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Economic Growth & Development

Preface

Sustainable Economic Development is achievable through the overlapping dimension on the issues of sustainability and economic development. This conference emphasizes the balance between conventional economic development and well-being not only of current but also future generations. Including the welfare of future generations involves the preservation of natural resources, energy, reduction of emissions, resilience of ecosystems etc. through appropriate production and consumption patterns. The theme of the conference is based on the three broad categories of sustainable development. They are: Economic Growth & Development, Business & Society, and Agriculture & Environment.

This proceedings includes papers presented at the USM-AUT International Conference (UAIC 2012) carrying the theme "Sustainable Economic Development: Policies and Strategies", held on 17-18 November 2012 at Bayview Beach Resort Penang Malaysia. This conference is jointly organized by the School of Social Sciences, Universiti Sains Malaysia (USM), Malaysia, and Faculty of Business and Law, Auckland University of Technology (AUT), New Zealand.

We received a total of 167 papers from various institutions and organizations around the world where 82 papers were accepted for inclusion in this proceedings. The proceedings is compiled according to the three sub themes of the conference. It covers both theoretical and empirical works from the scholars globally. It is hoped that the collection of these conference papers will become a valuable reference to the conference participants, researchers, scholars, students, businesses and policy makers. The proceedings will be submitted to Thomson ISI for indexing.

We would like to thank all authors and paper presenters for their invaluable contributions and support. Our sincere gratitude also goes to all paper reviewers who provided their professional views and comments. Last but not least, we honestly appreciate our editorial board members and assistants who passionately assisted in editing the proceedings.

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Jute Crop Cultivation Protecting the Environmental Pollution of Bangladesh

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Abstract

The study was an attempt to assess the jute crop status of Bangladesh as regard to its production, cultivation areas and ratio, sowing and harvesting time etc. in terms of environment protection. The study was based on secondary data. Data were collected during May to June, 2008. The secondary data were accumulated from different records of Bangladesh Bureau of Statistics, Bangladesh Jute Research Institute, Food & Agriculture Organization, International Jute Study Group reports etc. The temperature, rainfall, day length, production acreage, air quality, planting time etc. were selected for its large concentration points of relation with jute cultivation. The year wise data of climatic factors during 1987 to 2007 and; areas and production of jute fibre during 1972 to 2007 were collected from different sources. The results revealed that in Bangladesh, there was pre-monsoon shower during the month of March and April thereby offering optimum condition for land preparation and sowing. Following that there were moderate and intermittent rain and shower during May and June providing enough moisture in the soil needed for good growth of jute plants. Both species of jute were of photo-periodism-short day plant, the critical light period seems to be near about 12.5 hours. The jute crop can be grown well with a minimum temperature of 15 ^0C to maximum temperature of 38 ^0C and which may increase up to 46 ^0C. Moreover, the crop sweep out the excess load of carbon-dioxide (about 14.66 tons ha^{-1}) from the atmosphere and released a bulk amount of oxygen (about 10.66 tons ha^{-1}). The total jute acreage in 1972-73 was 2214.70 thousand acre and the production was 1181.00 thousand tones. It was 1908.00 thousand acres in 1986-87 and the area gone down to 500.00 thousand acres in 2006-07 from where producing 1221.00 and 990.00 thousand tones of jute fibre, respectively.

Keywords: Jute (Corchorus spp.), temperature, rainfall, acreage, carbon-dioxide, oxygen

1.0 Introduction

Bangladesh forms one of the largest deltas in the world and is situated approximately between $20^034´$ and $26^037´$ north latitude and $88^045'$ and $92^040´$ east longitude. Average annual rainfall is 2137.2 mm; day length ranges from 10-14 hours; humidity 30-89% and temperature 11.16- 34.50 ^0C. The great delta is flat throughout and stretches from near the foot-hills of the Himalayan Mountains in the north to the Bay of Bengal in the South. In Bangladesh the great plain lies almost at sea level in the south. The maximum elevation from the sea level is only 50 meter (excepting hilly areas). The topography varies and divides the land scope in to five tracts, viz. high land, medium high land, medium low land, low land and hilly land. Almost 90% of the land area of the country is alluvium.

Jute is a fibre crop belongs to genus *Chorchorus* of the Tiliaceae family with two cultivated species–*C. capsularis* L. and *C. olitorius* L. Fibre is extracted from the bark of the plants. It grows under an abundant range of climatic factors. Among the climatic factors, temperature, humidity rainfall, sunshine are the dominating component for the growth of jute plant. In 1970-80 decades about 1.5-1.6 million hectare of the total cultivable land was occupied by jute has now been reduced to 0.45 to 0.50 million hectare. Still jute is contributing to national economy. Its present contribution to GDP is about 5.5% (Sikder *et al.*, 2008). Jute is a versatile and environment friendly biodegradable natural fibre widely grown in Asia, particularly in Bangladesh, India and China. It is rapid growing renewable biomass and photo-reactive crop with only 120 days of harvesting period.

Emission of green house gases into the atmosphere has lead to global warming. It causes glaciers melting, raising sea levels, cyclones, tornados, flood, drought Tsunami etc. Incremental raising of the temperature intensified folds and causing havoc to life and properties. Bangladesh is facing the reality of climate change due to global warming. It will impact on the composition of atmosphere, hydrology, geomorphology, ecology, soil, land use, biodiversity, vegetation etc. As a result many natural ecosystems may be changed. Emergence of climate change would affect Bangladesh in two ways in two major contrasting regions. First one, the southern region would be in drainage congestion with rise of sea level and intrusion of saline water. Secondly the north-western part will be subjected to scarcity of water leading to drought condition, both will impaired the agro-ecosystem of the country. Agriculture is the main concern due to changes in climatic factors such as temperature, humidity, precipitation, wind flow, solar radiation; evaporation etc has direct effect on the production of crop.

Bangladesh is the drainage basin of big rivers and being bestowed with alluvial soil and availability of non-stagnant water for jute retting has a distinct agro-ecological comparative advantage in production of best quality fibre. Though market for traditional jute products has been declining continuously in the recent past, now with the increasing environmental awareness, eco-friendly and biodegradable products are gaining popularity both in developed and developing countries for combating retardation of ecological degradation due to green house effect. Jute and jute products not only retards ecological degradation but conserve environment and atmosphere as a whole. The present study was therefore undertaken to assess the jute crop status of Bangladesh as regard to its annual production, cultivation areas, cultivation ratio, sowing and harvesting time etc. in terms of environment protection.

1.1 Materials and Methods

The study was based on secondary data. Data were collected during May to June, 2010. The secondary data were accumulated from different records of BBS, BJRI, FAO, IJSG etc. Data temperature, rainfall, day length etc. were selected for its being large concentration point of relation with jute production of Bangladesh. On the basis of concentration on the changes of production, growing area, growing behaviors ie. seed sowing time, harvesting time, plant protection measures etc. were selected as study areas for collecting information on the production aspect. The year wise data of climatic factors and areas and production of jute fibre during 1987 to 2007 of climatic and 1972 to 2005 of jute production were collected from the secondary data accumulated from BBS, BJRI, FAO and IJSG reports.

2.0 Results and Discussions

2.1 Temperature

Temperature directly affects photosynthesis, respiration, and cell wall permeability, absorption of water and nutrient, transpiration, enzyme activity and protein coagulation of plants. Jute is grown in a wide range of temperature. It can thrive well with a minimum temperature 15 ^{0}C to maximum temperature 38 ^{0}C and may increase up to 46 ^{0}C. Generally the temperature of Bangladesh remains between 7 to 12 ^{0}C during winter and maximum range of 23.88 to 31.55 ^{0}C during summer season. The IPCC-WG-I Third Assessment reported that the global average surface air temperature has increased by 0.6 ^{0}C over the 20th century (IPCC, 2001), which has been mainly attributed due to atmospheric causes of green house gases. The trend of global temperature increase during the last two decade was 0.15^0 C/decade. IPCC (2001) has also projected the rise of temperature by 1.4-5.8 ^{0}C over the period 1991-2100. During the last decade there was increase of temperature due to climate change (Tables 1 & 2). But the fall of humidity will cause wilting of jute plant with nutritional disorders (Dempsey, 1975). Some diseases may be uncounted as to the raise of temperature specially originated from thermophilic organism. The limit of survival of living organism has generally been reported to be between -35 and +75 ^{0}C but for plant the range is much narrower, which may be 15 to 40 ^{0}C (Nelson, 1997). So under the predicted temperature due to climate change crop will suffer from disease infestation.

2.2 Rainfall

The annual rainfall varies from 1419 to 4338 mm, which is more intensive in the eastern and southern region with less in the north and western part of Bangladesh. Climate change will cause more intensive rainfall pattern in eastern and southern region and scarcity of rainfall in the northern-western part of the country. Average precipitations are projected to increase in June – August up to 12.5 % by 2020s and about 20 % by 2050s. Jute is sown between March to April, and remains in the field up to July i.e. occupied by pre-monsoon to monsoon season. Early precipitation exceeding 750 mm will delay sowing period of jute and ultimately crop yield (Table 1). Generally rainfall of 250-300 mm during March to April is most suitable for growing jute in the field (Kundu, 1959).

Table 1: Change in monthly average temperature and rainfall of Bangladesh

Months	Average of 1987-1990			Average of 1991-2007		
	Temperature (^{0} C)		Rainfall (mm)	Temperature (^{0} C)		Rainfall (mm)
	Mean daily Maximum	Mean daily Minimum		Mean daily Maximum	Mean daily Minimum	
January	23.29	11.22	1.41	24.19	12.00	103.98
February	24.47	13.21	19.64	25.79	15.09	297.39
March	28.79	17.16	59.59	31.00	18.24	182.88
April	30.93	21.05	196.65	33.04	23.22	852.18
May	30.66	22.09	217.10	32.43	23.82	1248.09
June	30.90	23.75	349.29	32.35	25.69	1548.42
July	29.94	24.69	578.43	32.71	25.82	3956.28
August	30.65	24.71	325.12	32.29	26.10	1762.17
September	30.43	23.99	292.07	31.70	25.61	2346.09
October	29.66	23.50	281.14	31.30	24.40	1942.71
November	27.81	18.94	61.48	28.64	19.02	137.40
December	24.47	14.15	3.00	26.48	14.26	0.00

Source: Khandaker (1991).

Maximum and minimum temperature increased highly during jute growing season March-April to July-August. The highest temperature of 2.77 ^{0}C increased in the month of July. In contrast the highest minimum temperature of 2.17 ^{0}C increased in the month of April. Within 17 years of age (Duration) the maximum temperature increasing (increment) range was 0.83-2.77 ^{0}C and that of minimum was 0.08-2.17 ^{0}C. The monthly temperature during the jute growing seasons were found higher (Table 2).

On the other hand, rainfall increased vigorously within this study period of 17 (1991-2007) years. The highest increased rainfall of 3377.85 mm was observed in the month of July. From the result it seems that the rainfall was higher with the higher temperature. The increasing range was -3.00 to 3377.85 mm monthly rainfall increase more during the jute growing season (Table 2).

Table 2: Increased monthly average temperature and rainfall after 17 years of Bangladesh

| Months | After 17 Years (1991-2007) | | Rainfall (mm) |
| | Temperature (^{0}C) | | |
	Mean daily Maximum	Mean daily Minimum	
January	0.90	1.22	102.57
February	1.32	1.88	277.75
March	2.21	1.08	123.29
April	2.74	2.17	655.53
May	1.77	1.73	1030.99
June	1.45	1.94	1199.13
July	2.77	1.13	3377.85
August	1.64	1.39	1437.05
September	1.27	1.62	2054.02
October	1.64	0.90	1661.31
November	0.83	0.08	75.92
December	2.01	0.11	-3.00

2.3 Solar Radiation

Solar radiation is a significant factor in plant growth and developed specially the intensity and duration of light are most important for the physiological process in plant. Both species of jute are of photo-periodism-short day plant, the critical light period seems to be near about 12.50 hours (Johansen *et al*., 1985).

White jute is a highly photosensitive plant of which tossa is more sensitive than white; the crops fall victim of short day length when sown early. Jute exhibits short-day flowering behaviour with critical day lengths generally being about 12 h for *Corchorus capsularis* L. varieties and 12.5 h for *C. olitorius* L. (Sen Gupta and Sen, 1946; Kundu, 1959). Temperature and soil moisture are the other factors which affect flowering and stunted or limit the growth.

Photoperiod is the dominant factor controlling flowering, and hence growth habit. There was relatively little effect of temperature on flowering even though night temperatures below 20^0 C markedly delayed emergence and initial growth. Thus effect of light intensity or quality may be involved (Johansen et al., 1985).

Figure 1: Daylength in hour 1st and 15th of each month of Bangladesh
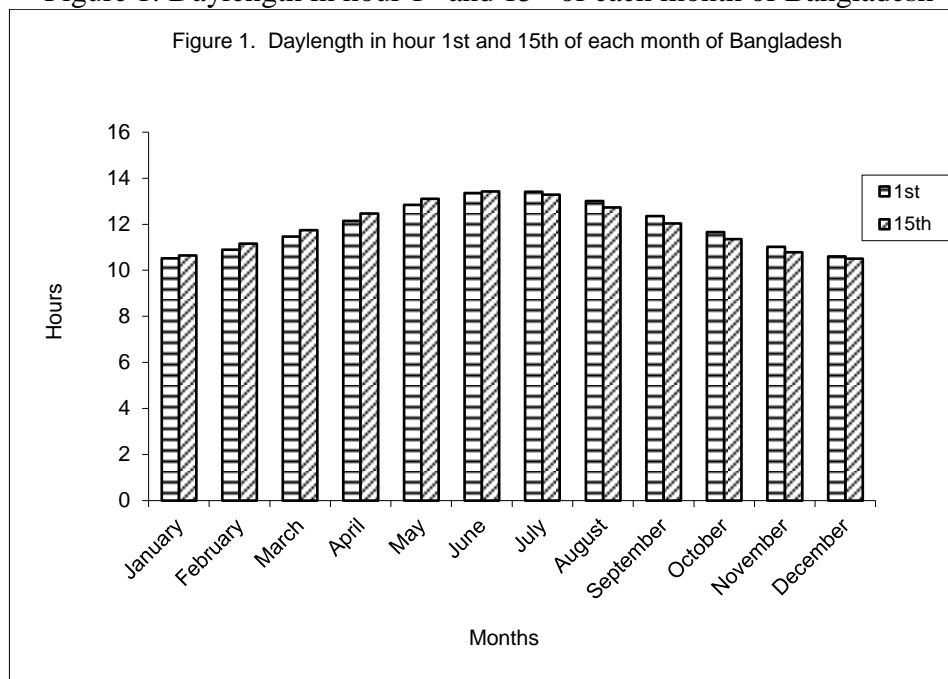
Source: Khandakar *et al*. (1995)

2.4 Relationship between Climatic Factors and Jute Production

Result revealed that jute production is so nicely matched with the ecological attributes of Bangladesh that there is pre-monsoon shower during the month of March and April thereby offering optimum condition for land preparation and sowing. Following that there were moderate and intermittent rain and shower during May and June providing enough moisture in the soil needed for growth of jute plants. Heavier rains follow during July and August, which fill the ditches and ponds with sufficient water needed for retting of jute plants after harvest.

Jute is mainly cultivated in kharif-1 season (March-June). Tossa jute (Corchorus olitorius L.) fibre and seed are commercially superior to those of white jute (C. capsularis L.) in both national and international market. Tossa jute shows premature flowering resulting in yield with low quality fibre when seeded in relatively low temperature in early March. Tossa jute seed generally used to collect from the normal fibre-yielding crop seeded during April-May. This seed-yielding crop is severely affected by natural calamities like flood, water, cyclone, heavy rainfall, insect pest infestation etc. during July-August almost every year and as a result there is acute shortage of seed for sowing in the next season. Hence, it becomes necessary to grow tossa jute and under late sowing condition in off-season during July-August for white and August-September for tossa jute. Bangladesh Jute Research Institute released so many tossa jute varieties O-9897, OM-1 and 0-72 that are more or less similarly tolerant to comparatively short day and low temperature. Now the varieties do not initiate premature flower even when sown in early March and also grown well under temperature of October-November for seed production.

2.5 Year Wise Area and Production of Jute

Recently, Jute is facing a hard competition Jute sector is crossing a miserable situation in the economy of Bangladesh. This is due to the fact that jute land is equally suited for growing

rice, and rice is commanding a record high price in the local market. Moreover, the different hybrid varieties of rice have further increased the possibilities of increasing cultivation of rice over jute. The farmers are quickly adjusting their production plans accordingly and taking the advantage of the high price of rice. The price of jute was never stable. That is why farmers like to produce other crops rather than jute. As a result the area of production of jute has decreased over the year.

The table 3 showed the area and production situations of jute in Bangladesh during 1972-73 and 2006-2007. There have been considerable variations in jute areas and production over the years however there is a clear downward trend (Table 3). The area of jute production reduced to 0.965 million hectares in 2004-05 from 2.215 million hectares in 1972-73. Table 3 also shows that the production of jute reduced to 1035 thousand tones in 2004-05 from 1181 thousand tones in 1972-73. The production of jute were 794 thousand tones and 800 thousand tones in 2003-04 and 2002-03 respectively while the areas of jute production were 1.008 million hectares and 1.079 million hectares in 2003-04 and 2002-03, respectively.

The total jute acreage in 1972-73 was 2.215 million hectares and the production was 1181.00 thousand tones. It was 1.908 million hectares in 1986-87 and the area gone down to 0.500 million hectares in 2006-07 from where producing 1221.00 and 990.00 thousand tones of jute fibre, respectively (Table 3). The jute production area decreased gradually during the decades from 70s to 2000s. It was observed that the average cultivation area in 70s decade was 1.779 million hectares. In contrast it decreased to 48.54% (0.863 million hectares) in 2000s decade. On the other hand, the average production was 952.33 thousand tons in 70s and increased to 972.33 thousand tons in 80s, however, it decreased to 874.59 thousand tons in 90s and 911.33 thousand tons in 2000s (Table 3). It might be happened for day to day getting pressure of food crop production, change of jute cultivation zones, cultivation ratio of tossa and white jute etc.

2.6 Jute Cultivation Affected By Air Quality

Jute is a fast growing field crop. Its relative growth rate varies from 0.115 to 0.05 gg^{-1} day^{-1}. The net assimilation rate of the leaves varies from 0.0006 to 0.0001 cm^{-2} day^{-1} during 30 to 120 days of its growing period (Khandakarr et al., 1990). Its carbon dioxide consumption is 0.23 mg CO_2 $m^{-2}S^{-1}$ on an average to a maximum of 0.44 mg CO_2 $m^{-2}S^{-1}$ (Palit and Bhattacharyya, 1988).

In a theoretical calculation one ha of jute plants can consume to about 14.66 tons of CO_2 at the rate of 0.34 mg $m^{-2}S^{-1}$ in life span of about 100 days. Therefore, it can be said that the jute crop is a good environmental cleaner that reduces the pressure of CO_2 in the atmosphere and thus lowers the rise of temperature of the atmosphere and reducing possible green house effect. On the contrary, it also refreshes the atmosphere with release of fresh oxygen at the rate of 10.66 tons ha^{-1}. To a theoretical calculation the total jute crop in Bangladesh removes/sweeps to about million tons of carbon dioxide in one jute season. In the same process it freshens the air with the release of 10 tons oxygen ha^{-1} and in total 5.90 million tons of oxygen is released to Bangladesh atmosphere. (Calculation based on the basic equation of photosynthesis to produced the required dry weight in total. This calculation also agrees with the finding of Palit and Bhattacharyya, 1988. The relation of jute cultivation and environment is illustrated as Figure-2.

Table 3: Total area and production of jute in Bangladesh

Years		Area (Million hectare)	Decade average (000 acres)	Production (000 tones)	Decade average (000 tones)
70s Decade	1972-73	2.215		1181.00	
1973-74		2.196		1088.00	
1974-75		1.417		630.00	
1975-76		1.277		714.00	
1976-77		1.603		873.00	
1977-78		1.805		973.00	
1978-79		2.052		1150.00	
1979-80		1.874		1065.00	
1980-81		1.569	1778.71	897.00	952.33
80s Decade	1981-82	1.412		842.00	
1982-83		1.425		886.00	
1983-84		1.435		946.00	
1984-85		1.484		928.00	
1985-86		2.614		1571.00	
1986-87		1.908		1221.00	
1987-88		1.245		780.80	
1988-89		1.270		799.40	
1989-90		1.338		835.00	
1990-91		1.462	1559.31	914.10	972.33
90s Decade	1991-92	1.449		945.10	
1992-93		1.235		885.60	
1993-94		1.288		782.30	
1994-95		1.402		929.50	
1995-96		1.356		910.35	
1996-97		1.253		883.00	
1997-98		1.427		1057.00	
1998-99		1.181		821.00	
1999-00		1.008		711.00	
2000-01		1.107	1270.65	821.00	874.59
2000s Decade	2001-02	1.128		859.00	
2002-03		1.079		800.00	
2003-04		1.008		794.00	
2004-05		0.965		1035.00	
2005-06		0.500		990.00	
2006-07		0.500	863.33	990.00	911.33

Source: BBS 1991, 1998, 2004 & 2006 and Choudhury, 1998

Figure 2: Natural conservation through jute cultivation

Jute Cultivation and The Environment

Total Dry Matter Production := 10.39 tons/ha
Per hectare value presented

Rate of CO_2 fixation   = 0.34 mg m^{-2} s^{-1} .

12 - 13.4 h

Transpiration
(2098 tons/ha)
- x (CO_2)
Respiratory

Sun

AIR

O_2
(10.66 tons)

30-35°C
20-24°C

$CO_2 + x$ (Respiratory
(14.66 tons)   substrate)

H_2O
(6.00 tons)

Water Use

Leaf (1.92 tons: 18.5% dry wt)
with N.P.K. Ca.Mg.etc(134 kg.)

CO_2

H_2O Use (0.6%)
(12.00 tons)

Sticks (4.94 tons ; 47.5% dry wt)
with NPK etc. (99 kg)

water use efficiency
4.924 g/kg water

Bark (2.68 tons ; 25.8% dry wt.) with N.P.K. etc.
(160 kg)

Nutrients (N,P,K, Ca, Mg etc) uptake 400 Kg.

Retting waste
(1.07 tons;
10.3% dry wt.)

Dry fibre(1.61 tons;
15.5% dry wt)

Water up-take
by plants (2110 t/ha)

Slow return
6.55 tons (63% dry wt.)

Roots (0.85 tons ; 8.2% dry wt.)

Water

Immediate return
3.84 tons (37% dry wt.)
including NPK etc.
(54% dry wt.)

Retting by products
Methane
Butaric acid and
derivatives

No irrigation

SOIL

Rain 2000 mm (Approx.)

Very little or no use of

Pesticide and fertilizer

Source: Khandakar et al., 1995.

2.7 Jute Cultivation Affected By Water Quality

One of the most important natural resource is water. The most important environmental issues that has been identified for Bangladesh in the Rio Earth Summit (1992), is too much water, too little water and polluted water. The adverse situation like flood and drought which frequently occur in Bangladesh causes crop destruction including jute and jute seeds that brings immense miseries to the people in the form of food shortage, cash shortage and last of all seed shortage. Flood and drought also pose a threat in the conservation of biodiversities of crop species.

2.8 Planting Time

Planting around 30 March the Corchorus capsularis L. varieties yieded optimum fibre and it provides facilities for other crops to fit into 3 crop pattern. However, some recently developed high yielding varieties can be sown about one month ahead. To concern C. olitorius L. varieties, the conventional variety like O-4, planting should be done after 14 April, but less photoperiod sensitive varieties are to be planted starting from 15 March (Islam and Rahman, 2008) (Table 4).

Jute sowing is dependent either on residual moisture or on natural rainfall. From this aspect jute growing areas fall into two main categories: (i) early sowing areas namely, greater Rangpur, part of greater Dhaka, Comilla and Mymensingh district; and (ii) late sowing areas namely, Faridpur, Jessore, Kushtia, Rajshahi, Pabna, Bogra and part of Dhaka, Comilla and Mymensingh. Jute varieties bred previously could not sow usually earlier than late March with C. capsularis and before mid-April with C. olitorius L. varieties for their sensitivity to flowering. For the same reason the varieties could not be adjusted to a 3-crop pattern. But now a days the scenario of jute based cropping pattern showed a great change.

Table 4: Jute varieties with specific sowing time

C. capsularis L. varieties	Sowing time
CVL-1	30 March – 15 April
CVE-3	30 March – 15 April
CC-45	15 Feb – 15 April.
BJC-7370	15 March – 15 April
BJC-83	30 March – 15 April]
BJC-2142	30 March – 15 April.
C. olitorius L. varieties	**Sowing time**
O-4	15 April – 18 May
O-9897	30 March – 30 April
OM-1	20 March – 30 April
O-72	15 March – 30 April

Source: Islam and Rahman, 2008.

2.9 Change in Species Cultivation Ratio and Location

Jute was once mostly concentrated in south-eastern part of the Bangladesh i.e. Comilla, Mymensingh (greater) which was known as "Jat Area", gradually shifted to northern part (once considered less potential). Southern and eastern part was dominated by C. capsularis L. jute. But with shifting of jute cultivation to the northern area is covered with C. olitorius L. jute which was 80 % of the total cultivated area is occupied by C. olitorius L., which was just reverse in that of 70s decade (80%:20%) (C. capsularis L.:C. olitorius L.). Among the resumes of shifting, the availability of C. olitorius L. seeds, price of jute fibre and soil condition were prominent. Moreover the changes in climate factors over the years cannot be ignored.

During seventies, 70% of jute cultivation was of white jute and 30% of tossa. In that period environmental favorable condition was prevailed for white jute seed production. Farmers kept small portion of the fibre crop plants for seed production. Now a days the change of global climatic factors that type of seed production method could not meet up the seasonal seed demand and day-by-day white jute cultivation areas are deteriorating. After 90s decade

and onward due to change circumstances and users demand, the jute cultivation scenario of Bangladesh is about 80% of tossa and 20% of white jute. With this changed ratio (80% of tossa and 20% of white jute) the jute cultivation area also changed i.e. white jute is growing now at a small portion of Bangladesh (some areas of Dhaka, Manikgonj, Mymensingh, Jamalpur, Kishoregonj and Comilla districts). Whereas a big area is now covered with tossa jute (Faridpur, Jessore, Rangpur, Dinajpur, Kushtia etc. districts) due to changing environmental factors.

Direct contribution from jute cultivation to the environment is given below (Table 5).

Table 5: Direct Contribution from Jute Cultivation to the Environment

Items	Ton ha^{-1}	Country total (000 ton)
Fibre production	1.98	891.23
Stick production	4.94	2734.58
Leaf	1.92	1062.84
Retting affluent	1.07	592.30
Roots	0.85	470.53
Total dry matter	10.39	5754.55
CO_2 Consumption	14.66	8115.19
O_2 Release	10.66	5900.95
Labour Utilization (Cultivation)	253.48 (mandays)	139.95 (Million mandays)
Cash flow	12383.17 (TK)	6854.83 (Million TK.)

3.0 Conclusion

Jute is grown in Bangladesh almost solely as a rainfed crop without any irrigation or drainage provisions. In this regard jute is a better choice than its major competing crop Aus rice. This is because jute is comparatively less affected by drought or stagnation of water. Moreover, 3-4 hundred thousands hectares of land in Bangladesh are suitable for growing no other crop but only jute in the Kharif season (April-September). Most rarely jute suffers total damage due to calamities like drought, excessive rainfall or flood. It seems that jute is somewhat naturally insured against common seasonal hazards. All the facts, as discussed above, lead to a logical appreciation that our agri-environment is very ideal for jute cultivation. It may be concluded that jute and the environment in Bangladesh are mutually supplementary to each other and the jute cultivation protecting our environment from different types of pollutions. However, there is no room for complacence. We are yet to fetch the real benefit from the match of jute and the environment in Bangladesh.

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Rice Residue Management on Fadama Lands and Their Effects on Soil Properties and Crop Development

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Abstract

Rice hulls / husks were used as a stubble material to investigate their effects on soil properties root and shoot development of maize. Soils were sampled from five Fadama fields in Bauchi State, Nigeria. Under varied compaction (0 - 8 blows) and hulls levels (0 – 400 g), the soil bulk density was found to decrease from 2.01 to 1.23 g/cm^3. Under screen house test, the maize root and shoot are also influenced by number of blows (compaction) and hulls level added. At seven and fourteen days after germination (DAG), longest root development of 10 and 16 cm and shoot length of 19.3 and 36.0 cm were recorded for 200 g hulls added and at 4 compaction blows. Use of rice hulls on farms will improve soil properties due to machinery traffic and prevent pollution of environments.

Keywords: Fadama soil, rice hulls, compaction, bulk density

1.0 Introduction

Organic farming is a rapidly growing system of agricultural production all over the world. Rice hulls or husk are important natural resources and recycling nutrients is a key to soil amendment and improve both physical, chemical and biological properties. Fadama lands in northern Nigeria are one of the major producing and processing zone of cereal crops. *Fadama* are geomorphologic phenomenon that resulted from the combination of slow river bed accretion and periods of high rainfall runoffs that caused extensive flooding and deposition of materials over the flood plains. The flood plains extend throughout all ecological zones, showing a great variation in ecology, land use and different economic and environmental values. These lands amount to about 25,000 sq. km or about 3 % of the total land area of Nigeria and mostly situated along the main rivers. Of which, about 0.3 million ha (12 %) are found in the Northern region (NFDP 2003). Crop grown during both dry and wet season includes rice, maize and vegetables. Large quantities of rice hulls are produced annually and with very high hills around the milling centers. Irregular disposal and frequent burning of this waste constitutes environmental hazards to both farmers and other inhabitants, Ogbodo, 2010. Burning results to atmospheric pollution, nutrient loss and it may be a cost-effective method for straw disposal as it reduces pest and disease populations (Dobermann and Fairhurst 2002). Rice residues can be used to improve properties of soil. Ogbodo (2010) also indicates that apart from its major role in supplying nutrients, crop residues (rice chaff) used as mulch have the potentials to regulate temperature, conserve soil moisture, minimize erosion and result in improved soil productivity. Chan (1992) observed that soil compaction significantly affects crop quality and the yield. Soil compaction affects plant growth by

causing increased resistance to root. Most of the Fadama lands are relatively poor in organic matter, cation exchange capacities and the essential macronutrients such as nitrogen, phosphates and potassium despite the fact that the Fadamas receive silt deposits from floodwaters annually (http://www.afdb.org/). Kuchenbuch and Ingram (2004) reported that bulk density, an important parameter related to root development was found to decrease, when organic materials were incorporated in to the soil. The water holding capacity of the soil increases with the incorporation of organic matter, especially the slower decomposing rice hulls. Mustapha, (2007) have reported the detailed properties of Fadama soils Table 1. The properties of Fadama soil are generally consistent for different locations as revealed from studies by several authors (Kparmwang and Esu, 1990; Mustapha, 2007; Yakubu, 2010, and Ibrahim and Omotesho, 2011). However, the beneficial impact of organic matter in moisture retention declined with time, possibly due to the decomposition of the material in the warm climate of the dry season (Hartemink, 2003). Good crop husbandry is the management of crop plants so that they are provided with the best possible conditions for growth (Lockhart and Wiseman, 1983). In recent years, there have been many changes as a result of rapid improvement in the mechanization of seed-bed preparation, planting and harvesting. To mention few, modifications of soil structure through tillage, preparation of suitable seed-bed, incorporation of organic and inorganic fertilizer, provision of suitable planting depth and spacing, transporting materials, labour and products among others.

This study examines the influence of crop residues (rice hulls) on soil properties and crop development, thereby providing awareness for utilizing agricultural waste (rice hulls) for sustainable environmental protection and significant economic benefits to communities.

Table 1: Distribution of particle-size fractions and pH in some fadama soils in Bauchi LGA, Bauchi State

Locations	Depth (cm)	Sand	Silt (%)	Clay	Textural class	Organic C. (g kg^{-1})	Total N (g kg^{-1})	Avail. P (mg kg^{-1})	pH (in CaCl$_2$)
Luda	0-15	23.3	40.7	36.1	Clay loam	7.38	0.07	3.60	5.26
	15-30	39.4	32.7	27.9	Clay loam	2.79	0.07	8.60	4.00
Bayara	0-15	43.4	32.0	24.8	Clay loam	9.18	0.14	5.60	5.13
	15-30	39.3	39.3	35.9	Clay loam	12.97	0.11	9.30	4.92
Mun	0-15	44.6	24.0	31.4	Clay loam	3.99	0.18	5.80	4.90
	15-30	69.5	15.8	14.9	Sandy loam	1.79	0.07	7.30	4.30
L/Katagum	0-15	69.4	23.1	34.1	Clay loam	4.78	0.11	9.90	4.10
	15-30	40.6	10.7	19.8	Sandy clay loam	1.99	0.11	4.20	4.86
Zungur	0-15	69.4	42.4	17.0	Loam	5.19	0.14	6.80	4.54
	15-30	33.5	41.4	25.1	Clay loam	2.45	0.04	15.20	4.43
Mean	0-15	39.0	30.0	28.6	Clay loam	6.10	0.13	6.34	4.79
	15-30	47.8	24.7	28.0	Sandy clay loam	4.40	0.08	8.92	4.50
Grand mean		43.4	27.4	28.3	Clay loam	5.25	0.11	7.63	4.65
CV (%)		11.8	11.3	9.1		19.68	14.02	14.88	2.95

Source: Mustapha (2007).

2.0 Materials and Methods

2.1 Study Area

The experiments were carried out between January and April, 2008 at Abubakar Tafawa Balewa University, Yelwa campus Bauchi. Bauchi is geographically located at about 10°22' N and 0947' E with elevation of 609.5 m above sea level. It is situated in the Northern Guinea savannah ecological zone of Nigeria (Tenebe, 1995). The soils were brought from Fadama locations at ATB University farm, Bagel, Dajin, Zungur-Kogi and Bayara.

2.2 Sample Handling

Soil and rice husk samples in polythene bags were air dried and pass through 2mm sieve. The rice hulls were obtained from Wunti market rice mill centre in Bauchi, a typical of rice hulls around milling area is shown in Figure 1. Cans of 100.2 mm diameter, 13.2 cm heights and 71 g weight were used as containers for planting maize seed under screen house condition. Seed variety called Nagari maize was obtained from Bauchi State Agricultural Supply Company, (BASAC). For each location 800 g of soil are mixed with 0, 100 g, 200 g, 300 g and 400 g rice residue at 0 to 8 compaction blows. The soil samples were compacted with 2.5 kg standard proctor hammer and containers were drained after saturation. Bulk density and other properties were measured and maize seed were sown in two set of containers to determined crop development at 7th and 14th days after germination (DAG). Shoot and root length were measured to determine the influence of rice hulls on maize growth.

Figure 1: Heap of rice hulls near processing areas

3.0 Result and Discussion

Table 2 shows the bulk density of soil samples. Values are high at lower compaction levels and reduce when both compaction and rice husk are increased. Bulk densities of 2.01 to 1.23 were recorded from the samples and the results show the impact of rice husk on the structure of Fadama soil.

Table 2: Soil Sampling and bulk density (gcm^{-3})* measurement

Sample	Hulls level (kg)	Compaction level (blows)	Sample Location ATBU Zungur	Bagel		Bayara	Dajin
1	0	0	2.01	1.45	1.53	1.43	1.47
2	100	2	1.44	1.43	1.50	1.40	1.45
3	200	4	1.41	1.41	1.42	1.36	1.41
4	300	6	1.38	1.32	1.31	1.30	1.35
5	400	8	1.30	1.29	1.27	1.23	1.28

* Values are mean of three measurements and 800 g of soil are mixed for each sample used

3.1 Maize Development

3.1.1 Shoot Development

Table 3 shows maize shoot length at 7 and 14 days after germination under screen house condition. Maize development was affected by adding varying levels of rice hulls and compaction. The longest maize shoot of 19.7 cm and 36 cm was observed when 300 g and 200 g of rice hulls and at 6 and 4 compaction blow respectively. Similarly shortest shoot growth was recorded for the controlled samples (with only 800 g soil). However, shoot length reduces from 19.7 and 27 cm to 15.5 and 26 cm with the increased level of rice husk for both seventh and fourteenth days after maize germination. The result clearly indicates that shoot development was positively influenced by appropriate proportion of rice hulls incorporation into the soil. Also the adverse effect of compaction was influenced by the hulls level. Numerous studies have shown the effects of soil bulk density on plant shoot and root growth (Masle and Passioura, 1987; Atwell, 1988 and Materechera et al, 1991, Lowery and Schuler, 1991).

Table 3: Effect of rice husk on maize shoot and root development under screen house condition

Compaction (blow)	Rice husk (g)	7 days after germination		14 days after germination	
		Shoot length (cm)	Root length (cm)	Shoot length (cm)	Root length (cm)
0	0	8.4	5.0	21.5	13.0
2	100	13.5	6.0	25.5	11.0
4	200	19.3	10.0	36.0	16.0
6	300	19.7	4.1	27.0	6.5
8	400	15.5	5.1	26.0	7.0

3.1.2 Root Development

Table 3 shows the effect of rice husk on maize root development under screen house condition. Root length with 10 and 16 cm was observed when 200 g of hulls was added at 4 compaction blows. The lower root lengths 4.1 and 6.5 cm were measured at300 g hulls and 6 blows. Rice husk sample were pass through 2 mm sieve to facilitate decomposition and allow root penetration within screen house set up. Both shoot and root lengths under screen house condition, were measured using thread and tailor tape. Crop root length at mid summer and matured stage using grid and other methods are described by several authors (Chaudhary and Prihar, 1974 and Cigr, 2007). The result shows that root can grow longer with time. And this is invariably based on the level of treatment provided to the soil. Within one week, the root length increased from 10cm to 16cm, here considering the longest root length. Figure 2 shows the shoot and root maize development under screen house condition at 7 and 14 days after germination.

Figure 2: Shoot and Root growth at varying Compaction levels
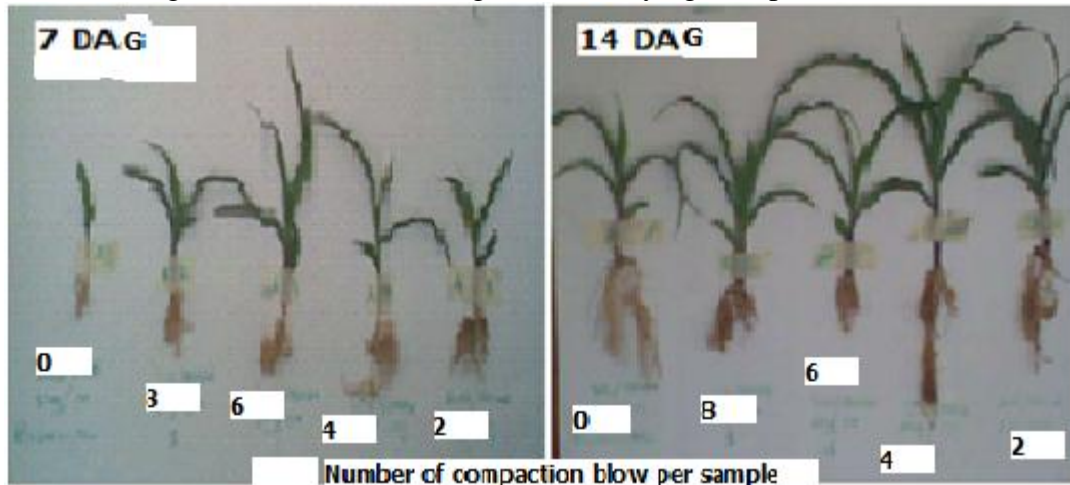
4.0 Conclusion

The experiment which involves incorporation of rice hulls and compaction as it affects shoot and root development of maize was conducted under screen house condition. It influences soil bulk density at varying rice hulls in Fadama soil. The hulls lowered the effect of compaction as indicated by the decrease in bulk density with increase in the hulls level. Soils with average level of hulls even at high level of compaction exhibited a good root and shoot development. Generally, the result shows that the structure of compacted soils can be improved by the use of rice hulls. Therefore, if heavy agricultural machines are to be used on soil, especially Fadama soils, application of rice hulls will help in reducing the adverse effect of compaction on the soil structure. Farmers can spread part of the rice husk in their farms to decompose earlier before planting maize.

Finally, a key part of ensuring sustainability and economic growth in developing nations is to ensure that raw materials are used efficiently. Million tonnes of crop-residues and agro-industrial wastes are produced. Some of the predominant uses are as fuel (briquette), animal feed, farm manure and construction materials. Other industrial usage of agricultural residues like rice straw, cotton linter, wheat straw are for making pulp paper, paper straw boards, biogas etc. Rice-husk has substantial energy value, if burnt in incinerators (skilfully managed); turns out to be a source for power generation far cheaper than using coal. A well designed environmental policy can lead to opportunities to create positive effects on employment;
  ➢ create high labour-intensity of processes for collection, sorting and recycling of wastes;
  ➢ advance technologies and waste minimisation measure these can have significant economic benefits.

Acknowledgement

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A Model for Paddy Industry in Malaysia

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Abstract

This study is conducted to analyze the factors affecting the paddy industry in Malaysia. The findings indicate that on the supply side, the estimated result shows that fertilizer subsidy and technology are important determinants in estimating paddy yield. Fertilizer subsidy and technology should be focused as one of the key issues in paddy is low yield. Meanwhile, on the demand side, price elasticity of demand is inelastic. This shows that consumers are not responsive to change in price of rice. On the other hand, income elasticities show rice is inferior good.

Keywords: Paddy, rice, agriculture modelling

1.0 Introduction[1]

The Malaysian paddy and rice industry has always been given special treatment based on the strategic importance of rice as a staple diet commodity. In 2010, apart from being the main source of food, it also provides the livelihood to 187,000[2] paddy farmers in the country (Department of Statistics, 2012). Land utilization for paddy production is currently 673,745 hectares, of which 76% (510,474 ha) is in Peninsular Malaysia. Paddy hectarage in Sarawak and Sabah accounted for 18% (122,699 ha) and 6% (40,572 ha) of the total hectareage respectively.

The industry is heavily regulated because of its social, political and economic importance (Amin, 2007 and Daño and Samonte, 2003). Public policy pertaining to the industry was towards self sufficiency. During the 1960s and 1970s, the government was committed to achieving almost 100 per cent self-sufficiency through various production-oriented strategies like the construction of irrigation facilities, the provision of cheap credit and other infrastructural development. Later in the Third National Agricultural Policy (1998-2010), a minimum of 65% self sufficiency was targeted due to the favourable world rice trade. In the Tenth Malaysia Plan the government set a target of 70% self sufficiency level.

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[1] This section draws heavily from Amin Mahir Abdullah (2007). Malaysian Paddy and Rice Industry: Policy Implementation and Directions In (Ed., Fatimah Mohamed Arshad, Nik Mustapha R. Abdullah, Amin Mahir Abdullah and Bisant Kaur), Book Title: 50 years of Malaysian Agriculture: Transformational Issues, Challenges and Direction, Serdang, UPM Press: 281-308.

[2] There is no available data on the latest number of paddy farmers. This figure is calculated based on the ratio of paddy farmers and number of employment by industry in Agriculture, Forestry and Fishing.

Paddy production shows a declining contribution to agricultural GDP. In 2009, the paddy production decreased by a small percentage of 2.9% (Ministry of Agriculture, 2010). Meanwhile, paddy industry has created employment for many in the rural areas. In 2005 the number of paddy farmers is 314,000 farmers (Agricultural Statistic Handbook, 1980-2010). At 70% SSL, paddy production is not enough to supply for domestic demand. Thus, Malaysia imports rice mainly from Thailand and Vietnam.

On the other hand, Malaysia does export a small amount of rice, mainly wholly milled rice and broken rice. In 1985, the average rice export was 2,002 tonne and increased to 2,437 tonne in 1995, while in 2005 the average rice export slightly increases to 2,915 tonnes (Department of Agriculture, 1980-2007).

Paddy farmers have long been associated with low income and poverty. This is one of the main reasons for various support program introduced by the government for paddy sector. From 1970-1980, majority (more than 70%) of paddy farmers were in poverty. During 1984-1990, a sharp reduction in percentage of paddy farmers in poverty was observed due to various support programs introduced by the government for the paddy sector. However, paddy farmers are still the highest in poverty level compared to other agricultural sectors (Marditech, 2004).

2.0 Industry Background

2.1 Production

Total paddy production in 2010 was 2.5 million tonnes. About 69% (1,757,575 tonnes) of the production was contributed by granary areas and 16% (417,506 tonnes) by non granary areas (granaries and non-granaries are in Peninsular Malaysia). Sabah and Sarawak contributed 6% (141,542 tonnes) and 9% (231,686 tonnes) of the paddy production respectively. On the other hand, total rice production was 1.6 million tonnes. Paddy production in Malaysia is costly compared to its neighbouring countries in ASEAN. This is mainly due to the small farm size, where the average plot size is 1.06 hectares as well as high input costs particularly labour and fertilisers. In 2007, cost of production per hectare in granary areas estimated by the Department of Agriculture was RM 2,475 on farmers' own land and RM3,087 on rented land (Amin, 2007).

The total production in granary areas ranged between 1.4 million tonnes to 1.6 million tonnes a year. In 2010, these areas currently produce 69% of the total national rice production. In contrast, production in non-granary areas, Sabah and Sarawak are below 400 thousand tonnes per annum. Thus, significant improvements in production support programs are required to enhance paddy production in these areas.

Figure 1 illustrates paddy production trends according to production area. Production trend in granary areas shows that paddy production has marginally increased over time. Production trend in Sabah is rather constant, as the area planted in Sabah has decreasing trend. A considerable increasing trend of paddy production is shown in Sarawak, in contrast with relatively stagnant area planted as shown in Figure 2, indicating that productivity has been enhanced in Sarawak.

Figure 1: Paddy Production by Region, 1990-2009

2.1.1 Area Planted

In 2010, area planted for paddy is roughly 10% of the total agricultural lands. Although rice contributes only 3.3% to the GDP, rice is viewed as as the country's most important food crop in terms of cultivation, as it is a staple food for most of the consumers in Malaysia. In order to keep up with the demand, the government has assigned eight granary areas as the permanent rice-producing areas in the country to produce rice and sustain sufficiency. These granary areas were officially chosen based on their being the traditionally most important rice-producing regions in the country. The granary areas are Muda Agriculture Development Authority (MADA), Kemubu Agriculture Development Authority (KADA), Barat Laut Selangor, Besut, Krian/Sg.Manik, Endau/Rompin, Seberang Prai, Seberang Perak and Kemasin/Semerak (Daño and Samonte, 2003).

Currently, there are 674,928 hectares of paddy fields. Out of 674,928 hectares, 76% is in the Peninsular, 6% in Sabah and the balance 18% is in Sarawak. The granary areas represent the hub of paddy production in the country. The eight granary areas accounted for almost 76% of the total planted area in the Peninsular and the remaining 24% is planted in non-granary area.

Figure 2: Paddy Planted Area in Malaysia, 1990-2009 ('000 Hectares)
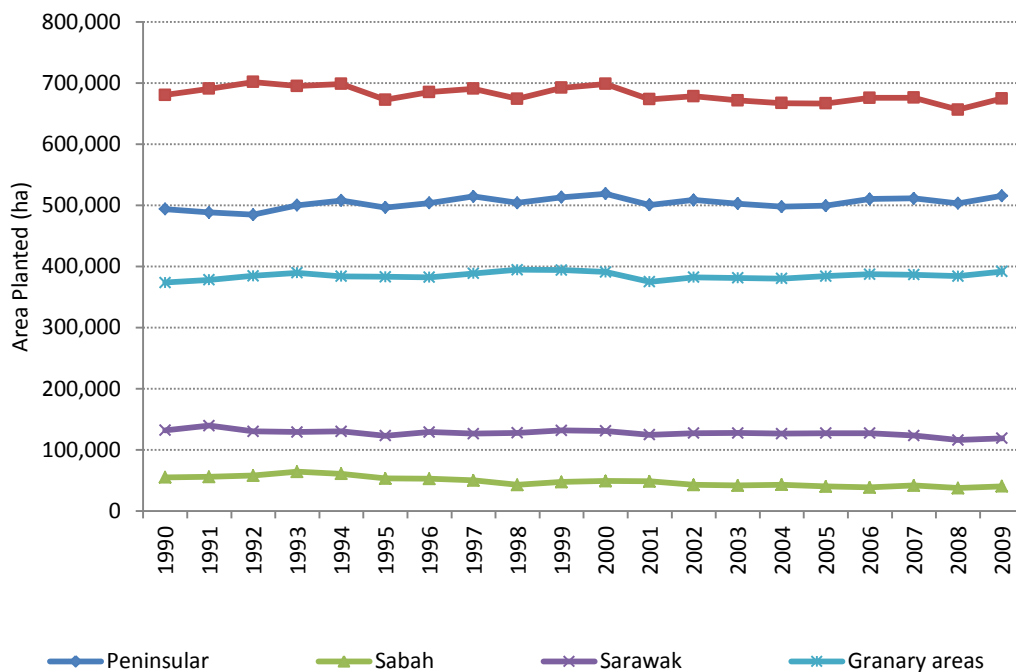
Source: Paddy Statistics of Malaysia, 1980-2007, Agricultural Statistics Handbook 2008, Buku Perangkaan Agro-Makanan 2009 - 2010

2.1.2 Yield

The national average yield in 2009 was 3.03 MT/ha as shown in Figure 3. Granary areas performed at a higher yield of 4.65 MT/ha compared to non granary areas. The national average yield in 2009 was 3.03 MT/ha. On the regional basis, the average yield in Peninsular Malaysia was 4.25 MT/ha, mainly contributed by the granary areas. Productivity in Sabah and Sarawak are lower than the Peninsular at 3.26 MT/ha and 1.56 MT/ha respectively. The average yield in Sarawak is low because 53% of paddy planted is highland paddy. The wetland yield in Sarawak in 2009 was 3.2 MT/ha.

Generally the average paddy yield increased after the implementation of NAP3. The national average yield increased 22% from 1999 to 2009. To achieve 80% self sufficiency target, productivity for granary and non-granary areas should be 5.5 and 4.5 MT/ha.

2.1.3 Consumption

In 2007, the total apparent consumption for rice was 2.3 million tonnes and per capita consumption was 85 kg. Apparent rice consumption and consumption per capita show a decreasing trend during 1980-2007. The reduction of per capita consumption is attributed to changes in dietary habit, income level and population increase. Income increase is generally correlated with an increase in health consciousness among consumers. That is, with higher income, consumers consume more high quality food such as meat, dairy products and less cereal (Tey, 2010).

2.1.4 Price

Prices of paddy and rice show a slight increasing trend from 1980-2009 (Figure 4). Paddy price is the average price of long and normal class of paddy paid to farmers from millers, while wholesale and retail rice price is the average prices from the most consumed rice classification (super tempatan, premium and standard).

Figure 3: Average Paddy Yield by Area, 1990-2009 (Kg/ha)
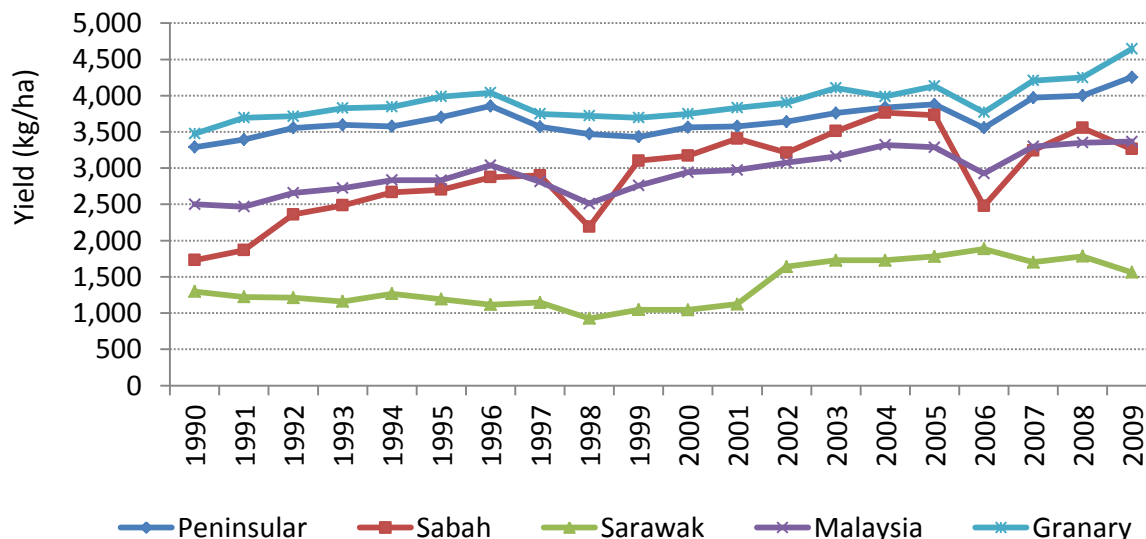
Source: Paddy Statistics of Malaysia (1985-2007), Agricultural Statistical Handbook (2008), Buku Perangkaan Agro-Makanan (2009-2010).

Figure 4: Domestic Paddy Farm, Wholesale and Retail Prices, 1980-2009 (RM/tonne)
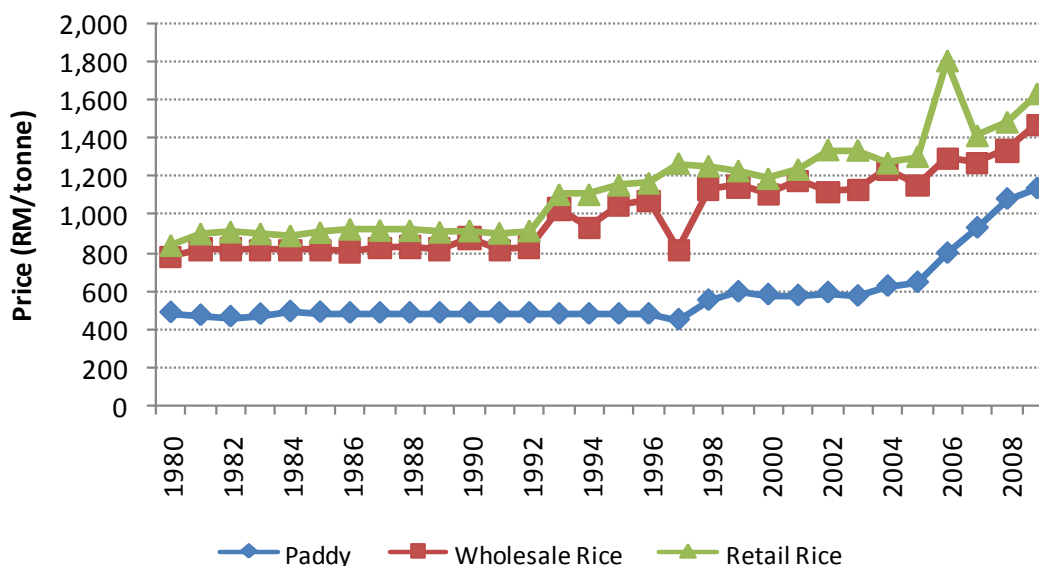
Source: Paddy Statistics of Malaysia (1985-2007), Agricultural Statistical Handbook (2008), Buku Perangkaan Agro-Makanan (2009-2010)

3.0 Key Issues

3.1 Self-sufficiency Level

In 2009, Malaysia has reached self-sufficiency level (SSL)[3] at 73 percent and is targeted to achieve 80 percent in 2010 following additional allocations to maintain food security (Ministry of Agriculture, 2008). In 2010, the self sufficiency level was estimated at 74% (Buku Perangkaan Agro-Makanan, 2010).

Malaysia was able achieve its self-sufficiency target as around 60-80% at a higher price. That is it incurs higher budgetary burden to the government and economic inefficiencies (Amin, 2010 and MARDITECH, 2004). It is estimated that the government spent about RM9 billion on cash and input subsidies between 1990-2009. Some studies suggests that the SSL may not be sustainable in the long term due to the higher growth rate of population and income compared to the rate of growth in paddy production in Malaysia and worldwide (Fatimah, 2011 and Bobenrieth & Wright, 2008).

Figure 5: Rice Self-sufficiency Level, 1980-2008 (%)
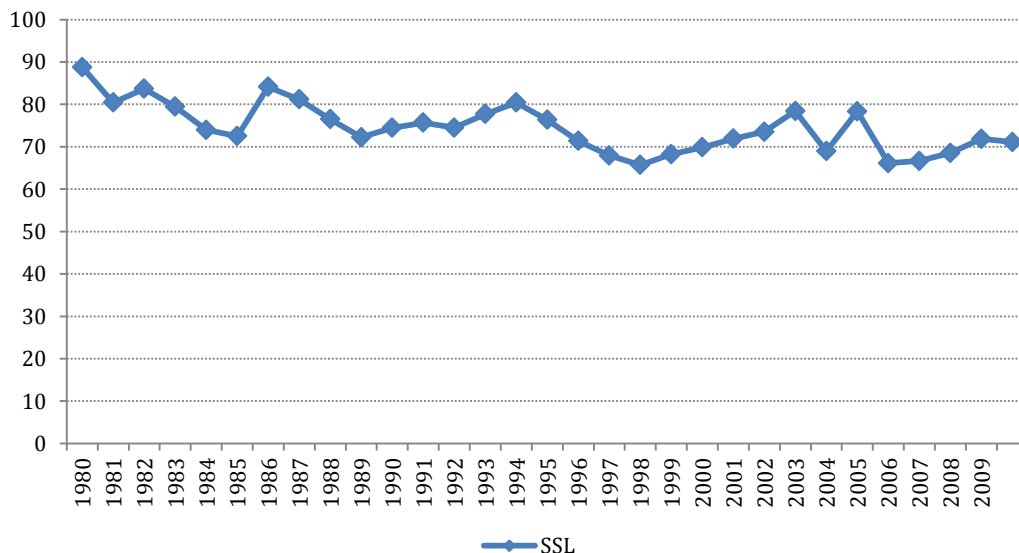
Source: Paddy Statistics of Malaysia (1980-2007), Agricultural Statistical Handbook (2008), Buku Perangkaan Agro-Makanan (2009-2010)

3.2 Low Productivity of Paddy

Thailand, India and Malaysia are among Asian countries that have the lower yield compared to other Asian countries such as China and Japan. In 2009, Malaysia is 17% below of Asian average paddy yield (Figure 6). This is attributed to small and uneconomic land, aged farmers, high cost of production and declining natural resources. Meanwhile, interest and involvement of younger generation in paddy planting is decreasing (Amin, 2007).

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[3] SSL is calculated by [Domestic production / (total rice imports – total rice export + domestic production)]

Figure 6: Paddy Yield by Country and Geographical Region, 1980-2008 (t/ha)
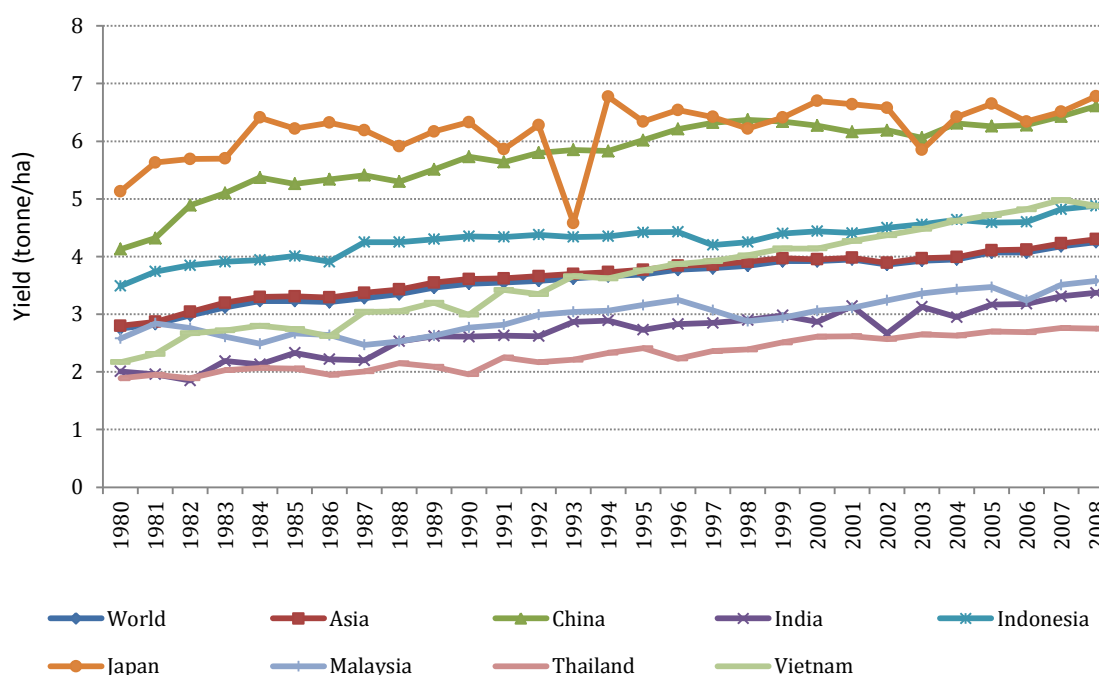
Source: IRRI (2011), Paddy Statistics of Malaysia (1985-2007), Agricultural Statistical Handbook (2008), Buku Perangkaan Agro-Makanan (2009-2010)

3.3 Trade Liberalization

Trade liberalization has caused a decline in the terms of trade for agriculture, and particularly for food, in almost all countries. Furthermore, the low and declining real prices of cereals from the late 70s till the late 90s have disincentived production growth in staple foods.

As a member of World Trade Organization (WTO) and ASEAN, Malaysia is duty bound to dismantle agricultural support progressively as per the liberalization agreements particularly for the paddy and rice industry. Despite various protectionist measures, Malaysia is a relatively high cost rice producer compared to other ASEAN countries and also other major rice producer or exporters. With trade liberalization, the allowable policy instruments to continue supporting and subsidizing the rice industry will be limited. Amin et al. (2010) indicated that the industry is highly supported above the border price. Without a clear road map of liberalisation move, the sector may not be able to compete with efficient and low cost producers such as Thailand and Vietnam in the long term. Under a liberal environment, the rice market will be opened up to producers from other countries within the region. This will further depress the price of Malaysian rice, making paddy farming less attractive. Besides, the market will be overwhelmed with cheaper and better quality rice from neighbouring countries.

3.4 Policy Environment

The government's interventions in the industry, both in production and marketing have been very significant. The objectives of the interventions ranged from achieving self sufficiency target, to improving farm incomes and subsequently, marketing improvements. The interventions include provision of irrigation and drainage facilities, input or fertilizer subsidies, price support or guaranteed minimum price for paddy, research and development,

extension services, farm mechanizations, credits, as well as providing processing and marketing facilities (Amin, 2007).

3.5 Production Policy

The three primary objectives of the rice policy were: i) ensuring food security; ii) raising farm income and productivity; and iii) ensuring food supply to consumers at reasonable price. The first two objectives had been stressed ever since the first two decades. The discovery of the new high yielding varieties (HYVs) of paddy, gave a big boost in achieving goal of increased output and income. However, these HYVs required regular water supply. Therefore, the government invested heavily in irrigation and drainage facilities. Malaysia's Second Five-Year Plan (1961-65) and the First Malaysia Plan (1966-70) periods saw the constructions of the two biggest irrigation projects; the Muda Irrigation Scheme in Kedah and Kemubu in Kelantan. With these irrigation facilities in place, double cropping was realized and contributed to the increase in output, as well as better income for the farmers who had sufficient accessibility to water. This was the success of the self-sufficiency drive in 1970s. However, in view of the high production cost, production target was changed to 90% and a later minimum self sufficiency of 65% was set in the third National Agriculture Policy.

3.6 Marketing Policy

The most relevant organizations to rice marketing were the Federal Agricultural Marketing Authority (FAMA) and the National Paddy and Rice Board (NPRB). NPRB had established 28 integrated milling complexes. To ensure that these mills were utilized to its maximum capacity, and to protect the farmers' interests, NPRB became a buyer of the last resort. The encroachment of NPRB into direct processing drove many private mills out of business (Amin, 2007).

Paddy pricing is controlled by the government through the guaranteed minimum price scheme (GMP). The GMP was maintained higher than the world price, as it was recognized then that the country did not have a cost advantage in rice production and stiff competitions in the open market (Amin, 2007). After the food crisis in 2008, the GMP was further increased to RM750 per tonne.

4.0 Model Structure

4.1 Conceptual Framework

Total supply of rice in Malaysia depends on rice production and import of rice. Meanwhile, rice production depends on paddy production, which are determined by paddy yield and area harvested. Area harvested depends on area planted which is determined by farm price, input price from fertilizer and wage, and government expenditure on paddy sector. Alternatively, yield is determined by climate, technology, and input usage. Government policy parameters will also affect yield. On the other hand of equation, domestic demand is determined by per capita income, price of rice and price of substitutes. The conceptual framework for paddy is presented as follows:

Figure 7: Conceptual Framework for Paddy Market Model
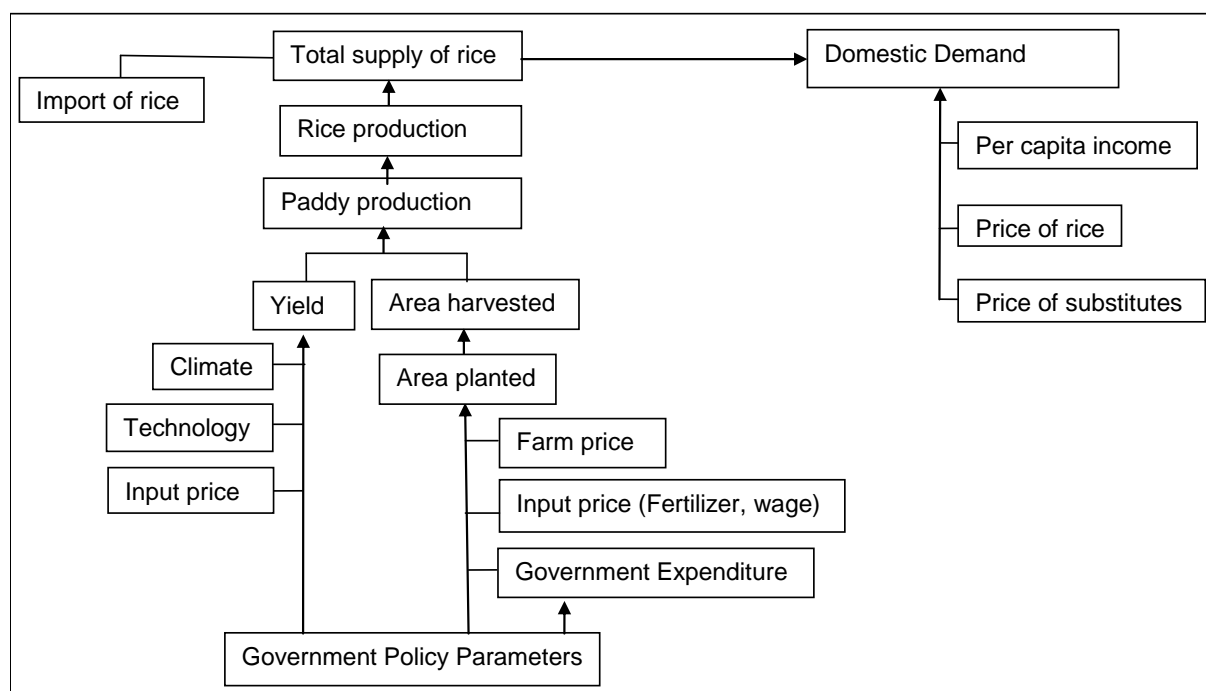
Source: Adopted with modifications from Shamsudin et al. (1994)

4.2 Model Specifications

The model consists of three behavioral equations and two identities. The behavioral equations describe the area planted, yield and per capita domestic demand, and the identities are the total consumption and net import.

4.3 Area Planted

The specified area planted equation is the Nerlovian type model where the paddy area planted is hypothesized as a function of the lagged dependent variable and lagged paddy price. The price support is considered as income transfer to farmers thus is not included in the price equation. Guaranteed minimum price is assumed to be exogenous in the equation. This assumption is consistent with the government's policy of setting the guaranteed minimum price. The area planted is adjusted in each period by a fraction of the discrepancy between last period's observed value and the desired value. This partial adjustment hypothesis is consistent with an economy where there are rigidities that prevent complete adjustment in each period. Based on the dynamic supply theory, it is hypothesized that both lagged dependent and the price variable will be positively related to the production. The area planted equation may be specified as follows:

$$PDAP_t = f\ (PDFP_{t-1}, PDAP_{t-1}) \tag{1}$$

where   PDFP = border price if > PDGM; or
          PDFP = PDGM if border price < PDGM

4.4 Yield

The yield of rice is hypothesized as a function of technological development, fertilizer subsidy and paddy price. The first two explanatory variables will cause the supply function to

shift. The technological shift may be the result of the adoption of new varieties, improved cultivation practices and improved water management. The relationship between the subsidy and the price variables with the yield is anticipated to be positive. Thus the yield function may be specified as follows:

$$PDYD_t = f (FERTS_t, TECH, PDFP_t) \tag{2}$$

4.5 Production

$$RCPD = (PDAP_t * PDYD_t) * \text{conversion rate} \tag{3}$$

4.6 Price

The price of paddy is hypothesized as a function of demand, which is determined by price of rice demanded by consumers. The relationship between price of farm price of paddy received by farmers and retail price of rice is assumed to be positive, as the increase in retail price of rice would increase farm price of paddy. Thus the price transmission function may be specified as follows:

Border price = f (RCPR)

4.7 Domestic Demand

The demand equation for rice is specified as function of own price, the price of wheat (substitute) and per capita income. Since the government sets the price of rice, it is considered as an exogenous variable. It is hypothesized that the own price is negatively related to the demand. The price of wheat is expected to have a positive sign. The coefficient for income can either be positive (superior good) or negative (inferior good). The per capita domestic demand equation can be specified as:

$$RCDCPC_t = f (RCPR_t, WTPR_t, YMY_t) \tag{4}$$

The total demand equation is,
$$RCDC_t = RCDCPC_t * POP_t \tag{5}$$

4.8 Import

The net import equation is conceptually an excess demand equation, which is a horizontal difference between total consumption and production. The import demand equation expressed as an identity is as follows,
$$RCMQ_t = RCDC_t - RCPD_t \tag{6}$$

The definition of the variables in the model is explained in Table 1.

5.0 Data and Estimation Method

The data for the estimation of the model was obtained from Paddy Statistics, Department of Agriculture; Agricultural Statistical Handbook; Buku Perangkaan Agro-makanan 2009-2010, publications by FAO and Bank Negara Report. The sample period for the study is from 1980 to 2009. The list of acronym, variable name and source is as described below in Table 1.

Table 1: List of Acronyms, Variable Names and Sources

Acronym	Variable Name	Source
PDYD	Paddy yield (kg/hectare)	Paddy Statistics of Malaysia
RCPD	Rice production (tonnes)	Paddy Statistics of Malaysia
Border price	Paddy farm price, normal and long grain (RM)	Paddy Statistics of Malaysia
PDADDM	Paddy area planted dummy	NA
RCDC	Apparent rice demand (tonnes)	Paddy Statistics of Malaysia
PDGM	Paddy Guaranteed Minimum Price (RM per tonne)	Ministry of Agriculture
PDSP	Price support to producers (RM per tonne)	Ministry of Agriculture
TECH	Time trend as proxy for technology	NA
FERTS	Fertilizer subsidy (RM '000)	Ministry of Agriculture
RCDCPC	Per capita consumption of rice (kg per capita)	Paddy Statistics of Malaysia and Department of Statistics
RCMQ	Import of rice ('000 tonnes)	Paddy Statistics of Malaysia
RCPR	Domestic retail price of rice (RM/kg)	Paddy Statistics of Malaysia
WHDP	Domestic retail price of wheat (RM/kg)	Food and Agricultural Organization
POP	Population (per capita)	Department of Statistics
YMY	Gross national income per capita (RM)	Department of Statistics

The time-series data will be subjected to stationary tests (Engle and Granger, 1987). If the results of the stationary test indicate that the null hypothesis for unit root test could not be rejected in the level, which implied that the variables in the model are found to be non-stationary, the error correction model (ECM) will be employed in the estimation. However, if the results indicate that the data is stationary at the level, the OLS will be used to estimate the equation. A simultaneous equation method is not required here because there is only one endogenous variable in each equation. Furthermore, as argued by Learner and Stern (1970) and Tegene (1989) in the case of a small country, it is reasonable to assume an infinitely elastic excess supply, and thus a single equation method is appropriate. The precise specification, however, is largely an empirical issue, which involves the appropriate variables, functional forms and the possibility of simultaneity bias in single equation estimation.

5.1 Estimated Equations

The estimates of the structural equations are presented in Table 2. The model as a whole appears to be consistent with a priori expectations, and has several significant explanatory variables.

In the area planted, the price of paddy lagged one period is not significant, indicating that rice producers are generally unresponsive to price change. This result is similar to result in other studies employing production as the dependent variable by Baharumshah (1990) and Tengku Ariff and Ariffin (2001). The estimated elasticity of the area planted is 0.009. This result is not consistent with the finding by Nik Fuad (1985), who employs area planted as dependent variable. This smaller elasticity indicates that paddy area is becoming more restricting. Comparison of elasticity estimates with past studies on the Malaysian rice industry is shown in Table 2.

The results of the yield equation suggest that rice yield is responsive to the fertilizer subsidy where its coefficient is statistically significant at the 5% level. Paddy producers are also

responsive to change in technologies, implying that paddy producers tend to improve the yield with higher technologies. The paddy price variable is statistically significant at the 5% level, implying that paddy producers tend to improve the yield with higher output prices.

The estimates obtained for the per capita consumption equation are consistent with a priori expectations. The own price elasticity is –0.199. The estimate of the own price elasticity is lower than Nik Fuad, Baharumshah and Jamal. The income elasticity is -0.033, indicating that rice is an inferior good. This result is consistent with past studies.

Table 2: Estimated Structural Equations

Area Planted

$LPDAP_t = 5.640 + 0.009LPDFP_{t-1} + 0.575LPDAP_{t-1}*** + 0.019PDADM$
      (3.008)   (0.658)   (4.157)   (2.327)
        Adjusted $R^2 = 0.450$ D.W. = 2.00

Yield

$LPDYD_t = -9.730 + 0.858LFERTS_t** + 0.008T_t *** + 0.227LPDFP_{t-1} **$
      (-1.489)   (2.490)   (3.485)   (2.311)
        Adjusted $R^2 = 0.842$ D.W. = 0.79

Price

$LBP_t = -0.294 + 0.942LRCRP_t***$
       (-0.295)   (6.634)
        Adjusted $R^2 = 0.597$ D.W. = 0.45

Per capita Consumption

$RCPCCPC_t = 3.8444 - 0.1998LRCPR_t + 0.1497WTPR_t* - 0.0331LYMY_t$
        (1.658)   (-0.942)   (1.951)   (-0.194)
        Adjusted $R^2 = 0.439$ D.W. = 1.40

Total Consumption

$RCCN_t = RCPCPC_t * POP_t$

Net Import

$RCNMQ_t = RCCN_t - RCPD_t$

Note: Number in parentheses is t-values.
*** Significant at 1 percent level
** Significant at 5 percent level
* Significant at 10 percent level

Table 3: Comparison of Demand and Supply Elasticities

Author	ε_{ii}	ε_{iy}	ε_{iS} Area planted	Production
Nik Fuad (1985)	-0.500	-0.310	0.260	-
Baharumshah (1990)	-0.309	-0.160	-	0.030
Jamal (1998)	-0.330	-	-	0.500
Tengku Ariff & Ariffin (2001)	-	-	-	0.13
Current study	-0.199	-0.033	0.009	-

Note: ε_{ii} = own-price elasticity of demand

    ε_{iy} = income elasticity

    ε_{is} = supply elasticity

6.0 Concluding Remarks

The Malaysian paddy and rice industry is an important industry as rice is a staple food for the nation. On the supply side, the estimated result shows that fertilizer subsidy and technology are important determinants in estimating paddy yield. Fertilizer subsidy and technology should be focused as one of the key issues in paddy is low yield. The government plays an immense role in ensuring the fertilizer subsidy is continued as most farmers in paddy sector are unable to survive if there is a removal of fertilizer subsidy. This finding is in line with Nurul Nadia Ramli et al. (2012). On the other hand, the government also plays an important task in increasing technology, such as increase in research to produce disease-resistant, high-yield and twice-a-year varieties.

Meanwhile, on the demand side, price elasticity of demand is inelastic. This shows that consumers are not responsive to change in price of rice. On the other hand, income elasticities show rice is inferior good.

Acknowledgement

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A Threat to Food Safety: Use of Untreated Waste Water for Vegetable Farming in Urban Areas in Pakistan

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Abstract

Providing safe and hygienic food for present and future generations is a challenge for food experts and agricultural researchers. Farmers of urban areas are handicapped in friendly environmental conditions and inputs supply for cultivation of fresh vegetables. The prominent hurdle in farming practices is non-availability of fresh water and other inputs supply for urban farmers around cities. A study was conducted in urban areas of District Sargodha-Pakistan to estimate the threat to food crops cultivating through untreated waste water. The purpose of the study was to check the knowledge level, perceptions, and role of extension advisory services to the farmers those are involved in this business. The demographic data revealed that average age of the farmers was 45 years with average education level of grade 5. The average area under waste water producing vegetables is about 3.93 acres. On average, approximately for the last 15 years farmers are involved in farming under untreated waste water. The results from regression analysis show that knowledge level of the farmers and extension advisory/training services play significant role in changing the perceptions of the farmers regarding the use of untreated waste water for food crops and vegetables in the area. The regression analysis explained more than 98% variance in the dependent variable of perceptions. It is concluded that their perceptions could be changed by increasing their knowledge and intervention of extension advisory services. Farmers should give training and regular advisory services for use of waste water so that it will not become threat to the food safety. They should provide all required agricultural inputs on subsidized rates. Arrangement should be made for regular supply of fresh water.

Keywords: Wastewater, knowledge, perceptions, advisory services, vegetable crops

1.0 Introduction

Providing safe and hygienic food for present and future generations is a challenge for food experts and agricultural researchers. Mankind has observed three major revolutions such as agricultural, industrial, and most recently the communication. In one report of Food and Agricultural Organization of the United Nations (2008) it was described that until about 200 years ago, climate was a critical determinant for food security. Since the advent of the

industrial revolution, however, humanity's ability to control the forces of nature and manage its own environment has grown enormously. As long as the economic returns justify the costs, people can now create artificial microclimates, breed plants and animals with desired characteristics, enhance soil quality, and control the flow of water.

In many developing countries, fast-growing urban population is demanding more fresh water and food, while generating greater volumes of domestic wastewater. Due to the lack of comprehensive wastewater management, a major portion of the wastewater pollutes natural water bodies. These polluted sources are used in and around the cities for agriculture and other purposes. In drier climates, farmers often use the wastewater itself from drains and sewers because it is the only (reliable) source of water. Although municipalities increasingly recognize the importance of this sector in supplying cities, among other things with vitamin rich vegetables, they are also aware of the associated health risks through microbial crop contamination, especially when it concerns food consumed uncooked. Among wastewater-related infections, diarrheal diseases are the top cause of death among children in the developing world (International Water Management Institute, 2006).

In many European and North American cities, wastewater was disposed of in agricultural fields before the introduction of wastewater treatment technologies to prevent pollution of water bodies. In Paris, for instance, the use of partially treated wastewater was common until the second part of the 1900s (Asano et al., 2007). In developing countries like China, Mexico, Peru, Egypt, Lebanon, Morocco, India and Vietnam, wastewater has been used as a source of crop nutrients over many decades (Australian Academy of Technological Sciences and Engineering, 2004; Jiménez & Asano, 2008).

Therefore, agricultural use of untreated wastewater has been associated with land application and crop production for centuries (Keraita et al., 2008). However, over the years, it has become less popular in developed countries with the improvement of treatment technologies and increased awareness of the environmental and health issues associated with the practice; by contrast, in developing countries, due to a variety of factors described later, farmers use it extensively, even drawing advantages to improve their livelihoods.

The oldest references to the use of excreta come from some Asian countries, where it was used to increase fish production through aquaculture (World Health Organization, 2006). Sludge management has only recently become an issue, even for developed countries, because the densely populated areas are producing such large amounts of sludge and excreta that natural assimilation into the environment is not possible, while space for stockpiling is limited (United Nations Human Settlements Program, 2008). It is also observed from literature that many human diseases are linked to the nature of the pathogen in the wastewater and thus vary locally following the local public-health pattern. Secondly, risks are not limited to farmers, but can be observed in four groups: agricultural workers and their families; crop handlers; consumers of crops or meat and milk coming from cattle grazing on polluted fields; and those living on or near the areas where wastewater, sludge or excreta is used. Within these groups the most vulnerable sections of the population are children and the elderly. Thirdly, observed responses may vary considerably between developing and developed countries. This is because pathogen distributions and concentrations, to which these groups are exposed, are very different, as are the living conditions and the level of resistance to disease between developing and developed countries (Jiménez, 2007; Jiménez & Wang, 2006).

Like many developing countries of the world, in Pakistan untreated wastewater is growing environmental issue. It has been observed from literature that wastewater used for irrigation is more than 80% all over Pakistani communities with a population of over 10,000 inhabitants. The absence of a suitable alternative water source, wastewater's high nutrient value, reliability, and its proximity to urban markets are the main reasons for its use. The use of polluted water for vegetable farming is more widespread in the more populated cities where safe water is scare and is used for domestic purposes. From a general survey among open-space farmers carried out in 2002, it was found that about 84% of nearly 100 farmers farming in and close to Quetta city and almost all 100 farmers in Quetta used polluted water for irrigation, at least during the dry seasons (Khalil & Kakar, 2011).

Feenstra et al., (2000) in their report on health risks of irrigation with untreated urban wastewater in the Southern Punjab, Pakistan estimated the health risks of irrigation with urban wastewater. The wastewater samples were analyzed and a cross sectional study was carried out in farmer community that used untreated wastewater for irrigation near the town of Haroonabad in the Punjab province of Pakistan. The health status of this community was compared with a farmer community in two peri-urban villages near the same town that used other water sources for irrigation. The wastewater used around Haroonabad contained far more faecal coliform bacteria and helminth eggs than advised by the World Health Organization. This poses a high health risk to farmers, their families and crop consumers. In the farmer community exposed to wastewater near Haroonabad, the prevalence of diarrheal diseases and hookworm infections was very high. The prevalence of these diseases was especially high among male farm workers. This group was highly exposed to wastewater, as they did a lot of the work in the fields manually and barefoot. In children of these farmers the prevalence of diarrheal diseases and hookworm was also higher than in the control population. The chance to acquire a hookworm infection seemed slightly high for crop consumers.

It is also learnt from literature that all diarrhea-causing pathogenic organisms of viral, bacterial, protozoan and parasitic origins are present in wastewater and can be transmitted via the consumption of wastewater-irrigated vegetables. In Ghana, studies on the microbial hazards in wastewater have so far been limited to faecal coliforms and 39iarrhea39s (Amoah et al., 2007; Obuobie et al., 2006). Adjei et al. (2004) suggested that rotavirus, cryptosporidium and salmonella can potentially be found in the wastewater used for irrigation of vegetables. Therefore, rotavirus, cryptosporidium and salmonella are representative organisms for the viral, protozoan and bacterial infections and 39iarrhea cases.

2.0 Objectives of the Study

Following objectives were investigated during the study:
1. To describe the demographic profiles of the respondents
2. To identify the knowledge level of respondents regarding use of untreated waste water for cultivation of crops
3. To identify the role of extension advisory services regarding teaching and education of farmers for the use of untreated waste water
4. To describe the perceptions of the farmers regarding waste water applications
5. To identify the relationship among the variables of knowledge level, role of extension advisory services and perceptions of the farmers regarding the use of untreated waste water

6   To evaluate the factors those are directly related for the use of untreated waste water by the farmers

7   To discuss existing and future policy regarding use of untreated waste water in Pakistan

3.0 Materials and Methods

A survey study was conducted in Sargodha district of Punjab province of Pakistan. A large area around the city is cultivated through untreated waste water. A questionnaire was used as a research instrument. The instrument was first pre tested on 10 farmers to check the suitability and validity of the instrument for data collection. The instrument was then finalized by a panel of experts after making a number of corrections. A simple random sample of 50 farmers was selected to collect the data. A sample from the waste water irrigated soil was taken up to the depth of 6 cm and water sample from the canal which carries waste water was also taken for soil and water test. The data thus obtained from the survey was fed into the computer and Statistical Package for Social Sciences software was used for interpretation of results. The instrument consisted of four sections demographic profile of respondents, knowledge level, perceptions of farmers and extension interventions.

4.0 Data Analysis

The collected data was coded and entered into computer for further analysis. The Statistical Package for Social Sciences (SPSS) 15.0 was used for analysis. The descriptive statistics such as mean, standard deviation, frequency distribution and percentages were computed for general description of the data. The regression analysis was used for further results interpretation and to predict how much of variance in dependent variable of perceptions of farmers accounted for by independent variables of knowledge and extension advisory services. Multiple regression procedures also make it possible to observe the relationships between each of independent variable and dependent variable while controlling for other variables in the model (Urdan, 2001).

5.0 Results and Discussion

The demographic profiles were age, education, status of land, Area irrigated with untreated waste water, years of using untreated waste water, Area under other crops and Area under Vegetables. Average age of the farmers was 45 years. About 34% of the respondents were of the age from 40 to 44 years. Of the 50 respondents, half (50%) of the respondents were having education level up to grade 5 and only 4% were metric. Approximately 40% of respondents have farming experience from 16 to 20 years. Only 2% of respondents have farming experience of above 31 years. The average area under waste water producing vegetables is about 3.93 acres. On average, approximately for the last 15 years, farmers were involved in farming under untreated waste water.

The results indicated that respondents have medium knowledge level in two concepts of soil management under waste water such as "Application of Fertilizers (3.68) and Use of sprays (3.60)". Of the 9 specific concepts of soil management under wastewater, the respondents were considered having "No" knowledge/awareness in 7 specific concepts of soil management under waste water as shown in the following table.

Table 1: Means, S.D., and Ranks of knowledge/awareness level for Soil Management under waste water

Knowledge level for soil management under waste water	N	Mean*	SD	Rank
Application of Fertilizers	50	3.6800	.86756	1.0
Use of Sprays	50	3.6000	.83299	2.0
Composition of water used	50	1.9400	1.15016	3.0
Standard soil preparation techniques	50	1.8200	1.02400	4.0
Nutrient requirements of the soil	50	1.7000	.50508	5.0
Effect on soil temperature	50	1.6600	.65807	6.0
Effect on soil tilt	50	1.5800	.49857	7.0
Effect on moisture holding capacity of the soil	50	1.5400	.50346	8.0
Importance of soil texture	50	1.5200	.50467	9.0

*Mean: 1= None, 2=Low, 3=Medium, 4=High, 5=Very high

The respondents were asked to rate their perception regarding use of untreated waste water on a 5-point Likert scale ranging from Strongly not Agreed to Strongly Agreed (1-5). The means ranged from 4.82 (Agreed) for "untreated waste water increases the yield of the vegetable crops" to 1.90 (Strongly not Agreed) for "Vegetables produced by untreated waste water are injurious for human health" as Perceptions of the farmers regarding use of untreated waste water shown in the table given below.

Table 2: Means, S.D., and Ranks for Perceptions of the farmers regarding use of untreated waste water

Perception of the farmers regarding use of untreated waste water	N	Mean*	SD	Rank
Untreated waste water increases the yield of the vegetable crops	50	4.8200	.38809	1
Application of fertilizer with untreated waste water improves the growth of plants	50	4.7600	.43142	2
Vegetables produced by untreated waste water give rise in income	50	4.1600	.61809	3
Use of untreated waste water don't have negative effects on soil texture	50	4.1400	1.08816	4.5
Untreated waste water makes soil more soft rather than fresh water	50	4.1400	.60643	4.5
Soil bed preparation is easy under untreated waste water	50	4.1200	.47980	6
Regular use of untreated waste water changes the color of soil	50	4.1000	.61445	7
Untreated waste water is easily available	50	4.0600	.76692	8
Mix of untreated waste water with fresh canal water	50	4.0000	.98974	9
Salt concentration increases by using untreated waste water	50	3.7200	.90441	10
Regular analysis of waste water is important	50	3.3400	.87155	11
Lack of availability of fresh water	50	2.4600	1.12866	12
Vegetables produced by untreated waste water are injurious for human health	50	1.9000	.99488	13

*Mean: 1=Strongly Not Agreed, 2=Not Agreed, 3=No Opinion, 4=Agreed, 5=Strongly Agreed

The respondents described that they "Agreed" to "Strongly not Agreed" to the perceptions regarding use of untreated waste water for vegetables production.

The respondents were also asked to point out the role of extension advisory services regarding use of waste water for irrigation of vegetables on untreated waste water. The likert type scale ranging from "Strongly not Agreed to Strongly Agreed" (1-5) was used to record responses of the respondents. The means ranged from 3.32 (No Opinion) for "agreement regarding there must be an agricultural policy for the use of untreated waste water for vegetables cultivation" to 1.24 (Strongly not Agreed) for "Farmers are paying attention toward the advises of the public/private extension services regarding the use of untreated waste water for vegetables production" as role of extension advisory services providing are shown in the table given below.

Table 3: Means, S.D. and Ranks for role of extension advisory services providing agencies

Role of extension advisory services providing agencies	N	Mean*	SD	Rank
Do you agree there must be an agricultural policy regarding the use of untreated waste water for vegetables cultivation	50	3.3200	3.3200	1
Public sector extension is responsible for training and information for the farmers	50	2.2800	2.2800	2
Do you agree with the role of extension services in cultivation of vegetables under waste water	50	2.0600	2.0600	3
Print and electronic media are playing their role effectively in creating the awareness regarding the use of untreated waste water for vegetables production	50	1.7600	1.7600	4
Private extension services playing their role more effectively	50	1.6400	1.6400	5
Farmers are paying attention toward the advises of the public/private extension services regarding the use of untreated waste water for vegetables production	50	1.2400	1.2400	6

*Mean: 1=Strongly Not Agreed, 2=Not Agreed, 3=No Opinion, 4=Agreed, 5=Strongly Agreed

The respondents described their view from "No Opinion" to "Strongly not agreed" regarding role of extension advisory services providing agencies in providing their services for use of waste water for vegetables production.

A regression model was used with independent variables of knowledge level of the respondents and the role of extension advisory services; the perceptions of the respondents were used as dependent variable. During the analysis, it was assumed that knowledge level of the respondents and extension advisory services may not be considered at zero level. The regression model was statistically significant and explained more than 98% variance in the dependent variable of perceptions accounted for by independent variables of knowledge level of the respondents and extension advisory services.

Exploratory Factor Analysis was used on the data set for understanding the factors' role in use of waste water by the farmers of the local area. The results are shown in the given table.

Table 4: Total Variance Explained

Component	Initial Eigen values			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.950	39.010	39.010	1.475	29.505	29.505
2	1.278	25.570	64.579	1.382	27.644	57.149
3	.746	14.925	79.505	1.118	22.356	79.505
4	.594	11.889	91.394			
5	.430	8.606	100.000			

In the table above, the first factor explained about 29% variation whereas first two factors cumulatively explained more than 57%, and by adding third-one approximately 80% of variation was explained. Therefore, three factors were retained to achieve minimum 80% variation in the data. Furthermore, varimax factor rotation technique was applied to clearly differentiate the variables of interest. The rotated factors are shown in the following table.

Table 5: Rotated Component Matrix[a]

	Component		
	1	2	3
Knowledge	-.199	.034	.946
Perceptions	.892	.050	-.063
Extension role	.776	-.149	-.245
Age	-.186	.738	.370
Experience	.056	.901	-.149

The first component is explained by the two variables perceptions of the farmers and role of extension advisory services with maximum loadings of 0.892 and 0.776 respectively and can be named as perceptions of the respondent. The second PC named as demographics of the respondents. The coefficients in the second PC suggested that age and experience are highly correlated variables having coefficients of 0.901 for experience and 0.738 for age. The third factor is only explained by knowledge with loading of 0.946 and can be named as knowledge level.

6.0 Conclusion

The purpose of this study was to highlight the issue of untreated waste water applications for vegetables cultivation in urban areas. The farmers are prone to use untreated waste water due to scarcity of fresh water availability in urban areas. The need is the respondents must have standard knowledge and training for the use of waste water. To overcome this issue the role of extension advisory services is highly significant in changing the mindset of the farmers. It is concluded that perceptions of the respondents could be changed by increasing their knowledge level and intervention of extension advisory services. Farmers should give training and regular advisory services for use of waste water so that it will not become threat to the food safety. The knowledge of the respondents, their perceptions, role of extension advisory services, age of the respondents and their experience in using waste water over the years, are the factors require immediate action to manipulate for the use of untreated waste water.

Presently in Pakistan, Agricultural policy exists however, hardly any evidence was found in the literature review regarding implementation of law for the use of untreated waste water for agricultural crops. The role of agricultural policy experts is significant in implementing the rules at grass root level. They have to train the masses and make them to abide the law for the use of untreated waste water for agricultural crops to avoid associated health risks. They must recommend standard irrigational practices or procedures for the treatment of waste water.

7.0 Recommendation

The following are few recommendations for solution of the problem.
1. The farmers must give training and the desired skills for the applications of the waste water, if it is deem necessary to use untreated waste water
2. The farmers should provide all required agricultural inputs on subsidized rates.
3. An independent policy is required at government level for the use of untreated waste water for irrigating crops in urban areas.
4. Environmental, socio-economic, and threat to food safety factors must be considered in the formulation of any policy regarding the use of untreated waste water.
5. Government should feel responsibility to supply alternate and precise water resources for cultivation of fresh vegetables in urban areas around the cities.

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Contributions of Smallholder Irrigation to Household Food Security in Vhembe District, South Africa

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Abstract

The contributions of irrigation to household food security, in comparison to dry-land farming were studied in this paper. Both primary and secondary data were used to analyse the factors. The primary data was collected by using a pre-tested questionnaire administered to selected farmers in the study area. A probability sampling method (that is pure or simple random sampling technique) was used to select the respondents. From a total population of 3,236 small-scale irrigators in Vhembe District, 147 irrigation farmers were randomly selected while 43 dry-lands farmers were selected adjacent to the selected irrigators. A logistic regression model was used to analyse the variables in the model, selected from factors identified by previous researchers that affect food security in rural areas. A comparison of the variables in the model was carried out between irrigators and dry-land farmers. The results obtained showed that the proportion of food secured households was higher among farmers who were on the irrigation projects (86.3%) compared to dry-land farmers (53.0%). From the analysis, irrigation and per capita aggregate production were found to have a positive influence on the probability of households being food secure. Farmers who are on irrigation projects are more likely to be food secure than dry-land farmers. With concerted support from government, and all stakeholders, food security can be enhanced at the household levels. The study also made recommendations on sustainability and the enhancement of economic growth and development in the area.

Keywords*: Household food security, rural livelihood, smallholder irrigation, dry-land farming.*

1.0 Introduction

Food insecurity and poverty are locked into the same destructive cycle. Poverty is the leading cause of food insecurity, and food insecurity is a major contributor to the continuity of poverty. Several studies have been carried out to assess household food insecurity in the semi-arid areas of Southern Africa. Food insecurity and malnutrition are highest in provinces with large rural populations, such as KwaZulu-Natal, Limpopo, Eastern Cape and the Free State (Department of Agriculture, 2007). The demands of the colonial and apartheid eras for male labour in urban areas have resulted in the erosion of the fundamentally agrarian existence of Black Africans, and a subsequent increased reliance on non-farm and non-rural incomes. There is a greater reliance on purchased food as opposed to own-produced food which exposes vulnerable households to the adverse effects of price fluctuations. For example, the 17% inflation on food prices between 2001 and 2002 had a disproportionate and devastating impact on the living standards of the predominantly rural ultra-poor, which spent more than 50% of their income on food (Stats SA, 2004). The food availability in any household had a pattern within a time frame which was either increased, decreased or was at a constant level (Oni et al., 2010).

Agricultural growth offers possibilities for reducing risks of food shortages at all levels, increasing overall supply of food, creating economic opportunities for vulnerable people and improving dietary diversity and the quality of food consumed by farm households (Lyne et al, 2009). In South Africa, food security is not a failure of agriculture to produce sufficient food at the national level, but it is a complex failure of households to access guaranteed sufficient food (Baker, 2004). According to Berry (2007), the country exported $5.4 billion of agri-food and seafood trade surplus of $2 billion in 2005. Agricultural products make up 8% of South Africa's total exports. South Africa is the world's top exporter of avocado, tangerine, and ostrich products. It is also ranked as the world's second largest exporter of grapefruit, third for plums and pears, and fourth for table grapes. Other major export commodities include wine, citrus, sugar, grapes, maize, fruit juice, wool, and deciduous fruit. Most of these studies have shown that there are many factors that are involved in enhancing food security such as irrigation, land quality, incomes, size of household, wealth of farmers and land size. In Oni et al (2010), low level of managerial and technical skills and inadequate training were identified as the major determinants of low level of productivity and household food insecurity. Among these factors water has been highlighted as the most limiting factor to food security in rural communal areas (Maliwichi et al, 2012). Thus, this study concentrated on selected irrigation projects and dry-land farming in the Vhembe District of Limpopo Province with the aim of assessing the contribution of irrigation to household food security, in comparison to dry-land farming. The outlook for the food security of many developing nations is cause for serious concern. Widespread denudation and accelerated erosion diminish the productivity of both cultivated and grazed rain-fed lands. Semi-arid regions are especially vulnerable to climatic instability and frequent droughts. At the same time, depletion and pollution of limited freshwater resources and competing demands for water - among neighbouring states as well as between different sectors within each state - constrain further expansion of irrigation. South Africa is a net agricultural exporter with an agri-people and improving dietary diversity and the quality of food consumed by farm households (Lyne et al, 2009).

Projections indicate that should current production trends hold, domestic wheat production would be outstripped by domestic consumption by nearly 60% in 2010 and by over 100% in 2020 (Limpopo Department of Agriculture, 2002). Maize and beef is expected to increase by about 130% if production trends continue. The demand for poultry products has already outstripped domestic production by an estimated 22% in 2000, and is expected to increase to 92% in 2010 and to 192% in 2020 (Limpopo Department of Agriculture, 2002). The erratic fluctuations in the value of the Rand have also underlined the close relationship between macroeconomic or economy-wide factors and food security in South Africa. The tariff policy is also significant, and needs to be constantly examined in the light of its effects on national food security policies. Lowered tariffs on poultry products from the USA in the late 1990s caused a severe crisis in the South African poultry industry. South African consumers, on the other hand, enjoyed more affordable poultry products. In order to appease both producer and consumer interests, the Government intervened to raise tariffs on US poultry to a level, acceptable to both sides (Limpopo Department of Agriculture, 2002).

According to Maliwichi et al. (2012), food security can be said to have two components;
  i.   Ability to be self-sufficient in food production through own household production.
 ii.   Accessibility to markets and ability to purchase food items.

Irrigation has long played a key role in feeding expanding populations and is undoubtedly destined to play a still greater role in the future (Maliwichi et al, 2012). It not only raises the yields of specific crops, but also prolongs the effective crop-growing period in areas with dry seasons, thus permitting multiple cropping (two or three, and sometimes four, crops per year) where only a single crop could be grown otherwise. With the security provided by irrigation, additional inputs needed to intensify production further (pest control, fertilizers, improved varieties and better tillage) become economically feasible (Maliwichi et al, 2012). Irrigation reduces the risk of these expensive inputs being wasted by crop failure resulting from lack of water. The practice of irrigation consists of applying water to the part of the soil profile that serves as the root zone, for the immediate and subsequent use of the crop (Maliwichi et al, 2012). Well-managed irrigation systems are those which control the spatial and temporal supply of water so as to promote growth and yield, and to enhance the economic efficiency of crop production. Such systems apply water in measures and at frequencies calibrated to answer the time-variable crop needs. The aim is not merely to optimize growing conditions in a specific plot or season, but also to protect the field environment as a whole against degradation in the long term. Only thus can water and land resources be utilized efficiently and sustainably (Maliwichi et al., 2012).

More recent assessments of the sector have all come to the conclusion that the success of smallholder irrigation has been limited (Bembridge, 2000; Crosby et al, 2000). Factors that contributed to their modest performance were poor infrastructure, limited knowledge of crop production among smallholders, limited farmer participation in the management of water, ineffective extension and mechanisation services and lack of reliable markets and effective credit services (Bembridge, 2000; Crosby et al., 2000).

Another factor that constrained the economic impact of smallholder irrigation was the predominance of subsistence-oriented farming. Backeberg et al. (1996) reported that 37% of farmers on smallholder irrigation schemes were commercially oriented, whilst the remaining 63% were mainly engaged in subsistence production. The results of the survey by Arcus (2004) painted a similar picture. It needs pointing out that economic success through market-oriented production has not always been the objective of these projects (Van Averbeke et al., 1998), nor should the measuring of success ignore the importance of food security through own production. As Perret (2002) points out, food security remains the major objective for many plot holders and subsistence-oriented crop production patterns have never been changed. For this reason it is important to also assess the success of smallholder irrigation from the perspective of plot holders and their livelihoods.

When viewed from this livelihood perspective, smallholder irrigation schemes represent assets or resources (Van Averbeke & Mohamed, 2007). They can be used to increase and diversify the livelihood activity of plant production, resulting in improved livelihood outcomes, either directly in the form of food or income for plot holders, or indirectly by providing full or partial livelihoods to people who provide goods and services in support of irrigated agriculture on these schemes. Determining the value of the irrigation plot as an asset and the importance of irrigated agriculture as a livelihood activity has not received much attention from South African researchers.

The overall economic performance of smallholder irrigation schemes were identified as institutional developments to improve access to land and water, the reintroduction of animal draught in land preparation, collaboration among smallholders in relation to markets, and the incorporation and integration of animal production into irrigated farming

systems. Western technology should be adapted or redesigned to be flexibly so as to suit the prevailing conditions and requirements. Government, private agencies and the farming communities should be geared towards achieving a sustainable smallholder irrigation scheme that will enhance food security.

2.0 Materials and Methods

2.1 Data Types, Sources and Collection

Both primary and secondary data collection methods were used in the study. The secondary data was collected from various government official reports which included Department of Agriculture, the Agricultural Service Centres in Thohoyandou, Makhado, Musina and Mutale; Statistics South Africa 2000 to 2008 census reports and mid-year estimates; private and public institutions including local farmers' organisation in the district; policy documents; journals, research papers on internet and related books in the University of Venda library and elsewhere. Primary data was collected using a pre-tested questionnaire administered among selected farmers in the study area.

2.2 Sampling Procedures

A probability sampling method involving simple random sampling technique was used to select the respondents. Vhembe district has a total of 3,236 small-scale irrigators. A desired sample of 147 irrigators was randomly selected while 43 non-irrigators of dry-land farmers were selected adjacent to the selected irrigators. The data collection tool was the questionnaire which was designed and used to obtain the required data needs of the study. The questionnaire elicited household characteristics such as demographic information (name, sex, age, level of education, etc), farm specific characteristics (number and class of livestock, crops grown, hectarage and output), food and non-food expenditures, remittances, employment and income, agricultural activities and finally the nature and risks of farming. The questions were designed in such a way as to avoid ambiguity, sensitivity and provocativeness. The questionnaire included a few open-ended and numerous close-ended questions. Face-to-face interview method between the researcher together with the enumerators and the respondents was used to administer the questionnaires.

2.3 Data Analysis

A combination of quantitative and qualitative design methods was used. However, the study was based more on quantitative (survey). In the quantitative approach, the investigator primarily used post-positivist claims for developing knowledge (that is cause and effect thinking, reduction to specific variables, hypotheses and questions, use of measurement and observations, and the testing of theories) and collects data using pre-determined instruments that yield statistical data. A logistic regression model was used to analyse the impact of smallholder irrigation on household food security. This model was complemented by eleven factors which influence food security, (the dependent variable). In this study, the selected independent variables are sex of the household head, the age of household head, the household size, the education level of household head, the technology adoption level (water frequency), farm size, per capital aggregate income, land quality, aggregate production, marital status, physical access to markets and physical access to irrigation.

These factors could have positive or negative impact on household food security. The model was specified as follows:

$$Y = f(x_1, x_2, x_3, x_4, x_5, x_6, x_7, x_8, x_9, x_{10}, x_{11}) \qquad (1)$$

Where:

Y = Dependent variable (food security)

x_1 = Household size

x_2 = Water frequency

x_3 = Household farm size

x_4 = Irrigation technology

x_5 = Access to market

x_6 = Per capital aggregate income

x_7 = Age of the household head

x_8 = Sex of the household head

x_9 = Educational level of the household head

x_{10} = Marital status

x_{11} = Land quality

The above model was estimated using cross sectional data collected from the respondents. The data analysis was carried out on 147 irrigators and 43 dry-land farmers, making a total of 190 respondents. The logistic regression was carried out on two separate groups and on a combination of the two groups. The variables were grouped into farm specific and demographic variables. The food security was measured based on whether or not the household produced enough food from their farm in the last one year. A logistic regression model was used to analyze the impact of smallholder irrigation projects on household food security. A comparison of the variables in the model was made between irrigation and dry-land farming to establish whether they produce enough food or not in order to ascertain the variables impact on the household food security of Vhembe District Municipality farmers. These variables showed significant signs after analysis.

3.0 Results and Discussions

The logistic regression together with the probability results were used to identify the impact of smallholder irrigation on household food security in the study area. There were 190 cases used in the analysis. Given the base rates of the two decision options (147/190 = 77.4% using irrigation technology, 22.6% are on dry-land farming), and no other information, the best strategy is to predict, for every case, that the subject will use irrigation technology. Using that strategy, it would be correct 77.4% of the time. Under Variables in the Equation, the intercept-only model is on (odds) = 1.229. If we exponentiate both sides of this expression we find that our predicted odds [Exp (B)] = 3.419. That is, the predicted odds of using irrigation technology are 3.419. Since 147 of the respondents were using irrigation technology and 43 were in the dry-land farming, the observed odds are 147/43 = 3.419 (Table 1).

Table 1: Coefficient of the Logistic Analysis for Irrigation and Dry land Farming

Variable	Coefficient (B)	Std. error	Wald statistic	Significant level	Exp(B)
Constant	1.229	0.169	10.849	0.000	3.419

The irrigation and dry-land farmers were compared in terms of their household food security status. Selected parameters were presented to show the percentages of households that

were food secure and those that were food insecure relative to the type of farming practiced. Using the logistic regression model, the researcher was able to determine which household food was more secured than the others. This was based on whether or not the household produce enough food to last one year. The analysis revealed that out of the 190 observed households in the study area, 141 households were food secured (86.3 and 53%) of irrigators and dry-land farmers respectively while 49 households representing (48.5 and 41.6%) of irrigators and dry-land farmers respectively were food insecure. The education variable was found to be positive and significant at 5% level (Table 2). It can be concluded that the farmers were able to understand information given to them that is written in their own language. This implies that households with an educated head are more likely to be food secured than uneducated head. The age of the household head, has a negative coefficient that was significant at 10% level (Table 2). This probably indicates that the older the household head, the lower the chances of the household being food secured. Hofferth (2003) argued that older people have better experiences in agricultural activities than younger people in that they know the social and physical environments better than younger people. This result shows that these households are headed by people who are economically active and are able to make household farm decisions as they have acquired more knowledge about farming.

Table 2: Household Demographics in the Study Area

Characteristics	Irrigators		Dryland	
	Number	Percentage (%)	Number	Percentage (%)
Sex				
Male	65	52.4	32	48.5
Female	59	47.6	34	51.5
Household age				
Less than 18	1	0.8	0	0.0
18-50	39	31.5	13	19.7
51-65	38	30.6	32	48.5
66 plus	46	37.1	21	31.8
Household size				
1-5	73	58.9	26	39.4
6-10	45	36.3	35	53.0
More than 10	6	4.8	5	7.6
Marital status				
Single	9	7.3	3	4.5
Married	92	74.2	53	80.3
Divorced	6	4.8	1	1.5
Widowed	11	8.9	7	10.6
Living together	6	4.8	2	3.0
Education level				
No formal education	24	19.4	18	27.3
Up to grade 7	42	33.9	35	53.0
Grade 8-12	44	35.5	10	15.2
Post-secondary	14	11.3	3	4.5
Irrigation	147	77.4	43	22.6
Tenure status				
PTO	79	63.7	42	63.6
Title Deed	10	8.1	6	9.1
Rented	9	7.3	5	7.6
Others	26	21.0	13	19.7
Farming year				
Less than 1 yr	2	1.6	1	1.5
1-5 yrs	11	8.9	3	4.5
Over 5 yrs	111	89.5	62	93.9

Source: Computed from field survey

For this study, households that are food insecure have on average more than 1 to 5 ha of land on the irrigation projects while dry-land farmers have as much as 10 ha of land. For dry-land farmers, this contradicts Estudillo et al. (2006) findings, in that as farm sizes increase, households tend to be more food secured as they able to get better yields from their fields in the absence of major technological advancement that can further increase yields. For irrigation farmers it could be that they lack management skills or do not have access to certain inputs required on the irrigation projects. Per capita aggregate production was higher for irrigation farmers that have 62.1% of maize while dry-land households have 37.9%. Food insecure households have per capita aggregate production of 56.8% for irrigation farmers and 43.2% for dry-land farmers. From the analysis in Table 3, per capita aggregate income was higher for farmers on irrigation projects than those on dry-land. This could be due to high intensive crop production on irrigation projects and also that irrigation farmers have access to water and seeds and inputs that increase productivity.

Table 3: Distribution of Total Household Income Category of Farmers (R000, 000 for the 2008- 2009)[1]

Income sources	Irrigation				Dryland			
	N	Amount (R)	Average amount	%	N	Amount (R)	Average amount	%
Maize	81	2,044,087	25,235	64.02	10	52,030	5,203	50
Vegetables*	48	1,135,651	23,659	35.9	7	48,110	6,872	46.3
Livestock**	4	2,300	575	0.08	5	3,900	780	3.7
Total	133	3,182,038	23,925	100	22	104,040	4,729	100

* Vegetable – include tomatoes, onions, spinach, cabbage, etc, ** Livestock – include cattle, goats, sheep, chickens, donkeys, etc

Vegetables and maize contribute the larger percentage of income as compared to other crops and off-farm incomes. Communal farmers receive less income from off-farm activities because a few people were employed and they received fewer remittances from their urban relatives. As was highlighted in Table 3, vegetables contribute about 35.6% of total income in irrigation farming as compared with 46.3% in dry-land farming. Livestock income was very low as farmers sell their livestock only in time of pressing financial needs and animals were not usually kept for commercial purposes by farmers in the study area.

The shortest distance to the market was used in this study to determine how often the farmers went to the market to sell their produce. This study revealed that the shortest distance to the market was 5 km for irrigation farmers and about 1 km for dry-land farmers. Those who did not market their crop either produce only enough for household consumption or sold at the farm gate. Feleke et al. (2005) used amount of time taken to reach the nearest market to assess if households were food secured or not but, for this study distance was used because of lack of transportation in the rural areas.

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[1] Figures at the exchange rate of Rand (R) to $0.13 US Dollar

Table 4: Marketing Problems

	Irrigation		Dryland	
	Frequency	%	Frequency	%
Storage facilities	25	62.5	6	85.7
Transport	37	77.1	4	66.7
Sourcing inputs	16	55.2	5	83.3
No market around	28	63.6	6	85.7
Market information	14	42.4	3	60.0
Other marketing problems	10	90.9	6	85.7

Irrigation promotes crop production throughout the year and also crop diversification because of the availability of water. Thus, the development of irrigation has been advocated in these areas with insufficient rainfall for crop yields to meet minimum food requirements. The perception of irrigation in enhancing food security in rural areas has also been acknowledged by Crosby et al. (2000). This has seen an increase in the development of small-scale irrigation projects in a bid to ensure food security in these areas. Irrigation reduces the risk of crop failure and the increment can be substantial. However, realizing the potential requires not only good irrigation (water) but also a range of complementary agricultural support (for example, improved agricultural research and extension). Despite the large investments, the performance of some small-scale irrigation projects has been poor and the goal of achieving food security has not been realized (Bembridge, 2000). Also with irrigation farming, there is a tendency to produce cash crops which are sold so that they can generate income for the households. This study revealed that the proportion of food secured households was higher among farmers who were on the irrigation projects (86.3%) than those on dry-land farming (53.0%). However, households that was on the irrigation farming and food insecure were (48.5%) while (41.6%) were households that were food insecure on dry-land farming (Table 5). Irrigation was found to be significant at 10% level meaning that irrigation plays an important role in enhancing food security in the study area.

Table 5: Descriptive Results of the Study

Variable		Food secure (%)		Food insecure (%)	
	Number	Irrigation	Dryland	Irrigation	Dryland
Sex					
Male	97	52.4	51.6	48.5	50.5
Female	93	47.6	48.4	51.5	49.5
Per capital aggregate income					
Yes	93	62.1	37.9	24.2	75.8
No	97	45.3	54.7	56.8	43.2
Irrigation					
Yes	147	75.0	97.9	81.8	56.8
No	43	25.0	2.1	18.2	43.2
Access to market					
Yes	82	50.0	50.0	30.0	69.7
No	108	61.1	38.9	52.6	47.4
Food security					
Yes	141	86.3	53.0	51.5	58.4
No	49	13.7	47.0	48.5	41.6

Eleven variables were all initially fitted in the binary logistic model. Six variables were found to have a significant impact in determining household food security (Table 6). These are irrigation technology, household size, farm size, per capita aggregate income, education, marital status. The data set was combined for both irrigation and dry-land farmers to investigate which determinants had a significant impact on household food security. The results showed an anomaly with land size. A positive sign for land size was expected but in this case it was negative. The data was then split into irrigation and dry-land farmers to verify if land size still had a negative and significant sign between the two groups of farmers. The result was still negative even after splitting the irrigation and dry-land farmers but the other variables showed some consistency. The expected signs were irrigation (+), per capita aggregate production (+), farm size (+) and household size (-). From the analysis, irrigation and per capital aggregate income were found to have a positive relationship to the probability of households being food secured, meaning that the likelihood of food security increases when farmers have increased agricultural output and have access to a piece of land on the irrigation project. The household size variable has a negative coefficient that is significant at 5% level, implying that as the household size gets larger, it puts pressure on available food for the household to be food secured. However, household size and farm size had a negative and significant effect on household food security meaning that the likelihood of a household being food secured decreases with an increase in household size and farm size. In other words, large size households are more likely to be food insecure than small size households.

Table 6: Parameter Estimates of the Determinants of Food Security

Variable	Coefficient (B)	Std. error	Wald statistic	Significant level	Exp(B)
Constant	0.557	0.169	10.849	0.001***	1.745
Household size	-0.350	0.968	0.131	0.018**	0.705
Food security	1.736	0.625	7.714	0.005***	5.673
Water frequency	1.130	0.819	1.905	0.078*	3.404
Farm size	-0.889	1.039	0.731	0.393	2.432
Per capital aggregate income	1.822	0.564	10.437	0.001***	6.182
Irrigation	1.289	1.388	0.862	0.053**	3.276
Access to market	1.176	0.602	3.816	0.051**	3.243
Enough food	1.736	0.625	7.714	0.005***	5.673
Age	-0.659	0.609	1.172	0.079*	0.517
Sex	0.748	0.563	1.767	0.184	2.113
Education	3.296	1.306	6.372	0.012**	0.037
Marital status	-3.832	1.802	4.524	0.033**	0.022

Note: * statistically significant 10% level, ** statistically significant 5% level, ***statistically significant 1% level, Number of observations = 190. Restricted log likelihood value [Log(L$_0$)] = -1.378, Unrestricted log likelihood value [Log(L$_0$)] = -121.581[a], Log likelihood value ($\chi^2_{(df=6)} - 2[Log(L_0) - \log(-(L_1))]$ = -1.378

Small-scale farming heavily depends on its family for labour. Increasing family size tends to provide households with the required labour for agricultural production, while on the other hand; large families had a lot of pressure on food consumption as compared with the large labour it contributes to agricultural production (Paddy, 2003). Household size is significantly larger for households that are food insecure as compared to food secure households. Thus, there is a negative correlation between household size and food security.

4.0 Recommendation

Having thoroughly synthesised the findings, it is recommended that the government and the stakeholders concerned should have improved access to production resources through enabling policies that will ensure access to land and improved tenure support. To improve production, smallholder farmers need access to inputs and output markets which require them to have access to credit facilities and be able to market their produce.

The results have shown that access to irrigation by rural farmers has a greater impact in enhancing food security at the household level. With increased agricultural production from irrigation projects, food security can be achieved both at household and national levels provided the farmers get the necessary support from government, non-governmental organisations (NGOs), farmers' support groups and parastatals. The kind of support that the farmers will need include information from extension services, agricultural inputs and price policy interventions that protect farmers from frequent fluctuations in market prices. Stabilization of agricultural prices or producer prices can promote increased production in the short and long term. Such conditions can encourage farmers to produce more and sell surplus produce to profitable markets. An intervention like irrigation can bring employment to local people, increase household incomes, reduce rural to urban migration, reduce the level of malnutrition, increase per capita aggregate production and also promote crop diversification.

In addition, own food production among farmers should be encouraged by the government and other stakeholders so as to break the dependency syndrome. Government and other stakeholders should provide support through the establishment of more irrigation projects and other income generating projects that can assist farmers to produce their own food and be food secured.

Policy makers need to promote irrigation development so that farmers can irrigate more crops, fruits, vegetables and other fresh produce. Farm size is one other important factor that contributes to household food security. An increase in farm size is likely to increase food security in rural areas without employing advanced technologies. In this study, farm size had a negative relationship to household food security. This suggests that farmers with small farms are more efficient than farmers who own large pieces of land. The reason could be the presence of irrigation projects which allows farmers to produce more on their irrigated land than dry-land farms.

Government should improve rural infrastructure to boost household income through the provision of better roads, water, electricity and telecommunications. This could increase the possibility of off-farm activities that could generate more income for the households. Education and extension training is essential for farmers so that they are able to adopt new technologies. Farmers need to be enlightened on programmes such as health education. This will assist them to know more about HIV/AIDS pandemic and programmes that assist them to deal with these challenges.

Marketing, especially through contract farming, has proven to be a problem for smallholder farmers. Most of the contracts are verbal and farmers usually are cheated by unscrupulous dealers. The terms are always in favour of the buyers and farmers lack bargaining power. Training in contract marketing is hereby recommended as a means of safeguarding the farmers against some unscrupulous people. A suitable local agricultural base is key to a community responsive food system. Farmers need increased access to markets that pay them

a decent wage for their labour, and farmland needs planning protection from suburban development. By building stronger ties between farmers and consumers, consumers gain a greater knowledge and appreciation for their food source.

It has been observed that when production goes beyond subsistence requirements, agricultural growth does drive food consumption demand and leads to beneficial dietary changes. Incentives to increase production and education on proper nutrition will help farmers make the right food choices and improve their quality of life. Nutrition should be part of the agricultural extension programme to promote a paradigm shift in the eating habit of the farmers. The stakeholders should invest in collaborative learning and knowledge development for sustainable food security, through the strengthening of the agriculture, rural development and food security networking and collaborative work with external partners.

Improved nutrition is clearly a positive externality for increased agricultural production in South Africa's rural areas. However, the scale of agricultural production strongly determines the magnitude of these nutritional benefits. To have a significant impact on the food security and nutritional status of rural populations, agricultural production must develop beyond the subsistence level. While production for home consumption increases the availability of vegetables and increases micronutrient intake, the income 'savings' derived from home production seems to have more positive influences on the nutritional status of rural productions. Income replacement leads to increased purchases of energy-dense foods as fats, oils and meat.

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Effects of Knife Angles and Cutting Speeds on Pulverization of Sweet Potato Vines

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Abstract

A study was conducted to investigate the effects of three different knife angles (30, 40 and 50°) and three different speeds (1830, 2066 and 2440 rpm) of a Mower on sweet potato vine slashing (pulverizing) The results showed that all the treatments were significant at 99% significance level on the percentage of pulverized vines. The best results were for the first knife angle (30°) with lowest vine pulverized of 57.59%. The third speed (2440 rpm) had the best vine pulverized percentage of 54.00%. The best performance for overlapping effect between knife angle and speed of mower was achieved by the 30° knife angle at 2440 rpm with average vine pulverized percentage of 38.73%.

Keywords: Chopping, knife angle, mower, slasher, speed, sweet potato.

1.0 Introduction

A review was conducted on different types of mowers, knives typically used to cut the vines and leaves and concluded that the type and vertical type mowers sweeping is most effective in the removal of vegetation. Cutting and grass cutting has many variables that have an impact on crushing and some of the important variables are the cutting speed and the percentage of moisture from the vine, and there is a need to establish a model of cutting mechanics and to relate knife parameters to forage material properties (Kakahy et al., 2011, O'Dogherty, 1982).

The information available is shown to be diverse and largely empirical but probably sufficient for conventional cutting heads to have been developed to near optimal form. Research shows that blades used in forage chopping should have a blade angle in the range 30-40° with a rake angle of 10-20°, cutting at speeds up to 30 m/s. The optimum radius of the cutting edge is approximately 0.05mm. A rotary mower has shown minimum power requirements at blade angles between 25°and 30°. A similar result suggests minimum energy requirements for a 25° angle, even though they found slight difference over a range 25-50°. Some have studied the effect of rake angle and found that an angle of 30° gave least energy.

Other studies showed a continuous reduction of specific energy with increasing rake angle for maize stalks which indicated that a value of at least 30° was required with an optimum at approximately 50°. Most of the investigations on the effect of blade cutting speed on single stems have been concerned with impact cutting, and found a relatively slow linear fall of about 25% in specific energy for assemblages of stems as velocity was increased from 20 to 60 m/s. In both laboratory experiments on single stems and field experiments on mowers, the evidence is that a high impact velocity is required. Typical velocities employed by disc and rotary mowers are in the range of 71-84 m/s (O'Dogherty, 1982).

Results for many studies (Kakahy et al., 2012d, Kakahy et al., 2012c) indicate that all the treatments were significant at 99% significance level for the grass leave area and the length of stem. The best results obtained for the first speed (2500rpm) and the second speed (2700 rpm) had the best average value of 9.47 and 6.19 cm2 for the leave area and 15.83 and 17.82 cm for length of stem.

Another study for (Kakahy et al., 2012b) showed that the best results were at a mower speed of 2500 rpm and 20.37% of grass moisture content which resulted in average values of 81.03% for the percentage of the leave area and 82.08% for the percentage of the length of the stem. And (Kakahy et al., 2012a) results indicated that all the treatments had significant effects at 99% significance level for the percentage of grass leave area and the percentage of length of stem.

Study by Jorge et al., (2009) found that the power required for pineapple fields shredding increases with the feeding speed and the cutting apparatus angular velocities.

There are requirements for additional, cutting mechanics and for further studies of the cutting action of blades, and there is a need to create a model of cutting mechanics and to relate knife parameters to forage material properties (O'Dogherty, 1984, O'Dogherty and Gale, 1986).

2.0 Methods

The study was conducted at the Department of Biological and Agricultural Engineering Laboratory, Faculty of Engineering, University Putra Malaysia, to investigate the effects of three different knife angles (30, 40 and 50°) and three different speeds (1830, 2066 and 2440 rpm) of a mower on sweet potato vine slashing (pulverizing), at 36.15% moisture content, wet base (w.b%). Data were analyzed statistically using ANOVA and the least significant difference LSD calculated at 1% to estimate the differences between the averages.

3.0 Results and Discussion

Tables 1 and 2 and Figures 1, 2, 3 and 4 indicate that all the treatments had significant effects on the percentage of vine remaining on the Sieve ($> 28mm^2$) at $p < 0.01$. First knife Angle gave the lowest vine remaining on the Sieve of 57.59 % and highest was by the third knife angle of 71.28%, while the third Mower speed (2440rpm) gave the lowest percentage of vine remaining on the Sieve at 54.00%.
On overlapping bilateral effect, the best result was by the first knife angle with third Mower speed giving 38.73% of the percentage of vine; meanwhile the highest one was for the second knife angle with second Mower speed (2066 rpm) at 80.32%.

Table 1: Analysis of Variance (ANOVA)

Source of Variation (S.O.V)	Degree of Freedom (d.f)	Percentage of vine remaining on the Sieve ($>28mm^2$)%
Duplicates	2	
Transactions	8	
Angles of knife (A)	2	485.21**
Speeds of Mower (V)	2	996.15**
Overlap between (A, V)	4	140.16**
Experimental error	16	23.486
Total	26	
		L.S.D1%=10.221

**significant at level 1%.

Table 2: Factors influencing the percentage of vine remaining on the sieve (%)

A	V1	V2	V3	Mean-A
A1	65.67	68.39	38.73	57.59
A2	67.85	80.32	58.99	69.05
A3	77.05	72.50	64.29	71.28
Mean-V	70.19	73.74	54.00	

a=Knife Angles, v=Mower Speeds.

Figure 1: Effects of the Treatments on the percentage of vine remaining on the Sieve ($> 28mm^2$).
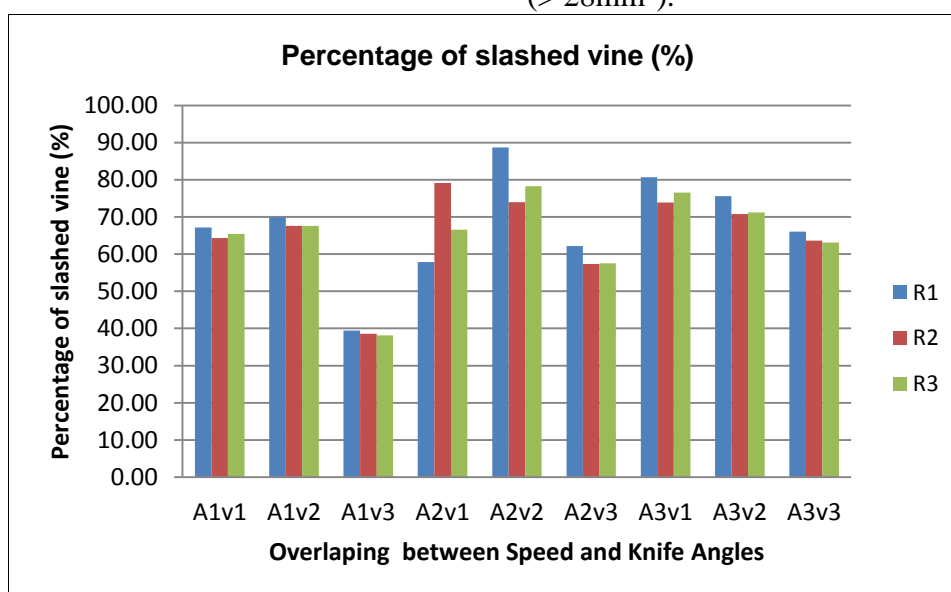
Figure 2: Effects of the overlapping bilateral on the percentage of vine remaining on the Sieve ($> 28mm^2$).
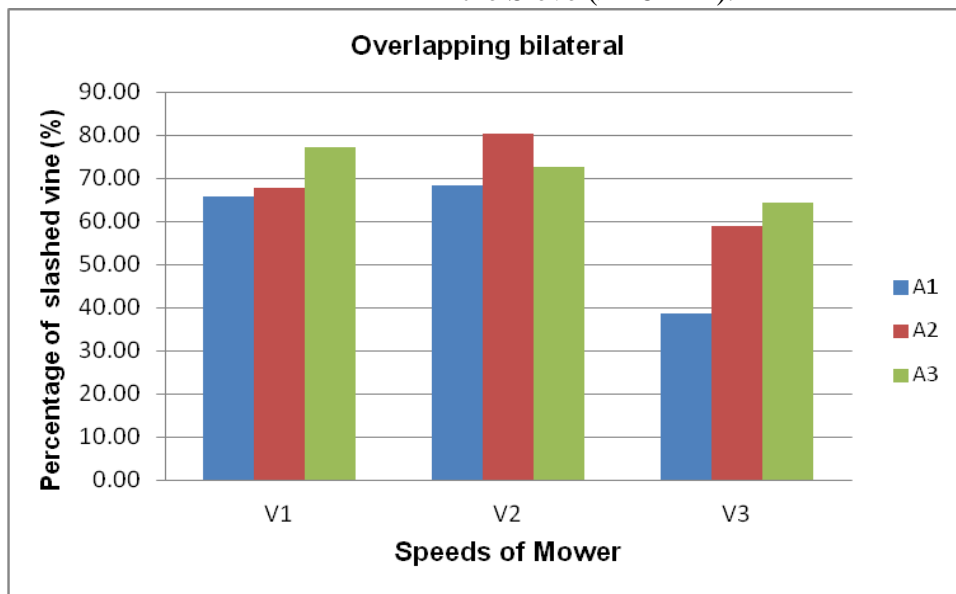
Figure 3: Effects of the speeds of Mower on the percentage of vine remaining on the Sieve ($> 28mm^2$).
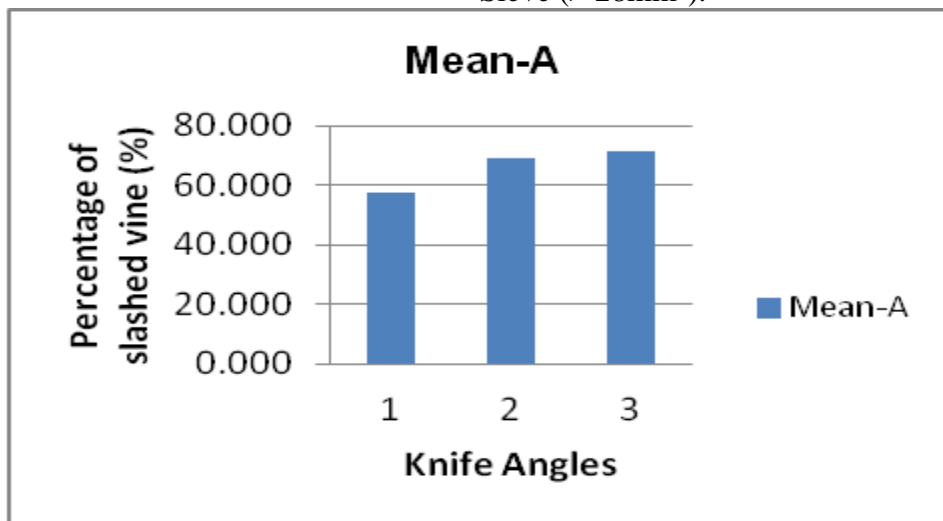
Figure 4: Effects of knife Angles on the percentage of vine remaining on the Sieve (>28mm^2).
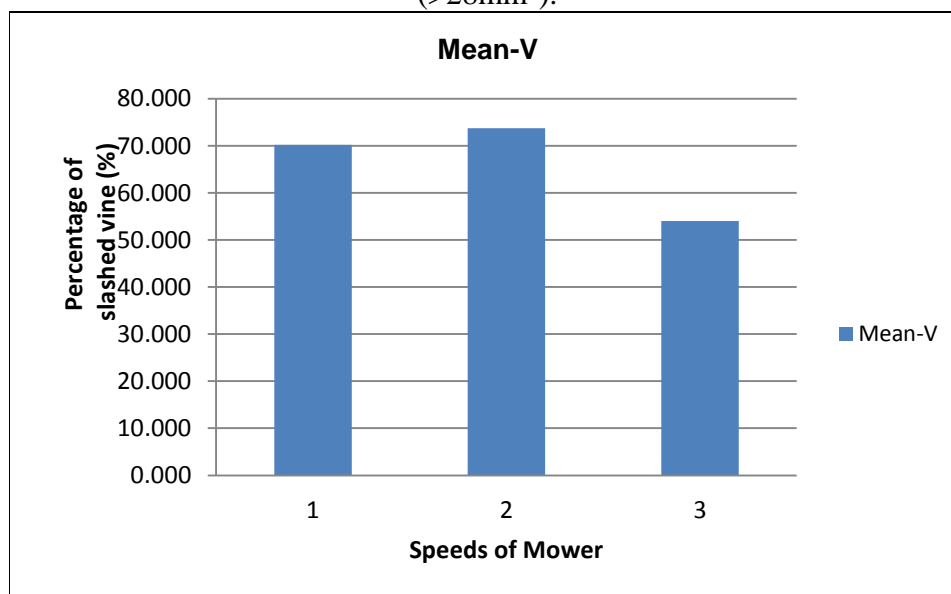
4.0 Conclusion

The study indicated that the best result was for the first knife angle (30°) with the third speed (2440 rpm) to have the best value of the cutting, and there was significant difference of all the studied characters. Other mower speeds and knifes angle will be deliberated in the future.

Acknowledgment

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Free Trade and Sustainable Development: Progress and Challenges in the Oil Palm Sector

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Abstract

Malaysia and Indonesia are major producers of palm oil. The international demand for palm oil is increasing because of increased demand for use of biodiesel and lowering of tariffs under the new WTO rules. The global demand is estimated to increase by 4 million tonnes of palm oil per year in the next 20 years. Expansion of oil palm in Malaysia is a concern due to loss of tropical forests, biodiversity, pollution due to fertilizer and pesticides and waste generation specially mill effluent polluting waterways. Malaysia had a forest loss of about 5 million hectares (20% reduction of forrest land) and the projected expansion for palm oil in Malaysis is 0.06 -5 million by 2020. Indonesia clears nearly 200000 hectares of forest per year for palm oil. The Oil pam industry both in Malaysia and Indonesia has introduced legislation to reduce the environmental impacts of the oil palm sector. Malaysia introduced provisions on (a) open burning (b) industrial waste (c) environmentally benign technologies and (d) Environmental Impact assessment (EIA) and adoption of ISO 14001 Environmental Management Standards Certification by the Malaysian Palm Oil Promotion Council (MPOPC). Both Malaysia and Indonesia are members of the RSPO and should adhere to RSPO regulations. In spite of these measures, progress towards sustainable palm oil production is slow. Many companies provided only brief narartive accounts of adoption of zero burning, planting legume covers, biological control and adoption of ISO 14001 environmnetal standards. Indonesia still violates the zero burning concept. Innovative utilization of oil palm biomass, green energy development, improved governance and monitoring of land use, protection of forest land are evident in both countries but there is scope for further improvement.

Keywords: Oil palm, biodiversity, sustainable development, trade

1.0 Introduction

In recent decades, the world has witnessed an explosion of environmental problems including severe floods and droughts, diminished rainfall and wildfires resulting in much destruction to natural and human resources. These developments have been linked to environmental processes such as the increase in Green House Gases (GHG), impoverishment of forest ecosystems and water resources and disruption of other critical ecological functions. In many instances these phenomena are a direct consequence of human activity. An objective evaluation of these developments requires a revisit to some important concepts introduced by scientists and policy makers in the past such as sustainable development (SD) (WCED 1987). The aim of this paper is to review existing literature of palm oil sector in Malaysia and Indonesia to evaluate the potential for increased international trade and sustainable development. The paper also reviews how current free trade regime and WTO rules affect trade and SD (Hezri and Hasan 2006).

Since the concept of SD was introduced into the development debate, there has been growing literature in applied science, environmental and international politics and development, and the value and implementation of the concept. However, there is yet no universal consensus on

what the concept actually means and the implications for development. SD argues that utilization of resources and efficiency is not sufficient for sustainability. Intergenerational equity and meeting the needs of the poor are imperative in achieving SD. Another important issue is the capacity of the environment to meet present and future needs which require maintenance of the integrity of the ecosystems. There are however, inherent contradictions in these two notions specially how to reconcile economic and ecological imperatives (Carvalho, 2001).

The genesis of the debate on the environment and development is not new and it dates back to the systems of cultivation and extraction of natural resources since colonial times. Historically, large scale cultivation of commercial crops created extractive enclave-based economies that thrived on reckless exploitation of natural resources and labor. The best example of this exploitation of natural resources is the timber based economies of Southeast Asia such as Malaysia and Indonesia. The mining, rubber and palm oil plantations in Malaysia and Indonesia are other examples (Sandker et al., 2007).

Monoculture cash cropping (tea, rubber, oil palm, coconuts) promoted in the colonial past undermines traditional systems of coping with natural hazards. Further, forest based communities in Southeast Asia were affected by commercial logging and other market activities. The extractive enclaves were supported both by national and international commercial interests exploiting natural resources. It is difficult to change this exploitative system to a sustainable one without a global push for equity and sustainability.

1.1 International Trade

The relevance of SD to trade emanates from the continuation of the dependent relations in the 20th century through dependence mechanisms, among them international trade. Dependent relations lead to a continued extraction and exploitation of natural resources in the periphery which are a threat to SD. There are two main links between international trade and the environment. First is that the free flow of goods facilitated by a liberalized economy tends to create external costs by industry. If countries restrict such externalities, the industries move elsewhere (dirty industry migration or the pollution haven hypothesis, eg. Production of pig iron migrating to Indonesia in the 1960s) (Copeland and Taylor, 1994, 1995). The second is increased consumption by citizens of the north and the south alike which can lead to further exacerbation of the already stressed natural systems. The General Agreement on Trade and Tariffs (GATT) agree that increased trade due to globalization can have deleterious impacts on the environment (Krugman and Obstfeld, 2009).

1.2 Trade Liberalization

Trade liberalization is highly complex and has varying policy implications and a wide range of different trade regimes. It increases the volume of trade and changes the nature of trade. Trade liberalization was pursued vigorously but several Southeast Asian countries since the 1960s. Many Southeast Asian countries shifted from import substitution to export oriented economies. The rapid growth of Hong Kong, Taiwan, South Korea and Singapore in the 1960s was the result of export-oriented economic policies (Quibria 2002). These high performing countries achieved more than 10 % growth rate in their economies. In the late 1970s and the 1980s, the second tier countries such as Malaysia, Thailand, Indonesia and China began liberalization and achieved very rapid economic growth. The high growth rates are the payoffs to liberalized trade regimes.

1.3 Trade Barriers

International trade however, can be a double-edged weapon. It can increase the volume of trade or be an obstacle to trade. For example, the use of tariffs can act as a barrier or as an incentive. Tariffs are a highly controversial issue in trade negotiations and have led to prolonged negotiations and disputes. There is a wide range of tariff regimes under the WTO. The MFN tariffs on ethanol range from 6-50% in OECD countries and up to 186% in India .Bound and applied tariffs in OECD vary from 0-7%. Tariffs applied to developing countries vary from 14-50% (Steenblik, 2007). These differential applications of tariffs may be trade diverting. The export of ethanol by Pakistan to the EU was facilitated by the EU's generalized system of preferences but this advantage was lost since 2006.

The major non-tariff barriers are sanitary and phyto-sanitary measures (SPS) and technical barriers to trade. SPS measures mainly affect feed stocks which are biological in origin which can carry pests and other pathogens and this is especially relevant to palm oil. For biofuels, the WTO is concerned with chemical and physical characteristics of the product. Thus WTO rules are significant because it affects oil palm as feed stocks or as final products.

1.4 The World Palm Oil Sector

Indonesia and Malaysia are currently the world's largest producers of palm oil-exporting a combined total of 28.6 million tons of crude palm oil (CPO) in 2007-2008 (Thoenes 2007). The global area under oil palm has more than tripled since 1961 to over 13 million ha (Food and Agriculture Organization of the United Nations (2008). Most of the CPO are imported by China (6.2 million tons in 2007-2008), India (4.9 million tons), and Pakistan (2.5 million tons). Palm oil is the largest traded vegetable oil used for a multitude of domestic and industrial purposes in Asia, US and Europe. Malaysia and Indonesia dominated this trade (Table 1).

Indonesian production of palm oil has increased significantly every year; as of November 2010 Indonesia produced 23,000 million metric tons, and ranks top among other major producer countries (Table 2). About 75% of palm oil production in Indonesia is exported to the world market (Rifin, 2010a). Palm oil exports have increased significantly during the period of 1980 to November 2010. Indonesia was able to catch up to Malaysia and become the largest palm oil exporter in the world market in 2008. Recently, Indonesia has about 46% of the share of the total world palm oil export market. Indonesia has potential to expand its palm oil plantation due to its abundant land. Since nearly 80% of these imports are used in the food processing industry, palm oil price tends to be closely related to the prices of other-vegetable oils. Palm oil prices are also influenced by global market trends in energy commodities. Oil palm prices have increased significantly. The Crude Palm Oil (CPO) prices increased from $478 per ton in 2006 to $1,196 per ton in the second quarter of 2008.

Table 1: Palm oil Output in Malaysia, Indonesia and the Rest of the World (x10 tonnes).

	2005	2006	2007	2008	2009	2010	2011	2012
Indonesia	14,000	15,400	17,150	18,552	20,633	22,896	25,295	27,863
Malaysia	15,194	15,485	16,520	16,433	17,243	18,054	18,862	19,568
ROW	4681	5071	5272	5489	5703	5919	6138	6360
Total	33,875	35,956	38,942	40,474	43,579	46,869	50,296	53,791

Source: Carter et al., 2007
LMC International Ltd. Estimates, where ROW=rest of the world.

2.0 Demand for Palm Oil

2.1 Demand as Edible Oil

The palm oil industry has great potential to meet the future global demand for vegetable oils. The usage of palm oil for bio-fuel industry has strengthened demand for palm oil in the world market. Between 2005 to 2008, more palm oil was produced globally than any other vegetable oil. As of November 2012 the production was 47.91 million metric tons. It also has the biggest consumption level, which was 36.77 million metric tons (USDA 2010).

Trade liberalization and the lowering of tariffs under the new WTO rules would boost demand for Malaysian oil palm imports specially from China and India. Increase in the use of palm oil for feed and livestock industries and biofuel can further enhance international demand. The global demand is estimated to increase by 4 million tonnes of palm oil per year in the next 20 years (Basiron 2002, Basiron and Simeh 2005).

The global palm oil consumption and trade has risen steeply from the 1970s (see Table 2 and 3). The share of palm oil in global vegetable oil productions has more than doubled over the last twenty years along with a strong rise in the share of palm oil in global vegetable oil trade (Thoenes 2007). In 1983, palm oil was 12 per cent of global vegetable oil production which rose to 26 per cent in 2003. Also the share of palm oil in global consumption has grown significantly. Since the year 2005, global palm oil output is matching that of soya oil, whereas for trade, global shipments of palm oil surpassed those of soya oil in the mid-1970s and, today, palm oil exports exceed soy oil shipments by almost two times (Thoenes 2007).

Table 2: Growth in Palm Oil Trade (million tonnes)

	1962		2004		Annual Growth	2015		2020	
	Million tonnes	% Share	Million tonnes	% Share	% Per annum	Million tonnes	% Share	Million tonnes	% Share
World oils and fats	5.94	-	46.01	-	5.00	50.18	-	66.8	-
Palm oil	0.55	9.2	23.27	50.56	9.34	26.77	52.41	30.70	45.96
Soyabean oil	0.76	12.8	9.10	19.77	6.08	11.88	23.26	13.30	19.91
Rapeseed oil	0.39	0.7	1.45	3.20	8.99	3.05	5.97	3.00	5.24
Sunflower oil	0.25	4.1	2.73	5.93	7.22	5.19	10.16	6.20	9.28
Animal fats	2.56	43.0	0.83	1.81	-2.63	2.03	3.97	2.20	3.29

Source : Basiron and Simeh 2005

Table 3: World Consumption of Oils and Fats (million tonnes)

	1962		2004		Annual Growth	2015		2020	
	Million tonnes	% Share	Million tonnes	% Share	% Per annum	Million tonnes	% Share	Million tonnes	% Share
World oils and fats	30.39	-	130.03	-	3.52	165.2	-	184.4	-
Palm oil	1.20	4.0	29.12	22.40	7.88	37.22	22.53	43.2	23.43
Soyabean oil	3.37	11.1	31.45	24.14	5.46	37.07	22.44	41.0	22.23
Rapeseed oil	1.15	3.8	14.65	11.27	6.24	20.26	12.26	22.7	12.31
Sunflower oil	2.17	7.1	9.58	7.37	3.6	14.69	8.89	16.9	9.16
Animal fats	11.99	39.4	8.33	6.40	-0.86	8.56	5.18	9.13	4.95

Source: Basiron and Simeh 2005

The projections (2005-2015) for the vegetable oil sector by FAO and OECD shows that vegetable oil demand, supply and trade are projected to rise by around 30% between 2005 to 2015. Malaysia and Indonesia can satisfy the projected expansion in total vegetable oil demand and further consolidate their global dominance in the palm oil sector's leadership.

2.2 Price and Income Elasticity of Demand for Palm Oil

Yulismi and Siregar (2007) calculated the price elasticity and import response elasticity for palm oil exports from Indonesia and Malaysian for the period 1990-2004. They found that in India and China, Indonesia's palm oil is price inelastic but income elastic. For Malaysian palm oil exports, India and China showed both price and income elasticity of demand to be elastic. For the EU, for palm oil, the price elasticity of demand was elastic but the income elasticity of demand was inelastic. Rifin (2010a, 2010b) analyzed import demand for Indonesian and Malaysian palm oil exports using annual data from 1964 until 2006. He found that Indonesia benefited more than Malaysia from increasing world income due to her higher income elasticity. These studies indicate that Indonesia is more income sensitive while Malaysia is more price sensitive. Shariff et al. (2006) estimated the price elasticity and income elasticity of demand for Malaysian palm oil exports to China, India, Pakistan, Egypt and South Korea using annual data from year 1980 to 2003. They found that Malaysian palm oil exports are price elastic and that soybean oil is an important substitute. Abdullah (2011) found that Indonesian palm oil export is significantly determined by its own export price and foreign countries' income. The value of the elasticity of its own export price in the short –run was -0.54 which is larger than the value in the long run elasticity of -0.41. The foreign countries' short run and long run income elasticity was 0.61 and 0.49 respectively. The income elasticity shows that Indonesian palm oil is a normal good.

2.3 Demand for Biofuel

Due to the depletion of fossil fuel and high gasoline and diesel prices, the utilization of

biofuel has become increasingly important. Global emissions continue to rise and it is estimated that by 2030 developing countries are likely to account for over one half of global emissions. Global energy demand is estimated to rise by half by 2030 but energy consumption is still largely based on the use of fossil fuel technologies. Increased energy consumption specially by China, US and Europe and increased concern over energy security have made investing on biofuel a priority (Sagar and Kartha, 2007). Bioenergy can also create viable rural livelihoods for rural communities.. Palm oil has been reported to be the most productive feedstock for biofuel production. The EU is increasing its use of biodiesel, and palm oil is an attractive candidate for biodiesel because it is at least US$200/ 70one cheaper than other vegetable oils (Tan et al., 2007). EU and USA produce biofuels from other crops such as sugar cane and rapeseed oil. In 2005, the US, Europe and Brazil accounted for 95% of biodiesel production. Canada, China and India produced the rest.

Palm oil has comparative advantage over other oils because of higher productivity and lower labor costs and good climatic factors. The thriving plantation of palm oil is the main factor which drives Malaysia towards developing biodiesel production and technology.

In Malaysia, biodiesel production using palm oil as primary feedstock. Therefore, the availability of palm oil supply is crucial in determining the potential growth of biodiesel production in Malaysia (U.S utilizes soybean oil, Europe utilizes rapeseed oil). A hectare of oil palm produce five tonnes of palm oil, compared with other vegetable oils like rapeseed and soybean, which can produce one tonne and 375 kg each. This is almost 5 times and 10 times higher yield than rapeseed and soybean respectively with the same area of land.

There is preference for biofuel production using corn and rapeseed rather than palm oil despite their cost disadvantage and threatening environmental sustainability. Economic efficiency in international trade requires that biofuel be produced in the most efficient locations.

2.4 Supply of Palm Oil

Oil palm is spreading throughout the tropics, specially in Southeast Asia. Global land area under oil palm quadrupled from 3.6 million ha in 1961 to 13.9 million ha in 2007 (FAO 2009). In 2008, Malaysia's Federal Land Development Authority (FELDA) announced plans to establish oil-palm plantations in Kalimantan (20,000 ha), Aceh (45,000 ha), Papua New Guinea (105,000 ha), and Brazil (100,000 ha) (Butler and Laurance 2009). In May 2009, Sime Darby, the world's largest oil-palm company, also announced plans to invest US$800 million in oil-palm and rubber plantations in Liberia, covering some 200,000 ha (80% for oil palm). In June 2009, Malaysian oil palm developers announced plans to establish a 100,000 ha oil-palm plantation and an extraction facility in the Philippines (Butler and Laurance 2009).

In Indonesia, palm oil plantation area grew at 20.5% per annum during 2000-2005 which is faster than the growth rate during the 1990-1997 period. In 2000, total area was 4.2 million hectares which increased to 6.07 hectares in 2006. Plantation area has increased from 425,000 hectares in 1987 to 4.54 million hectares in 2007. Compared to Malaysia, Indonesia has more abundant fertile land with suitable geographic conditions for oil palm (Sulistyanto and Akyuwen 2011). In 2008, Indonesia became the biggest CPO producer in the world replacing Malaysia. Total production of Indonesia's CPO in 2005 was 12.6 million tons or equal to 38.77 % of total production of CPO in the world (32.5 million tonnes). Oil pam

productivity also increased from 3.25 tonnes to 3.70 tonnes per hectare which however is still lower than the productivity in Malaysia with yields of around 4.15 tonnes per hectare (Sulistyanto and Akyuwen, 2011).

There are several main importers of Indonesia's CPO include the Netherlands, Malaysia, India, China, Spain, Germany, USA, Italia, Singapore, and Turkey. India is the biggest importer with a share of around 42 % of total of Indonesia's CPO exports in 2005. The EU was the second largest importer accounting for 20.6 %.

Some 88 per cent of the expected growth in palm oil production until 2017 will originate from Malaysia and Indonesia. Their joint supply will meet up to 44 percent of the extra vegetable oil demand. Current emphasis is to support oil palm production through the corporate sector dominated by large, multinational corporations, such as Sime Darby. Malaysian law grants complete foreign ownership of companies with production for export purposes. This may also raise issues regarding income distribution especially with respect to poverty alleviation.

2.5 Trade in Palm Oil and Sustainable Development

Oil palm expansion is a concern due to loss of tropical forests, biodiversity, pollution due to fertilizer and pesticides and waste generation specially mill effluent polluting waterways (Turner et al., 2008, Koh and Wilcove, 2007). Over the past few decades oil palm has become a major driver of deforestation clearing large areas of rainforest with high conservation value (Koh & Ghazoul, 2008; Koh & Wilcove, 2008). Malaysia had a forest loss of about 5 million hectares (20% reduction of forrest land) and the projected expansion for palm oil in Malaysis is 0.06 -5 million by 2020 (Wicke et al., 2010). Between 1990 and 2005 at least 56 per cent of oil palm expansion is Indonesia and 55-59 per cent of that in Malaysia is estimated to have been at the expense of forests

This unprecedented increase in demand for oil palm products, biodiversity-rich land can be destroyed by unregulated oil palm expansion. Fargione et al. (2010) suggest that biodiversity decreases by about 85 per cent in Southeast Asian oil palm plantations when contrasted with unchanged habitat. NGOs and environmentalists argue that Malaysia's remaining old growth forests are biologically, some of the richest on the planet and are home to a number of endangered species including forest elephants, rhinos, orang-utans, tigers and monkeys. Oil palm plantations are claimed to be unable to provide the biodiversity obtainable in old growth forest.

Given the growing demand for palm oil from economies such as China and India, the conversion of tropical forests for palm oil production will likely continue over the next decade. It will imperil carbon sequestration and biodiversity conservation (Fargione et al., 2010; Koh and Wilcove, 2008). Palm oil palm plantations have also led to some of the worst forest fires and haze creating serious threats to ecosystem and human health. The 1997/98 forest fires in Indonesia are a case in point.

2.6 Policies for Sustainable Production of Palm Oil

Malaysia's vision to become a developed country by the year 2020 means that under the United Nations Framework Convention on Climate Change (UNFCCC), Malaysia must reduce their emissions of GHG to levels agreed to under the Kyoto Protocol. Malaysia also

needs to allay the fears of the EU' which may impose bans on palm oil-based biodiesel because of the adverse environmental impacts identified (Hoh, 2008).

Malaysia however is committed to sustainable development and reducing GHGs emissions by adopting sustainable practices to conserve the rainforests and wildlife (Basiron, 2008). Malaysia is pursuing a policy to limit land clearance for agricultural activities to a maximum of 25% as a first step to reduce biodiversity. Malaysia is taking strategic initiatives in particular the National Biofuel Policy to promote a better quality environment by reducing use of fossil fuels. Five leading producers of palm oil in Malaysia are currently producing biofuel using sustainable practices certified by RSPO (Laurance et al., 2010).

Malaysia plans to meet world requirements of palm oil whilst reconciling the need to provide nutrition to populations, returns to the shareholders and maintain a balance between wildlife and nature. If properly focused, Malaysian palm oil will be able to survive the production-environment debate and supply a healthy source of edible oil and meet market demand for biodiesel. Malaysia has sustainable forest management policies to maintain environmental stability and ecological balance. Nearly 14.1 million hectares of natural forest have been designated as Permanent Forest Reserve (PFR), and 3.39 million hectares of land allocated for national parks, wildlife sanctuaries, and natural reserves. For eco-labeling or eco-certification of timber and non-timber product a Committee on Timber Certification (CTC) has been established.

It is useful to take note of the argument of the MPOC regarding the biodiversity loss due to oil palm. MPOC avers that the situation is not dire because Malaysia does not have sacrifice its forest to meet the quota of biofuel usage in the EU. This is because oil palm plantations can conserve forest as many as ten times in the importing countries which produce land intensive edible oils such as rape seed and soya. Hence they argue that there is a 'deforestation avoidance effect' in growing oil palm.

The Malaysian government has introduced the (a) Enviromental Quality (Crude Palm Oil) Regulations 1977 and (b) the Environmental Quality (Clean Air) Regulations 1978 which stipulate conditions for licencing, open burning and emissions standards. Open burning is banned in plantations and industrial waste is recycled using environmentally benign technologies. Malaysia has adopted the certification processes for palm oil under ISO 14001 Environmental Management Standards Certification. The Malaysian Palm Oil Promotion Council (MPOPC) is the chief protagonists of this process. Nearly 30% of the edible oils imported to the EU is certified as originating from sustainable production approaches.

RSPO has established environmentally sustainable principles and criteria for palm oil industry and is a forum for stakeholder dialogue and negotiation. Malaysia is a member of the RSPO. Integrated pest management (IPM) in palm oil plantations has lessened the use of pesticides. Innovative approches to the efective utilization of oil palm biomass energy which is expected to rise to 820 TJ by 2010 (Shuit et al., 2009). The use of waste water from oil mills to irrigate oil palm plantations saves essential water and also reduces waste.

Better governance and monitoring of land use, protection of forest land, and supporting socio-economic research to uncover the dynamics of the causes and drivers of land degradation and soil erosion.meet EU Directives that stipulate that biofuels achieve green house emissions reduction of 35% will meet the 2020 target of 10% for the share of biofuels (Thamsiriroj and Murphy, 2009). Using privately owned nature reserves for biodiversity

conservation within oil palm plantations funded by the profits in the industry is being mooted and this seems to be a viable idea that needs to be further investigated (Koh and Wilcove, 2007).

2.7 Challenges to Sustainable Development of Oil Palm

Despite these initiatives, serious problems can constrain the achievement of sustainable development in oil palm. The Reducing Emissions from Deforestation and Forest Degradation (REDD) was designed to compensate land users and owners when the forest is not used for cultivation. The REDD is weak because of economically attractive land-use options where REDD cannot fulfill its main function of reducing deforestation. High palm oil prices make palm oil attractive alternative land use to REDD schemes. For habitats such as peat lands there may be higher returns for REDD but technical and financial problems in assessing the value of belowground carbon can still undermine the REDD scheme.

There may be questions about voluntary commitment towards the environment such as zero burning, planting legume covers, biological control and adoption of ISO 14001 environmnetal standards. A 2001 study showed that only 9 mills out of 352 received certification to the ISO 14001 standards. In year 2000 action was taken against 213 palm oil mills for various environmental offences.

The robustness of RSPO itself is doubtful because it is dominated by industry. Of 312 ordinary-member organizations as of October 2009, just 12 and nine come from conservation or social-development groups, respectively (6.7 % in total). Oil-palm interests numerically dominate the RSPO Executive Board (Lawrence et al., 2010). The RSPO approach to peat forests appears to be half-hearted and the RSPO approach to less than optimal for oil-palm production (Koh 2007). Noncompliance by RSPO members can be widespread. According to Greenpeace-International, RSPO-certified palm oil used by Nestle, Procter & Gamble, and Unilever were grown on recently deforested lands, (Greenpeace 2008). Greenpeace-Indonesia in Kalimantan and Papua found substantial evidence of destruction of primary rainforests and peat forests by RSPO members (Lawrence et al. 2010). The RSPO has a limited annual budget of around US$500, 00, paid by dues of its member organizations and capacity to monitor is limited. RSPO has rejected use of remote sensing, the most reliable and transparent method for monitoring the behavior of its members. Easy membership without actually having their operations certified is a loophole. Further, China and India have shown little interest in purchasing RSPO certified palm oil because it is 8-15% more expensive than uncertified palm oil. RSPO criteria may also not fulfill the European Union directives for bio fuel.

Protecting riparian buffers, leaving patches of natural forest within plantations, and growing flowering plants in the understory of oil-palm plantations generate, have been adopted. But it is argued that these isolated patches and narrow strips of forest may be help improve water quality or reduce insect pests, but cannot do much to conserve biodiversity. This is an important issue that needs attention.

The research on oil palm is heavily weighted towards markets and not to environmental or socio- economic research. This is a serious omission and need to be addressed if environmentally sound information for the industry is to be provided.

3.0 Conclusion

Malaysia and Indonesia have introduced sustainable development policies to maintain environmental stability and ecological balance to minimize the environmental effects of palm oil production. These are mostly based on RSPO guidelines. A Committee on Trade and Environment (CTE) was set up in the Malaysian International Trade and Industry (MITI) in the Seventh Malaysia Plan (1996-2000). Nearly 14.1 million hectares of natural forest have been designated as Permanent Forest Reserve (PFR), and 3.39 million hectares of land allocated for national parks, wildlife sanctuaries, and natural reserves. The eco-certification of oil palm under RSPO can enhance the output of sustainable oil palm in due course and this may lead to enhanced trade especially within the EU. The RSPO still remains a questionable entity although some significant progress has been reported.

Many plantations have adopted Integrated Pest Control (IPC) where the use of pesticides has been minimized. There had been significant success in adopting biological pest control methods to reduce pests in oil palm. There are some ominous signs in oil palm trade with Asia. The demand from China and India is increasing and will be major purchasers of palm oil. However, India and China, main purchasers of palm oil, are lukewarm towards purchasing certified palm oil because non-certified palm oil is cheaper. This can undermine the effort towards sustainable production of palm oil. Malaysia and Indonesia should follow the EU directive to exploit the trade potential with the EU, USA and Australia although they are currently not big players. But they form the market for sustainably produced palm oil.

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The Role of Concern for the Environment and Perceived Consumer Effectiveness on Investors' Willingness to Invest in Environmentally-Friendly Firms

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Abstract

With the growing awareness on the need to care for the environment better, there is a need to understand the factors that facilitate environmentally-sustainable behaviour among the populace. It is known that various researchers have studied factors influencing investors' willingness to invest in the past. This study however covers a segment of finance research, specifically behavioural finance as it examines investors' willingness to invest. This study determines investor behaviour on corporate environmental strategies, which is relatively an underexplored field of study. This study contributes to the theme of sustainable development, more precisely, sustainable finance. The study of sustainable finance has become the attention of investors around the world, however, this study is to analyse whether this sector of investment (green companies) will interest investors. It is proposed that consumers' concern towards the environment and perceived consumer effectiveness (PCE) are significant predictors of investors' willingness to invest in the shares of environmentally-friendly firms in Malaysia. An understanding of the role of concern for the environment and perceived consumer effectiveness on investors' willingness to invest in environmentally-friendly firms will be useful to the government and NGOs in the formulation of policies that would encourage investment in firms that are sensitive towards the needs of the environment.

Keywords: Investors' willingness to invest, perceived consumer effectiveness, environmental concern

1.0 Introduction

The impacts of environmental strategies towards the economic sustainability are few and far between (Callon, 2009). More importantly, hardly any studies measure corporate environmental strategies towards investors' 77 ehavior. Therefore, this paper seeks to examine investors' perceived consumer effectiveness towards the willingness to invest in companies that are actively involved in green activities.

The relations of banking and finance with this research topic is that it covers the segment of finance, specifically, behavioural finance, as it examines individual investor behavior. According to Ritter (2002), behavioural finance is further divided into two blocks, which are the cognitive psychology and the limits to arbitrage. However, there are very few researches done on linking corporate environmental strategies to investor 77ehavior. Numerous past research on environmental strategies had been done in other countries, such as the USA,

Netherlands, Denmark, Africa, Malaysia, and others (Maxwell et al., 1997; Reyers et al., 2011), yet they do not cover its linkage to finance.

The variables that will be examined in this paper are concern for the environment perceived consumer effectiveness (PCE). Although in various economic literature, either theoretical or empirical, there are increasing concern on the key role of corporate social responsibilities (CSR), (Brine et al., 2006; Tsoutsoura, 2004). However, very few touched on the principles of corporate environmental strategies. Hence, the purpose of this research is to provide data by examining if investor 78ehavior is affected by PCE. The aim of this paper is to study on the role of PCE in influencing investors' willingness to invest in environmentally friendly shares, recognizing environmental concern as the moderating variables. This paper will therefore examine the linkage between willingness to invest, PCE and environmental concern.

Research on environmental strategies in both developing and developed countries is scarce. Moreover, the impacts of environmental strategies towards the economic sustainability are even few and far between (Callon, 2009). More importantly, hardly any studies measure corporate environmental strategies towards individual investor behavior. Thus, the purpose of this paper is to layout past literature review with regards to PCE affecting investors' willingness to invest moderated by environmental concern.

2.0 Literature Review

In recent years, pressures from stakeholders have triggered firms on taking a long, hard look at their approach to the environment, discovering well-formulated environmental strategies that can lead to business advantages, such as better quality, cost reduction, improved company's image, and opening of new markets (Maxwell et al., 1997). This section will discuss on the ideas of past literature with regards to willingness to invest, perceived consumer effectiveness (PCE), and environmental concern.

2.1 Willingness to Invest

Individuals invest to increase their wealth, however, no one can assure the profitability of a particular investment (Lewis, 2001). According to Chandra and Sharma (2010), the fundamental objective of an investor is to get good profits from their investment. Kasilingam and Sudha (2010) stated that investment behaviour is linked to individual investors act in evaluating, searching, reviewing and acquiring a particular investment product.

Taking into consideration the importance and impact of a consumer's investment decision, there is surprisingly few research done especially in investigating consumer's decision to adopt new investment products (Howcroft et al., 2007). They also added that the lack of research in this area causes an even greater amount of risk to investors as not many are aware about the performance of new investment products (Howcroft et al., 2007). According to Zhou and Pham (2004), past literature on consumer behaviour had stated that consumers paid too little attention on investment decisions. Thus, it is important to look at PCE and its effect towards investors' willingness to invest.

It has been proven that incomplete financial information often make it impossible for consumers to accurately estimate their risk and investment returns (Goldstein et al., 2008; Hoffmann and Broekhuizen, 2010). Other researchers stated that some investors do not

consider much on risk and return, but their preferences go beyond it, which include status deliberation and entertainment value (Dorn and Sengmueller 2009; Hamilton and Biehal 2005; Hoffmann and Broekhuizen 2010; Zhou and Pham 2004). In view of these, Goldstein et al., (2008) emphasize on the necessity to integrate both finance and marketing insights to improve and increase investors' understanding regarding investment decisions.

In a study conducted by Hoffmann and Broekhuizen (2010), they had extended the finance and marketing literature and examined the sociological and psychological personality traits that influence investors decision to invest in new products. Steenkamp and Gielens (2003) also stated that the distinctive factor on investment products from tangible products is due to the sociological and psychological traits of consumer innovativeness. A survey conducted by Zoghlami and Matoussi (2009) on investor behaviour in Tunisia had suggested that the five psychological traits that influence Tunisian investor behaviour include conservatism, lack of confidence, precaution, informational inferiority and under opportunism. However, because this is only a conceptual paper, thus, this paper will present ideas on PCE and investors' willingness to invest, moderated by environmental concern.

Several researchers had studied on investment decision with regard to pension plans (Byrne, 2007; Gough and Nurullah, 2009). The younger respondents believed that pension provision must be made for themselves rather than relying on the retirement provision set by the government (Gough and Nurullah, 2009). On the other hand, in the study of Byrne (2007), noticed that many employees have presented the lack of interest towards their personal pension provision. Nevertheless, those who have received their pension advice are likely to calculate their savings, actively evaluate their portfolio and have greater knowledge of investment (Byrne, 2007).

Socially responsible investing (SRI) is deemed as "value-driven" investment advancement where personal and social values are taken into consideration instead of using a purely financial basis to make investment decisions (Derwall et al., 2011). According to Lewis (2001), a majority of the respondents are willing to accept twenty percent loss on their return if the investment is ethical. Socially responsible investors that choose investment products that are not-for-profit purposes are called as shunned stock hypothesis (Derwall et al., 2011). Some investors have ethical mixed investment portfolio, whereby the "unethical" segments of their portfolio are historical shares which have not yet been sold (Lewis, 2001).

Past literature had identified several issues that raised the question on the determinants affecting investor 79ehavior (Vyvyan et al., 2007). Concern towards the environment has been suggested as one of the main reasons for SRI managed fund's rapid growth (Vyvyan et al., 2007). However, there is a lack of empirical studies examining investment decision in the context of SRI (Vyvyan et al., 2007) as many of the studies examine the conception of environmental or ethical consumer (Mohr et al., 2001; Rosen et al., 1991). Willingness to invest is an act that involves investors' behavior, thus, this paper examines the linkage between willingness to invest and PCE, recognizing environmental concern as the moderating variable. The concept of PCE will be discussed in the following section.

2.2 Perceived Consumer Effectiveness

Perceived consumer effectiveness (PCE) signifies a conception that consumers are expected to act on social problems if the consumers deem that their action may help to resolve the problems (Nilsson, 2008). It also explains the appraisal of an individual in the context of the

issue, as stated by the researcher that a person may feel exceptionally concern about an issue, at the same time being powerless in his or her own effort to have an impact on the issue (Berger and Corbin, 1992). According to Antil (1984), there are two components that play a role on PCE. The first issue is whether a consumer is aware about the existing issue, next, the consumer must trust that their effort will contribute to the solution of the issue. On the other hand, Thogersen (1999) suggested that the PCE concept that captures a person's perception on the ability to solve social issues is mediated by personal attitude. PCE is also defined as consumers' self-belief in the capability to improve the environment (Lord and Putrevu 1998).

Berger and Corbin (1992) described PCE as a unique and detached entity from attitude, they stated that PCE can be a standalone as a model by itself. For example, a group of individuals is concerned about the environment but were convinced or persuaded to believe that others can generate better solutions, these individuals are said to have high attitude scores, and low PCE scores; conversely, another group of individuals who may not be concerned about the environment and deem that individual effort is efficient, these individuals expected to have low attitude scores, and high PCE scores (Berger and Corbin 1992). Hence, attitude refers to a particular issue while PCE refers to a person's role in solving the issue (Nilsson, 2008).

Recent findings on PCE had found that it has a strong positive correlation with ecologically-conscious consumer behaviour (ECCB) (Roberts 1996; Straughan and Roberts 1999). Roberts (1996) had proven that PCE is by far the most influential variable to explain the variation sample of ECCB. By combating environmental destruction, PCE is expected to be the thrust behind ECCB (Roberts 1996). Other research such as Lord and Putrevu (1998) measured the impact on high and low PCE towards intention to recycle and they had found out that consumers with high-PCE are more likely to be receptive to negatively-framed messages about the cost of failing to recycle than those who are low in PCE. Webster (1975) further demonstrated that PCE has a strong influence on both socially-conscious consumers (SCC) and recycling. Even though SCC and recycling have strong influence in their study, both measures are different where SCC is based on items in questionnaire; whereas recycling was based on observation, thus, it cannot be proven that one is a more valid measure than the other.

Other research on the other hand studied on the effects of collectivism, environmental concern and PCE had suggested that the collectivism influences the flow through PCE and was statistically significant (Kim and Choi, 2005). In the study of green consumption and sustainable lifestyles, the researchers highlighted that even individuals' who are least environmentally inclined proved to have relatively high scores for PCE (Gilg et al., 2005). Nilsson (2008) who studied on pro-social attitude had proven that PCE has a significant effect on consumers' behaviour for socially responsible investment (SRI). The researcher also concluded that investors who scores high on pro-social attitudes regarding SRI and PCE were expected to invest a larger amount of their portfolio in SRI (Nilsson, 2008).

2.3 Environmental Concern

Environmental issues have caused alarm among an increasing numbers of people all around the world (Schultz, 2001). The world has suffered with significant environmental degradation, including the thinning of the ozone layer, loss of available land for agriculture, depletion of natural resources, global warming, and acid rain (Mainieri et al., 1997; Ramlogan, 1997). Out of this development with the environment, environmental concern is described as an assessment or a person's stance and behaviour towards the environment

(Takala 1991). Fransson and Garling (1999) believe that environmental concern may perhaps refer to a broad general attitude determining intentions, or a more specific attitude directly influence environmental intentions.

Tikka, Kuitunen and Tynys (2000) stated that the arising of environmental issues and the failure to conserve a good environment is due to the overemphasis placed on other value factors, such as political, and socio-economic factors, and lack of attention placed on non-economic values toward the environment. According to Mainieri et al. (1997), people have depended on technology such as alternative or generic resources in order to resolve the environmental dilemmas, rather than changing their own lifestyle and behaviour. However, the researchers stated that consumers should actually adopt environmental activities such as recycling and taking public transport in order to achieve a sustainable environment and to prevent further damage to the environment rather than relying on technology (Mainieri et al., 1997). This statement has also been supported by Chukwuma (1998) who found that public awareness is the most significant determinant influencing the environment, not government policy alone.

Previous researchers who studied on environmental concern has suggested a somewhat disconnected, crude, and weak relationship on environmental measures (Bamberg 2003; Guber 1996). Bamberg (2003) stated that this weak relationship is due to the assumption of past researchers who studied environmental concern as direct determinants, appropriately, they should be studied as an indirect determinants towards a specific behaviour. Fujii (2006) also suggested that individual's behavioural intention is not affected by environmental concern.

There are several researchers who studied on the environmental concern towards racial issues, however, there is a lack of research done on determining other factors affecting black and white consumers' environmental concern (Newell and Green 1997). According to Newell and Green (1997), there are indeed significant differences in environmental concern between blacks and whites, however, this environmental concern gap between different races decreases as education level and income rises. Shen and Saijo (2008) had studied on the socio-demographic factors towards environmental concern in Shanghai and found that men are more concerned in relation to the environment than their female counterparts. The study also resulted in contradicting findings of past researches where the older generation concerns more about the environment compared to the younger generation (Shen and Saijo 2008).

The study of environmental concern has further extended by determining the influence of travelling behaviour towards the variable (Nilsson and Kuller 2000). The study suggested that people who live in a highly polluted area would be concerned more regarding environmental issues compared to those who live in a low pollution area. However, it is studied by other researchers that the reduction of car used is unrelated to environmental concern (Fujii 2006; Nilsson and Kuller 2000). On the other hand, a study conducted in Japan had suggested that to effectively promote pro-environmental behaviour, besides having environmental concern, a person must also have respect for resources (Fujii, 2006).

Figure 1: Conceptual Framework
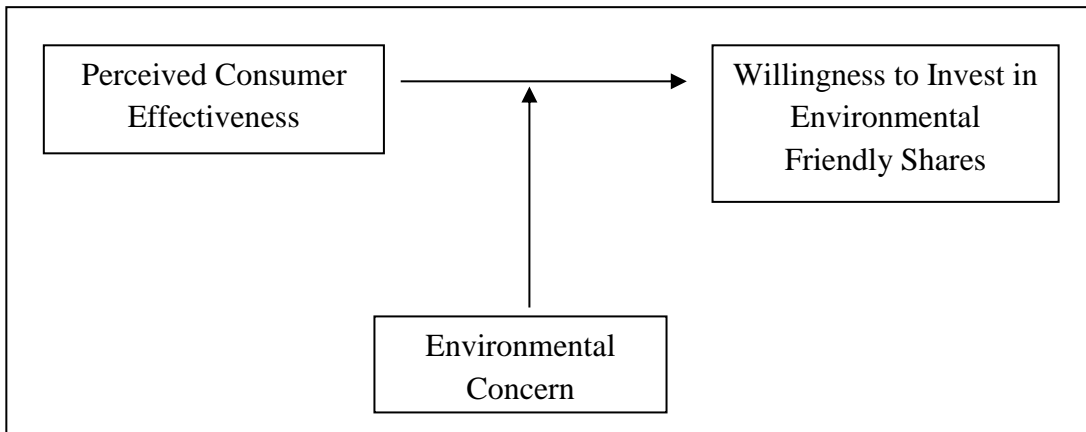
3.0 Research Method

This paper discusses about the data sources, conceptual framework and definitions of variables. This section will also outline the proposed method and statistical analysis to be conducted in the study. As this is a conceptual paper, thus, we will only discuss the ideas and concept about this study and why is it important to research and practice.

Table 1: Dependant variable

Variable	Items	Source
Willingness to invest	W1: stock markets are unpredictable, which is why I would never invest in stocks	(Keller and Siegrist 2005, p. 293)
	W2: I would invest a larger sum of money in stocks	
	W3: the uncertainty of whether the markets will rise or fall keeps me from buying stocks	
	W4: when I hear the word "stocks", the term "possible loss" comes to mind immediately	

3.1 Data Sources

Primary data will be obtained through personal administration where questionnaires are distributed by hand to respondents. This paper uses questionnaire as a means of data collection. The purpose of using questionnaires distribution is to assess the different viewpoints of individual investors' and to gather investors' behaviour toward investing in environmentally-friendly shares. The sampling method that will be used in this research is the purposive sampling method. Purposive sampling is where sample is collected from a specific target group who can provide the desired information. This research will be using individuals' who have an investment account and are currently investing.

3.2 Measurement

The role of corporate environmental strategies on investors' willingness to invest with the underlying determinants will be measured using the five point Likert scale in ascending order

with Strongly Disagree (1) and Strongly Agree (5). The use of Likert scale is to measure how strongly a respondent agree or disagree with the questionnaire statement. A few previous researchers have used Likert scale as their tools for measurement such as the research on Hoffmann and Broekhuizen (2010) and Nilsson (2008).

Table 2: Independent variable

Variable	Items	Source
Perceived consumer effectiveness	CE 1: by investing in SRI every investor can have a positive effect on the environment	(Nilsson, 2008, p. 315)
	CE 2: every person has power to influence social problems by investing in responsible companies	
	CE 3: it does not matter if I invest my money in SRI mutual funds since one person acting alone cannot make a difference (r)	
	CE 4: it is useless for the individual consumer to do anything about pollution (r)	

Table 3: Moderating variable

Variable	Items	Source
Environmental concern	EC 1: I am very concerned about the problem of pollution in general	(do Paco and Raposo 2010, p. 433)
	EC2: I am very concerned about air pollution and the problem of ozone depletion	
	EC 3: I become angry when I think about the harm caused to life by pollution	
	EC 4: when I think of the ways in which firms pollute, I get frustrated and angry	

3.3 Face Validity

These variables had gone through the face validity process where the reviews and comments from six professionals in finance from Malaysia where gathered. These personnel are from different profession, which includes personal banker, customer acquisition and merchant support, financial planner, securities brokers and senior associate. Face validity is a good initial step to undergo scrutiny, and helps researchers in finding impending flaws before going more detailed into the study (Shuttleworth, 2009). There are a few minor mistakes noted by the experts, and the amendments are made.

Table 4: Revised items for face validity

No	Original items	Revised items
W3	The uncertainty of whether the markets will rise or fall keeps me from buying stocks.	The uncertainty of stock markets prevents me from buying stocks.
CE2	Every person has power to influence social problems by investing in responsible companies.	Every person has the power to influence social behaviour by investing in responsible companies.

3.4 Data Analysis Techniques

This paper will be using the Statistical Package for Social Sciences (SPSS) to test and analyze the data collected with a few data analysis tools which includes Cronbach's alpha test and regression test. Cronbach's alpha is used in this research to test the reliability coefficient that shows how well the items in a set of questionnaire are positively correlated to one another. Cronbach's alpha is a measure of internal consistency of how closely related a set of items are as a group (*What does Cronbach's alpha mean,* 2012). Another analysis tool that will be used is the regression analysis. The simplest form of regression analysis involves finding the best straight-line relationship to determine how outcome of the variation (Y), influenced by the predictor (X), where (Y) is the dependant variable and (X) is the independent variable (*Information point: Regression analysis,* 2001)

3.5 Discussion

Perceived consumer effectiveness (PCE) is expected to influence investors' willingness to invest through the moderating role of environmental concerned. There are numerous researchers who have studied on PCE, for example, Berger and Corbin (1992) relating PCE with environmental practices; Lord and Putrevu (1998) on PCE and recycling appeal. Pro-social attitude had also proven that PCE have an effect towards consumers' acting socially responsible on investments (Nilsson, 2008). According to Fransson and Garling (1999), environmental concern refers to an array of attitude determining intentions, or a more specific attitude that influence environmental intentions. Thus, it is deemed that environmental concerned can be best suited as a moderating variable bridging PCE and investors' willingness to invest in environmentally friendly shares. Most of the literatures are tested on environmental practices being the dependent. This paper however posits that willingness to invest is influenced by PCE and moderated by environmental concerned.

4.0 Expected Significance

4.1 Significance to Research

As can be seen from past literature, PCE were studied in various "green" field, for example PCE and recycling (Lord and Putrevu, 1998), PCE and ecologically conscious consumer behaviour (ECCB) (Roberts 1996; Straughan and Roberts, 1999). However, the approach of this paper is relatively new where it examines the linkage between willingness to invest and PCE, with environmental concern as the moderating variable. This paper contributes to the literature on behavioural finance which is an essential aspect as it gives a better clarifications to existing research as the variables in exiting work is rather isolated. Further justification on this relationship has to be examined, and whether this has implications for behavioural finance.

4.2 Significance to Practice

This research is useful for securities brokers as they may adapt and analyze further improvements in their brokering services. Furthermore, brokers can distinguish the important factors that influence investors' willingness to invest and guide investors in managing their investment portfolio. Furthermore, this research is believed to be useful to individual investors as they can refine their investment portfolio better.

5.0 Conclusion

PCE has proven to have an influence on consumer behaviour as a number of findings have found to correlate with pro-social consumer behaviour (Nilsson, 2008). Indeed, there are studies that linked PCE with other factors and suggested that PCE was the major factor influencing consumer behaviour (Roberts 1996; Straughan and Roberts, 1999). As supported by Nilsson's (2008) findings, this has established the need to look at the role of PCE environmental friendly shares. In addition to that, environmental concern is recognised as a moderating variable to test the relationship between PCE and investors' willingness to invest. Thus, if investors are concern towards the environment, and they support the act of investing in environmentally-friendly shares, then, they will support these firms by investing in their shares.

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Land is Development: A Developmental Sustainability for Trade Integration for Africa's Advancement

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Abstract

For centuries development in Africa has been determined and influenced mainly by the Western countries which were colonisers of this continent. As a result Africa's identity as a "Third World Beggars" continues to be reconstructed through various ideologies such as neo-liberalism that is authenticated in various policies of the International Monetary Fund (IMF), World Bank. The paradox of Africa as "Third World Beggars" as well as its lack of developmental sustainability could also be attributed to what NEPAD has identified as lack of good governance. The focus in this article will be on good governance, sustainability, as well as trade and development aid and argue that for developmental sustainability to be achieved, the questions of land redistribution, integrated education and trading are fundamental to Africa's development. Furthermore, the above are key concerns that ought to be taken seriously. Three recommendations will be outlined as possible models for Africa's developmental sustainability. A conclusion will be drawn from the discussion above as well as future challenges such as: one of the compelling questions: is Africa in need of a New Liberation?

Keywords: Good governance, development, sustainability, corruption, funding policies, trade and development aid and liberation

1.0 Introduction

This article will attempt to argue that the identity of Africa as a Third World Beggars is based on the ideologies of neo-liberalism, imperialism. These ideologies are crafted in the policies of the IMF and the World Bank that continues to marginalise Africa. As a result Africa developmental aid has been utilised to perpetuate such an identity simply because the land does not belong to its inhabitants. The questions on land redistribution, and education are fundamental for Africa to advance, without prejudice to the inclination towards timocracy disguised in the notion of democracy.

2.0 Development and Sustainability

In April 27 of 1994, South Africa experienced a paradigm shift in its political dispensation as it went through the first democratic election. As a result there was a sense of 'the fear is gone, the fear is gone', yet deep down the question had to be answered is that fear gone? Eighteen years into democracy, issues of development have not yet been achieved this is because South Africa seems to have two types of citizenship 'the rich and the poor', the rich becoming richer and the poor remaining poorer. In his article: *The death of democracy and the resurrection of timocracy*, Ramose argues that "ownership of wealth determines and defines power" (Ramose 2010, p. 291), the influence of the IMF and the World Bank that is characterised by ownership of wealth and power exacerbates the conditions in which Africa

finds itself. The argument will demonstrate that such wealth is continued to be extracted from the African continent. While power in the West is based on the ideology that they are the "*first world countries*" and therefore they have the privilege to determine the future and sustainability of Africa in the name of neo-liberalism. Ramose uses *timocracy* in relation to "property or wealth determines and defines the nature and extent of political power" (Ramose 2010, p. 292). The underdevelopment of Africa as argued above lies in the political power of the West, precisely because, of the centrality of money and accumulation of wealth. Yet, at the same time, Africa's leadership lacks political will and framework to use in order to deconstruct and reconstruct the path which Africa should take with regard to developmental sustainability. This framework will not only sustain development but will integrate it. Firstly, for development to be sustainable it has to deconstruct the previous models that have for decades led the majority of the people to be underdeveloped. In other words, it has to reflect Africa in character, addressing the underdevelopment of the African people. The current development in Africa is under the spotlight mainly influenced by the IMF and the World Bank. Evans cited in Ware, refers to "deconstruction" as revision, in other words it is "both iconoclastic and constructive, dismantling intellectual systems for the purpose of exposing new possibilities for thought" (Ware 2002, p. 33).

When development is understood within the context of Africa or South Africa, it therefore challenges the ideological impositions of neo-liberalism and imperialism, through the policies of the IMF and World Bank that continues to maintain the status quo of the privileged. It further takes into account that for it to be sustainable, it ought to focus on the historical, socio-political, socio-economic, cultural and intellectual development of the black people (Ware 2002). What Evans is advocating is what one would refer to as decolonisation (Ware 2002); we borrow the term from Dibinga Wa Said, who defines colonialism as 'slavery' (Dibinga Wa Said 1971, p. 501). For development to be achieved one has to first begin the process of decolonisation, this includes challenging terms and conditions of development aid. The development aid in other words is the form of dominating the poor in the sense that they end up not owning their destiny. Secondly, its point of departure is to scrutinise the extent to which imperialism and neo-liberalism affect its intentions. Thirdly, it puts into question one of the major problems of developmental aid, where the poor have no significant voice and role with regard to the acquisition and utilisation of such aid. In other words, it does not only question the timocracy of the West but it puts into question the participation of its leaders. Fourthly, the resistance of the poor by striking back, this for them becomes a new struggle. It is a struggle that is characterised by various protests over lack of service deliveries that are infringing sustainable development. This view is summarised by Gumede in the following manner (Gumede 2008, p.370):

> If delivery remains slow and the ANC continue to choke internal descent, the first faint stirrings of new resistance struggle could turn into something of far greater magnitude. If the deep inequalities of the past are not rectified soon, a full a blown and devastating uprising of the poor could be at hand.

Recently in Kigali, the World Bank held a meeting (March 15, 2012) with more than 100 Members of Parliament from 40 countries with one thing in mind, which is to 'improve the business environment on the continent by reviewing legislation linked to governance, trade barriers, and regional infrastructure in a bid to strengthen sustainable private sector development' (www.worldbank.org).

3.0 *Mphe mphe o a lapisa*[1]

The fundamental question that could be posed is; in what way is development aid for the poor? One can therefore deduce that developmental aid is the survival of the fittest. This is precisely because developmental aid is not for Africa; firstly, it provides work for the US citizens. Secondly, identified non-governmental organisations provide work for the US citizens. Lastly, the 'aid' that is said to be assisting ensures that money remains in the US. At the heart of neo-liberalism and imperialism is the concept of survival of the fittest. Moyo argues, since development aid as argued above continues to make Africa dependent on the super powers (West) as a result it renders the poor to be voiceless, (Moyo 2009). He further maintains that "the absence of political voice due to lack of financial resources means that money is central to development, to the extent that it determines who survives and who does not" (Moyo 2009, p.67).

In other words instead of focusing on the people it maintains the status quo at the expense of the poor. This is clearly evident from the Kigali meeting mentioned above which its intention is to simply ensure that the super rich continue to maintain their wealth while the poor remain poorer. The fact that the MPs in that meeting discussed issues on how to boost macroeconomic stability by promoting legal and regulatory reforms meant encouraging productivity was to ensure that private investments are safe and protected through the efforts of the poor. Such a tendency leads to corruption and lack of good governance. While its aim is to *lift and eradicate poverty and through development* on the one hand it is evident that the failure to do so could be attributed to lack of good governance on the other. At the same time NEPAD acknowledges that part of Africa's problems is lack of good governance. Akokpari observes the following regarding lack of good governance in Africa based on the analysis of the World Bank (Akokpari 2004, pp. 243-263):

> "In the early 1980s, the World Bank (1981) attributed sub-Saharan Africa's lack of development to the absence of good governance. This led to a combined search by Africans and the dominant International Financial Institutions (IFIs) for solutions to Africa's persistent crisis of governance, a search that culminated in the adoption of the ubiquitous Structural Adjustment Programmes (SAPs). SAPs, however, failed to spawn good governance, allowing miss-governance and human right violations to continue unabated".

On the contrary, good governance does not translate into lack of corruption or strengthens democracy. While those who espouses good governance as a condition for aid such an assumption is a fallacy, precisely because of the arguments that have been presented above, that is good governance does not equal no corruption or stable democracy. Rather as Easterly points it out that "money is the means of corruption and corruption sub-serves the purpose of accumulating more money (Easterly 2006, p. 129). Soros further observes this idea in the following manner (Soros 1998, p. 204):

> "There has always been corruption, but in the past people were ashamed of it and tried to hide it. Now that the profit motive has been promoted into a moral principle, politicians in some countries fell ashamed when they fail to take advantage of their position".

It is therefore not surprising that the poor continue to be economically dependent and further marginalised. We would argue that perhaps at the heart of development is the question

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[1] It is a Setswana idiom that literally means it is tiring to keep on borrowing rather than owning and not being dependent.

whether development aid should continue or not (Moyo 2009), taking into cognisance the impact of development aid on the poor. While on the contrary Hancock maintains an argument that the answer is that "the lords of poverty must depart" (Hancock 1989, p. 193). This simply means that as a people they have no contribution whatsoever all what they do they cost the wealthy. At the same time the World Bank has pledged to invest on people in Africa. This investment from the World Bank is based on human development and not so much on infrastructure. Certainly this refers to education as well as skilled and knowledgeable workforce that will contribute to the economic productivity. As a result this ensure basic essentials such as health and education are a priority which will give rise to the right skills for jobs, that people are protected from poverty and hunger (http://www.worldbank.org/website/external/countries/Africaext/0,,prin).

While on Social Protection about half of the people of Sub Sahara live on one dollar twenty five cents or less a day and this has left millions vulnerable. Unemployment is another pervasive matter especially among the youth. It is on the basis of the above that Social Protection is important as it will extend to the security of the poor people and this may empower them to build both their human as well as physical capital particularly in time of crisis. From the year 2000 to 2010 the World Bank was able to fund at least sixty social protection plan programs in around and this has gone to 23 countries in Sub-Sahara (e.g. Ethiopia and Nigeria). This operation was done through the technical assistance of governments which helped form country form strategies for social protection (http://www.worldbank.org/website/external/countries/Africaext/0,,prin).

4.0 Land and Development

For the sake of this paper we will define land in the following manner: firstly, land consists of agriculture, secondly land is mineral resources, thirdly is it the marine and lastly an inhabitable space above surface. At the heart of development is the issue of land. One of the fundamental problems is the majority of the people who are unable to develop and sustain development precisely because they have no land. Therefore it is important to argue and maintain that the defined identity of Africa as a *Third World Country* of beggars is rooted in the fact that Africans do not own the land. Lack of ownership translates into lack of development, which is based on agriculture and natural resources. Pheko argues from his *land is money and power* that without land one cannot develop. In other words as long as the African people are still landless, poverty, squatting and unemployed one cannot speak of development. It is imperative to see sustainable development within the paradigm of land redistribution. This view is summarised by Pheko in the following manner: "If land is not important, why are the Oppenheimers, De Beers and others not prepared to give up land on which gold, diamonds, platinum, uranium are mined? Loss of land meant loss of sovereignty, power, status and wealth" (Pheko 1998, p. 12).

Holomisa supports Pheko's view that land is a source of livelihood and that it is aptly referred to as mother earth. In the context of Africa, land is not owned by any individual but by the collective for the benefit of each and every member of the community (Holomisa 1998). At the same time most of the communally land in South Africa is tribal owned. While nominally most of the land is owned by the State as trust for the community. This has created a situation where in most of the white people and other races legally enjoy individual ownership of pieces of land without any government assistance, with the exclusion of Africans. Holomisa takes his argument further on the issue of development that: "the community system of land tenure provides the poorest of the poor with secure tenure which

cannot be arbitrarily alienated. Financial institutions and property developers cannot lay their hands on it. Communal land cannot be mortgaged and is thus not susceptible to confiscation in the event of a defaulter failing to repay a loan" (Holomisa 1998, p. 91).

Walker makes the following argument regarding sustainable economic development (Walker 2007, pp. 132-150):

> "The target that the government has set for land reform, that of transferring 30 per cent of commercial farmland to African ownership by 2015, is inadequate as an indicator of success if sustainable economic development and the reduction of rural poverty are primary concerns".

Walker's argument is that one cannot therefore speak of sustainable economic development without taking into cognisance the land issue. Makhura and Mokoena take Walker's argument further that (Makhura & Mokoena 2003, pp. 137-148):

> "The land reform programme in South Africa is currently not redistributing land as envisaged rate. Potential ways to improve this situation would be to provide incentives to motivate high-value commodity production, and to create access to grazing rights for small-scale livestock farmers. It is hoped that the new Land Redistribution and Agricultural Development programme will lead to greater access to productive resources".

5.0 Religion a Vehicle of Imperialism or Development?

The Christian Religion in the context of Africa has been a vehicle of imperialism which has effected and affected development as a result is has rendered Africa a Third World Beggar, through political, economic and social resource. Consequently as Holomisa observed as cited above it fractured the communal aspect and understanding of development. Yet at the same time religion in the context of South Africa was a resource for colonialism, oppression and liberation for over 300 years. It is for this reason that Gillan raises a question regarding the land rights He examines the issue of land restitution in South Africa and argues that those in the rural landless communities are able to articulate their stories which have led him to conclude that there are no voiceless players in the struggle for land restitution (Gillan 1998, p. 105). This view is shared by Gumede regarding the new struggle of the poor as discussed above (Gumede 2008). One of the observable trends in South Africa regarding development is what Gillan refers to as 'conflict of interpretations', this is based on the understanding of development in the African and Western notion (Gillan 1998, p. 105).

6.0 Education is Development

For development to be sustainable education is the key. In the environment of South Africa regarding education there appears to be 'conflict of interpretations' in terms of the impressions of learners about their constitutional right. According to Madise and Lebeloane the Bill of Rights found in chapter 2 of the Constitution Act No 08 of 1996 of South Africa asserts the values of human dignity, equality and freedom (Madise and Lebeloane 2012). The following Acts, Child Act No 74 of 1983, the Domestic Violence Act 116 of 1998 and the South African Schools Act No 84 of 1996 address the values of human dignity, equality and freedom for all citizens of South Africa including its learners (Madise and Lebeloane 2012). Madise and Lebeloane observe that though there are such are such Acts in the Constitution of the land, it is evident that the learners do not take their right to education seriously; neither do they acknowledge that the government is the provider at the same time of compulsory education (Madise and Lebeloane 2012). Based on their assertion it can be argued that with

such a view of 'conflict of interpretation' the urgency of moving from dependency syndrome towards sustainable development seems unlikely to be achieved.

7.0 Recommendation

We would therefore suggest five possible approaches for Africa's sustainable development and integrated trade for its advancement. Firstly, governments of the SADC (Southern African Development Communities) region have to move from marginalising sustainable development by not implementing articulating seriously the objectives and coherent strategies as well as implementation (Victor, 2006). Secondly, based on the assertion above in terms of conflict of interpretation regarding the rights of learners towards education, education has to be integrated within the region and that Higher education has to train students for the whole of SADC rather than for a particular country. This will address problems identified by Unesco that 19 out of 44 countries, more than half of all the children will not complete primary school (Unesco, 2005). Thirdly, a move from timocracy to an African view of development that is community oriented is essential. This movement will enable Africa to put into question whether there is a need for a new struggle or not. Fourthly, the use of African epistemology through idioms and proverbs in order to deconstruct, the social construction of race which suggest that blacks are in some sense genetically inferior (West, 1999). Lastly, change of mindset regarding development as belonging to the West *par excellence* and this will lead to the restoration of African values and Human dignity that anchors on 'truth is like a baobab tree'.

8.0 Conclusion

In this article we have argued that ideologies such as neo-liberalism, imperialism are embedded in the policies of IMF and World Bank that continue to define the identity of Africa as a Third World and thus making Africa a world of beggars. Such policies have made it to be impossible for Africa to develop and to sustain its development. We have therefore advocated for land redistribution and a movement from isolated framework of development to an integrated one based its starting point from SADC. For as long as Africa operates on the ideology and philosophy that advocates *cogito ergo sum* (I think therefore I am) rather than *cognatus sum, ergo sumus* (I am related, therefore we are), (Ramose, 2010) Africa's development and trade is in vain. Perhaps the fundamental question is "is Africa in need for liberation?"

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Agriculture Co-operatives Society in Perak: Role of Education Background and Training Attained on the Competency of BOD

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Abstract

Several weaknesses were highlighted during the post-mortem on the National Cooperative Policy 2002-2010. Among the weaknesses highlighted were low entrepreneurship skills, lack of understanding among members of the cooperative and lack of professional management. The targeted key performance indicators (KPI) for the Core Strategic V of National Cooperative Policy 2011 – 2020 stated that, at least 90% of the co-operatives have audited annual financial report and 90% of the co-operatives conduct the annual general meeting. This study addresses a question, does educational background and training attained has a relationship with the competency of the BOD in ensuring the effectiveness of financial reporting? Based on previous literature, competency is believed to be influenced by individual educational background and training attended. 42 cooperatives on agriculture based in the whole state of Perak were selected in this study, however only 258 questionnaires were returned. Hierarchical regression analysis technique was used, and the result shows that there is a significant relationship between education background and training attained by the BOD member with their competency in managing the agriculture co-operative society activities in state of Perak. The study has expended the frontier of application of the Organizational Effective Theory put forth by many scholars specifically on Co-operative Society.

Keywords: Competency, effectiveness, education background & training attained

1.0 Introduction

The primary purpose of a co-operative movement is to improve the economic conditions of its members. A co-operation seeks to unite its members with a communal feeling and a common concept of the standards of morality and social life (Orizet, 1969). In Malaysia, the setting up of co-operative was initially influenced by the plight of rural rice farmers who had to sell their produce to middlemen - a system known as *Sistem Padi Kunca* (Malaysia Co-operative Societies Commission, 2010). Currently, the number of co-operative members in Malaysia is approximately seven million; i.e. 25% of the total population of the country, consisting of various levels and different backgrounds of the Malaysian communities. It started with nine *Sharikat Bekerja Bersama-sama Jimat-cermat dan Pinjam-meminjam* in 1922, and the figure increased to 7,215 by the end of 2009. From 2005 to 2009, the number of co-operatives increased at an average of 9.4% a year, membership at 4.7%, share capital at 8.2%, asset at 20.8% and revenue at 17.0% a year. In 2009, there were 7,215 registered co-operatives with members totaling 6.78 million; share capital amounting to RM8.97 billion; and assets reaching RM65.0 billion. With the resources and financial strength, the co-operatives had managed to generate revenues amounting to RM 8.92 billion in 2009 (Malaysia Co-operative Societies Commission, 2010).

1.1 Problem Statement

Several weaknesses were highlighted during the post-mortem on the National Cooperative Policy 2002-2010 (Malaysia Co-operative Societies Commission, 2010). Among the weaknesses highlighted were low entrepreneurship skills, lack of understanding among members of the cooperative and lack of professional management. Therefore, in the Core Strategic V of National Cooperative Policy 2011 – 2020, supervision and effective enforcement are mandatory to strengthen the co-operative movement. Among the targeted key performance indicators (KPI) for the Core Strategic V are at least 90% of the co-operatives have audited annual financial report and 90% of the co-operatives conduct the annual general meeting (National Cooperative Policy 2011 – 2020, 2010). The above statement indicates that currently many co-operatives are still unable to produce and present audited financial reports as well as to conduct annual general meeting in time as per required by the Co-operative Act.

During the meeting with the Senior Assistant Director of Perak Malaysia Co-operative Societies Commission, he addressed several issues that hampered the effectiveness of co-operatives in the state, Chan H.T (personal communication, October 26, 2010). Among the issues highlighted in the commission report as well as in the co-operative auditor's reports are as follows.
1. Audited Annual Financial Report were not prepared and submitted on time, and therefore Annual General Meeting (AGM) was unable to conduct.
2. Documents and business transaction records were not properly kept and many records were incomplete.
3. Lack of proper records and control over inventories and assets.

As a result, it becomes virtually impossible to prepare a true and fair statement on financial activity of the co-operative. This situation will cause delay in preparing financial statement and of course, lead to delay in conducting the Annual General Meeting as required by Co-operative Society Act 1993(Act 503) and Regulations. The issues raised constitute a threat towards fulfilling the obligations to improve the livelihood of the members of the co-operatives.

1.2 Research Objective and Research Question

The objectives of the study are to: 1) determine the reasons that contributed to 58.8% of agricultural co-operatives in 2009 failed to submit their audited financial report on time as per required by the Co-operative Society Act 1993(Act 503) and Regulations, 2) determine the reasons that lead to business documents are not properly kept and the contents are incomplete, 3) determine the factors effecting lack of proper records and control over inventories and assets, 4) study the level of competencies, commitment, integrity, and accountability of Board of Directors in agriculture co-operatives (on the effectiveness of financial reporting), and 5) study the effect of organizational support and document handling system (on the effectiveness of financial reporting).
The study addressed three research questions.
1. Do educational level and training relate to the competency of the BOD in ensuring the effectiveness of financial reporting?
2. Do competency, commitment, integrity and accountability of BOD relate to the effectiveness of financial reporting?

3. Do organizational support and document handling system have a relation (act as a moderator) between BOD's competency, commitment, integrity and accountability with the effectiveness of financial reporting?

However, for the purpose of this paper, only the first research question, i.e. The relationship between BOD educational background and training attained with their competency in ensuring the effectiveness of financial reporting will be discussed.

1.3 Effectiveness of Financial Reporting

Referring to Part Vll section 59 (1) of Co-operative Society Act 1993(Act 503) and Regulations (as at 25 November 2009), every co-operative society needs to produce an audited financial statement at least once in every calendar year, and to be tabled in its annual general meeting. Therefore, in the context of this research, effective financial reporting refers to the capability of the co-operative in complying with the Part Vll section 59 (1) of Co-operative Society Act 1993(Act 503) and Regulations (as at 25 November 2009). The act requirement is in line with the models of Organizational Effectiveness as suggested by Cameron (1986), where an effective financial reporting can be categorized under Strategic Constituencies Model due to its clear explanations that the constituencies possess a strong influence on the organization as well as it has to simultaneously respond to demands.

2.0 Literatures Review

It cannot be denied that individual characteristics and capabilities play an essential role in virtual settings in determining the overall team or organizational performance as highlighted by Martins, Gilson & Maynard (2004). Kock (2004) stated that in order to make individuals and their limited capabilities a potential bottleneck in reaping benefits, the novelty of virtual work will induce the gaps between individuals' existing cognitive structures and the ones needed to perform work in order to achieve the objectives of the organization. Therefore, Powell, Piccoli, and Ives (2004) suggested that individual characteristics needed to be taken into consideration, besides maintaining a task–technology–structure fit. Referring to Marcolin, Compeau, Munro and Huff (2000), to achieve optimal performance, organizations need to align individuals with tasks, technology, and organizational structure. This is due to the fact that such an alignment cannot be achieved without the understanding of the individuals and individual characteristics. Therefore, it is essential to have such characteristics on BODs member for the successfulness of the co-operative society.

In management literature, it has been observed that competency, commitment, integrity and accountability are the independent variables which contribute to effectiveness in performance (Martins, Gilson & Maynard, 2004; Kock ,2004; Powell *et al*., 2004; Marcolin, et al., 2000). Competency is a measurable characteristic that can be explained in terms of ability and willingness to perform a task, generic knowledge, motive, trait, social role, or skill of a person which have a relationship with the effective performance in a specific job, organization, or culture (Hayes 1979; Hay Group 2001).

Boyatzis (1982) defined the term 'competency' as individual characteristics that influence and lead to effective or superior performance in a job. In literature, based on Garavan & McGuire (2001), and Viitala (2005), the term "competency" is associated with multiple meanings depending on the context and perspective of the term being used. Heffernan and Flood (2000), Brophy and Kiely (2002), stated that, competencies are made up of levels of

knowledge, attitudes and skills that are related to individual's ability in performing their tasks. Elkin (1990), Stuart & Lindsay (1997) was suggested that they should be regarded as complementary because each approach has its own strengths. Spencer and Spencer (1993) mentioned that individual competence is an important precursor to individual performance. Competence refers to the state of having the necessary ability, motivation, skills, and knowledge that guide action (Kraiger, Ford & Salas, 1993, Spencer and Spencer,1993). This definition concludes that individual competence is specific in nature due to the different contexts which may require different sets of ability, motivation, skill, and knowledge (Marcolin, Compeau, Munro, & Huff, 2000). It is strongly believed that the success of an organization relies on the quality of its employees (Dubois & Rothwell, 2004, Kellie, 1999). However, it is a difficult task to determine which employee's abilities significantly contribute to its success. As a result, a number of organizations adopt a competency model as a human resource (HR) strategy (Athey & Orth, 1999; Lucia & Lepsinger, 1999; Rothwell & Lindholm, 1999). A competency model contains a detailed description of the knowledge, skills, and characteristics that distinguish exemplary performers (Lucia & Lepsinger, 1999; Rothwell & Lindholm, 1999). Applying this model which is in line with an organization's strategic plan to HR practice such as recruiting, staffing, training, performance management, employee assessment, and compensation, an organization may be able to improve human performance (Rodriguez, Patel, Bright, Gregory, & Gowing, 2002; Gangani, McLean, & Braden, 2006).

Most of the literatures discussed conclude that knowledge and skills are among the necessary components of competency for instance Draganidis and Mentzas (2006), Hillman and Dalziel (2003), Lucia and Lepsinger, (1999). Referring to the competency in managing the effectiveness of financial reporting, it is noted that basic knowledge and skills in financial are also required by the members of the board.

2.1 Education and Competency

Literatures in both labor economics and organizational sciences confirmed that there is significant evidence that individuals' educational background has a relationship with positive career outcomes including salary, promotions, career development opportunities, and job mobility (Cappelli, 2000; Howard, 1986; Ng, Eby, Sorensen & Feldman, 2005). Therefore, many organizations have viewed education as an indicator of a person's skill, level or productivity (Benson, Finegold, & Mohrman, 2004). Referring to Hunter (1986); Ree, Earles, & Teachout (1994), ability or competency has generally been discussed in terms of an individual's power, strength, or capacity to perform a task. The findings show that individuals with higher level of background education have both greater fluid and crystallized intelligence (Ceci,1991; Neisser, Boodoo, Bouchard, Boykin and Body, 1996). On the whole, it was justified that intelligence and education level are positively and significantly correlated (Kaufman, 1990; Trusty & Niles, 2004). Another research conducted by Ng and Feldman (2009) which studied the manner education contributes to job performance found out that there was a positive relationship with task performance. It was also discovered that education level was positively related to citizenship performance.

Education level refers to the academic credentials or a degree an individual has obtained (Ng and Feldman, 2009). Education promotes core task performance by providing individuals with more declarative and procedural knowledge with which they can complete their tasks successfully. Referring to McCloy, Campbell, and Cudeck, (1994), knowledge typically refers to the understanding of information related to job duties. Campbell (1990) have

differentiated two forms of knowledge: declarative and procedural knowledge. Declarative knowledge refers to expertise regarding facts, rules, and principles. Procedural knowledge refers to the application of declarative knowledge in practice (Ree, Earles & Teachout, 1994).

By and large, intelligence and education level are positively and significantly correlated (Kaufman, 1990; Trusty and Niles, 2004). People or individuals with high or more education are also likely to have greater in depth, analytical knowledge (crystallized intelligence) as well (Ceci, 1991). Ng and Feldman (2009) found in their study that education level was positively related to task performance. However, they found that education level was very weakly related to performance in training programs. In two other major studies, Hunter and Hunter (1984) and Schmidt and Hunter (1998) conclude that cognitive ability was strongly related to job performance and was an important contributor to success virtually on every job. Hunter (1986) also suggested that cognitive ability facilitates the learning of job-relevant knowledge and indirectly promotes stronger job performance as well.

Shaikhah, Sarmad, and Wafi,(2009), based on their comparative study on the effect of education and training on competency concluded that other than training, education is one of the important factors that affects competency. Even though some of the studies show the irrelevance of education and work competency since they do not design education with market needs in mind (e.g. Jorgensen, 2004; Lave and Wagner, 1991). Shaikhah *et al*. (2009), argued that education acts as the theoretical foundation of knowledge which later used by the individuals to build organizational knowledge in the future.

Siegel, Persellin and Rigby (1992) had also carried out a research to provide empirical evidence concerning the relations between the education background of individuals and their professional performance while working in the tax practice. It was found out that the result was consistent with the prior suggesting that post-baccalaureate (with Master of Accountancy and MBA) education is associated with higher professional performance. Much earlier research in this area had also examined the correlation between graduate education and performance on professional exam (Dun and Hall, 1984). The results showed that those individual who had a post-baccalaureate education background scored significantly higher on CPA examination compared to individuals with only a bachelor's degree. Other studies also generally found out a similar relationship between post-baccalaureate education and professional exam scores (e.g. Leathers, Sullivan and Berstein, 1982; Titard and Russel, 1989; Kapoor, 1988).

2.2 Training Attained and Competency

With rapid changes in global marketplace which are characterized by the increase of technological advancement, organizations demand a more flexible and competent workforce to be adaptive and to remain competitive. Therefore, to survive in the current business environment, the demand for a well qualified workforce becomes a strategic objective (Nikandrou, Apospori, Panayotopoulou, and Papalexandris, 2008). In order to achieve organizational goals and create competitive advantage, Peteraf (1993) suggested that an organization's human resource training and development (T&D) system functions as the key mechanism in ensuring the knowledge, skills and attitudes necessary is in line. Currently, the intensification of global competition and the relative success of economies cause the organization to focus more on training. This has resulted in the recognition of how importance training is in the recent and future years (Holden, 1997).

Training is a means of improving workforce utilization and therefore it can potentially and positively raise job satisfaction (Melanie, Richard, Paul and Peter, 2009). Dearden, Reed and Van Reenan, (2000, 2006) measured the impact on productivity which directly employed a panel of British industries over the period of 1983 to 1996. The results revealed that one percentage point increase in training was associated with an increase in value-added per hour of about 0.6 per cent, but an increase in wages of only 0.3 per cent. Melanie *et al*., (2009) had discovered evidence which proved that training is positively and significantly associated with job satisfaction and that job satisfaction is positively and significantly associated with the workplace performance on most measures of performance carried out. In order to improve establishment performance, employers should increase the volume of training and make effort to raise the job satisfaction of the workforce.

Based on the study, Shaikhah *et al*., (2009), has concluded that, training has an effect on competency. The effect of training on competency has been researched by many authors including Emad and Roth (2008), Smith, Smith, Pickersgill and Rushbrook, (2006), Lewarn (2002), etc. As evidence, some countries have integrated competency-based training into the national education system (Lewarn, 2002). Referring to Emad and Roth (2008), England had introduced the national vocational qualification (NVQ) in their national education system, and then later followed by Scotland, Wales, Australia, and New Zealand. In Australia, the government had also introduced a system known as the Vocational Education and Training (VET) scheme.

Many studies had been carried out earlier and found that there were positive connections between various T&D practices and different measures of organizational performance (for example, Delery and Doty 1996; Becker and Huselid 1998). The study carried out by Bartel (1994) on the effects of training on productivity found an evidence of a direct link between the two. Furthermore, it has been identified there is a direct correlation between increased training activities and improvement in employee productivity, firm profitability and shareholder value in both short and long term. Trained employees have been identified to affect performance (Russell, Terborg and Powers 1985). Surprisingly, a study conducted by Nikandrou *et al*. (2008) on training and firm performance in Europe revealed that none of the T&D activities were found to have any significant relationship with firm performance.

Lee, Park, and Yang (2010), in their research had also discovered that there is a positive relation on specific training and development plan for process on improving individual performance. It seems that proper training increases the competency of the individuals in relation with the organization's performance. The finding is in correlation with the suggestion by Gangani, McLean, and Braden, (2006), where the Human Resource department can make use of this information to identify current and potential future competency gaps and adapt for training and development strategies. However, based on the discussion made by Shaikhah *et al*. (2009), education and training are not the only two factors affecting individual competence. There are other factors that should also be considered. Among the factors suggested are personal characteristics, the environment in which individuals are exposed to, and the environments that they work in are considered important factors. All these factors play important roles in an individual's competences. Based on the discussion above, education and training may have relationship with individual competency in a co-operative society. In this research, it was believed that BOD competency has a relationship with the effectiveness of co-operative financial reporting.

3.0 Methodology

This research primarily relies on primary data. Since Perak has the second largest number of registered co-operatives and also due to the accessibility to the data, Co-operatives in Perak were chosen for this study. However, the survey is only on Agriculture Co-operatives due to its' second largest co-operatives in Perak and on oil palm-based co-operative activity. In Perak, out of 190 agricultural co-operatives, 56 agricultural co-operatives are involved in oil palm activities covering an approximate land area of 5,803.45 hectares. Juring A. IDI (personal communication, January 24, 2011). The respondent groups that serve as data sources are board members of agriculture co-operatives in Perak. There were altogether 138 registered agriculture co-operatives in Perak scattered all over in 7 districts in the state for the year 2010 (Perak – Malaysia Co-operative Societies Commission, 2010). The co-operatives were managed by average at least a total of 1,380 of board members (138 x 10 BOD on each Co-operative). The decision on the number of subjects from a co-operative included in the study was based on proportionate sampling. For each selected co-operative, all members of the BOD were taken as a research sample. For the research purpose, the total number of population taken was 1,400 members of the board based on the average requirement; ten members of BOD from each co-operative (cooperative act 1993, for each co-operative the required number of BOD was a minimum of six persons and a maximum of 16 persons). Based on number of population (N) of 1,400 people (figures provided by the Malaysia Co-operative Societies Commission, State of Perak for the year 2010), the number of sample (n) determined is 302 respondents. The sample size was determined from a given population by Krejcie and Morgan, (1970). However, 456 questionnaires were distributed to 42 selected cooperatives which are more than the minimum requirement for number of respondents. Convenience sampling is used to obtain a large number of completed questionnaires quickly and economically (Conveniencesampling.net). However, out of 456 questionnaires distributed, only 258 questionnaires were returned by 26 cooperatives,

Hierarchical regression analysis is chosen as the method of testing the contingent effect of the congruent relationship between education and training with competency. This technique is chosen over others because of its simplicity (Kenny, 2008). A major advantage of hierarchical regression analysis is that it allows a unique partitioning of the total variance in the dependent variable that is accounted for by each of the independent variable. The hierarchical regression technique is better than other techniques in a situation where the independent variables are highly correlated (Cohen and Cohen, 1975). Problem relating to multi-collinearity can be avoided since the previous independent variable has been partial from the relationship between each independent variable and dependent variable. Hence, the hierarchical regression technique allows the evaluation of the contribution of each independent variable without losing the importance of each variable toward the regression model.

In the hierarchical multiple regression method, we need to determine the order of entry of the independent variables based on theoretical knowledge. In this analysis, data on education background was entered fist than followed by data on training attended by the BOD members. The order of the entry was made based on study done by Emad and Roth (2008); Lustri (2007); Smith *et al*., (2006), Jorgensen (2004), Lewarn (2002). Even though their research are on education and competency (i.e. Jorgensen, 2004; Lave and Wagner, 1991, and on training and competency (i.e. Emad and Roth, 2008; Smith, *et al*., (2006); Lewarn, 2002), however there were an agreement where education is the basic necessity in human

daily social life. Training later come in as tool to make workers more efficient, effective and productive in performing their task.

4.0 Analysis and Findings

The result shown that the correlation coefficient R (0.140) of Model 1 is moderate and that the correlation coefficient R changes to higher value of .555 in model 2 with the inclusion of training attained variable. It implies that an increase in the level of training attended is likely to increase the BOD' competency of Agricultures Co-operative Society in Perak. The analysis also indicates that there is 28.8 percent actual increase in R square value (from 2 percent to 30.8 percent). In other words, training attained explains for the additional 28.8 percent in the variation of the BOD' competency. The increased is significant with $F = 5.119$, $df = 1$, and $p = 0.000$ ($p < 0.05$). Therefore, BOD educational background and training attended has a significant relationship with the BOD' competency in ensuring the effectiveness of financial reporting.

Table 1: Result of Regression Analysis (Model 1 and 2)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.140[a]	.020	.016	1.31050
2	.555[b]	.308	.303	1.10309

    a. Predictors: (Constant), Training,
    b. Predictors: (Constant), Training, Education,
    c. Dependent Variable: Competency

Table 2: ANOVA Test Statistic for Model 2

Model		Sum of Squares	df	Mean Square	F	Sig
	Regression	8.791	1	8.791	5.119	.025[a]
	Residual	439.658	256	1.717		
	Total	448.450	257			
2	Regression	138.161	2	69.080	56.771	.000[b]
	Residual	310.289	255	1.217		
	Total	448.450	257			

    a. Predictors: (Constant), Training,
    b. Predictors: (Constant), Training, Education,
    c. Dependent Variable: Competency

The two control measures were statistically significant, with training attained scale recording a higher beta value (beta = .64, p<.001) than the education background scale (beta = -.06, p>.05). In step 2 of Coefficients analysis, education background is no longer a significant predictor when both predictors are entered into the regression equation. This is because training attained subsumes education background. Therefore education background on its' own is a silent predictor.

Based on the above analysis, we conclude here, there is a significant relationship between education background and training attained by the BOD member with their competency in managing the agriculture co-operative society activities in state of Perak. This finding is parallel with previous research where similar results were found (i.e Melanie *et al*., 2009; Ng and Feldman 2009; Shaikhah *et al*. 2009; Apospori *et al*., 2008; Stavrou *et al.,* 2004).

5.0 Conclusion

It is concluded that there is a significant relationship ($F = 5.119$, $df = 1$, and $p = 0.000$, $p < 0.05$) between education background and training attained with the competency of BOD members. This study has expanded the frontier of application on the Organizational Effective Theory put forth by many scholars such as Ruigrok *et al*., (2006); Martins *et al*., (2004); Kock, (2004); Powell *et al*., (2004); Daily *et al*., (2003), into the BOD competencies on agriculture co-operative society which has not been done before. This research has also made a small contribution in enriching the literature of organizational study on agriculture co-operative society by offering alternative measurement and improvement on the competency of agriculture   co-operative society BOD.

Since there are several types of registered Co-operative Society in Malaysia such as Consumer, Agriculture, Services, Credit, Industrial, Transportation, Development, and Housing, further research on the relationship between educational background and training attained with BOD competency should also be carried out on these Co-operatives. The findings can be used later as guidance in strengthening the BOD competency and training programs which are currently being conducted by the Cooperative College of Malaysia (MKM) and Malaysia Co-operative Movement (Angkasa). This is necessary due to the fact that Co-operative sector is among the main contributors to the national productivity. It has been focused that towards year 2013, Co-operative Society in this country will contribute 5% of the total of national output, and subsequently 10% towards 2020 (Malaysia Co-operative Societies Commission, 2010).

Co-operative Society in Malaysia has been classified into four clusters: large, medium, small, and micro. Further studies to examine the BOD competency are also suggested to determine whether there are any differences in competency among the BOD in these four clusters.

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Are We Willing to Pay for Green Products?

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Abstract

This study aims to examine the price consumers are willing to pay for green products relative to their non-green substitute and the actual price of the products in the market. While the price factor was the focus of previous consumers' green products adoption studies, the focus has not been on asking the respondents the price they are willing to pay for the green products and compared them to the non-green substitute and actual price of the products in the market. The current study examines on three categories of green products i.e. shampoo, light bulb and air-conditioner. The price the respondents are willing to pay is captured through questionnaire survey. One-sample t-test is used to examine the significant difference between the prices consumers are willing to pay for the green products relative to its non-green substitute and the actual prices in the market. The results show that respondents are willing to pay significantly higher prices for the green products relative to the non-green substitute but the prices are significantly lower than the actual prices in the market across all the three categories of products. The findings suggest that the respondents could claim that they are willing to pay premium prices for green products but are unlikely to purchase the green products due to the significant difference between the prices they are willing to pay for green products and the actual prices of the products in the market.

Keywords: Green products, price consumers are willing to pay, Malaysia

1.0 Introduction

Environmental issues have been discussed by government leaders since two decades ago (UNCED, 1992). Over the last few years, the people's awareness on environmental issues has greatly increased. The Copenhagen climate summit (Shah, 2009) has helped in bringing awareness around the world with regards to environmental issues. The Malaysian government is in no exception in commiting to environmental initiatives by investing resources significantly to increase the awareness of environmental issues among the citizen. (Economic Planning Unit, 2010). While the government has committed to reduce the green house effect, the pressure has been transferred to the manufacturers to adopt more environmental-friendly or green operation approaches. The businesses, on the other hand, might be keen to switch to more environmental friendly approaches as a result of finding new

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competitive edge or as corporate social responsibilities initiative besides complying with the regulatory pressures.

Nevertheless, adopting green approaches in production require investment in various areas such as research and development, investment in new infrastructures and equipments, and operational expenditure in auditing to name a few. Hence, the production cost will definitely be driven up. On the other hand, businesses may also use green initiatives and features in their products and services to differentiate from their competitors in exchange for higher price from the customers. For strategic or operational factors, the price that the consumers are willing to pay for green products heavily determines the production of green products in the market. Studies have shown that more consumers are supporting the growth and diffusion of green products and are willing to pay a premium price for environmentally friendly products (Bang, Ellinger, Hadjimarcou, and Traichal, 2000; Laroche, Bergeron and Barbaro-Forleo, 2001; Yusoff, 2004; Tsen, Phang, Hasan, and Buncha, 2006; Hamzaoui-Essoussi and Linton, 2010). With the ever increasing demand from the citizen to the society and businesses to be responsible in protecting the environment, a direct respond on individuals' intention to purchase green products will expose the threat of social desirable response (Grunert and Rohme, 1992). A socially desirable response is an answer that is accepted and desired in a community based on its cultural norm (Steenkamp, 2009).

Existing studies on marketing of green products focus heavily on the consumers' intention to buy green products (e.g. Minton and Rose, 1997; Kim and Choi, 2005; Gan, Wee, Ozanne, and Kao, 2008; Tan and Lau, 2010). Although previous studies (Mandese, 1991; Laroche et al., 2001) have verified that consumers are willing to pay a premium price for green products, the actual price the consumers are willing to pay remains unstudied. In addition to that, the quantity and frequency of purchase would influence the consumers' sensitivity towards the price of the products (Krishnamurthi and Raj, 1991). Thus, this study examines the price consumers are willing to pay for green products as an indication of their willingness to purchase as price is one of the most important components in marketing and consumer purchasing decision (Lichtenstein, Ridgway and Netemeyer, 1993). This study also compares the price consumers are willing to pay for green products with the actual price of the products in the market. This approach would hopefully be able to minimise the issue of social desirable response from the respondents as their willingness to pay price premium for green products are measured indirectly.

2.0 Literature Review

Widespread global environmental degradation has lead to public concern over the last two decades (Mohamed and Ibrahim, 2007). Developing countries such as Malaysia face a big challenge to balance between development and environmental sustainability (Tan and Lau, 2010). The 21st century is touted as the century of the environment and businesses have to keep up with this trend by producing environmental-friendly products and the need to innovate high technologies in responds to society's needs (Hadyn, 2005).

2.1 Green Products and Consumers' Willingness to Pay

The term environmental-friendly product, ecological product and green product can be used interchangeably (Tan and Lau, 2010). Green products refer to the products that have less impact on the environment, and can be recycled or conserved (Shamdasani, Chon-Lin and Richmond, 1993). Green products also refer to products that use less packaging and uses non-

toxic materials to reduce pollution level (Elkington and Makower, 1988; Wasik, 1996; Tan and Lau, 2010). Fotopoulos and Athanassios (2002) describe environmental-friendly products as products that relate health issues with quality of life. Loureiro, McCluskey, and Mittelhammer (2002) further extend the description by stating that environmental-friendly products are different from the conventional products due to their unobservable quality attributes. This leads to marketers selling these environmental-friendly products at a higher price as compared to other conventional products (Yusoff, 2004).

In light of this, to what extent are consumers willing to pay for these environmental-friendly products? The term "willingness to pay" is defined by the Organization for Economic Cooperation and Development (OECD) as:
"*The stated price that an individual would accept to pay for avoiding the loss or the diminution of an environmental service*" (OECD, 2010).

2.2 Factors Influencing Consumers' Willingness to Pay for Green Products

There are many factors that influence the consumers' willingness to pay for environmental-friendly products. Among the factors influencing consumers' willingness to pay is price. In marketing, price is the "sum of all the values that customers give up in order to gain the benefits of having or using a product or service" (Kotler and Armstrong, 2007, p. 266). Price also refers to the amount of economic outlay that a consumer must sacrifice in order to make a purchase or transaction (Lichtenstein et al., 1993). Yet another definition provided by Nagle and Holden (2002) is that price refers to the monetary value which the buyer must give to a seller as a part of a purchase agreement.

The motivation factor of the buyers such as price, quality and availability (Zeithaml, 1988; Stanton, Etzel, and Walker, 1994) must be satisfied in their purchase decision process (Howard and Sheth, 1969). Consumers' purchasing decision will be driven by availability or quality of the product if the price of the product is not satisfactory enough to lead to a purchase (Nisel, 2001). Price plays an important role in the consumer purchase decision-making process (Smith and Carsky, 1996; Kenesei and Todd, 2003) where price acts as the primary purchasing motivator (Holden and Nagle, 1998). Price, besides quality, is an important determinant in the consumers' product selection process (D'Souza, Taghian and Lamb, 2005). Since price is the antecedent of green purchases, businesses that are pursuing green products should avoid practicing premium pricing strategy D'Souza et al., 2005). According to Holden and Nagle (1998), price is the weapon for the business firms where they compete with each other in order to gain more sales and market share. However, Nisel (2001) and Hopkins and Roche (2009) found that price is insignificant in the purchase decision of the consumers.

Price sensitivity refers to the "response of an individual to the amount of money asked or paid for a good or service" (Clausen, 2005, p. 2). Customers can be divided into two types: (1) moderate usage customers where they are less sensitive to the price, and (2) intensive usage customers where they are more sensitive to the price (Munnukka, 2005). For price-sensitivity consumers, changes in the price will lead to changes in their buying behaviour (Clausen, 2005). Monroe (1990) claims that consumers with high price-sensitivity are not willing to pay the price premium for the products and services. Price premium refers to the excess prices over and above the "fair" price which reflects the "true" value of the product (Rao and Bergen, 1992; Vlosky, Ozanne and Fontenot, 1999). Most consumers want to get high quality products by paying the lowest price (Nagle and Holden, 1998). According to

Mandese (1991), green consumers have high price-sensitivity when making purchase decisions about environmental-friendly products. Adcock (2000) stated that purchases of green products deliver two benefits to the consumers – their needs or wants can be satisfied, and their consumption can reduce the impact to the environment. On other hand, Wasik (1992) claimed that it is a combination of factors including price, quality, effectiveness, and availability that influence consumers' green purchasing behaviour.

Firms that adopt environmental-friendly approach can reduce the cost of operation in the long run because going green is the way to reduce wastage by reusing resources (Lin, 2010). For example, energy saving bulbs can save up to 75% of electricity cost as compared to the standard light bulbs (Boyes, 2008). Nisel (2001) indicated that the main determinant for consumers' purchase decision is low price. While Yusoff (2004) claims that not many consumers are willing to pay premium price for green products, a significant number of studies have found that the level of willingness to pay more for environmental-friendly products is generally high (Roozen, 1997; Chan, 1999; Nimon and Beghin, 1999; Vlosky et al., 1999; Johnston, Wessels, Donath and Asche, 2001; Krystallis, Arvanitoyannis and Kapirti, 2003; Sanjuan, Sanchez, Gil, Gracia and Soler, 2003; Donovan, 2004; Yusoff, 2004; Barber, Taylor and Strick, 2009).

Other researchers have taken a step further to investigate the amounts consumers are willing to pay for green products. These researchers try to find out what are the factors that influence the price level which the consumer is willing to pay for a product. Among some of the researchers, Saphores, Nixon, Ogunseitan and Shapiro (2007) found an average willingness to pay premium of 1% for green electronics; Drozdenko, Jensen and Coelho (2011) discovered that their sample homeowners are willing to pay 9.5% premium for a green music player; Loureiro et al (2002) state that consumers were willing to pay a 5% premium for eco-certified apples and Gil, Garcia, and Sanchez (2000) found that consumers are willing to pay premiums ranging from 8% to 25% for different types of organic food. Other researchers in line with this are Jensen, Jakus, English, and Benard (2003), Aguilar and Vlosky (2007), Barber et al (2009), and Krystallis and Chryssohoidis (2005).

Previous literatures have indicated that consumers are generally willing to pay a premium price for green products, but the amount that they are willing to pay will vary by the product categories and other factors such as potential savings resulting from the purchase, perceived benefits, and perceived functionality of the products (Hopkins and Roche, 2009; Hamzaoui-Essoussi and Linton, 2010; Drozdenko et al., 2011). A study by Boston Consulting Group reviewed that different category of products command different premiums in the market (Hopkins and Roche, 2009). Jay (1990) concluded that green marketers targeting green consumers must be able to balance between the setting of green products prices with consumers' cost sensitivity and their willingness to pay for environmental safety.

Price is one of the most important components in the capitalism market (Lichtenstein, et al., 1993), but there is limited study focusing on the level of price that consumers are willing to pay more for the green products especially in Malaysia (Yusoff, 2004). As such, this study will attempt to narrow this gap and also to obtain the price differences between the prices that consumers are willing to pay with the actual prices of the green products in the market in Malaysia.

3.0 Research Methods

This study uses questionnaire survey method for data collection. The respondents are required to indicate the prices they are willing to pay for the green products indicated in the questionnaire. The products are shampoo, light bulb and air-conditioner. For each category of product, a non-green product with features description about the product, and the price given will be used as reference for the respondents to make their decision in the questionnaire. Then, the products with green features are shown in the questionnaire. The respondents are required to provide the prices they are willing to pay for the green products in all the three categories. The features for the green and non-green products are identical apart from the additional green features in the green products.

The respondents of the study are identified using non-probability sampling. The respondents are approached on a face-to-face basis in some public areas such as wet markets, government offices and temples and through personal contacts. 260 sets of usable questionnaires were successfully collected. The data collected are then analysed using SPSS. The results of the analysis are presented in next section.

4.0 Findings

The results of the statistical analysis for the data collected are shown in Table 1, 2 and 3. Table 1 shows the demographic information of the respondents who participated in this study. 58.10 percent of the respondents are female. 38.10 percent and 36.90% of them are Chinese and Malay respectively. In term of the age group distribution, 32.30 percent of them are between 31 and 40 years old, while 27.30 percent of them are 30 years old and below.

Table 1: Demographic profile of the respondents

Variable		Frequency	Percentage
Gender	Male	109	41.90
	Female	151	58.10
Ethnicity	Malay	96	36.90
	Chinese	99	38.10
	Indian	62	23.80
	Others	3	1.20
Age group	30 and below	71	27.30
	31 – 40	84	32.30
	41 – 50	57	21.90
	51 and above	48	18.40

The results in Table 2 show that mass media and advertisements are the two main sources for the respondents to get information on the green products which contributed to 60% and 53.50% respectively. 36.20 percent of them get the information from friends while only 16.50 percent get to know green products' information from their family members.

Table 2: Sources of green products information

Sources	Frequency	Percentage
Mass media	156	60.00
Friends	94	36.20
Family	43	16.50
Advertisements	139	53.50

Results on Table 3 show the mean and standard deviation of the prices that the respondents are willing to pay for each category of green product and the significant difference of the prices they are willing to pay for the green products relative to the non-green substitutes and the actual price of the green products in the market.

For shampoo, the price for the non-green reference given in the questionnaire is RM19.80. The mean for the price that the respondents are willing to pay for the green shampoo with identical features apart from the pro-environmental ingredients is RM20.50 with the standard deviation of 4.35. Nonetheless, the price the respondents are willing to pay is lower than the market price of the green shampoo of RM25.90. One-sample t-test is used to examine the significant difference of the price that the respondents are willing to pay for the green shampoo relative to the non-green reference and the market price of the green shampoo. The results of the one-sample t-test show that the price the respondents are willing to pay for the green shampoo is significant higher than the non-green shampoo indicated in the questionnaire (t=5.935; p<0.05) but it is significant lower than the actual price of the product in the market (t=-20.043; p<0.05).

The similar results can be observed for air-conditioner and light bulb. The mean and standard deviation of the price that the consumers are willing to pay for the air-conditioner with additional green features is RM823.74 and 314.50 respectively, relative to RM698.00 for the non-green air-conditional price given in the questionnaire and RM989.00 for the actual price of the green air-conditional in the market. The results of one-sample t-test show that the price that the respondents are willing to pay for the green air-conditioner is significantly higher than the non-green reference given in the questionnaire (t=6.447; p<0.05) and the actual price of the green air-conditioner in the market (t=-76.541; p<0.05).

On the other hand, the price of the light bulb given in the questionnaire is RM2.50. The respondents indicate that they are willing to pay RM5.93 for the compact fluorescent lamp (CFL) with standard deviation of 3.75. The actual price for CFL in the market is RM23.90. The results of one-sample t-test show that mean of the price that the respondents are willing to pay for CFL is significant higher than the price of the normal light bulb given in the questionnaire (t=5.93; p<0.05). Nonetheless, similar to the shampoo and air-conditioner, the price the respondents are willing to pay for CFL is significant lower than its market price (t=-76.541; p<0.05).

Table 3: One-sample t-test for the prices that the respondents are willing to pay for green products compared to the non-green substitutes and market prices

Variables	Mean	Std. Dev.	T	Sig.
Green Shampoo	20.50	4.35		
vs. Non-green shampoo (RM19.80)	-	-	5.935	0.000
vs. Market price (RM25.90)	-	-	-20.043	0.000
Green Air-conditioner	823.74	314.50		
vs. Non-green air-conditioner (RM698.00)	-	-	6.447	0.000
vs. Market price (RM989.00)	-	-	-8.473	0.000
Compact fluorescent lamp (CFL)	5.93	3.75		
vs. Incandescent light bulb (RM2.50)			14.602	0.000
vs. Market price (RM23.90)			-76.541	0.000

5.0 Discussions

The statistical findings indicate that respondents are willing to pay higher price for green products in comparison to the non-green substitutes. The findings reinforce the study by Roozen (1997), Chan (1999), Nimon and Beghin (1999), Vlosky et al. (1999), Johnston, Wessels, Donath and Asche (2001), Krystallis, Arvanitoyannis and Kapirti (2003), Sanjuan, Sanchez, Gil, Gracia and Soler (2003), Donovan (2004), Yusoff (2004) and Barber, Taylor and Strick (2009). However, the findings also suggest that the price that the respondents are willing to pay for green products is much lower relative to the actual price of the products in the market. The findings imply that the respondents might claim that they are willing to pay higher price to buy green products but the actual purchasing 117ehaviour is unlikely as the price that they are willing to pay for the green products is much lower compared to the actual price of the products in the market. Furthermore, this problem could induce further problem to the research that looks solely at the consumers' intention to purchase green products and whether they are willing to pay premium price for green products. Both the intention to purchase and willingness to pay could have been overstated unless the actual price the respondents are willing to pay is taken into consideration.

5.1 Managerial Implications

Based on the findings of this study, the producers of green products are advised to reconsider the price they set for their products. This study reviews that the consumers are willing to pay higher price for the green products but the price they are willing to pay is much lower compared to the market price of the products. Adjustments on the price by the producers and retailers on green products could lead to a significant boast in the sales of green products. This could eventually lower the production cost of green products through the effect of economic of scale as the quantity demanded in the market would be much higher.

On the other hand, the policy makers could also assist the green products segment on the price. The government move to subsidise the price of the green electrical products in Malaysia (Ministry of Energy, Green Technology and Water, 2011) is a wise move based on the findings of the study in encouraging the citizens to adopt green products. Nonetheless, in the long run, the policy maker should focus on assisting the green product producers to adopt technologies and best practices to produce with greater efficiency and effectively to lower the production cost. This will enable the green products to be sold at lower price in the market.

6.0 Conclusion

The findings suggest that the consumers are willing to pay higher price for green products in Malaysia but the price they are willing to pay for green products is lower relative to the market price of the products. Thus, this put doubts on the actual purchasing behaviour of the consumers on the green products. To address this issue, it is advisable to suggest the green product producers and retailers to lower the price to gain economic of scale in the long run could be a viable option. On the other hand, the government intervention by providing subsidy to the green electrical product price is a wise short-term move to encourage greater usage of green products but strengthening the efficiency and effectiveness of the production of green products is crucial for the long run.

Acknowledgement

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Impact of Climate Change on Palm Oil Production

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Abstract

Agriculture plays a significant role in the resource-based socio economic development in Malaysia. Despite technological advances and improvements, climate is still the most important aspect in ensuring the continuous production of the agricultural sector. Agricultural sector had been found to be affected by the change in climate due to its vulnerability. Past studies had revealed that climate change has resulted in the decline of palm oil production. For example, in southern Malaysia, the production of crude palm oil has reduced to 1.1 million metric ton in 2006. Although there has been a significant amount of research and studies related to climate change and agriculture in Malaysia, there continues to be wide range of opinions regarding scenarios of the future impact especially on palm oil production. This paper will present the research proposal in assessing the impacts of climate change on agriculture sector, especially the palm oil production and propose important insights in managing the resources for the future.

Keywords: Agricultural sector, palm oil, climate change, productivity, yield

1.0 Introduction

In 2010, agricultural sector in Malaysia continues to be one of the most important sectors with contribution of 10.6% to Malaysian GDP (Fatimah et al., 2012). This sector has been identified as the economy's third engine of growth in the Ninth Malaysian Plan and its production is fundamental to Malaysia's economic existence. Palm oil industry is the largest contributor to this sector where in the Malaysia Economic Census (Agriculture) 2011, it had contributed to RM34, 699.6 million of output and RM24, 046.6 million of value added (DOS, 2012). In addition, it had provided the highest job opportunities in the crops sub-sector with 300,465 persons were employed. However, palm oil industry and agriculture sector as a whole are exposed to a number of threats particularly from climate and weather.

Pearce et al. (1996) described that among the market sectors that are susceptible to climate change are agriculture, coastal development, energy, forestry and water while the non-market sectors are terrestrial ecosystems, human health and undeveloped coasts. As mentioned by him, agriculture is affected by the climate variability and the other sectors which are affected by climate change will indirectly affect agriculture. Climate change will not only affect the agriculture sector in terms of production, but Mustafa (2007) reported that it will also have a socioeconomic impact on the people who are employed in the sector and the nation as a whole. The impacts of climate variability are predicted to affect developing countries like Malaysia. These are mainly because of the tropical climate and the high temperature that Malaysia is currently facing. Even with the government strategies to prevent shortage in food supply in Malaysia through import of food resources and so on, the worst scenario that needs to be observed is the adverse impact of warming on Malaysia's agriculture in the future. After all, agricultural production has been and will remain to be the most important line of

defence for global food security (Zhai and Zuang, 2009) and climate change is seen as major potential threat to it (Austin and Baharuddin, 2012). Palm oil was chosen to be the subject of this study due to the contribution to the agriculture sector and to the Malaysia's economy.In determining how climate change will affect the palm oil productivity in Malaysia, various aspects need to be studied such as changes in temperature, changes in rainfall patterns, increased in CO2 levels and so on. Furthermore, by studying the impact of climate change on palm oil productivity, it will aid the process of adaptation and managing the resources in the future.

This paper has aimed to present the research proposal in assessing the impacts of climate change on palm oil production in Malaysia where the research has two specific objectives, namely; i) to estimate the impact of climate change on palm oil production in Malaysia and ii) proposesfuture insights in managing the resources.

2.0 Impacts of Climate Change on Agriculture Sector

Malaysia has a uniform temperature with high humidity and copious rainfall. The average annual rainfall is 2409mm and the average annual relative humidity is 62.6%. In 2009, the Malaysian Meteorological Department projected that the temperature will increase by $1^{o}C$ to $3.6^{o}C$ and $1.0^{o}C$ to $3.5^{o}C$ for Peninsular Malaysia and East Malaysia respectively, under the Atmosphere-Ocean General Circulation Models (AOGCMs). Due to the variation in the current and future climate in Malaysia, the changes will give effect especially to the agricultural production. Mendelsohn (2009) had claimed that it is expected to cause damages to agriculture in developing countries over the next century. Hence, climate plays a very important factor in determining the sustainability of agricultural production systems thus ensuring continuous production.

In recent years, a major concern has been raised and expressed by researchers and NGOs regarding the effects of climate change on agricultural productivity. As defined by Aydinalp and Cresser (2008), climate change is "caused by the release of greenhouse gases into the atmosphere" and "the changes in global climate are related to parameters such as temperature, precipitation, soil moisture and sea level". Even though the effects of climate change may vary across the globe, it may have an overall insignificant effect on total food production where the doubling of the atmospheric carbon dioxide concentration will lead to decrease in global crop production (Rosenweig and Parry, 1994). Nelson et al. (2009) had reported that high temperatures will reduce crop yield and at the same time encourage weed and pest proliferation. In addition, changes in precipitation patterns will increase the likelihood of short run crop failures hence decline the production in a long run. They also reported that although there will be increased production in some regions in the world, the overall impact of climate change are expected to be negative. Furthermore, the study showed that agriculture will negatively affected by climate change with decrease in crop yields and productions where it will cause yield declines for most of the important crops in Southeast Asia. Besides, climate change will also contribute to crop variability (Chen et al., 2004).

3.0 Impacts of Climate Change on Palm Oil Production in Malaysia

Parry et al. (1992) had reported that the oil palm yields on alluvial soils would not be substantially altered under the projected changes of climate in Malaysia, but these conclusions are not applicable to oil palm plantations in inland regions of sedimentary soils. However, the potential impact of climate change on palm oil production had yet to be seen as

the area planted of palm oil in Malaysia is increasing over the years (Figure 1).However, the yield per hectare produced from 1980 to 2010 (Figure 2) had showed fluctuate pattern even though the production (Figure 3) had revealed an increasing trend. The figures may suggest that the climate change has given some effect on the production of palm oil. This is supported by Adams et al. (1998) which reported that although increase in temperature may have both positive and negative effect to crop yields but in general, it have been found to reduce the yields and quality of many crops. He added that the change in yields is determined by the balance between the positive and negative direct effects on plant growth and development and by indirect effect that can affect production.

Figure 1: Area Planted of Palm Oil in Malaysia, 1980-2010
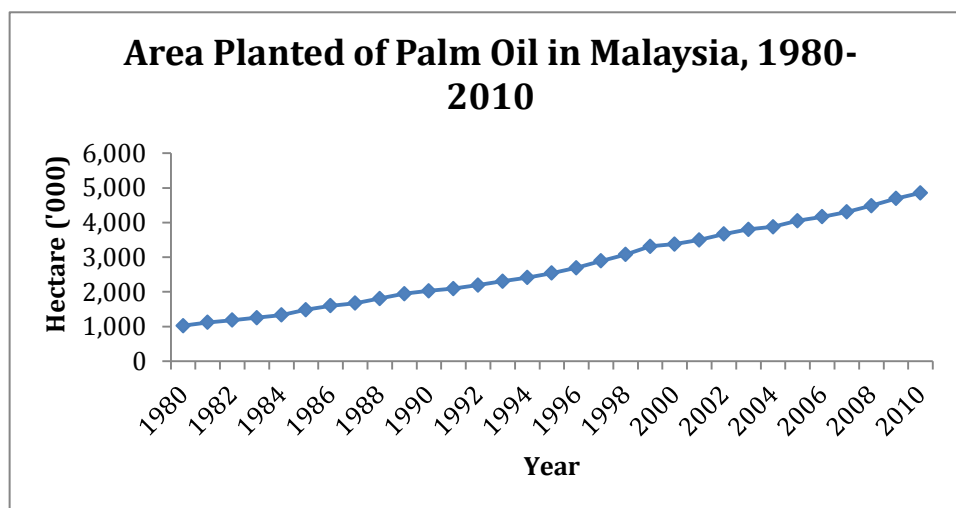
Source: DOS Malaysia, 2011

Figure 2: Yield (per Hectare) of Palm Oil in Malaysia, 1980-2010
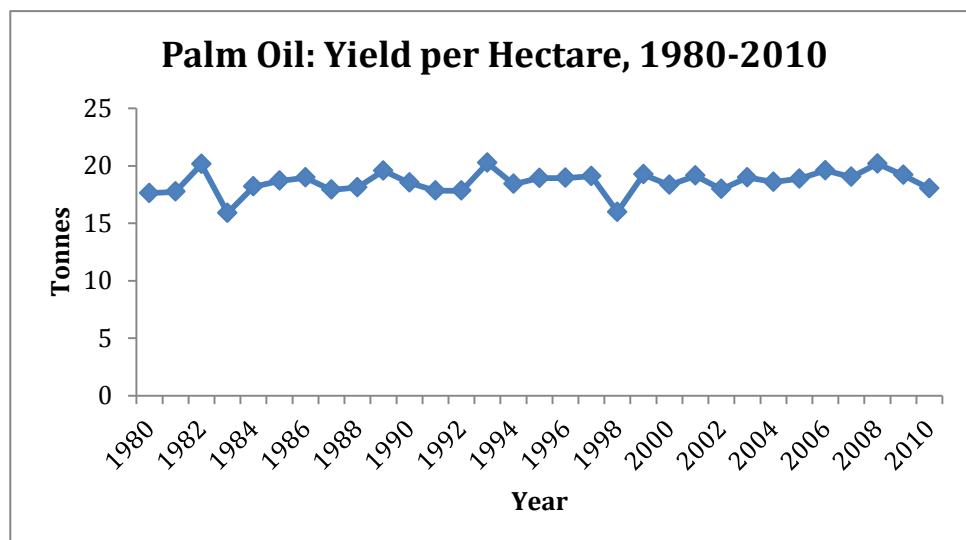
Source: DOS Malaysia, 2011

Figure 3: Production of Palm Oil in Malaysia, 1980-2010
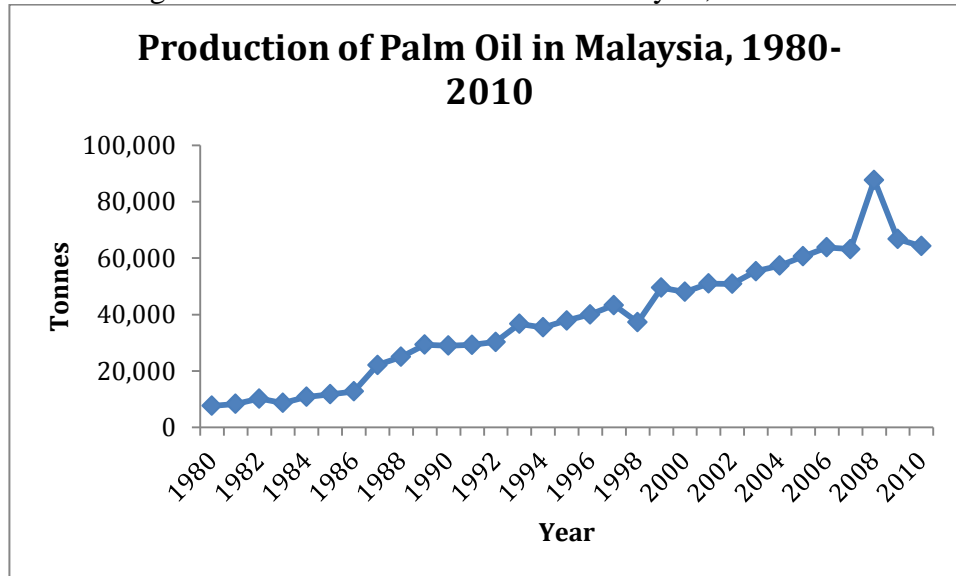
Source: DOS Malaysia, 2011

4.0 Research Methodology

Therefore, in order to estimate the impact of climate change on palm oil production in Malaysia, several methods are chosen to be used. The analysis for this study will be using analysis proposed by Chen et al. (2004) and McCarl et al. (2008) that employed an estimation method based on the Just-Pope production function (1978). This method allows statistical determination of the influence of climate on yield mean and variance by using temperature (mean and variance) and precipitation (average and intensity index). In addition to that, the average duration of daylight will also be included. The Just-Pope production function equation has the following form:

$$y = f(X, \beta) + h(X, \alpha)\varepsilon$$

where, y is crop yield, f(X) is an average production function, X is a set of independent variables, and α and β are unknown parameters to be estimated. In addition, h(X) is a function that accounts for explicit variable-dependent heteroskedasticity, allowing yield variability as a function of observed covariates. Under the assumption that error term e is distributed with mean zero and unitary variance, is the yield variance.

In estimating the function, FGLS (feasible generalized least squares) will be used. The basic Just-Pope procedure are as follow: a) Estimate the model by ordinary least squares (OLS) and get the residuals, b) regress the logarithm of squared residuals against X as independent variables, c) get the predicted values of those residuals, which are calculated as the antilogarithm of the predictions from step (b). They are consistent estimates of the variances: and d) estimate the original model by weighted least squares (WLS), using the squared root of the variance predictions as weights.

The production function approach relies on experimental evidence of the effect of the temperature and precipitation on agricultural yields. The appealing feature of the experimental design is that it provides estimates of the effect of weather on the yields of specific crops that are purged of bias due to determinants of agricultural output that are beyond farmer's control (e.g: soil quality). Consequently, it is straight forward to use the

results of these experiments to estimate the impacts of a given change in temperature or precipitation.

The impacts from climatic variability are taken to be a useful analogue of potential future effects of longer term climate change. In determining how climate change will affect the agricultural productivity, several aspects will also be considered such as technical change, invested capital and government subsidies and also the possible changes in policy. The sources of data that will be used are from the Department of Statistics, Malaysia for data that are related to palm oil and Malaysian Meteorological Department for data that are related to climate.

5.0 Managing the Resources for the Future

The potential impact of climate change on the agricultural production has received much attention compared to other resource sectors. Although, there has been a significant amount of research and studies related to climate change and agriculture in Malaysia, there continues to be wide range of opinions regarding the scenarioon palm oil production. For a tropical country like Malaysia, climate change willaffect the productivity of this commodity in a long run. The impact of climate change on palm oil production will depend greatly on current local climate. Therefore, farming practices are needed to be adjusted to suit the situation (Aydinalp and Cresser, 2006) e.g. changes in varieties, improved water management, irrigation systems and changes in planting schedules to minimize the effects. In determining how climate change will affect the palm oil industry in Malaysia, various aspects need to be studied in relation to climate change such as temperature, rainfall patterns and CO_2 levels. Understanding the impact of climate change on the palm oil productivity will help in directing the process of adaptation and also provide important insights on how to adjust the management of the resources in the future.

Research on the impact of climate change on agriculture is needed in order to provide knowledge on the climate system, effect on agricultural productivity and possible adaptation in agricultural management. The result of the study will help in providing access to information on climate to the government to rectify the related future impact. Policy needs to be scrutinized and new management plan need to be proposed to face the impact of climate change.

6.0 Conclusion

As among the biggest producers of palm oil, this sector will eventually be affected by the changes in climate. Although the effects associated with it are not expected to result in large changes, climate change had been proved to affect several aspects in agriculture such as in mitigation and production. Research that had been done showed that tropical countries like Malaysia will be the most affected by the change in climate due the hot weather we are currently facing. Research need to focus on reducing the vulnerability to climate change and focus on ways to adapt. This research is needed to be carried out to determine the impact of climate change on thepalm oil production in this country. Hopefully, the finding of this research will help in determining the effects of climate change and provide suggestions in coping with the potential risks from the change in climate.

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Does Paddy Cultivation in Malaysia Contribute to Increased CO$_2$ Emissions? : An Econometric Analysis

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Abstract

This study was conducted to investigate whether paddy cultivation in Malaysia do indeed contribute to increased CO2e. Johansen (1991) co-integration method was used to investigate the relationship between these variables, and the result clearly shows that they are highly co-integrated or literally means that they (both variables) share long term time trending patterns. The long run relationship is further investigated based on granger causality and vector error correction model (VECM), and the result again clearly shows that paddy production indeed granger causes the increased CO2e. Dynamic Ordinary Least Square (DOLS) method was also employed to check the robustness and consistency of the findings and the results are consistent and robust with the VECM estimations. The findings of the study clearly show the dire needs for the government to invest more on the R&D in the paddy production sector in order not to deteriorate further the environment albeit CO2e while securing the food security.

Keywords: Johansen co-integration test, paddy, climate change, carbon dioxide emissions, VECM

1.0 Introduction

It cannot be denied that the agriculture sector represents a significant source of the world's total anthropogenic greenhouse gas emission. Recent assessments of methane emissions from irrigated rice cultivation estimate global emissions for the year 2000 at a worrying level corresponding to 625 million metric tons (mt) of carbon dioxide equivalent (CO2e). Malaysia does not have competitive advantage in paddy production but this commodity is a staple food for her population. The total paddy production only stated a marginal increase from 1980 to 2010. It increased only 503,396 metric tonnes within 30 years with percentage increase of 25% (Figure 1). In terms of productivity, it has increased from 2.9 to 3.8 tonnes per hectare due to varietal improvement and infrastructural supports.

Figure 1: Malaysia: Paddy Production ('000 mt) and Productivity (t/ha), 1980-2010
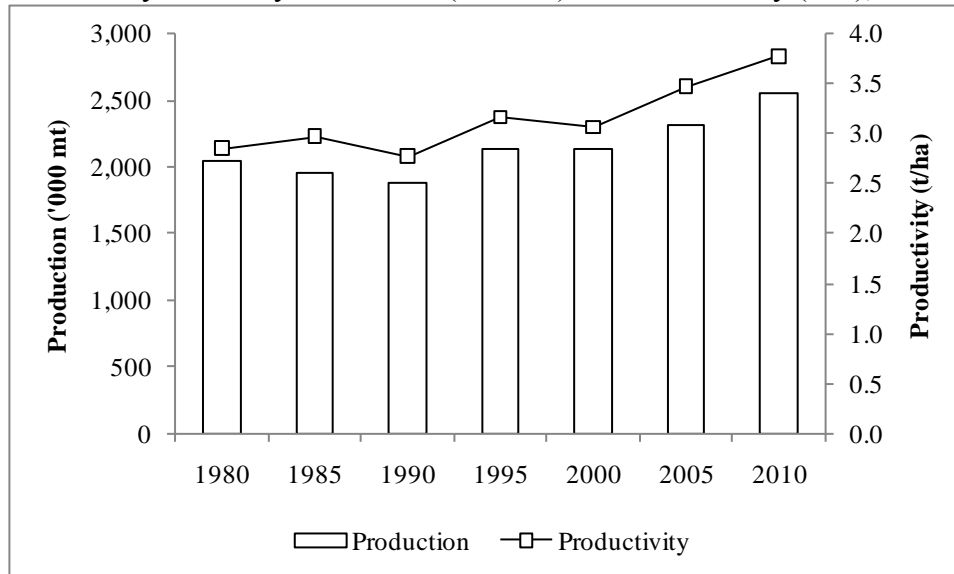
Source: DoS (2010) and MoA (2009).

As explained earlier that it is very much agreed that agriculture is indeed one of the largest source of non-energy GHG emissions (Jolley, 2006). The estimated gross for this emission is 15.4% and mostly, it comes from the advanced economies in 2010. Emissions from agriculture were 4028 mt CO2-e in 2000, almost three times the level in the advanced economies. Agricultural emissions in the developing countries are increasing by 1.6% per annum, well in excess of the rate of change in the advanced economies.

The highest contribution for CO2e is at the rice cultivation stage (Esmizade et al., 2010). Recent assessments of methane emissions from irrigated rice cultivation estimate global emissions for the year 2000 at a level corresponding to 625 million metric tons (mt) of carbon dioxide equivalent (CO2e). While agricultural soils contributed to 1944 mt of CO2e and enteric fermentation 1235 mt CO2e.

One of the rice cultivation activities that contribute more to GHG emissions is rice residue burning that has been practices in many countries such as China, India, Philippine, Thailand and Japan (Cheewaphongphan et. al., 2011 and Shigeto, 2011), and undeniably right at our doorstep in Malaysia. The burning of rice residue emits (i) GHG emissions such as carbon dioxide (CO2), methane (CH4), and nitrous oxide (N2O); (ii) pollutants such as carbon monoxide (CO), particulate matter (PM); and (iii) toxic such as polycyclic aromatic hydrocarbons (PAHs) due to the incomplete combustion process. Hence, this activity also will indirectly give an impact to the human health.

The purpose of this paper is to investigate whether paddy cultivation in Malaysia do indeed contribute to increased CO_2 emissions. Johansen (1991) cointegration method was chosen to explore the probable cointegration. Vector error correction model (VECM) would be employed in the later stage to investigate the dynamic and long run relationship between these variables. Granger causality test based on VECM will also be conducted. Then the policy implication will be proposed which will benefit the sector itself and also the country.

The remainder of this paper is organized as follows: Section 2 gives a brief introduction of the methodology and section 3 presents the results and discussions. Section 4 concludes.

2.0 Methodology

Data on carbon dioxide emissions for the period 1980-2010 were gathered from Carbon Dioxide Information Analysis Center. These data was converted to units of carbon dioxide by multiplication with the estimated conversion factor of 3.667. The data series on the paddy production were collected from the Department of Statistics. Throughout the analysis, all variables were transformed into natural logarithm.

There are three main methods (Engle Granger, Johansen and Phillips-Ouliaris) to test the cointegration. For this study, we employed the Johansen cointegration test to determine whether the linear combination of the series possesses a long-run equilibrium relationship. The maximum likelihood based λtrace and λmax statistics were used to test the numbers of significant cointegrating vectors in non-stationary time series. These statistics were introduced by Johansen and Juselius (1990). One of the advantages of this test is that it utilises test statistics that can be used to evaluate cointegration relationship among a group of two or more variables. Therefore, it is a superior test as it can deal with two or more variables that may be more than one cointegrating vector in the system.

Prior to testing for the number of significant cointegrating vectors, the likelihood ratio (LR) tests are performed to determine the lag length of the vector autoregressive system. In the Johansen procedure, following a vector autoregressive (VAR) model, it involves the identification of rank of the $n \times n$ matrix Π in the specification given by:

$$\Delta Y_t = \delta + \sum_{i=1}^{k-1} \Gamma_i \Delta Y_{t-i} + \Pi Y_{t-k} + \varepsilon_t \tag{1}$$

where Yt is a column vector of the n variables, Δ is the difference operator, Γ and Π are the coefficient matrices, k denotes the lag length and δ is a constant. In the absence of cointegrating vector, Π is a singular matrix, which means that the cointegrating vector rank is equal to zero. On the other hand, in a cointegrated scenario, the rank of Π could be anywhere between zero. In other words, the Johansen cointegration test can determine the number of cointegrating equation and this number is named the cointegrating rank.

The Johansen Maximum likelihood test provides a test for the rank of Π, namely the trace test (λtrace) and the maximum eigenvalue test (λmax). Firstly, the λtrace statistic test whether the number of cointegrating vector is zero or one. Then, the λmax statistic test whether a single cointegration equation is sufficient. Both test statistics are given as follows:

$$\lambda_{trace}(r) = -T \sum_{i=r+1}^{p} \ln(1 - \hat{\lambda}) \tag{2}$$

$$\lambda_{trace}(r, r+1) = -T \sum_{i=r+1}^{p} \ln(1 - \hat{\lambda}_{r+1}) \tag{3}$$

where p is the number of separate series to be analysed, T is the number of usable observations and λ is the estimated eigenvalues.

Vector Error Correction Model (VECM)
VECM is a restricted VAR designed for use with non stationary variables that are known to be co-integrated. VECM specification restricts the long run behaviour of the endogenous variables to converge to their co-integrating relationships while allowing for short-run adjustment dynamics. Engle and Granger (1987) showed that if the variables, say *Xt* and *Yt* is found to be cointegrated, there will be an error representatives which is linked to the said equation, which gives the implication that changes in dependent variable is a function of the

imbalance in cointegration relation (represented by the error correction term) and by other explanatory variables. Intuitively, if *Xt* and *Yt* have the same stochastic trend, current variables in *Xt* (dependent variable) is in part, the result of *Xt* moving in line with trend value of *Yt* (independent variable). Through error correction term, VECM allows the discovery of Granger Causality relation which has been abandoned by Granger (1968) and Sims (1972). The VAR constraint model may derive a VECM model as shown below:

$$\Delta y_t = \delta_0 + \sum_{i=1}^{\rho} \theta_i \Delta y_{t-i} + \sum_{i=1}^{\rho} \phi_i \Delta x_{t-i} + \varepsilon_t \tag{4}$$

where y_t is in the form of *n* x 1 vector, θi and ϕ_i are the estimated parameters, Δ is the difference operator and ε_t is reactional vector which explains unanticipated movements in Y_t and *x* (error correction term).

In the Granger causality test, the degree of exogeneity can be identified through the *t* test for the lagged error correction term (ϕ_i), or *F* test applied to the lags of the coefficients of each variable separately of the non dependent variable (θi). In addition to the above, VECM method allows the differentiation of the short term and long term relationship. Error term with lagged parameter (ECT ($_{e1,\ t-1}$)) is an adaptive parameter where it measures the short term dispersal from long term equilibrium. In the short term, the variables may disperse from one another which will cause in-equilibrium in the system. Hence, the statistical significance of the coefficients associated with ECT provides evidence of an error correction mechanism that drives the variables back to their long-run relationship.

To the check the robustness and consistencies of ECM estimations, we also utilised the dynamic ordinary least squares (DOLS) procedure proposed by Stock and Watson (1993). According to Stock and Watson, the DOLS is robust in small sample and it is a parametric approach for estimating long-run equilibrium in systems which may involve variables integrated of different orders but still cointegrated.

3.0 Result and Discussion

The order of the integration for all variables is tested before testing the cointegration using Johansen procedure. Table 1 presents the results of unit root test. It clearly shows that both ADF and PP tests indicate that all the variables are difference stationary, or in other words, they are *I*(1) levels.

Table 1: Results of the Unit Root Tests

Variables	ADF		PP	
	Level (Intercept)	First Different (Intercept)	Level (Intercept)	First Different (Intercept)
Production	-0.9440 (0)	6.36*** (0)	-0.8095	-6.461***
CO_2 emission	-0.7258 (0)	-6.0532*** (0)	-0.7258	-6.0166***

Note: *** denotes significant at 1% level. Figures in parenthesis ( ) refer to the selected length. The lag length was arbitrarily selected using SIC.

Since all the variables are integrated in the same order, the Johansen cointegration test is carried out to examine the presence of a long-run equilibrium relationship between production and CO_2 emission. The results of the Johansen test are shown in Table 2. The

results indicate that null hypothesis of no cointegration can be rejected in the period. Therefore, it can be concluded that there is positive and significant long run relationship at five percent level, implying that there is common trend exists within production and CO_2 emission.

Table 2: Results of Cointegration Test

Vectors	r=0	r≤1
Trace test	18.52	1.60
5% level	15.49	3.84
Max-Eigen test	16.92	1.60
5% level	14.26	3.84

Note: r indicates the number of cointegrating vectors. Trace and Max-Eigen denote the trace statistic and maximum eigenvalue statistic. The critical values obtained from Osterwald-Lenum (1992). Lag selection (k) is based on Schwert (1987) formula.

The long-run relationship is further investigated based on Granger causality and vector error correction model (VECM). Table 3 provides the results of long-run elasticities among production and CO_2 emission. From the results, it clearly shows that paddy production indeed causes the increase in CO_2 emission. Dynamic ordinary least square (DOLS) also employed to check the robustness and consistencies of the findings and the results show that it is consistence with the ECM estimators. In the short-run, there is insignificant relationship between production and CO_2 emission (Table 4). The same result also detected in the ECT.

Table 3: Long-run elasticities

Dependent Variables	Independent Variables
	ln CE
ln PP	0.20** (-15.85)

Note: PP – paddy production; CE – CO_2 emission; ** denote significant at 5% levels. T-stats in parentheses.

Table 4: Short-run elasticities

Dependent Variables	Independent Variables	
	Δln CE	ECM_{t-1}
Δln LPP	0.41	-0.90
	(1.24)	(-4.26)

Note: PP – paddy production; CE – CO_2 emission.

4.0 Conclusion

In this study, the Johansen cointegration test is employed to test the relationship between paddy production and CO_2 emission. The reason for the test is to uncover whether paddy cultivation in Malaysia do indeed contribute to increased CO_2 emission, and also to unearth grappling questions of whether Malaysia is indeed adopting suitable policy in the agriculture sector particularly in paddy and rice industry. The sample period of study was 1980 to 2010 using annual data. All the data went through natural log transformation so that the estimates will be less sensitive to outliers or influential observations and also order to reduce the data range. From the analysis, we found that the paddy production and CO_2 emission is highly cointegrated. The results also show that the paddy production in Malaysia and CO_2 emission has a significant and positive relationship in the long-run. The findings of the study clearly show that the government need to invest more on the R&D in the paddy production sector in other to control the climate change and secured the food security.

5.0 Policy Implications

This study to a certain point proves that the Government needs to carefully formulate and execute sustainable paddy farming practices. While arguably it cannot be denied that rice is indeed the staple food of Malaysians, and most of those who are involved in paddy cultivation belong to the lower bracket of income earners, we cannot simply brush away the notion of the worsening environment that is due to paddy cultivation. Budgets need to be allocated for research and development purposes in order to create not only awareness, but also to find alternative sustainable practices which are more environment friendly in order to strike a win-win solution.

While it would be quite cumbersome and huge burden to place the responsibility on the shoulder on farmers, who as explained previously are low income earners, since the end result is beneficial to the entire stakeholders, the Government should take the initiative.

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A Model for Tobacco Industry in Malaysia

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Abstract

A study was conducted to analyze the factors affecting the tobacco industry in Malaysia. Tobacco farmers were found to be more concerned with changes in input particularly, fertilizer. Both incentive scheme for tobacco fertilizer and fertilizer price show significant impact on area planted as both the factors will affect cost of production. Another significant determinant on supply side is tobacco farm price. Higher price will attract tobacco farmers to be more productive and this will lead to higher yield. On the demand side, price of cigarette is significant in explaining the changes in tobacco domestic demand. As cigarette price increases, firms will be sensitive towards the price increase and this will reduce the quantity of tobacco consumed by the manufacturers. Lastly, the result shows that import demand for tobacco is income elastic.

Keywords: Tobacco, agriculture modelling

1.0 Introduction

Tobacco industry in Malaysia started with cigar tobacco smallholdings in the early 19th century. It was grown extensively and became one of the main trading commodities in Sabah upon successful cultivation in 1883. The main area of cultivation is in Sagama River Valley, Lahad Datu, Sabah. It attracted more than fifty players from Europe and reached RM2 million export values in 1902. However, the tobacco industry in Sabah declined in the 1930's era due to various factors such as, floods, lack of capital, lack of management, the collapse of world market and the "closed door" policy of American traders to curb imports.

In 1931, the cultivation of tobacco of Virginia variety was found suitable after the research farm trial at Serdang, Selangor but the growth of the industry was slow due to the 2nd World War. In 1959, efforts to increase tobacco plants were implemented in earnest. The industry progressed aggressively in the mid-1970s with 60% of total tobacco plantation in Kelantan, 11% in Terengganu, 5% in Kedah, 4% in Perlis, 2% in Pahang (2%) and other states (Melaka, Negeri Sembilan and Johor).

Tobacco farming has been practiced by farmers especially in Terengganu and Kelantan since the 1960's. The tobacco plant is a short-term crop that provides alternative income to farmers in the east coast. The market is guaranteed where the grade and the price is fixed and controlled by National Kenaf and Tobacco Board (NKTB). All growers and curers must comply with preservatives, grades and prices according to the set standards.

The tobacco industry activities have generated income indirectly to support other industries such as the supplier of agricultural inputs, farm equipment and curing stations, fuel services, financial institutions and insurance, transportation and logistic services.

Table 1 shows the contribution of tobacco to gross domestic product (GDP) of Malaysia. The contribution of tobacco to agriculture GDP is small compared to other commodities. Tobacco contributes 0.4% in 2000 and has decreased to 0.05% in 2008 in line with the AFTA compliance on tariff reduction. At present, the Government only imposed 5% tariff on imported tobacco from 40% previously. This will further liberalize to zero tariff in the future.

Table 1: Contribution to GDP, 1990-2008

Year	Contribution to GDP (%)	GDP of Agriculture (RM/Million)
1990	0.60	18,120
1991	0.68	19,398
1992	0.55	21,958
1993	0.30	23,741
1994	0.49	26,702
1995	0.54	28,809
1996	0.47	29,637
1997	0.39	31,283
1998	0.30	37,706
1999	0.32	32,610
2000	0.40	30,647
2001	0.46	28,245
2002	0.41	34,432
2003	0.41	38,971
2004	0.31	43,949
2005	0.16	43,361
2006	0.14	49,865
2007	0.12	65,032
2008	0.05	75,657

Source: Department of Statistics, 2010

Presently, there are 5,035 registered farmers and 3,047 workers at curing stations (Figure 1). The highest number of registered farmers and station workers are found in Kelantan. The number of farmers and workers decreased by 88% in 2009 compared to 1990. This indicates that local farmers cannot compete with foreign producers in the Phillipines, Thailand and Indonesia.

Figure 1: Number of Registered Tobacco Farmers, 1990-2009
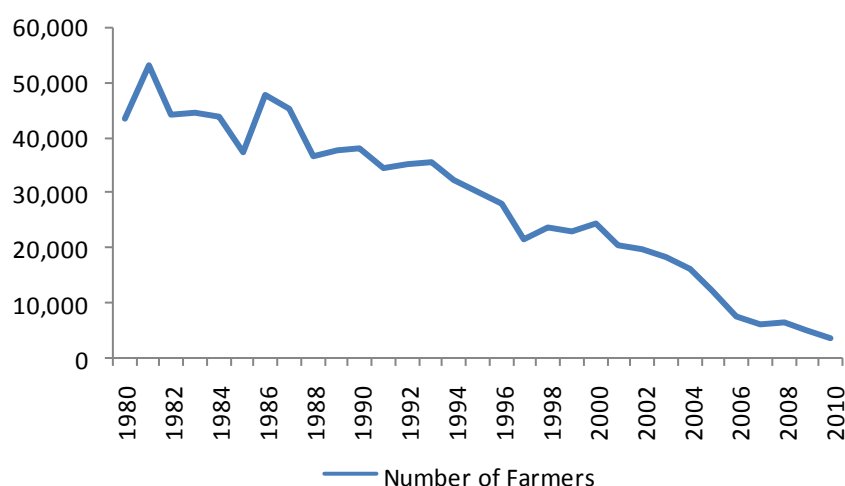
Source: Ministry of Plantation Industries and Commodities, 2010

Table 2 shows the planted area by regions in 1990 to 2009. Out of the total planted area in 2009, almost 93% is in the Peninsular Malaysia. The average annual growth for planted area in Sabah is 6% per annum while in Peninsular Malaysia shows a declining trend. As mentioned above, Malaysia produces two types of tobacco which are Virgina and Burley grown in Peninsular Malaysia and Sabah, respectively.

Table 2: Planted Area by Regions, 1990-2009 ('000 Hectares)

Year	Peninsular Malaysia	Sabah	Total
1990	10.17	0.40	10.57
1991	14.95	0.55	15.50
1992	11.91	0.48	12.39
1993	12.36	0.39	12.74
1994	10.22	0.20	10.42
1995	10.53	0.23	10.75
1996	0.00	0.28	0.28
1997	10.78	0.23	11.01
1998	14.20	0.32	14.52
1999	18.52	0.40	18.93
2000	15.76	0.66	16.43
2001	15.59	0.69	16.29
2002	14.39	1.19	15.58
2003	12.10	1.31	13.41
2004	12.15	1.13	13.28
2005	8.52	1.16	9.68
2006	6.78	1.16	7.94
2007	6.83	0.90	7.73
2008	6.70	1.02	7.72
2009	7.62	0.59	8.21

Source: Ministry of Plantation Industries and Commodities, 2010

In 2010, approximately 70% of the annual local tobacco demand (in the form of cigarettes) was met by local production and the balance was imported, especially those of higher flavoured quality, which was not produced in Malaysia, to meet the manufacturer's specification to produce premium brand cigarettes. The consumption for locally manufactured cigarettes is around 18 billion sticks a year valued at RM2.1 – 2.5 billion.

Tobacco is cultivated in marginal land especially on the coastal bris soil in the east coast of Peninsular Malaysia. Its production is to cater for the local manufacturing of cigarettes. Under the National Agricultural Policy (1992-2010), tobacco industry will still be continued in view of the fact that there are no other alternative crops that could generate competitive returns. Tobacco industry will be geared towards improving its competitive position in order to compete with other ASEAN tobacco producing countries which produce at a substantially lower cost. The production system will be restructured with a view to reduce its cost of production, increase its quality and yield as well as to maximize income to farmers. This means only efficient farmers will be in the industry. The total area planted with tobacco is also heavily dependent on the annual milling quota of tobacco cured leaves, as the millers decide on the amount of tobacco cured leaves to purchase from tobacco farmers. On the socio-economic aspects, tobacco industry will still continue to play an important role in uplifting the socio- economic status of the rural population especially in Kelantan, Terengganu, Kedah, Perlis and Sabah.

2.0 Industry Background

2.1 Production

The cultivation of Virginia tobacco decreased from 15,764 hectare in 2000 to 7,616 hectare in 2009 (Table 3). However, the production shows an increase in the first five years and it fell in the following year. Burley tobacco growing areas in Sabah began to decline in 2005 from 1,155 hectare to 591 hectare in 2009.

Table 3: Basic Statistics on Flue-Cured Virginia and Burley Tobacco, 1990-2010

| Year | Flue-Cured Virginia Tobacco | | Burley Tobacco | |
	Planted Area (Hectares)	Production ('000 Kg)	Planted Area (Hectares)	Production (Kg)
1990	10,168	10,154	401.0	459,350
1991	14,953	9,216	NA	NA
1992	11,905	11,245	NA	NA
1993	12,355	9,679	NA	NA
1994	10,219	6,087	NA	NA
1995	10,525	10,318	226.0	232,418
1996	10,982	11,723	279.0	268,031
1997	19,790	11,241	231.5	250,434
1998	14,200	11,169	318.3	276,889
1999	18,522	7,675	403.1	417,386
2000	15,764	7,172	661.0	755,528
2001	15,972	8,299	694.0	913,493
2002	14,390	11,304	1,189.0	1,707,474
2003	13,037	11,691	1,308.0	1,834,615
2004	12,148	12,858	1,132.0	1,484,637
2005	8,520	9,444	1,155.0	1,489,138
2006	6,778	6,062	1,163.0	1,569,173
2007	6,827	6,453	899.0	1,154,060
2008	6,702	6,278	1,137.0	1,085,544
2009	7,616	2,473	591.0	537,584
2010e	3,500	4,200	270.0	260,000

Source: National Kenaf and Tobacco Board (NKTB), 2010

2.2 Consumption

About 70% of cigarette production in the country used local tobacco, which are produced by farmers in Kelantan, while the balance is imported from neighbouring countries. Tobacco was consumed in the form of cigarettes. Table 4 shows per capita consumption of cigarette from 1990 to 2009. The per capita consumption of cigarette decreased from 1,024 sticks in 2000 to 487 in 2009. This shows that may be the awareness campaign about the dangers of smoking was successful or may be allegations made by the cigarette companies that the domestic smokers mostly consumed contraband cigarettes are true.

Table 4: Basic Statistics on Per Capita Consumption of Cigarette, 1990-2009

Year	Per Capita Consumption (Sticks)
1990	1,100
1991	1,037
1992	986
1993	920
1994	866
1995	920
1996	937
1997	951
1998	1,030
1999	1,000
2000	1,024
2001	990
2002	872
2003	971
2004	1,000
2005	900
2006	626
2007	600
2008	563
2009	487

Source: National Kenaf and Tobacco Board (NKTB), 2010

2.3 Price

Table 5 indicates the price of cured tobacco leaves increased by only 1.8 percent while price of cigarette increased by more than 300 percent from 2000 to 2009. As in many agriculture products, the problem of asymmetric price transmission also exists in the tobacco industry. The data indicates that after the opening up of the domestic market, the price of cigarettes increased quite significantly.

Table 5: Basic Statistics on Price of Cured Tobacco Leaves and Cigarette, 1990-2010

Year	Price Cured Tobacco Leaves (RM/kg)	Price cigarette (RM/stick)
1990	13.52	0.07
1991	12.63	0.07
1992	13.32	0.07
1993	13.39	0.07
1994	13.28	0.08
1995	13.58	0.10
1996	13.62	0.13
1997	13.15	0.10
1998	13.27	0.10
1999	12.89	0.10
2000	13.79	0.10
2001	13.72	0.07
2002	13.87	0.08
2003	13.69	0.08
2004	14.02	0.08
2005	14.18	0.12
2006	13.23	0.13
2007	13.69	0.20
2008	14.10	0.42
2009	14.04	0.41
2010e	14.00	0.45

Source: National Kenaf and Tobacco Board (NKTB), 2010

2.4 Key Issues[1]

Similar with other industrial crops, ASEAN Free Trade Agreement (AFTA) has a significant impact in terms of competitive performance of local tobacco farmers. A lower limit on production of tobacco in the contract farming is set after the liberalization to comply with AFTA. This forced many farmers, who cannot compete, to stop planting tobacco causing a significant reduction in the acreage planted. Prior to AFTA, cigarette manufacturers must meet the usage quota of 70% local tobacco cured leaves and 30% of imported tobacco cured leaves. After AFTA is implemented, there is no usage quota for local and import tobacco leaves to produce cigarettes for domestic consumption. In 2010, the usage was about 60% local tobacco cured leaves and 40% import tobacco cured leaves, but there were also manufacturers who imported 100% cured tobacco leaves (e.g. Philip Morris). Thus, after the implementation of AFTA in 2005, the local tobacco production dropped significantly.

In accordance with AFTA, on the production side, an exit plan called the Tobacco Industry Restructuring Plan was implemented in 2005, where an allocation of RM100 million was offered to tobacco curers to exit the industry. The payment depended on how many curer barns they owned. Currently, only about 150 curers applied for a new license and received a new quota. These curers are the ones who are competitive in producing cured leaves and can comply with AFTA. To be competitive, many curers plant their own tobacco apart from having established a group of competitive farmers under their supervision. This strategy was adopted to generate higher margins from tobacco cured leaves and green leaves. Green leaves growers can earn profit approximately of RM0.20 per kg, while curers can make about RM2 per kg.

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[1] All the key issues in this paper are summarized based on the discussion with Malaysian Kenaf and Tobacco Board (LKTN) on 14 September 2011 in Kota Bahru, Kelantan. LKTN officers present were Hj. Ismail bin Omar, Hj. Idris Mohd Salleh, Pn. Tan Eng Nee, En. Fajrol Zakuan Mohd Yussof and En. Nik Mohd Azran Nik Mohd Yusof.

On the consumption side, AFTA imposed liberalisation by reducing import duty from 40% to 5% on imported tobacco cured leaves. As a result, government assistance to tobacco industry is reduced, and most farmers operate contract farming with the curers. The tobacco manufacturers provide inputs to farmers through curers as production contract between them. The tobacco and kenaf board has applied for exclusion list in the AFTA, but to no avail. As a result, many local cigarette manufacturers increased their imports as the price of local cured leaves is higher compared to that of other ASEAN countries. Malaysia currently produces tobacco cured leaves at RM 33 per kg, while the Philippine, Thailand and Indonesia produce at a much lower price ranging from RM16 to RM 24 per kg. One of the cigarette manufacturers has also closed down its local operation because of high cost of production. Malaysian tobacco price is high because of the relatively high cost of labor compared to the Philippine and Indonesia coupled with increasing price of fertilizers and pesticides. In Malaysia, daily cost of labour is around RM14 per worker, while in the Philippine and Thailand the daily cost of labour is approximately RM5 per worker (National Kenaf and Tobacco Board, 2011).

The current market situation for tobacco industry after the implementation of AFTA depends purely on supply and demand for tobacco. This is based heavily on the price of cigarettes and cigarette consumption. On average, cigarette manufactures agreed to purchase approximately 4 million kg of local cured tobacco leaves while the remaining will be satisfied by imports. On the production side, there will be no more production of Burley tobacco in Sabah. Meanwhile in Peninsular Malaysia, starting 2006 the remaining tobacco farmers are either encouraged to rely on other sources of income such as crop integration (mostly watermelon and pineapple) or multi-tasking from tobacco farmer to tobacco curer in order to remain competitive. The first choice which is crop integration does not compete with the existing land for tobacco farming as tobacco is planted from January to May while the integration of crops in the next 6 months. In addition, the ratio of full tobacco farmers and tobacco growers and crop integration is 60% and 40%, and sharing of common soil which is sand (bris soil) help the soil to regain its nutrition as well as it helps both crops to minimize attacks from pests and diseases. Another alternative crop being considered is kenaf. Currently, kenaf is planted for the end product demanded by Panasonic that is kenaf fiber. However, a similar situation exists where the cost of producing kenaf is also high compared to other world producers.

2.5 Policy Environment

The government realised that the local tobacco farmers cannot compete with their foreign counterparts. Thus, several alternative crops have been suggested to tobacco farmers so that the level of previous income can be maintained. Since five years ago the Government had encouraged tobacco growers to plant kenaf. The National Kenaf and Tobacco Board Act 2009 underline the country's objective, policy and priority to develop and govern an orderly kenaf industry as the country's new source of economic growth in the east coast. Until 2010, the government has assisted 270 smallholders to establish 700 hectares of kenaf plantations in Kelantan, Terengganu, Kedah and Perlis. To achieve economies of scale, the kenaf cultivation will be extended to other areas instead of just tobacco growing areas. The Ministry of Plantation Industries and Commodities decided to revise the current policy from this year as there have been little progress and interest from tobacco growers to plant kenaf. The reason given was low price of kenaf. The current policy followed by the tobacco board is the National Commodities Industrial Policy and the National Food Agro Policy (MoA) 2011-2020. Under this policy, besides kenaf, other annual crops are also recommended to replace

tobacco. Currently, under the crop integration projects, the tobacco farmers are switching to watermelon, pineapple and sweet potatoes. However, marketing is the major problem as compared to tobacco where it has a ready market.

3.0 Objectives

It is apparent that the tobacco industry in Malaysia is facing globalization challenges in coping with AFTA. Thus, the objective of this paper is to determine the underlying factors that affect the tobacco industry in Malaysia. Hopefully, this paper will help farmers and policy makers to understand the factors that are significant in determining tobacco industry and to guide farmers and policy makers in making decision relative to tobacco industry in Malaysia.

4.0 Methodology

4.1 Conceptual Framework

Figure 2 presents a broad framework of the crop model structure in terms of supply and demand linkages. Each crop model, however, has its own particular structure. The left side of the Figure 2 provides the principal constituents of the supply sector commodity while the right is that of the demand sector. The model assumes that supply and demand will reach equilibrium in determining the price.

Farm price, substitute price, quota, yield, planted area and number of farmers are assumed to affect production. Total demand or consumption is affected by Malaysian index of industrial production and farm price.

Figure 2: Conceptual Framework of Tobacco Crop Model
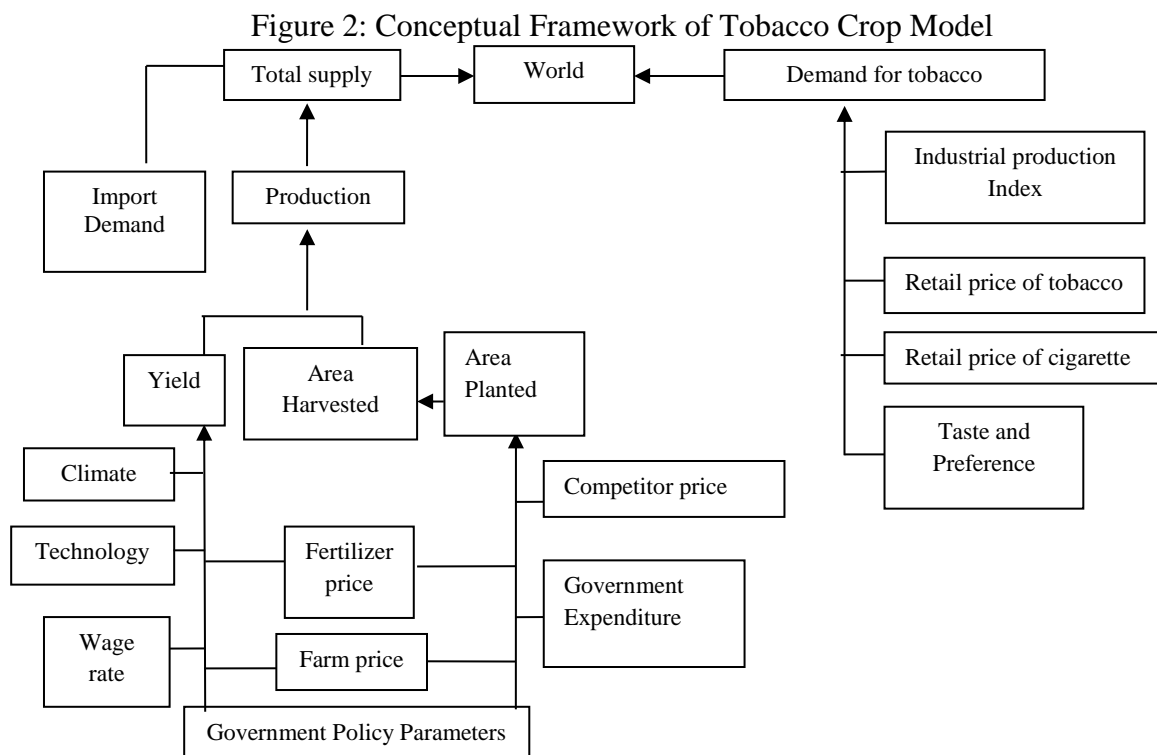
Source: Adopted from Malaysian Agricultural Commodity Forecasting and Policy Modelling (1993)

4.2 Model Specifications

a. Domestic demand

The demand for tobacco is a derived demand for cigarette, cigars etc. In this model, the demand equation for tobacco is specified as a function of own price, the price of cigarette and taste and preference. The tobacco domestic demand equation can be specified as:

$$TBQC_t = f\ (TBFP_t,\ CGRP_t,\ LMIPIMY) \tag{1}$$

$TBQC_t$	= Total usage of tobacco (tonnes);
$TBFP_t$	= Tobacco farm price of cured leaves (RM/kg)
$CGRP_t$	= Cigarette retail price (RM/stick); and
$LMIPIMY_t$	= Malaysia manufacturing industrial index of production

b. Area Planted

The model described the planted area equations of tobacco as a function of expected returns (producer price), cost of production (cost of inputs, wage rates and others) in addition to government policies (government expenditure as a proxy for subsidies).
The general equation for area planted of tobacco in Malaysia is as follows:

$$TBAP_t = f\ (TBFP_t, FERTP_t, TBINCTS_t, AFTA_t) \tag{2}$$

where

$TBAP_t$	= Area planted of tobacco (hectare)
FTP_t	= Fertilizer price (RM)
$TBFP_t$	= Tobacco farm price of cured leaves (RM/kg)
$TBINCTS_t$	= Incentive scheme for tobacco fertilizer (RM)
$AFTA_t$	= A dummy for AFTA Agreement, value is 0 for 1980-2004, and 1 for 2005-2009

c. Area Harvested

The area harvested is determined by the area planted. The increase in area planted will increase the area harvested in the same year as tobacco is an annual crop.
The general equation for area harvested of tobacco in Malaysia is as follows:

$$TBAH_t = f\ (TBAP_{t-i}) \tag{3}$$

where

$TBAH_t$	= Area harvested of tobacco (hectare)
$TBAP_t$	= Area planted of tobacco (hectare)
t	= Time period
i	= Lagged Time

d. Yield

The yield of tobacco cured leaves is dependent on its previous year's level, climate (rainfall, temperature), type of soil, seed quality, fertilizer price, and the environmental condition in addition to advancement in technology represented by a time trend.
The yield of tobacco in Malaysia can be presented as follows:

$$TBYD_t = f\ (FTP_t,\ TBFP) \tag{4}$$

where

$TBYD_t$ = Tobacco yield of cured leaves (kg/ha)

FTQ_t = Fertilizer price (RM)

$TBFP_t$ = Tobacco farm price of cured leaves (RM)

e. Production

The conversion rate for tobacco is approximately 70 to 100 kg of green leaves will produce 1 kg of cured leaves. However, due to lack of data, the yield function is estimated by using yield of cured leaves. Thus, the production of cured leaves is defined by yield multiply by area harvested. Thus, the production is an identity equation written as follows:

$$TBQ_t = TBAH_t \times TBYD_t \tag{5}$$

where

TBQ_t = Production of tobacco (tonnes)

$TBAH_t$ = Area harvested of tobacco (hectare)

$TBYD_t$ = Tobacco yield of cured leaves (kg/ha)

A restriction has been imposed on the tobacco production equation to account for the tobacco cured leaves quota.

f. Import

The net import equation is conceptually an excess demand equation, which is a horizontal difference between total consumption and production. The specification of the import demand for tobacco is similar to that of the domestic demand with slight differences in the variables. Thus, the import demand function can be specified as follows:

$$TBMQ_t = f(TBWP_t, MIPIMY_t, ERMY_t) \tag{6}$$

Where

$TBMQ_t$ = Import demand for tobacco at time t (tonnes)

$TBWP_t$ = Tobacco world price of cured leaves (RM/kg)

MIPIMY = Malaysia manufacturing industrial index of production

ERMY = Real exchange rate (RM/USD)

4.3 Data Sources

Data sources for tobacco are from National Kenaf and Tobacco Board (NKTB) and Malaysia Department of Statistic. Prior to the estimation of the model, two main groups of variables used in the system of equations should be identified. These are the exogenous and endogenous variables. The distinction between these groups is important, particularly for projection purposes. Exogenous Variable: Those variables determined outside the model; variables that do not depend on agriculture and has "small" effect on it. They include among others manufacturing index of industrial production. Endogenous Variable are variables determined within or by the agriculture sector context, that is, variables that depend on what is happening in one or more agricultural markets. This group includes variables like production of cured leaves and consumption of tobacco.

Table 6: Definitions and Classification of Variables

Acronym	Variable Name	Source
TBQC	Total usage of tobacco (tonnes)	Yusnita Sidi Ahmad, Strategic and Corporate Planning Division, Ministry of Plantation Industries and Commodities, personal communication, June 28, 2011
TBAP	Area planted of tobacco (hectare)	Yusnita Sidi Ahmad, Strategic and Corporate Planning Division, Ministry of Plantation Industries and Commodities, personal communication, June 28, 2011
TBAH	Area harvested of tobacco (hectare)	Yusnita Sidi Ahmad, Strategic and Corporate Planning Division, Ministry of Plantation Industries and Commodities, personal communication, June 28, 2011
TBYD	Yield of Cured Leaves (kg/Hectare)	Yusnita Sidi Ahmad, Strategic and Corporate Planning Division, Ministry of Plantation Industries and Commodities, personal communication, June 28, 2011
TBMQ	Import demand for tobacco at time t (tonnes)	Yusnita Sidi Ahmad, Strategic and Corporate Planning Division, Ministry of Plantation Industries and Commodities, personal communication, June 28, 2011
TBFP	Tobacco farm price of cured leaves (RM)	Yusnita Sidi Ahmad, Strategic and Corporate Planning Division, Ministry of Plantation Industries and Commodities, personal communication, June 28, 2011
FTP	Fertilizer Price (RM)	Agriculture Statistical Handbook Malaysia, various issues (1983-1989). Malaysia External Trade Statistics (1990-2004). Department of Statistics (2010). Malaysia External Trade Statistics (2005-2008). Department of Statistics (2007).
TBINCTS	Incentive Scheme for Tobacco Fertilizer (RM)	Yusnita Sidi Ahmad, Strategic and Corporate Planning Division, Ministry of Plantation Industries and Commodities, personal communication, June 28, 2011
CGRP	Cigarette retail price (RM)	Yusnita Sidi Ahmad, Strategic and Corporate Planning Division, Ministry of Plantation Industries and Commodities, personal communication, June 28, 2011
Acronym	Variable Name	Source
MMIIP	Malaysia Manufacturing Index of Industrial Production	Department of Statistics (2011). Malaysia Economic Statistics Time Series 2011. Department of Statistics, Putrajaya.
TBWP	Tobacco world price of cured leaves (RM/kg)	Yusnita Sidi Ahmad, Strategic and Corporate Planning Division, Ministry of Plantation Industries and Commodities, personal communication, June 28, 2011
ERMY	Exchange Rate (RM/USD)	Bank Negara Malaysia (2011). Exchange Rate. Retrieved at http://www.bnm.gov.my. (June 1, 2011).
TBQUO	Tobacco cured leaves quota (tonnes)	Yusnita Sidi Ahmad, Strategic and Corporate Planning Division, Ministry of Plantation Industries and Commodities, personal communication, June 28, 2011
AFTA	ASEAN Free Trade Agreement	A dummy for AFTA Agreement, value is 0 for 1980-2004, and 1 for 2005-2009

Note: NKTB - National Kenaf and Tobacco Board, DOS - Department of Statistic, GTIS – Global Trade Information Service, IMF – International Monetary Fund.

4.4 Estimated Model

The estimated model is shown below in Table 7. The results, overall, indicate that the model described in methodology section is the proper specification to examine the market variables response as all variables carry expected signs.

The supply side contains two equation, which are area harvested and yield. The equation fits the data and all coefficients carry the correct signs although only a number of variables are significant. In the area planted equation, fertilizer price and incentive scheme for tobacco fertilizer shows significant results. An increase of 1% in fertilizer price will cause a decrease of 0.5% in area planted for tobacco. This tally with the current scenario in tobacco industry, where input price is an important factor affecting the decision of tobacco farming as it will increase costs of production. On the other hand, an increase of 1% in incentive scheme for tobacco fertilizer will increase 0.8% of area planted. This implies that incentive scheme for tobacco fertilizer as a form of government intervention is very important to tobacco farmers as this will reduce the costs of production for producing tobacco. Although the AFTA agreement is viewed as a major influence to the tobacco industry in Malaysia, however the results indicate that the variable is not significant in the period of study.

In the yield equation, only tobacco farm price shows significant result. An increase of tobacco farm price by 1% will increase yield of tobacco by 2.2%. Higher price will attract tobacco farmers to be more productive and this will lead to higher yield. This is also parallel with the current scenario where price is a very important indicator in the tobacco industry.

On the demand side, tobacco domestic demand is affected by tobacco farm price, cigarette retail price and Malaysian manufacturing industrial production index. All the coefficients show expected signs. In addition, cigarette price shows significant negative relationship to domestic demand for tobacco. An increase in cigarette price by 1% will lead to a decrease in tobacco domestic consumption by 1.0%. The tobacco domestic consumption is the total usage tobacco in the nation. As cigarette price increase, firms will be sensitive towards the price increase and will reduce quantity of tobacco consumed or processed. On the other hand, Malaysia manufacturing industrial production index as an indicator of economic activity level shows insignificant positive relationship to total usage of tobacco.

The import demand is modelled by tobacco world price, Malaysia manufacturing industrial production index and real effective exchange rate. All variables showed expected signs with only Malaysia manufacturing industrial production index is significant in explaining the import demand. An increase in industrial index of production by 1% will increase tobacco import by 1.4%. This shows that import of tobacco is demanded for the production of cigarette in the country.

Supply

Area Planted

LTBAP =	-0.572	+0.131LTBFP$_t$	-0.388LFTP$_t$***	+0.737LTBINCTS$_t$**	-0.177AFTA
	(-0.36)	(0.29)	(-3.66)	(7.61)	(-1.598)
	[0.72]	[0.77]	[0.00]	[0.00]	[0.12]

Adjusted R^2 = 0.86 F-Statistics 34.1 DW 1.96

Area Harvested

LTBAH=	4.122***	+0.990LTBAP$_{t-1}$
	(3.10)	(3.97)
	[0.00]	[0.00]

Adjusted R^2 = 0.37 F-Statistics 15.7 DW 1.80

Yield

LTBYD=	5.373	-0.107LFTP$_t$	+2.220LTBFP$_t$***
	(2.46)	(0.72)	(2.66)
	[0.02]	(0.48)	[0.01]

Adjusted R^2 = 0.03 F-Statistics 1.31 DW 1.83

Demand

Domestic Demand

LTBQC=	9.649***	-0.061LTBFP$_t$	-0.957CGRP$_t$***	+0.033LMMIIP$_t$
	(5.09)	(-0.08)	(-4.79)	(0.62)
	[0.00]	[0.94]	[0.00]	[0.55]

Adjusted R^2 = 0.60 F-Statistics 8.65 DW 1.90

Import Demand

LTBMQ =	3.9799	-0.259LTBWP$_t$	+1.413LMMIIP$_t$***	+0.498LEXM$_t$
	(1.88)	(-0.51)	(3.00)	(0.47)
	[0.08]	[0.62]	[0.01]	[0.65]

Adjusted R^2 = 0.76 F-Statistics 15.52 DW 1.77

Note: Number in parentheses is t-values.
*** Significant at 1 percent level
** Significant at 5 percent level
* Significant at 10 percent level

4.0 Concluding Remarks

The result shows tobacco farmers are found to be more concerned on changes in input particularly, fertilizer. Both incentive scheme for tobacco fertilizer and fertilizer price show significant impact on area planted as both the factors can cost of production. The result also shows that in the area planted, the elasticity of incentive scheme for tobacco fertilizer is bigger than fertilizer price; implying farmers are still willing to plant tobacco as long as incentive scheme is continued even though fertilizer price is increasing. Another significant determinant on supply side is tobacco farm price. Higher price will attract tobacco farmers to be more productive and this will lead to higher yield. A dummy variable representing AFTA agreement has been included to study the effects on the area planted equation, however the result shows it is not significant in affecting farmers' decision to plant tobacco.

On the demand side, price of cigarette is significant in explaining the changes in tobacco domestic demand. Price of cigarette includes excise tax imposed by the government. As

cigarette price increase, firms will be sensitive towards the price increase and this will reduce the quantity of tobacco consumed by the manufacturers. Meanwhile, the determinants for import demand include Malaysia manufacturing index of industrial production as a proxy for income and world price of tobacco. The result shows that an increase of 1% in Malaysia manufacturing index of industrial production will lead to a significant increase of 1.4% in import demand for tobacco.

5.0 Policy Implications

Tobacco is an income generating crop to farmers and government. This is because while farmers enjoy good returns from tobacco cured leaves, the government enjoyed income from excise duties and import duties on tobacco products. However, due to globalisation challenges by AFTA, the relatively higher local tobacco price compared to its neighbouring countries drove tobacco manufacturers, particularly multinational companies, to invest in other countries that offer lower production costs. This has caused a steady decline in the area planted for tobacco. The government has decided to gradually replace the tobacco planted area with kenaf. However, the progress is still unknown as the kenaf industry in Malaysia is still at a development stage, and instead, watermelon is planted as side income when in monsoon season. Nevertheless, this does not affect the decision to plant tobacco as it has different planting period.

The policy makers of tobacco industry in Malaysia believed that the AFTA agreement has affects on the farmers' decision to plant tobacco. However, the result of this study shows that rather than AFTA, farmers are more concerned on the changes in fertilizer price and the amount of incentive schemes provided by the government to facilitate tobacco planting. In facing challenges of globalization, it is important to ensure that farmers are able to cope with the removal of production quota and compete with prices of tobacco offered by neighbouring countries. Hence, this also implies that farmers must generate enough returns to cover their production cost such as fertilizer. A lower fertilizer price and a higher amount of incentive scheme would cause farmers to increase area planted of tobacco.

6.0 Suggestions for Further Research

Some variables are not included in estimating the area planted equation such as wage rate of tobacco farmers and climate due to non availability of data. It would be better for this research if the variables are included.

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Malaysian Sugar Industry: Is There A Competitive Advantage?

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Abstract

The paper outlined a look into the trend of competitive advantage of sugar industry, as well as the growth in trade especially from the context of Balance of Trade (BOT) perspective. The competitive advantage of Malaysia's sugar sector is examined from the aspect of Relative Export Advantage (RXA), Relative Import Advantage (RMA), and Relative Trade Advantage (RTA), and the results were then compared to that of selected ASEAN countries for competitive positioning. The trade data used for the analysis is the annual exports and imports data retrieved from the Global Trade Information System. The results indicate that Malaysia is not competitive in raw sugar but possesses competitive potential in processed sugar. However, the competitiveness level is declining.

Keywords: Sugar, Balance of Trade (BOT), Relative Export Advantage (RXA), Relative Import Advantage (RMA), and Relative Trade Advantage (RTA).

1.0 Introduction

The domestic sugar consumption in Malaysia has been mounting up over the years and to service the growing demand, Malaysia has to increase its imports of sugar. The sugar production seems to be in the insufficient stage for domestic consumption and the situation is expected to worsen especially during the festive season. Thus, the trade competitiveness of the sugar sector would give a clear trade position of Malaysia's sugar industry and extended to include another four selected ASEAN countries because they are close competitors either in production or trade.

The sugar sector can still be considered as internationally competitively low whereby we import raw sugar and add value to it and re-export as the final product. This is seen as normal for developing countries with limited factor endowments. Any country can import raw materials and become a major player in the export of final products even though that particular country has no comparative advantage in the production of raw materials. That is why, this paper discusses about the competitive position of the Malaysian Sugar Industry among four (4) selected ASEAN countries which are Indonesia, Singapore, Thailand and the Philippines even though some of these countries are not producing raw sugar. In 2010, the bulk of Malaysian sugar, 41%, was imported from Brazil which amounted to 509,630 tonnes, followed by 447,480 tonnes from Australia (36%) and 174,000 tonnes from Thailand (14%). Malaysia also received raw sugar from Nicaragua amounting to 99,400 tonnes (8%) and Guatemala with 12,430 tonnes (0.6%) and local sugar production contributing to only 1% of the sugar supply at 17,000 tonnes (Mustapa, 2010). Currently, Malaysia is only about 5% self-sufficient in domestic sugar production.

Early in 2009, Malaysia is the 8th highest sugar user in the world and to deal with the growth in demand, Malaysia has been increasing its imports of sugar (Shahrir, 2009). With excess

refining capacity, some of the imports of raw cane sugar are refined and re-exported to regional markets. The government monitors imports through quota restrictions controlled by licences. Tariffs on imports have been eliminated in line with the world trade agreement.

In this paper, the competitiveness analysis is studied using a Relative Trade Advantage (RTA) indicator. Most studies have evaluated trade competitiveness using the Revealed Comparative Advantage (RCA) (Balassa 1965 and 1977; Ferto and Hubbard, 2003; Bojnec and Ferto, 2006 and Ismail et al., 2010) and Relative Trade Advantage (RTA) (Vollrath, 1991 and Bojnec and Ferto, 2009) to recognise potential products. Similarly in this study, we evaluate the relative trade advantages of Malaysian Sugar Industries in order to discover the level of competitiveness position and the composition of Malaysian Sugar Industries in the global market, in relation to the main rival countries in the ASEAN region.

1.1 Industrial Background

Sugar

Under the 3rd National Agricultural Policy, production of this sector will be encouraged for import substitution and for supplying quality raw materials for the further development of finished products. New Research and Development and necessary supports from the Government will further promote the sugar industry to enhance the development of higher value-added products.

Production

Malaysian centrifugal sugar production peaked at 108 000 tonnes in 1997 and this sugar production have declined to around 107 000 tonnes in 1998-1999 (USDA, 2011). Basically, production is concentrated in the North West of peninsular Malaysia (Perlis and Kedah) and most of the cane area is under plantation management. The lack of growth in cane area largely reflects the higher payment received by farmers for competing crops that grow well in the region, especially oil palm.

Consumption

Population and income growth explained for most of the gains in sugar consumption. Ice cream, chocolates, sweetened condensed milk, and soft drinks are some of the items that have created new demand for sugar besides household demand. The Malaysian Government estimates domestic requirements each year and sets a quota allocation for refiners and millers to supply the domestic market. Based upon this estimate the refiners and millers are issued licenses to import raw sugar. Quantities imported above these quotas require prior approval. The level of imports permitted is dependent upon expected domestic production and may be adjusted according to the progress of the crop. Raw sugar imported for re-export as refined sugar is also covered by licenses.

Trade

There was a fluctuating trend for the balance of trade in sugar products in Malaysia from 1997 to 2008 (Table 1). The trend shows that Malaysia is still relying on the import of sugar products. However, it can be seen that even with the total import exceeding the total export, the total export throughout the years is increasing probably because of the government

initiatives made to control the supply and demand which meant they still had to import. Generally, the main exporters of raw sugar to Malaysia are Australia, Thailand and Fiji. For a number of years, Malaysia has maintained long term agreements (LTA's) with Australia and Fiji for its sugar supplies. Shipments under these LTA's have accounted for about 40% to 60% of annual import requirements. Import licensing, administered by the Ministry of Trade and Industry, has replaced the duty levied on imports of refined sugar. The sugar industry also utilizes its excess refining capacity to produce refined sugar for export to Singapore, Indonesia, New Zealand and periodically South Asia and Middle Eastern countries, especially Saudi Arabia.

Table 1: Total Export, Total Import and Balance of Trade (BOT) of the Sugar Industry in Malaysia

Year	Total Import	Growth Rate (%)	Total Export	Growth Rate (%)	Balance of Trade (BOT)	Growth Rate (%)
1997	970369633	-	221509921	-	-748859712	-
1998	1148169187	18%	257013580	16%	-891155607	19%
1999	1086906648	-5%	284213832	11%	-802692816	-10%
2000	1075868875	-1%	349806902	23%	-726061973	-10%
2001	1227801921	14%	381344362	9%	-846457559	17%
2002	1147729507	-7%	471247489	24%	-676482018	-20%
2003	1080223179	-6%	487811746	4%	-592411433	-12%
2004	1177656432	9%	439617468	-10%	-738038964	25%
2005	1333158072	13%	467746360	6%	-865411712	17%
2006	1679874709	26%	499636912	7%	-1180237797	36%
2007	1837640767	9%	665850483	33%	-1171790284	-1%
2008	1727174772	-6%	471741231	-29%	-1255433541	7%

Sources: Global Trade Information System

2.0 Results and Discussions

There are 17 sub-groups in the sugar sector as categorised by the Global Trade Atlas Navigator (Table 2). The products can be grouped into low processing(raw materials) up to complex processing (final products).

Table 2: Sub-groups in Sugar, Sugar Preparation

HS	DESCRIPTION
170111	Cane Sugar
170112	Beet Sugar
170191	Refined Sugar, In Solid Form, Containing Added Flavouring or Colouring Matter
170199	Refined Sugar, In Solid Form, Not elsewhere stated
170219	Other lactose & lactose syrup
170220	Maple sugar and maple syrup
170230	Glucose, not containing fructose or containing in the dry state less than 20% by weight of fructose
170240	Glucose & glucose syrup, containing in the dry state at least 20% but < 50% by weight of fructose, excluding invert sugar
170250	Chemically pure fructose
170260	Fructose, containing in the dry state more than 50% by weight of fructose
170290	Flavoured or coloured sugars (excluding maltose)
170310	Cane molasses
170390	Other molasses
170410	Chewing gum, whether or not sugar-coated
170490	Other sugar confectionery not containing cocoa

2.1 Relative Export Advantage (RXA) Indices

The computed RXA indices for Indonesia, Malaysia, the Philippines, Singapore and Thailand are presented in Tables 3, 4, 5, 6, and 7, respectively. A RXA index of greater than one signifies a comparative advantage while a RXA index less than one implies a comparative disadvantage. The RXA indices however, show mixed results of comparative advantage between sub-groups in the sugar and sugar preparation sector.

From Table 4, Malaysian sugar and sugar preparation sector have possessed positive indices in RXA. Furthermore, we can observe that Malaysia's most competitive sub-group is HS170199, which had a consistent RXA value greater than one for ten analysed years. There is a comprehensible revealed comparative advantage in other molasses sub-groups HS170390 for Indonesian since the export performance was slightly better than other selected ASEAN countries. Additionally, Indonesia possessed a competitive advantage in HS170191 (Refined Sugar, in Solid Form, Containing Added Flavouring or Colouring Matter), HS170240 (Glucose & Glucose syrup, containing in the dry state at least 20% but < 50% by weight of fructose, excluding invert sugar), and 170490 (Other sugar confectionery not containing cocoa). Singapore also possessed a competitive advantage in a few sub-groups such as HS170191 (Refined Sugar, In Solid Form, Containing Added Flavouring or Colouring Matter), HS170310 (Matter maple sugar and maple syrup and Cane molasses) (Table 6). The Philippines and Thailand however, were competitive in the same two sub-groups which are HS170111 (cane sugar) and HS170390 (other molasses).

Table 3: RXA in the Indonesian Sugar Sector, 1999-2008

HS	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
040900	0.03	0.04	0.17	0.02	0.21	0.86	1.09	0.59	0.51	0.63
170111	0.33	0.14	0.09	0.02	0.02	0.01	0.02	0.01	0.02	0.02
170112	0.07	18.45	0.36	0.06	0.64	0.2	0.03	0.02	0	0
170191	4.07	3.64	8.33	2.57	1.46	1.2	0.97	0.18	0.23	0.06
170199	0.01	0.01	0.02	0.01	0.02	0.07	0.01	0.01	0.01	0
170219	0.38	0.26	0.3	0.24	0.35	0.12	0.39	0	0.68	0.09
170220	0.32	0.35	0.09	1.25	0.22	4.69	0.53	0.07	0.07	0.06
170230	0.01	0.07	0.03	0.06	0	0.02	0	0	0	0
170240	3.79	1.81	1.98	1.87	1.15	0.7	0.77	1.15	2.34	1.22
170250	1.37	0.01	0.01	0.11	0.03	0.02	0.05	0.01	0	0.01
170260	0.04	0	0	0.17	0	0.02	0.03	0	0	0
170290	0	0	0.19	0.05	0	0.61	0.14	0	0	0.08
170310	1.66	1.45	4.61	2.1	2.15	2.92	1.65	0.55	1.08	0.6
170390	54.45	46.5	27.81	36.63	28.36	42.56	104.69	372.35	151.2	242.34
170410	2.27	0.93	0.59	1.81	1.79	1.24	0.42	0.32	3.26	9.55
170490	6.38	7.21	9.57	9.95	16.52	5.98	5.22	2.77	4.39	1.64

Table 4: RXA in the Malaysian Sugar Sector, 1999-2008

HS	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
040900	0	0	0.01	0.18	0.52	0.09	0.04	0.11	0.45	1.11
170111	0	0	0.01	0	0	0.05	0	0	0	0.01
170112	0	0	0	0	0	0	0	0	0	0
170191	0.66	0.88	0.17	0.09	0.11	0.91	0.01	0.01	0.02	0.05
170199	11.34	11.18	12.27	10.97	7.88	8.78	5.65	7.58	9.38	3.2
170219	0.11	0.07	0.07	0.16	0.13	0.1	0	0.02	0.01	0.02
170220	0.06	0.2	0.1	0.13	0.14	0.17	0.17	0.24	0.08	0.05
170230	0	0	0.02	0	0	0	0.01	0	0	0.02
170240	1.27	0.88	0.83	0.54	0.44	0.4	0.52	0.48	0.25	0.17
170250	0.28	0.15	0.11	0.36	0.4	0.36	1.11	1.39	1.68	3.34
170260	0.15	0.37	0.28	0.12	0.05	0.13	0.03	0.05	0.06	0.09
170290	0.01	0	0	0	0.01	0.01	0	0	0	0
170310	0.81	0.94	0.91	1.16	1.29	0.83	2.94	1.87	1.31	4.33
170390	0.3	0.32	0.14	0.03	0.09	0.14	0.31	0.14	0.11	0.25
170410	0.26	0.05	0.05	0.06	0.13	0.15	0.15	0.22	0.09	0.26
170490	0.03	0.02	0.27	0.16	0.24	0.43	0.68	1.06	0.84	1.92

Table 5: RXA in the Philippines Sugar Sector, 1999-2008

HS	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
040900	0	0	0	0	0	0	0	0	0	0
170111	11.1	10.62	2.79	5.24	8.01	9.09	5.69	5.28	5.43	3.24
170112	0	0	0	0	0	0	0	0	0	0
170191	0.04	0	0	0	0	0	0	0	0	0
170199	0	0	0	0	0.01	0	0.01	0.01	0.04	0.02
170219	0	0	0	0	0	0	0.12	0	0	0
170220	0	0	0	0	0	0	0	0	0.03	0.04
170230	0	0	0	0	0.01	0	0.01	0	0.02	0.03
170240	0	0	0	0	0	0	0	0	0.03	0
170250	0	0.04	0.03	0.06	0	0.01	0.05	0.23	0.42	0
170260	0	0	0	0	0	0	0	0	0	0.01
170290	0	0	0	0	0	0	0	0	0	0
170310	0.04	0.01	0.01	0.03	0.03	0.05	0.12	0.09	0.18	0.29
170390	9.07	5.31	12.2	8.82	6.32	8	8.66	7.54	3.71	7.25
170410	0	0	0	0	0	0	0	0	0.01	0.06
170490	2.6	3.83	7.79	5.92	4.15	3.48	5.56	8.18	9.5	11.25

Table 6: RXA in the Singapore Sugar Sector, 1999-2008

HS	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
040900	2	2.72	0.99	0.57	0.41	0.66	0.53	0.68	0.42	0.43
170111	0.01	0	0.29	0.01	0.19	0.05	0.03	0.03	0.04	0.02
170112	0.01	0	0	0	0	0.01	0	2.31	0	0
170191	1.24	0.17	138.32	136.06	36.06	101.45	35.83	20.97	31.88	77.8
170199	1.71	1.01	0.59	0.89	1.44	0.91	1.52	1.16	1.58	0.77
170219	1.24	0.24	1.24	0.25	0.09	0.08	0.6	0.32	0.1	0.13
170220	2.41	4.93	3.13	6.06	3.68	3.69	7.52	8.31	1.03	0.08
170230	0.13	0.11	0.04	0.04	0.11	0.12	0.12	0.06	0.06	0.05
170240	0.41	0.24	0.08	0.08	0.05	0.05	0.08	0.27	0.22	0.15
170250	3.74	10.8	3.68	0.26	0.22	0.15	0.11	0.35	0.05	0.19
170260	0.74	0.76	1.03	1.01	0.53	1.43	0.82	0.9	0.23	0.32
170290	0.07	0.06	0.11	0.14	0.06	0.05	0.02	0.04	0.02	0.02
170310	6.37	9.04	3.17	2.24	2.14	1.45	1.77	2.4	1.18	4.39
170390	0.37	0.09	0.05	0.04	0	0	0	0	0	0.01
170410	0.58	0.53	0.05	0.14	0.2	0.39	1.14	0.59	0.25	0.07
170490	0.05	0	0	0	0	0	0.19	0.67	0.34	0.21

Table 7: RXA in the Thailand Sugar Sector, 1999-2008

HS	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
040900	0.03	0.04	0.03	0.02	0.03	0.04	0.09	0.1	0.14	0.04
170111	4.28	4.6	4.8	2.68	2.79	2.64	2.31	2.31	1.95	2.52
170112	0	0	0	0	0	0	0	0	0.08	0
170191	0.11	0.02	0.01	0	0.01	0.27	1.42	1.05	0.3	0.32
170199	0.68	0.7	0.44	1	1.16	1.24	0.84	0.8	1.6	1.05
170219	0	0	0	0	0	0	0	0.01	0.01	0
170220	0.03	0.01	0.18	0.16	0.01	0.02	0.02	0.04	0.05	0.05
170230	0	0	0	0	0	0	0	0.02	0.01	0
170240	0.09	0.08	0.1	0.08	0.07	0.09	0.1	0.13	0.17	0.28
170250	0.06	0.13	0.25	0.28	0.35	0.53	1.81	0.97	0.03	0.04
170260	0	0	0	0	0	0.01	0.01	0.1	0.01	0.08
170290	0	0	0	0	0	0.01	0.01	0.02	0	0.01
170310	0.36	0.28	0.3	0.29	0.2	0.33	0.39	0.44	0.31	0.29
170390	3.3	4.23	5.46	5.33	3.83	3.22	6.17	4.3	2.38	2.21
170410	0.01	0	0	0	0	0.01	0	0.01	0.01	0.37
170490	0.11	0.07	0.06	0.05	0.13	0.09	0.13	0.21	0.15	0.53

2.2 Relative Import Advantage (RMA) Indices

A RMA index of greater than one suggests an import specialization disadvantage while less than one reflects an import specialization advantage (Vollrath, 1991). The RMA indices show mixed results of import specialization advantage between sub-groups in the Sugar and Sugar Preparation Sector.

From Table 9, the RMA ratios for Malaysia in all sub-groups except for cane sugar (HS170111), Beet Sugar (HS170112) and other lactose & lactose syrup (HS170219) are smaller than one, indicating an import specialization advantage. Indonesia did not have an import specialization advantage in Cane sugar (HS170111), Beet sugar (HS170112) Refined Sugar, In Solid Form, Containing Added Flavouring or Colouring Matter (HS170191), Refined Sugar, In Solid Form, Not elsewhere stated (HS170199) and Maple sugar and maple syrup (HS170220). Singapore's RMA indices are mostly smaller than one, indicating that it has an import specialization advantage. While enjoying a comparative advantage in Beet Sugar (HS170112), Refined Sugar, In Solid Form, Containing Added Flavouring or Colouring Matter (HS170191), Refined Sugar, In Solid Form, Not elsewhere stated (HS170199), other lactose & lactose syrup (HS170219), Maple sugar and maple syrup (HS170220), Chemically pure fructose (HS170250) and Cane molasses (HS170310), Singapore also encountered an import specialization disadvantage in several other sub-groups.

Table 8: RMA in Indonesia's Sugar Sector, 1999-2008

HS	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
040900	0.04	0.06	0.17	0.13	0.14	0.16	0.06	0.07	0.04	0.11
170111	1.54	1.77	2.42	1.58	0.52	0.88	1.07	1.49	2.65	0.85
170112	3.89	1.46	0.18	0.16	191.9	0.63	1.42	1.64	0	0
170191	0.58	2.09	0	0.02	8.29	0.56	7.91	1.09	0	0
170199	2.06	1.65	0.85	1.38	1.67	3.28	2.25	1.76	1.51	2.79
170219	0.39	0.83	0.76	0.81	0.55	0.68	0.33	0.62	0.27	0.51
170220	0.88	0.31	0.45	0.6	0.71	1.99	1.1	1.16	1.12	3.16
170230	0.01	0	0.01	0.02	0.08	0.04	0.32	0.02	0	0.01
170240	0.05	0.12	0.18	0.23	0.15	0.2	0.11	0.24	0.15	0.6
170250	0.01	0.01	0.03	0.06	0.06	0.2	0.16	0	0.09	0.16
170260	0.05	0.06	0.06	0.09	0.04	0.09	0.03	0.06	0.04	0.05
170290	0	0.04	0.05	0.1	0.08	0.08	0.01	0.01	0	0.03
170310	0.15	0.2	0.5	0.4	0.23	0.65	0.46	0.34	0.22	0.97
170390	0.33	0.32	0.51	0.46	0.42	0.17	0.03	0.02	0.1	0.05
170410	0.76	1.72	2.71	3.83	0.73	1.38	1.09	1.21	0.36	2.13
170490	0.08	0.27	0.42	0.88	0.26	0.24	0.1	0.09	0.04	0.13

Table 9: RMA in Malaysia's Sugar Sector, 1999-2008

HS	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
040900	0.29	0.28	0.26	0.2	0.29	0.23	0.26	0.22	0.29	0.27
170111	18.5	20.4	17.51	15.95	13.12	12.64	15.54	15.33	13.88	13.24
170112	0	0	0	0	0	0	0	0	0	0
170191	0	0	0.18	0.18	0.07	0	0.02	0.02	0.08	0.1
170199	0	0	0	0.01	0.04	0.09	0.01	0.01	0.02	0.02
170219	0.41	0.37	0.34	0.65	0.63	0.83	1.01	1.01	0.57	0.78
170220	0.11	0.3	0.45	0.31	0.27	0.21	0.26	0.25	0.18	0.2
170230	0	0	0.01	0	0.01	0.01	0.01	0.01	0.01	0.01
170240	0.09	0.08	0.16	0.17	0.17	0.11	0.15	0.17	0.18	0.21
170250	0.05	0.05	0.05	0.05	0.05	0.03	0.01	0.01	0.04	0.01
170260	0.26	0.17	0.25	0.18	0.19	0.2	0.31	0.24	0.22	0.42
170290	0	0	0.02	0.03	0.01	0.05	0.03	0.05	0.02	0.02
170310	0.79	0.72	0.84	0.78	0.82	0.9	0.84	0.73	0.94	1.17
170390	0	0	0.05	0.03	0	0.02	0	0.01	0.01	0.02
170410	0.24	0.25	0.16	0.16	0.2	0.25	0.26	0.31	0.21	0.29
170490	0.25	0.22	0.24	0.45	0.43	0.46	0.44	0.53	0.55	0.65

Table 10: RMA in the Philippines' Sugar Sector, 1999-2008

HS	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
040900	0.1	0.08	0.05	0.07	0.06	0.07	0.12	0.22	0.09	0.26
170111	0.95	0.07	0.58	0.49	0	0	0	0.01	0	0
170112	0	0	0	0	0	0	0	0	0.01	0
170191	0	0	0	0	0	1.68	0.56	3.94	4.21	1.85
170199	1.24	4.92	1.44	1.35	2.19	1.12	1.06	2.46	0.39	0.43
170219	0	1.99	3.11	3.69	4.29	8.25	7.66	4	6.48	5.1
170220	0	3.84	6.71	7.45	5.44	1.34	1.21	1.39	4.13	9.67
170230	0.01	0.04	0.34	0.03	0.1	0.07	0.17	0.02	0.02	0.02
170240	2.23	2.74	2.62	2.1	2.68	3.33	4.38	2.66	2.62	4.69
170250	0.49	1.2	1.81	2.76	4.14	4.82	3.41	1.59	1.55	0.95
170260	0	0	0	0.1	0.26	0.3	0.31	0.64	0.66	2.14
170290	0	0	0.04	0.12	0.04	0.02	0	0.02	0.14	0.17
170310	1.53	1.3	2.22	3.11	3.76	5.89	5.84	3.84	6.32	7.29
170390	1.57	0.87	0.5	0.86	1.81	0.14	0	0.06	5.9	0
170410	0	0	0.06	0	0	0	0	0.1	0	0.02
170490	0.11	0.14	0.39	0.71	0.99	0.89	0.94	0.54	0.31	0.59

Table 11: RMA in Singapore's Sugar Sector, 1999-2008

HS	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
040900	0.8	0.66	0.62	0.59	0.64	0.76	0.88	0.79	0.76	0.74
170111	0.7	0.74	0.86	0.26	0.05	0.01	0.01	0.01	0	0
170112	0.12	0.01	5.49	1.73	0.01	0.01	0	1.58	0	0
170191	0.11	0.08	1.69	0.52	0.19	0.08	0.15	0.1	0.48	0.49
170199	2.77	2.86	2.45	6.02	9.65	7	7.35	8.17	7.63	5.53
170219	0.4	0.33	0.41	0.58	0.72	1.89	1.8	1.45	1.58	2.02
170220	1.88	1.49	1.58	3.62	2.42	2.87	4.53	1.61	1.08	0.42
170230	0.57	0.52	0.4	0.41	0.38	0.43	0.38	0.33	0.29	0.18
170240	0.31	0.22	0.14	0.11	0.22	0.37	0.25	0.1	0.17	0.37
170250	0.42	0.41	0.13	0.19	0.48	0.64	0.92	1.38	1.63	0.94
170260	0.22	0.25	0.45	0.4	0.21	0.44	0.36	0.37	0.26	0.68
170290	0.03	0.02	0.06	0.58	0.46	0.06	0.05	0.04	0.06	0.07
170310	3.28	3.6	3.31	2.84	2.88	3.23	2.43	2.55	2.19	3.13
170390	0.01	0.01	0	0.01	0.03	0.04	0.04	0.03	0.04	0.03
170410	0.08	0.14	0.03	0.05	0.13	0.15	0.21	0.06	0.03	0.04
170490	0.01	0	0	0	0.01	0	0.08	0.18	0.19	0.16

Table 12: RMA in Thailand's Sugar Sector, 1999-2008

HS	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
040900	0.87	0.94	7.96	3.49	0.52	1.09	0.76	0.88	0.37	0.32
170111	0	0	0	0	0	0	0.09	0.16	0	0.01
170112	0.01	0.05	0.04	0	0	0.01	0	0	0	0
170191	0	0	0.16	0	0.93	0	0.01	0.08	0.05	0.62
170199	0	0	0	0	0	0	0	0.05	0	0.04
170219	29.54	26.83	15.44	12.04	14.22	15.29	19.55	21.25	16.62	7.68
170220	6.1	4.54	2.12	2.22	3.03	2.39	4.5	7.8	8.1	9.69
170230	0.15	0.1	2.41	6.86	0.03	0.03	0.65	0.45	0.32	0.04
170240	2.85	2.19	1.51	1.38	1.42	1.38	1.58	1.58	1.15	2.32
170250	0.01	0.03	0.03	0.04	0.07	0.04	0.4	0.75	0.05	0.08
170260	0.87	1.4	0.51	0.6	0.69	0.85	0.66	0.76	0.76	1.31
170290	6.74	1.24	0.22	0.08	3.26	0.12	0.29	0.48	0.12	0.08
170310	5.82	6.43	6.7	8.38	13.61	12.98	11.67	7.2	7.36	7.77
170390	0.02	0.02	0	0	0	0	0	0	0.05	0.05
170410	0.01	0	0	0	0	0.04	0.51	0.46	2.48	5.4
170490	3.61	5.11	7.36	6.41	6.47	7.34	5.41	5.24	4.07	7.45

2.3 Relative Trade Advantage (RTA) Indices

A positive RTA value indicates a relative trade advantage and a negative RTA value indicates a relative trade disadvantage. The computed RTA indices are presented in Tables below.

From Table 14, the RTA indices show diverse results of relative trade advantage for Malaysian. The positive RTA indicates that Malaysia had a relative trade advantage in five out of 16 sub-groups which are Refined Sugar, In Solid Form, Not elsewhere stated (HS170199), Glucose & glucose syrup, containing in the dry state at least 20% but < 50% by weight of fructose excluding invert sugar (HS170240), Chemically pure fructose (HS170250), Cane molasses (HS170310) and Other molasses (HS170390).The rest, however were not competitive. Indonesia's however, have only 3 relative trade advantages in it sub-groups which are Glucose & glucose syrup, containing in the dry state at least 20% but < 50% by wt. of fructose, excluding invert sugar (HS170240), Other molasses (HS170390) and Other sugar confectionery not containing cocoa (HS170490). The Philippines possessed a relative trade advantage in Cane sugar (HS170111), Other molasses (HS170390) and Other sugar confectionery not containing cocoa (HS170490). Singapore enjoyed a relative trade advantage in Refined Sugar, In Solid Form, Containing Added Flavouring Or Colouring Matter (HS170191), Fructose, containing in the dry state more than 50% by weight of fructose chewing gum, whether or not sugar-coated (HS170260) and Chewing gum, whether or not sugar-coated (HS170410). On the other hand, Thailand had a relative trade advantage in cane sugar (HS170111), Refined Sugar, in Solid Form, Not elsewhere stated (HS170199) and other molasses (HS170390).

Table 13: RTA in Indonesia's Sugar Sector, 1999-2008

HS	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
040900	-0.01	-0.02	0	-0.12	0.07	0.7	1.03	0.53	0.47	0.51
170111	-1.21	-1.63	-2.33	-1.56	-0.5	-0.87	-1.05	-1.48	-2.63	-0.84
170112	-3.82	17	0.18	-0.1	-191.3	-0.43	-1.39	-1.63	0	0
170191	3.49	1.55	8.33	2.55	-6.83	0.64	-6.94	-0.92	0.23	0.06
170199	-2.05	-1.64	-0.84	-1.37	-1.64	-3.21	-2.24	-1.75	-1.5	-2.78
170219	-0.01	-0.58	-0.47	-0.57	-0.2	-0.56	0.06	-0.62	0.42	-0.42
170220	-0.56	0.03	-0.36	0.65	-0.49	2.69	-0.58	-1.09	-1.04	-3.1
170230	0.01	0.06	0.02	0.04	-0.08	-0.02	-0.32	-0.02	0	-0.01
170240	3.73	1.68	1.8	1.64	1	0.5	0.66	0.91	2.18	0.62
170250	1.37	0	-0.03	0.05	-0.03	-0.18	-0.11	0.01	-0.09	-0.16
170260	-0.01	-0.06	-0.06	0.08	-0.04	-0.08	0	-0.06	-0.04	-0.05
170290	0	-0.04	0.14	-0.05	-0.08	0.53	0.13	-0.01	0	0.05
170310	1.51	1.24	4.11	1.7	1.92	2.28	1.19	0.21	0.86	-0.37
170390	54.12	46.18	27.3	36.17	27.94	42.38	104.65	372.32	151.1	242.29
170410	1.51	-0.79	-2.12	-2.01	1.07	-0.14	-0.67	-0.89	2.9	7.42
170490	6.3	6.94	9.15	9.07	16.26	5.74	5.12	2.67	4.35	1.51

Table 14: RTA in Malaysia's Sugar Sector, 1999-2008

HS	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
040900	-0.29	-0.28	-0.25	-0.02	0.23	-0.14	-0.22	-0.11	0.16	0.84
170111	-18.5	-20.4	-17.5	-15.95	-13.12	-12.59	-15.54	-15.32	-13.88	-13.24
170112	0	0	0	0	0	0	0	0	0	0
170191	0.66	0.88	-0.01	-0.1	0.04	0.91	-0.01	-0.01	-0.06	-0.05
170199	11.34	11.18	12.27	10.96	7.84	8.7	5.64	7.57	9.37	3.18
170219	-0.3	-0.3	-0.27	-0.49	-0.5	-0.73	-1	-0.98	-0.56	-0.76
170220	-0.05	-0.1	-0.35	-0.17	-0.12	-0.05	-0.09	0	-0.1	-0.15
170230	0	0	0.01	0	-0.01	-0.01	0	-0.01	-0.01	0.01
170240	1.18	0.8	0.66	0.37	0.27	0.29	0.37	0.31	0.06	-0.05
170250	0.23	0.11	0.05	0.31	0.36	0.33	1.1	1.38	1.64	3.33
170260	-0.11	0.19	0.03	-0.06	-0.14	-0.07	-0.28	-0.19	-0.16	-0.34
170290	0.01	0	-0.02	-0.03	0	-0.04	-0.03	-0.04	-0.02	-0.02
170310	0.02	0.23	0.07	0.38	0.47	-0.07	2.1	1.14	0.37	3.16
170390	0.29	0.31	0.09	0.01	0.08	0.12	0.31	0.14	0.1	0.23
170410	0.02	-0.2	-0.11	-0.1	-0.07	-0.1	-0.11	-0.09	-0.12	-0.02
170490	-0.23	-0.21	0.03	-0.29	-0.18	-0.03	0.24	0.52	0.29	1.28

Table 15: RTA in the Philippines' Sugar Sector, 1999-2008

HS	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
040900	-0.1	-0.08	-0.05	-0.07	-0.06	-0.07	-0.12	-0.22	-0.09	-0.26
170111	10.15	10.55	2.21	4.75	8.01	9.09	5.69	5.27	5.43	3.24
170112	0	0	0	0	0	0	0	0	-0.01	0
170191	0.04	0	0	0	0	-1.68	-0.56	-3.94	-4.21	-1.85
170199	-1.24	-4.92	-1.44	-1.35	-2.18	-1.11	-1.05	-2.45	-0.35	-0.41
170219	0	-1.99	-3.11	-3.69	-4.29	-8.25	-7.54	-3.99	-6.48	-5.1
170220	0	-3.84	-6.71	-7.45	-5.44	-1.34	-1.21	-1.39	-4.1	-9.63
170230	-0.01	-0.04	-0.34	-0.03	-0.09	-0.07	-0.16	-0.01	0	0.01
170240	-2.23	-2.74	-2.62	-2.1	-2.68	-3.33	-4.38	-2.66	-2.6	-4.69
170250	-0.49	-1.16	-1.77	-2.7	-4.14	-4.81	-3.36	-1.36	-1.13	-0.95
170260	0	0	0	-0.1	-0.26	-0.3	-0.31	-0.64	-0.66	-2.13
170290	0	0	-0.04	-0.12	-0.04	-0.02	0	-0.02	-0.14	-0.17
170310	-1.49	-1.29	-2.21	-3.08	-3.73	-5.85	-5.72	-3.74	-6.14	-7
170390	7.5	4.43	11.7	7.95	4.51	7.87	8.66	7.48	-2.19	7.25
170410	0	0	-0.06	0	0	0	0	-0.1	0.01	0.04
170490	2.5	3.68	7.4	5.21	3.16	2.59	4.62	7.64	9.19	10.65

Table 16: RTA in Singapore's Sugar Sector, 1999-2008

HS	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
040900	1.2	2.06	0.37	-0.02	-0.23	-0.1	-0.35	-0.12	-0.34	-0.3
170111	-0.69	-0.73	-0.56	-0.25	0.14	0.04	0.03	0.03	0.04	0.01
170112	-0.12	-0.01	-5.49	-1.73	-0.01	0	0	0.73	0	0
170191	1.13	0.09	136.63	135.53	35.87	101.37	35.68	20.87	31.41	77.31
170199	-1.06	-1.85	-1.86	-5.14	-8.21	-6.09	-5.82	-7.02	-6.05	-4.76
170219	0.84	-0.09	0.84	-0.33	-0.63	-1.81	-1.2	-1.12	-1.48	-1.89
170220	0.53	3.44	1.55	2.45	1.26	0.82	2.99	6.71	-0.05	-0.33
170230	-0.45	-0.42	-0.36	-0.37	-0.27	-0.31	-0.26	-0.27	-0.23	-0.12
170240	0.1	0.02	-0.06	-0.02	-0.17	-0.32	-0.17	0.17	0.06	-0.22
170250	3.32	10.39	3.55	0.07	-0.26	-0.5	-0.81	-1.03	-1.58	-0.75
170260	0.51	0.51	0.59	0.6	0.32	0.98	0.45	0.53	-0.03	-0.35
170290	0.04	0.04	0.06	-0.44	-0.4	-0.01	-0.03	0	-0.04	-0.05
170310	3.09	5.44	-0.15	-0.6	-0.73	-1.78	-0.67	-0.15	-1.01	1.26
170390	0.36	0.09	0.04	0.03	-0.03	-0.04	-0.04	-0.03	-0.03	-0.02
170410	0.51	0.4	0.02	0.09	0.07	0.23	0.92	0.52	0.22	0.03
170490	0.04	0	0	0	-0.01	0	0.11	0.49	0.15	0.05

Table 17: RTA in Thailand's Sugar Sector, 1999-2008

HS	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
040900	-0.84	-0.9	-7.93	-3.47	-0.49	-1.05	-0.67	-0.78	-0.23	-0.28
170111	4.28	4.6	4.8	2.68	2.79	2.64	2.22	2.14	1.95	2.52
170112	-0.01	-0.05	-0.04	0	0	-0.01	0	0	0.08	0
170191	0.11	0.02	-0.15	0	-0.92	0.27	1.41	0.96	0.25	-0.31
170199	0.68	0.7	0.44	0.99	1.16	1.23	0.83	0.75	1.6	1
170219	-29.54	-26.83	-15.43	-12.04	-14.21	-15.28	-19.54	-21.24	-16.62	-7.68
170220	-6.07	-4.53	-1.94	-2.06	-3.02	-2.37	-4.48	-7.76	-8.05	-9.64
170230	-0.15	-0.1	-2.41	-6.86	-0.02	-0.03	-0.65	-0.43	-0.32	-0.04
170240	-2.76	-2.11	-1.41	-1.31	-1.34	-1.29	-1.48	-1.46	-0.98	-2.03
170250	0.04	0.1	0.22	0.24	0.28	0.49	1.4	0.22	-0.02	-0.04
170260	-0.87	-1.4	-0.51	-0.6	-0.69	-0.84	-0.65	-0.66	-0.75	-1.23
170290	-6.74	-1.24	-0.22	-0.08	-3.26	-0.11	-0.29	-0.47	-0.12	-0.07
170310	-5.46	-6.15	-6.4	-8.1	-13.41	-12.65	-11.28	-6.76	-7.06	-7.49
170390	3.28	4.21	5.46	5.33	3.82	3.22	6.17	4.29	2.33	2.16
170410	0	0	0	0	0	-0.03	-0.5	-0.46	-2.46	-5.03
170490	-3.5	-5.03	-7.3	-6.36	-6.34	-7.26	-5.28	-5.03	-3.92	-6.92

2.4 Trend Line Coefficients for RTA

The tables below revealed the static competitiveness position. In order to compare the dynamic competitiveness position among the countries, a line evaluation was fitted to the RTA indices for each country. A positive trend for a particular product reflects higher competitiveness levels in the future while a negative trend shows lower competitiveness levels in the future.

Malaysia is uncompetitive in the production of sugar with HS170260 (Fructose, containing in the dry state more than 50% by weight of fructose) being the most uncompetitive category. The negative trend indicates that the commodity is losing its competitiveness level but the value is not significant (Table 18). The sub-sector HS170199 shows a negative trend and

these values are getting smaller and this is reflected in the negative trend of the RTA indices where the commodity is losing its competitiveness level. Nevertheless, Malaysian Sugar Industries show a negative trend over the years but few show an increasing or positive trend in several type of sugar such as HS170490 and HS170250. Malaysia and Singapore showed increasing trends significantly in HS170111, this means that throughout the years both countries were gaining competitive advantage in that product. However, others cannot be identify as potential products because the trend is either decreasing or none of the variables are significantly positive.

Table 18: Trend Line Coefficients for RTA

	40900		170111		170112		170191		170199	
	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat
Indonesia	Positive	2.829828	Positive	0.135195	Positive	0.079295	Negative	-1.3594	Negative	-1.15455
Malaysia	Positive	2.657318	**Positive*****	3.277505	N/A	N/A	Negative	-1.736	**Negative*****	-3.80566
Philipines	Negative	-2.42791	Negative	-1.6512	Negative	-1.25724	**Negative*****	-3.37863	Positive	1.650037
Singapore	**Negative*****	-3.42662	**Positive*****	4.255615	Positive	1.165381	Positive	0.092317	Negative	-2.57512
Thailand	Positive	1.27094	**Negative*****	-4.413	Positive	2.33087	Positive	0.730403	Positive	1.956014

Table 18: Cont'd

	170219		170220		170230		170240		170250	
	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat
Indonesia	Positive	0.619768	Negative	-1.36622	Negative	-0.91879	Negative	-2.15554	Negative	-2.08694
Malaysia	**Negative*****	-3.35591	Positive	0.646352	Negative	-0.53572	**Negative*****	-6.159	**Positive*****	4.583536
Philipines	Negative	-2.84391	Negative	-0.65606	Positive	0.888061	Negative	-2.1562	Negative	-0.15887
Singapore	**Negative*****	-5.28767	Negative	-0.12898	Positive	8.334279	Negative	-0.70401	**Negative*****	-3.02763
Thailand	Positive	2.101214	Positive	-2.19551	Positive	0.696273	Positive	1.549135	Positive	0.264319

Table 18: Cont'd

	170260		170290		170310		170390		170410		170490	
	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat
Indonesia	Negative	-0.57388	Positive	0.331468	Negative	-2.15591	Positive	2.759631	Positive	1.938987	Negative	-1.68756
Malaysia	Negative	-3.25296	Negative	-2.03355	Positive	2.625237	Negative	-0.39681	Positive	0.211468	**Positive*****	3.983189
Philipines	**Negative*****	-3.65103	Negative	-2.03336	**Negative*****	-6.07273	Negative	-0.95535	Positive	0.303421	Positive	2.798604
Singapore	Negative	-2.02075	Negative	-0.0143	Negative	-1.72764	**Negative*****	-2.9516	Negative	-0.07752	Positive	1.514645
Thailand	Positive	0.047446	Positive	2.048278	Negative	-0.65195	Negative	-1.13766	**Negative*****	-3.07239	Negative	-0.36192

3.0 Conclusion

This paper has given an account of empirical evidence on Sugar Sector's trade competitiveness of the selected 5 ASEAN countries. Obviously, Malaysia is improving competitiveness because it has shown increasing values in several sub-groups in this sector. In fact, the RTA indices show that value added products which is HS170199 (Refined Sugar, in Solid Form, not elsewhere stated) has the potential to be a basis of foreign exchange earnings. However, the competitiveness level of this product is deteriorating based on the significantly negative trend. Malaysian Sugar consumption is expected to continue to be upward trend reflecting population and income growth. Higher income also translates into growth in the consumption of processed foods containing sugar. Malaysia is likely to import increasing quantities of raw sugar to meet domestic needs if no efforts are made to develop alternative sources of sweeteners. In summary, Malaysia should not only focus on importing raw sugars and exporting finished products but it also need to have a good agriculture policy specifically on sugar industry to sustain its competitiveness level.

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The Palm Oil Import Demand in Selected European Countries: A Cointegration Analysis

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Abstract

This paper examines the palm oil import demand in European countries, specifically, Austria, France, Germany, Italy, Spain and the United Kingdom with a special focus on the impact of biodiesel development in these countries. The paper uses annual data to investigate the palm oil import demand in selected European countries, namely, Austria, France, Germany, Italy, Spain, and the United Kingdom; jointly, accounting for more than 70% of the biodiesel production in EU27. Six single equation models are specified to represent palm oil import demand functions in those countries. The models have been estimated using the augmented autoregressive distributed lag (ARDL) technique. The findings of the study reveal that rapeseed and sunflower oils are the main substitutes for the palm oil in Europe. The palm oil price came out to be a major determinant of palm oil demand across the six models. It is also found that the industrial production index is an important factor affecting the demand in the all studied countries. The palm oil import demand in Austria, UK, and Germany is significantly, influenced by the start of the commercial production of biodiesel whilst the demand in France, and Spain was boosted by the introduction of the EU's directive on the promotion of the use of bio-fuels for transport. However, neither of them produced a significant impact on the demand in Italy that is significantly affected by the development in technology represented by an upward trend.

Keywords: Import demand, biofuel policies and econometric models.

1.0 Introduction

Europe has been a progressively important and rapidly developing market for palm oil among other vegetable oils, due to the high dependence of the European countries on imports to fill their shortfalls in this commodity. A recent major development that led to further increase in the European countries demand for vegetable oils is the emergence of the biodiesel industry, which uses oils such as palm and rapeseed oils as feed stocks. Biodiesel has been produced, on an industrial scale in the European Union since 1992, mainly in reaction to positive signals from the EU institutions (BASAN, 2011). Currently, there are approximately 245 plants in the EU with annual production of more than 10 million litre of biodiesel. They are mainly located in Germany, Italy, Austria, and France (Table1). Specific legislation to promote and regulate the use of biodiesel is in force in various countries including Austria, France, Germany and Italy. In September 2001, a Directive of the European Parliament and the Council on the promotion of the use of bio-fuels for transport was proposed. The proposed directive was basically intended for increasing the use of biofuels for transport within the EU by demanding that a minimum percentage of the total transport fuels sold in each Member State should be biofuels in pure or blended form.

The introduction of the EU's directive has led to a large increase in biodiesel production in Europe (EBB, 2009). This substantial factor, coupled with the increasing complexity of the domestic and international vegetable oils market, impels policy makers and other market participants to identify the major determining factors affecting the demand for palm oil in the European countries so as to facilitate defining long-term targets and strategies. This study, therefore, attempts to analyse the palm oil import demand in representative countries Austria, France, Germany, Italy, Spain and the United Kingdom, over a period of time.

Table 1: Annual biodiesel production in Europe (2002-2009)

Country	Production [Ml/yr]							
	2002	2003	2004	2005	2006	2007	2008	2009
Germany	507	805	1166	1880	2998	3255	3175	2859
France	412	402	392	554	837	982	2044	2206
Italy	236	307	360	446	503	409	670	830
Austria	28	36	64	96	139	301	240	349
Spain	0	7	15	82	111	189	233	967
United Kingdom	3	10	10	57	216	169	216	154
Others	13	47	1336	2351	3701	4385	7374	2822
EU 27	1199	1614	2177	3586	5507	6435	8733	10187

Source: Biofuels platform available at: <http://www.biofuels-platform.ch/en/infos/eu-biodiesel.php>

The objective of this study is to analyse the palm oil import demand in European countries, specifically, Austria, France, Germany, Italy, Spain and the United Kingdom with a special focus on the impact of biodiesel development in these countries. The study makes three noteworthy contributions to the existing literature on vegetable oils trade. First, the econometric methodology employed in this study uses the Bounds Test procedure (henceforth BT), a relatively new cointegration technique developed by Peseran et al. (2001), which has not been applied in any palm oil study. Secondly, to our knowledge, it adds the first systematic quantitative analysis of the factors shaping the demand for palm oil in Austria, France, Germany, Italy and Spain and uses a relatively more recent data than those used in previous studies on palm oil demand in UK. Thirdly, this study examines the effect of the introduction of biodiesel industry and the legislation to promote the industry in the European countries.

The remainder of the paper is organized as follows: Section 2 briefly outlines the empirical methodology and Section 3 reports and discusses the results while a summary and some conclusions are presented in Section 4.

2.0 Methodology

2.1 Model Specification

Prior to building the model to answer the questions raised by this study, there are some key points that we must consider. First, as the palm oil is not a close substitute for domestically traded goods, the study will be conducted under the criterion of the imperfect substitutes model. Second, since the imports in individual countries compose a small share of palm oils trade, each of them can be treated as a small country. Under the small country assumption, the supply prices of different fats and oils faced by these countries are assumed to be exogenous. As price takers, individual countries face highly elastic supply function for different oils, including palm oil. Thus, a single equation model can be appropriate in this

case. The determinants of palm oil import demand in country I (Q_i) were modelled with a common set of five explanatory variables. The main explanatory variables suggested by economic theory are the industrial production index (IP), palm oil price (PP), and the price of a substitute oil (P_{st}).

$$Q_t = f(Pp_t, Ps_t, I_t) \quad \text{or} \quad Q_t = \alpha_0 + \alpha_1 Pp_t + \alpha_2 P_{st} + \alpha_3 I_t + u_t \tag{1}$$

Where

Q_t = quantity of palm oil demanded at time t.

P_t = price of palm oil at time t

Ps_t = prices of some relevant palm oil substitutes at time t

I_t = economic activity level at time t represented by industrial production index (IPI), for importing country).

Another explanatory variable included in the initial model specifications is a linear time trend. Furthermore, two dummy variables to capture the effects of the start of the commercial production of biodiesel and the introduction of the EU's directive on the promotion of the use of bio-fuels for transport in European Union denoted D_1 and D_2, respectively had been included. In the pursuance of the above ideas, the demand for palm oil is explained as follows:

$$Q = \alpha_0 + \alpha_1 P_P + \alpha_2 P_s + \alpha_3 I + \alpha_4 T + \alpha_5 D_1 + \alpha_6 D_2 + u. \tag{2}$$

For the appropriate specification of import demand, the theory does not provide any specific suggestion on the best functional form and the most pertinent measures of variables involved in the analysis. An appropriate model was defined as one which generate unbiased (or at least consistent) and efficient elasticity estimates (Thursby and Thursby, 1984). In the current study the linear form has been rejected against the log-linear form in the cases (results on the rejected functional forms are available from the authors)

In log-linear form the equivalent specifications are:

$$\text{In } Q = \beta_0 + \beta_1 \ln Pp + \beta_2 \ln Ps + \beta_3 \ln I + \beta_4 T + \beta_5 D_{1} + \beta_6 D_2 + V \tag{3}$$

where the time and country subscripts in both equation 2 and 3 are suppressed for notational convenience. β_0 is constant and V is a multiplicative error term that is identically and independently distributed (i.i.d) with mean equal to unity and constant variance.

Following the above discussion the a priori expected signs of the regression coefficients are as follows:

$\beta_1 < 0$, $\beta_2 > 0$, $\beta_3 > 0$, $\beta_5 > 0$, $\beta_6 > 0$. However, the sign for the trend variable is ambiguous and depends on the direction of trend.

Several different specifications of the general model were tried, and results from each model were tested for statistical significance of the estimated coefficients as well as for consistency with the cointegration method. Consistency with economic theory is another important criterion for selecting the models. After discarding the model specifications that do not meet all these preconditions, the following model specifications have been selected as the final models for individual countries:

Austria: $LNQ_{AS} = -LNPP + LNSNP + LNIPAS + D_1 + C + U$ (4)

France: $LNQ_F = -LNPP + LNSNP + LNIPF + D_2 + C + U$ (5)

Germany: $LNQ_G = -LNPP + LNSNP + LNIPG + D_1 + C + U$ (6)

Italy: $LNQ_{IT} = -LNPP + LNSNP + LNIPIT + T + C + U$ (7)

Spain: $LNQ_S = -LNPP + LNSNP + LNIP_S + D_2 + C + U$ (8)

United Kingdom: $LNQ_{UK} = -LNPP + LNRAP + LNIP_{UK} + D_1 + C + U$ (9)

Where

QAS, QF, QG, QIT, QS, QUK are the quantities of palm oil imports by Austria, France, Germany, Italy, Spain, and the United Kingdom, respectively, in tonnes;

C is intercept;

PP, SNP, SOP and RAP are the world market nominal prices of palm, sunflower and rapeseed oils respectively, in USD/ tonne; $IPAS$, IPF, IPG, $IPIT$, IP_S, IP_{UK} are the industrial production indices for Austria, France, Germany, Italy, Spain, and the United Kingdom, respectively.

T is linear trend;

D1 = Dummy variable, $D_1 = 0$ for observations before 1992, $D_1 = 1$ from 1992 onwards;

D2 = Dummy variable, $D_2 = 0$ for observations before 2002, $D_2 = 1$ from 2002 onwards;

U is error term.

2.2 Model Estimation Method

Co-integration and general-to-specific approaches are utilized to model the above mentioned relationships. First, the variables must be tested for stationarity, since regressions between non-stationary variables may be subject to the problem of spurious regression. An important exception is where the non-stationary variables are integrated of order one, or I(1), so that first-differencing makes them stationary. In this case there may be one or more cointegrating relationships between the I(1) variables and the problem of spurious regression does not arise. In some cases, a difference stationary variable may also contain a deterministic trend, and this possibility must be considered in the cointegrating regression. Second, it is necessary to determine which of the explanatory variables in the general model should be included in the final cointegrating regressions. Third, given the existence of a cointegrating or long-run equilibrium relationship, it is always possible to build an error correction model (ECM) (Granger, 1983; Engle and Granger, 1987) to specify the nature of the short-run disequilibrium relationship between the variables.

The literature on cointegration estimation (and the related problem of testing for unit roots) is very extensive, and a number of estimation methods have been recommended, including the Engle and Granger (1987) procedure, Johansen's (1996) full information maximum likelihood procedure, Philips and Hansen's(1990) fully modified OLS procedure and a relatively recent procedure known as the Bounds Testing (henceforth BT) procedure developed by Pesaran et al. (2001), have been proposed in the econometric literature for investigating the long-run equilibrium relationship among time-series variables. The Engle-Granger method has been criticized in the literature for several weaknesses which include the following: (a) Small sample bias due to the exclusion of the short-run dynamics, (b) the problem of normalization in systems with more than two variables and (c) the inability to test hypotheses in connection with the estimated coefficients in the long-run relationships. Although the procedures developed by Johansen and Philips and Hansen avert some of these problems, they (along with the Engle-Granger method) entail that the variables included in the model are integrated of order one that is, the variables are I(1). On the other hand, the most important advantage of the BT procedure it is applicable irrespective whether the underlying variables are purely I(0), purely I(1) or fractionally integrated.

2.3 Data Description and Sources

The study used annual data. The time range of data for Austria and Spain extends over the period 1977-2008 whereas that for France covers the period 1976-2008 and the data for the rest of the countries extends over the period 1977-2008. . Data on industrial price index were available from International Financial Statistics of the International Monetary Fund. Annual data on palm, rapeseed and sunflower seed oils prices were available from International Financial Statistics as well as the Oil World Annual. FAOSTAT online database provided the data on quantities of palm oil imports by country.

3.0 Results

3.1 Pre-estimation Tests

3.1.1 Unit Root Tests

The augmented Dickey-Fuller (ADF) and the Philip Perron (PP) tests were used to determine the order of integration of the time series in all models and to check for the presence of deterministic time-trend in each regression. The findings of the conducted tests reveal that each of the specified models across the six countries includes a mixture of $I(0)$ and $I(1)$ variables. With such a combination of $I(1)$ and $I(0)$ variables it was found that the appropriate procedure to analyse the long-run and the short-run behaviour of palm oil import demand by European countries was the BT. Besides, the results suggest the inclusion of time trend in all regressions except for Spain. However, it was dropped from all the specifications during the general to specific applications for different reasons, except for Italy. For instance, it was eliminated from the specifications of France because its inclusion produces results that are economically irrational, and it was dropped from other specifications for being statistically insignificant or because its inclusion affects the performance of the error correction model.

3.1.2 Lag Length Selection

Both SBC and AIC criteria for lag selection are used in this study to choose an appropriate lag order of the model specification before performing the test for the existence of co integrations. Thus, the models for Italy and UK have been estimated with a lag of two while the models for the rest of the countries have been estimated with lag of one.

3.1.3 Bounds Test Results

The BT was conducted on all models to investigate the presence of a long-run relationship among the variables specified for each country, employing the lag lengths previously selected. The error correction version of the ARDL model pertaining to the variables in equation (3) is as follows:

$$\Delta lnQit = \gamma_0 + \gamma_1 T + \pi_{QQ} lnQ_{t-1} + \pi_{Q,x} x_{t-1} + \sum_{i=1}^{\rho-1} \phi_i' \Delta z_{t-1} + \omega' \Delta x_t + u_t. \qquad (10)$$

where x represents the regressors ($LNPP_t$, $LNSNP_t$… etc) and z represent all the variables used in the specified model.

Table 2 summarises the results of the bounds test across the six models. The conclusion drawn from those results is that the presence of a cointegrating relationship among the

variables included in each of the six models was established, which permits the application of the ARDL technique for the estimation of the parameters in the long-run relationship and the associated short-run dynamic error correction models.

Table 2: F-statistics for testing the existence of long-run relationships

Variables	**K**	ρ	F-Statistics
F(LNQA /LNPP, LNSNP, LNIPA, D_1 ,C)[a]	4	1	9.3748*
F(LNQF/ LNPP, LNSNP, LNIPF,D_2, C) [a]	4	1	5.4017 *
F(LNQG/ LNPP, LNSNP , LNIPG, D_1, C)[a]	4	1	6.0411*
F(LNQIT/ LNPP, LNSNP, LNIPIT,T, C) [b]	3	2	5.1522*
F(LNQS/ LNPPS, LNSNP, LNIPS, D_2, C) [a]	4	1	4.1824**
F(LNQUK/ LNPPK, LNRAP, LNIPUK,D_1, C) [a]	4	2	7.6067*

a =Table CI (iii) Case III: Unrestricted intercept and no trend (Pesaran et al. Page 300). With 4 regressors the lower and upper limits of the bounds test are 2.86 and 4.01 respectively, at 5% significance level; and 3.74 and 5.06, respectively, at 1% significance level.

B=Table CI (v) Case V: Unrestricted intercept and unrestricted trend (Pesaran et al. Page 301). With 3 regressors the lower and upper limits of the bounds test are 4.01 and 5.07 respectively, at 5%.

Asterisks * and ** denote 1% and 5% significance levels respectively.

3.2 Models Estimation Results

3.2.1 The Robustness of the Empirical Model

Having found a long-run relationship, the specified model for each country is estimated using the SBC and AIC criteria for model selection. The Schwarz Bayesian criterion selected ARDL(1,0,0,0) for Austria and Spain, ARDL(1,0,0,1) for Germany, ARDL(2,0,0,2) for Italy and ARDL(2,0,0,0) for United Kingdom, while the Akaike criterion selected an ARDL (1,0,1,0) for France. In order to confirm the robustness of the model specification suggested in this study, several diagnostic tests are conducted. The diagnostic test statistics of the specified ARDL models are displayed in Table 3.

Table 3: Diagnostic tests

$\overline{R}^2$	**Austria**	**France**	**Germany**	**Italy**	**Spain**	**UK**
	95%	96%	96%	81%	94%	95%
Diagnostic tests						
Serial Correlation[a]						
LM Version(1)	1.467[.226]]	.874[.350]	.827[.363]	.777[.378]	1.093[.296]	2.033[.154]
F Version(1)	1.225[.278]	.6804[.417]	.637[.432]	.572[.457]	.878[.358]	1.424[.246]
Functional Form [b]						
LM Version(1)	.626[.429]	.0524[.819]	.0071[.933]	.023[.879]	.2455[.620]	2.624[.105]
F Version(1)	.510 [.481]	.0398[.843]	.005 [.942]	.0167[.898]	.2323[.633]	1.875[.185]
Normality[c]						
LM Version(2)	975[.614]	.630[.443]	.069 [.966]	.538[.764]	1.465[.481]	.0949[.954]
F Version	Not applicable					
Heteroscedasticity [d]						
LM Version(1)	.597[.440]	.478[.489]	.3389[.560]	1.579[.158]	.0015[.969]	1.022[.312]
F Version(1)	.573[.454]	.456[.505]	.339[.560]	1.811[.162]	.001[.974]	.9899[.328]

Notes: a: LaGrange multiplier test of residual serial correlation.

B:Ramsey's RESET test using the square of the fitted values.

C: Based on a test of skewness and kurtosis of residuals.

D: Based on the regression of squared residuals on squared fitted values.

Furthermore, the cumulative sum (CUSUM) and cumulative sum of squares (CUSUMSQ) of recursive residuals tests for examining the stability of the model are conducted and their plots are displayed at the Appendix. The equations for all countries have a high degree of explanatory power, and they are all free from misspecification errors. The plots of CUSUM and CUSUMSQ for examining the stability of the models are all within the critical bands, rejecting any evidence of parameter instability. Those findings suggest that the import demand functions used in this study are properly specified and they verified their stability throughout the sample period and, accordingly; estimations of the long and short-run dynamics based on those models are reliable.

3.2.2 Estimating the Long -Run Parameters

The findings of the long–run (static) model estimation displayed in Table 4. Almost all the estimated coefficients are statistically significant and their signs are consistent with theory. Those findings suggest that the import demand functions used in this study are appropriately specified. The results show that the palm oil price is a significant determinant of palm oil demand across the six models. The palm oil variable in all the models is statistically highly significant. Furthermore, the long run elasticities of the demand with respect to its own across the countries are high except for France where it showed very low price elasticity. The sunflower seed oil proved to be substitute for palm oil in all the studied countries excluding UK where rapeseed oil came out to be important substitute for it.

Table 4: Estimated long run coefficients using the ARDL approach
(Dependent variable is LNQ)

Regressors	Austria Coefficient (T- Ratio)	France Coefficient (T- Ratio)	Germany Coefficient (T- Ratio)	Italy Coefficient (T- Ratio)	Spain Coefficient (T- Ratio)	UK Coefficient (T- Ratio)
LNPP	-.52139** (-2.2195)	-.2818*** (-1.930)	-1.1935** (-2.35)	-1.0278** (-2.2306)	-.9708** (-2.3413)	-1.373* (-3.5277)
LNSNP	.91176** (2.5534)	.24291 (.66871)	1.0205** (2.1076)	1.2014** (2.4284)	.9868** (2.2114)	- -
LNRAP	- -	- -	- -	- -	- -	.659** (2.2603)
LNIPI	.75821* (2.9035)	1.575* (4.3834)	2.490* (3.7684)	4.8709* (6.10)	4.681* (4.7369)	1.605** (2.0693)
C	3.7052*** (1.8101)	3.3430 (1.6324)	2.3781 (.80445)	-13.73* (-3.68)	-10.576** (-2.2825)	9.68** (2.1236)
D_1	.79708* (2.8494)	- -	.43900* (2.8524)	- -	- -	.4025** (2.3004)
D2	- -	1.1086* (9.0930)	- -	- -	1.0422* (3.2537)	- -
T	- -	- -	- -	.0829 * (8.2499)	- -	- -

Notes: Country notations in the variable symbols are suppressed for writing convenience (i.e. Q, PP, SNP, RP, I are palm oil imports quantity, palm oil price, sunflower seed oil prices rapeseed oil price and industrial production index, respectively, for the country of interest).
Figures in parentheses below the coefficient values are the T-Ratio values. Asterisks ***, **, * denote 10%, 5% and 1% significance level respectively.

The prices of substitute oils in almost all countries have been found to play an important role in shaping the palm oil demand. However, in the case of France, where the substitute price turned to be statistically insignificant, it is included in the models as imposed by theory.

Moreover, the selected substitute (sunflower seed oil) also showed the correct signs whereas the other oils prices produced wrong results. The demand in Austria, Germany, Italy and Spain emerged to be highly elastic to the change in sunflower oil price while it showed low elasticity in France, probably due to the high substitutability between the vegetable oils with improved technology there. The elasticity of the demand with respect to rapeseed oil price in UK is quite high, reflecting the high sensitivity of demand in this country to the changes in the prices of rapeseed oil.

Moreover, the results reveal that the industrial price index is the most sequential variable across the studied countries. The coefficients of the dummy variables accounting for the onset of the commercial production in Europe and the introduction of the EU's directive on the promotion of the use of bio-fuels for transport included in all the models excluding Italy proved to be statistically significant and carry positive sign indicating the positive effect of the recent developments that took place in the oils and fats market in Europe. Those dummy variables were eliminated from the model specified for Italy as they produced erroneous results. Apart from Italy the data for all the models rejected the inclusion of a linear time trend. However, the demand in Italy is significantly affected in the long run as well as in the short run, by the development in technology represented by an upward trend.

3.2.3 The Short-Run Dynamics and the Adjustment towards the Long-Run Equilibrium

The results of the error correction representations for the selected ARDL models corresponding to palm import demand functions throughout the selected countries are displayed in Table 5. The error correction terms were found to be highly significant and carry negative signs, giving additional evidence as to the existence of long term causal relationships between the variables of all the equations.

Furthermore, magnitudes of the lagged error correction term coefficients across the countries ranges from 0.31- 0.7 indicating that 31% to 70% of the disequilibrium is corrected every year which implies a low to moderately high speed of adjustment of the dependant variables to the variations in its determinants.

Table 5: Error correction representations for the selected ARDL models
(Dependent variable = DLNQ)

Regressors	Austria Coefficient (T- Ratio)	France Coefficient (T- Ratio)	Germany Coefficient (T- Ratio)	Italy Coefficient (T- Ratio)	Spain Coefficient (T- Ratio)	UK Coefficient (T- Ratio)
dLNQ(-1)	- -	- -	- -	-.298 (-1.6946)	- -	-.309** (-2.1847)
dLNPP	-.212** (-2.422)	-.29262* (-1.9539)	-.26683* (-3.3846)	-.7377** (-2.2205)	-.6209** (-2.5824)	-.639* (-4.0939)
dLNSNP	.371* (2.978)	.07307 (.27507)	.30962** (2.2846)	.8623** (2.3505)	.6311*** (2.0045)	- -
dLNRP	- -	- -	- -	- -	- -	.30698 (1.6949)
dLNIPI	.308** (2.3)	1.0957* (3.2236)	2.0142* (4.2036)	1.865*** (1.998)	2.993** (2.7228)	.74758 (1.6141)
dLNIPI(-1)	- -	- -	- -	-2.92* (-3.59)	-.79743 (-.4889)	- -
dLNIPI(-2)	- -	- -	- -	- -	-2.6766 -1.6538	- -
dD1	.324* (3.113)	- -	.2165* (2.8061)	- -	- -	.1874** (2.1925)
dD2	- -	.7711* (4.4434)	- -	- -	.6665** 2.0910	- -
dC	1.507** (1.7243)	- -	1.1732 (.89973)	-4.288*** (-1.8)	-6.764*** (-1.7743)	4.507** (2.5612)
dT	- -	- -	- -	.0637* (4.853)	- -	- -
ect(-1)	-.4067* (-6.03)	-.695* (-4.8591)	-.4933** (-3.5309)	-.31229** (-2.103)	-.6395* (-3.1492)	-.4656* (-3.2147)

Notes: Refer to the notes in Table 4; d denotes the first difference of the variables; ect is the error correction term.

4.0 Conclusion

The results of this study provide the following findings or conclusions. First, the palm oil price variable was found to be significant all through the six models, and the palm oil demand for all countries turned to be highly sensitive to this variable. Secondly, the prices of sunflower and rapeseed oils that turned to be the most important substitute for palm oil in all countries has been found to be an important determinant for palm oil demand. From a policy point of view, these findings emphasize the need for reorientation of palm oil marketing policies, in the exporting countries, in a way that would make it possible for them to capture the ever increasing market share through adopting suitable price policies. A highly competitive pricing strategies is imperative in view of firstly, the high substitutability of palm and sunflower oil in the edible and non-edible usage. Secondly, to some extent the substitutability of palm and rapeseed oils as feedstock for biodiesel production. The study reveals that the level of industrial activity and the development in technology are positively related to the palm oil import demand in Europe. Moreover, it is found that the progress in the biodiesel sector in Europe also influences the demand, which means that in spite of the discriminatory laws and non tariff barriers against palm oil; its demand continues to increase in line with the industrial growth and biodiesel development in the region. Clearly palm oil has established a strong footing in this region as a raw material for conventional industrial uses (food and non-food) and, lately, biofuel production.

Based on the above analysis the prospect of utilizing palm oil as a feedstock for biodiesel production in Europe appears to be good. This is largely attributed to its apparent favourable demand and supply factors. However, a closer examination of the fundamentals is necessary to provide a more accurate picture. On the demand side, it is clear that demand is created through mandates while the supply is heavily subsidized by most of the EU countries as part of the move towards green technology and reduction of greenhouse gas emissions. These suggest that the market of biodiesel is artificially created through mandates and subsidies which may not be sustainable in the long term. Besides, the production of biodiesel hinges upon the differences between the prices of crude palm oil (as feedstock) and crude oil. That is crude palm oil as feedstock for biodiesel is feasible if the margin is adequate to cover at least the cost of raw material. As shown in the last few years, both commodities have shown increasing trend and narrowing margin which is not conducive to biodiesel production. Hence, future research on the demand of palm oil as feedstock of biodiesel in EU shall have to take into account of the said factors.

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Ayutthaya, Thai Heritage and Foreign Tourists: Approaches and Issues

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Abstract

Ayutthaya historical park and the difficulties about its interpretation is the object of the paper here. Registered in the UNESCO World Heritage List in 1991, previous studies about Ayutthaya historical park have demonstrated the difficulties foreign tourists encounter in visiting it, especially regarding interpretation. The concept of multiculturalism is analysed and discussed, at the light of Said's Orientalism and more recent studies on the argument. Multiculturalism is seen as experience enriching someone's experience, but this new experience needs to be addressed against an already established cultural background. A discussion of Tilden's interpretation rules, also integrated by more recent studies is also given. As observation techniques have been used, some specific examples from the interpretation material as present in selected spots of the historical park have been selected. Such analysis demonstrates the need of a better balance of interpretation material for non-Thai speakers within the park itself. A major critique about the difficulty of interaction between social scientists, heritage experts and archaeologists and heritage management is raised, as they have trouble to deal coherently in a way both beneficial to local stakeholders as well as heritage itself. Moreover, suggestions about ticketing and different pricing are offered.

Keywords: Ayutthaya, architectural heritage, tourist interpretation

1.0 Introduction

My paper needs more than just a few words of presentation. First and most importantly, my formation is that of an archaeologist now working in a tourism department, therefore the paper has been looking to the question of heritage from both sides, the discovery and conservation side of the problem as well as its opening to tourism and its benefits. Some of the concepts and aims present here are shared with earlier works by other scholars (Aphivan Saipradist 2005; Aphivan Saipradist and Staiff 2007). There is a difference however between my research and those colleagues'. While the latter aimed to check the utility of guidebooks in the archaeological park, my intentions were different as I both targeted the interpretation problem as well as the promotion of heritage between foreign tourists.

2.0 Different Tourists, Different Interpretations

Conceptually, the paper has also a great limit by itself: it presupposes that any tourist going to an archaeological site would like to be entertained and informed about the site itself. The fact that someone may go to an archaeological site in order to have some relax is not considered. As I use the classification as styled in McKerchner and du Cros (2002, p.144) (Appendix 1), only categories 1-4 will be considered here.

There is a question that needs to be addressed as starting point: what is culture?

If I look at an English dictionary, the concept of culture is defined as such: "The arts and other manifestations of human intellectual achievements regarded collectively" (Soanes and Stevenson 2005, p.422).

Having defined what culture is not an answer by itself. Until 60 years ago, cultures were mostly delimited by country borders. A post Second World War spreading of Westernisation (Americanisation) and diffused ethnic movements, both from former colonies toward the once ruling country (France and England), as well as within more vast regional borders (European Union for instance) have brought to multiculturalism. And the issue of cosmopolitanism has been frequently mentioned in quite recent years (Appiah, 2006; Cuno, 2008).

Multiculturalism implies the concept of enrichment of anyone's life experience, and yet, as many readers may concur, only a full appreciation of someone's ideas can improve a better understanding (Ashworth, Graham and Tunbridge, 2007; Meskell, 2009). Culture clashes are still present around the world: I do not want to go any further into this line of thought, as it will go on examining 9/11 bombings, Afghanistan and Iraq invasions.

While the concept of cosmopolitanism has also been used within archaeology and museology to justify the appropriation of works of art from less developed parts of the world and then brought to museums in richer countries (Cuno, 2008), it does not have much impact over the actual archaeological remains. In fact, while intangible heritage may fascinate the viewer as enacting past era or earlier human developments (Henderson 2009, p.85) – and here again there is a colonialist concept of modernity as the best possible condition (Said, 1978; Howard 2003, p.126) – an archaeological heritage is essentially a mute aggregate of ruins, difficult to understand if not part of the small group of adepts to the discipline. Therefore, making it intelligible is of utmost importance.

In general - and this is a blame for Fine Arts Department throughout the world - many archaeological sites are supplied of signposts explaining buildings and objects found therein, but no many words are spent to specify their functions or uses. Therefore, those signposts can be defined informative, but not giving any further help about a site interpretation. This limit highlights the difference between information and interpretation (Moscardo, 1999; McKercher and du Cros, 2002, p.229): while the former supplies the basic data needed to complete a chronological or typological scheme, the latter gives much deeper concept, as needed to fully understand a culture.

Tilden was certainly the father of all the interpretation aspects (Tilden, 1957; Beck and Cable, 2002). As Tilden wrote about the interpretation in American National forests (Appendix 2, 1), he set the trends for the future generations of interpreters. Those rules are extensively used up to now, with the due technological and pedagogical advancements.

A complaint has been usually raised against field archaeologists: that in interpretation studies, their input is still quite limited (Helms and Blockley, 2006; Sørensen and Carman, 2009). Usually field archaeologists give their contribution by excavating the site, retrieving and registering as many findings as possible. Such discoveries generate voluminous reports with lots of graphics and database results spreading over many pages. Then the archaeologists go back to their ivory tower, the fate of the site itself is not their business anymore.

As the archaeologists ended their duties, the heritage specialists get into the business. By then the site is now recognised worthy for tourist-generated incomes. Thus, the site needs to be opened to the public. As they prepare an interpretation plan of the site, they have to deal with the amount of data left by the field archaeologists. As being not specialised about the historical period or site in details, what comes out is sometimes an oversimplification of those

results the field archaeologists have discussed at length in their reports (Timothy and Boyd 2003, p.196). Therefore, the result of the heritage specialists is a well-designed package for the visitors. The main issue is whether different "consumers" of the site are really included, or only the "generic" tourist can be satisfied by such interpretation package. The second critical remark is that interpretation specialists and social scientists like discussing about methodology, essentially forgetting about the actual historical contents.

If social scientists may be able to propose generic interpretations, the archaeologists cannot be saved by some harsh remarks. In many archaeological sites throughout the world has been/is praxis that officials of the local or national Fine Arts Department have been the responsible for writing labels and signposts at those sites. Those signposts create even more confusion. Firstly, they try to be short in the contents and such brevity makes their language quite cryptic. Secondly, they sometime imply the full knowledge of archaeological lexicon or jargon (Howard 2003, p.77).

It is time that a general trend can be more largely diffused, whereas social scientists and archaeologists can share their experience and contribute to the best heritage setting. Looking forward, countries such as United Kingdom and USA have already set up standards for how an archaeological/heritage site should be opened to the public.

3.0 Misinterpreting Ayutthaya World Heritage Site

Having raised some issues about groups dealing with interpretation, it is time to focus on the site under study. Ayutthaya was the capital of Siam from 1350 up to 1767 CE, alternating long periods of independence to a sporadic rule by Burma. The last conflict with Burma led to the destruction of the city in 1767 CE. The history of the site from a scholarly point of view is more recent. The beginnings of the twentieth century CE saw a progressive interest toward Ayutthaya ruins, with Rama V being one of the first to order restorations (Peleggi 2002:44). During 1950s, a series of archaeological discoveries, both by chance and illegal diggings, as well as by excavations led by the Fine Arts Departments brought to the foundation of the Chao Sam Phraya Museum (Peleggi 2002, p.44; Charnvit Kasetsiri and Wright 2007, p.116–118). This was the first step to various restorations, finalised to and culminated with the inscription of the Ayutthaya Historical Park in the registry of the UNESCO World Heritage List in 1991 (UNESCO World Heritage Committee; Aphivan Saipradist and Staiff, 2007, p.213).

One of the major problems of Ayutthaya is its proximity to Bangkok itself. Far only about 70 kms from the modern capital city, visitors to Ayutthaya usually come with a river cruise or by coach and return back by sunset. Therefore, their experience with the archaeological park is limited and limiting. Moreover, Ayutthaya Historical Park lacks a clear cut monument symbol of the park itself, in spite of the fact that four landmarks can be identified (Wat Mahatahat, Wat Ratchaburana, Vihara Mongkol Bophit with the nearby Ancient Palace and Wat Chaimongkol). Such absence, instead of being used to promote the park in its entirety is actually a big limit for interpretation, as it did not determine a development of an educational route the visitors can follow in order to "discover" the park.

As for the Ayutthaya historical park and my research project about interpretation on site, no previous knowledge of the site by the foreign tourists visiting it has been assumed. Therefore, the historical park has been studied in its ability to give information to a general layman, with a vague interest about Thai culture but not extremely fond about it. As the signpost or other

information material is analysed, the highest ambition for such tools should be they are able to "sparkle" the fantasy of the visitor and let him have the desire for major "discoveries", i.e. more time spent to visit the particular monument or site.

As my focus was about interpretation for foreign tourists, it has to be said that the park is not only limited to them. Thai visitors come to the park for merit making. As for statistics published by the Department of Tourism, Thai visitors form a substantial part of the visitors, actually 2/3 of the total number, but the number of foreign visitors in general and Western in particular is considerable. While there has been a drastic reduction of them in 2009, mostly due to global economic recession, foreign visitors made up roughly 1/3 of the total visitors, with Westerners being 2/3 of the actual foreigners.[1]

As the number of Western visitors is high, there is nothing more dangerous or at least less rewarding to a heritage site than the feeling of estrangement. The reasons of estrangements can be various, but in any case, apart from natural boredom or disinterest in what you are actually seeing, two cases for which no solution can be found, the reasons of estrangement essentially are centred in the difference between what you see and what you know. As Western foreigners are not grown within a Buddhist culture, the estrangement they feel at the Ayutthaya Historical Park runs quite deep.

In order to highlight the various issues, I will supply some examples from the park itself.

4.0 Wat Ratchaburana

Wat Ratchaburana temple is still in good conditions, and it has been the place of some major archaeological discoveries during the 1950s, as golden foundation objects were found in the crypts of the main stupa (Photo 1).

Photo 1: Wat Ratchaburana, Ayutthaya

Moreover, paintings Buddha's previous lives and another painting with Chinese-looking guardians are also present (*Ayutthaya. Guide to art & architecture* 2007:20). The labels and signposts can be informative, but not interpretative, using the definition as given above. The text as present at the base of the stupa is as follows:

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[1] In 2008, the number of Western visitors was 127,225; more recent statistics were not available to me.

"This Khmer-architecture is still in a good condition. At each "kuha" (Grotto) of the prang, there is a stucco Buddha image in standing gesture. The lowest level of the top-part of the prang is decorated with Garuda divinity, Naga. Inside the tower, there is 2-storeyed cache. At its upper storey, the mural at the wall is unclear, inside the lower storey, some part of the mural at its wall still remain. It was used to contain some gold."

Having read it, I am left puzzled by the language and terminology used. Apart from defining what really Khmer architecture is, something that a simple label certainly is not enough to deal with, some of the words are not entirely correct. Maybe grotto can be translated niche and looking at the prang itself, I may understand that prang means actually the tower in front of me. As I look around the building however, I have problems in identifying what Garuda and Naga are, for instance. Yet, the label is quite reductive, as it more relevance should be given to the frescos present in the crypt. The treasure from Wat Ratchaburana actually fills a wing of the second floor in the Chao Sam Phraya Museum at Ayutthaya and it is one of the most important findings in Thai archaeology. So defining it as "some gold" is extremely reductive.

5.0 Wat Mahathat

As second example, there is the sandstone head of Lord Buddha embraced by a bodhi tree in Wat Mahathat (photo 2):

Photo 2: Buddha Head at Wat Mahathat
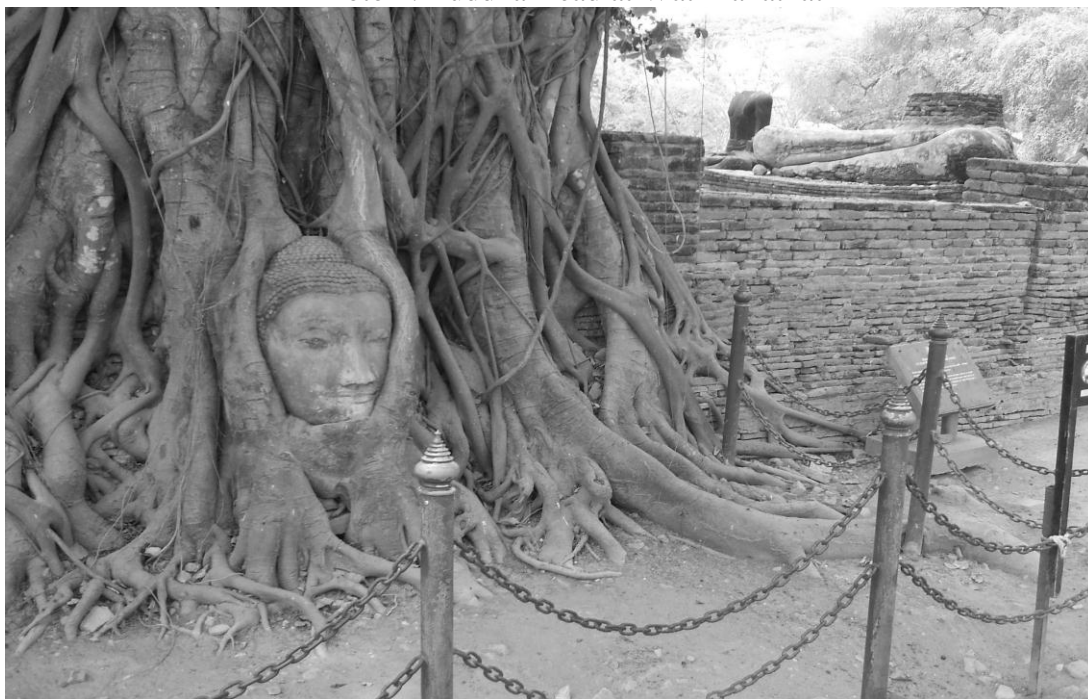
"All that remains of this sandstone Buddha image is part of its head, while the body has disappeared. The head is in the style of the Ayutthaya period. It lies beneath a bodhi tree beside the minor vihans."

It can be wondered what the Ayutthaya period style for the Buddha statue actually is and what is different from a statue of an earlier or later period, as well as what is a minor vihan. It

might be possible to understand that the building on the back is a vihan, but what was the function of a vihan is not said.

6.0 Vihara Mongkhon Bophit

Vihara Mongkhon Bophit was completely roofless at the beginnings of 1900s, as it is possible to see even in photos kept inside the temple itself. In 1958, the temple was massively restored, also thanks to King's intervention and the Burmese government contribution (Photo 3).

Photo 3: Vihara Mongkholborphit after restoration

The actual signpost says:
"During the fall of Ayutthaya Kingdom in 1767, the roof of the Vihara was damaged by fire and the head and the right arm of the image were broken. Later, the image was repaired and the Vihara was completely restored again in 1956".

On 23rd March 1990, the Supreme Patriarch presided over a candle lightening ceremony in front of the image and announced that people could honour the image by covering it with gold leaf. H.M. Queen Sirikit auspiciously paid homage to the image and donated Baht 70,000 to the restoration fund. Henceforward, the Mongkhon Bophit Foundation undertook to cover the image with gold leaf in celebration of the 60th birthday of H.M. Queen Sirikit."
Having read the long text, there is no way that the viewer can understand how much the building has been restored. The impression on a Western visitor is that Vihara Mongkhon Bophit is a new construction, therefore creating a contrast with the adjacent Wat Phra Si

Sanphet and royal palace ruins. This erroneous impression by the visitor is completely detrimental to the Vihara itself and spoils the atmosphere of the place.

7.0 Gaps and Improvements

I prefer to concentrate my analysis of improvements on specific issues. Foremost is the lack of interpretative materials. I have personally bought small guides, handbooks in English in order to satisfy the curiosity of a visitor present on site. Many of those guides are archaeologically unsatisfactory. The elements given are a generic history of the building, but none of them satisfies some basic questions such as: what was the shape of the building, what was the function, what are the representations present in that stupa? What are/were the artistic features of the monument in question?

There is no map available to be sold to the visitor, through which he could understand the structure of the various buildings within a specific site and the relations between architectural distinct buildings in Ayutthaya itself. The maps present at the entrances to the various temples may explain the location of a particular ruin within the complex, but they do not help the tourist understand the particular function of it. For instance, in Wat Mahathat, I believe that once there was a sort of reconstruction of the fallen prang stuck on a board inside the precinct at the actual entrance, thus giving the original view of the building in its working conditions. Such sticker however has gone lost or the sun has worn it out. Therefore, various scholars should collaborate in joint project for an informative handbook of the city heritage.

Quite a few of the actual labels and signposts at Ayutthaya are not written in correct English. But English quite often is not the native language of the Western visitors, so those grammatical or spelling mistakes are not relevant for any interpretation issues. They certainly need to be corrected, but that is all. What is more disconcerting however is the mistaken assumption that translating word by word the Thai label into English language is enough to understand the various functions. Therefore, it is automatically implied the ability of a Western visitor reading the English version has the same cultural baggage of the Thai visitor. This is obviously not the case (Timothy and Boyd 2003, p.215–216). New entrance boards will be supplied for the various monuments in Ayutthaya. At least this is what I have been told. As some of the old boards have been lost or stolen and others are rusty and faded, I have serious doubts about their effectiveness. As from March 2011, audio guides have been made available at Wat Mahathat, Wat Ratchaburana and Wat Chaiwattanaram. While seemingly filling some of the issues as presented here, a preliminary study of their contents seem not giving any more benefit for the entire interpretation issue.

But there are more elements that show a different vision of heritage between Ayutthaya Historical Park and the Westerners. If a generalisation of Heritage policy in the Western World is given, it can be said that Heritage policies in Europe or USA mean preservation of the existing structures. An anastylosis can be attempted, as long as the original elements are scattered on the floor. This certainly contrasts with the actual restoration done at Ayutthaya, where substantial restorations were done in the last fifty years. A full restoration of a building is certainly part of the Thai perception of heritage, following the spirit, if not the lines of the Nara Declaration about Authenticity (Pisit Charoenwaongsa, 1995). Any building is a living structure, thus, a temple has to be restored when it is time to do it, and there is no reason to keep a collapsing structure just for the taste of the "old" things.

As they opened Ayutthaya archaeological site to the public, Thai visitors went to the old capital in order to give respect to the various manifestations of Lord Buddha and *only secondly* by the possibility to appreciate their own heritage. Thus, the heritage *needed* to be restored. But the difference of intents between Thailand and Western countries about conservation should have been made evident somehow, avoiding the impression of having in front a sort of fake.

Relatively to the diffused restorations, most of the buildings in the Ayutthaya historical park were restored during the 1980s, just before the park registration in the World Heritage list. The material used for those restorations was essentially the same as the original buildings: red bricks, with stamped the registration year on it. My concern at this point is that those marks are already fading away, and no marks will be left in another 20 year time. So the general impression for the visitor will be of structures that have survived in such a state since the times of the destructions of Ayutthaya more than two centuries ago. A restoration using bricks with a slightly different colour or composition would have given a better idea of what is original and what is instead a reconstruction. As update about this issue, in October and November 2011, Ayutthaya was flooded for almost two months, with structures such as Wat Chaiwattanaram greatly suffering for it. After UNESCO experts visited the site in January 2012, the site is now a sort of building site, with "original" bricks changed with new ones. As I prefer to postpone to later studies a discussion about Thai concepts of restoration, I just relate such recent on site "developments".

I also highlight two particular "nuisances" about Western visitors – and not only them – and Thai heritage. As foreign tourists pay the entrance fee to heritage sites in Ayutthaya at least 3 times the amount of a Thai visitor, the service they receive is not better. For a Western visitor remains difficult to explain the different in pricing, as in Europe, a Thai and a European visitor would pay the same amount of money to go to see the Louvre Museum for instance, unless you belong to in a protected category (senior citizens, unemployed, and students under a certain age with international student card). And the British Museum in London is free to anyone, British, European and Thai. Western visitors may be actually rich, but it is difficult to justify major costs without receiving anything back.

Connected with ticketing, there is also the prohibition of taking photos inside museum galleries. This prohibition is valid in any Thai national museum. In many cases, the reasons of such prohibition are not entirely clear and various reasons can be given. The prohibition can be linked to copyright reasons, as postcards or photo of the objects are sold at the Museum bookshop. The camera flashlight may damage the exhibited objects, or a photo of an object can be used in order to steal the object and sell it in the antiquity market. Some of the concerns may be valid, but I would let the visitors take photos to any objects, excluding the fragile ones. The only condition is that the photographer should buy a photo permit. This rule would leave Museum ticket offices richer, and would make the tourists visiting the museums happier for their usual holiday photos and satisfied by the experience.

The actual extension of the archaeological park limits the tourists' visitation. In Ayutthaya, tourists usually roam around the main temples, but the archaeological park is immense and many parts are not visited at all. Thus, various itineraries focused about different sectors of the city should be proposed in order to spread visitors throughout the park, with a major appreciation of the park as whole. I may preliminarily suggest the following ones: religious, political, foreigners in Ayutthaya.

Moreover a major tourist focus should be given, both helping local economy and visitors. The creation of a group of guides is a must, in conjunction with the creation of a website dealing with Ayutthaya. Such website should promote the place, supplying information about events, hotels and obviously the culture of Ayutthaya. The website should also target various levels of tourists' interests and ages.

8.0 Conclusion

I have tried to highlight some of the issues present at Ayutthaya itself as love for archaeology in general and for the site in particular. As date of fact, after the actual opening in 1991, any development has been completely abandoned in spite of the fact that many critical remarks have been issued about the state of the archaeological park. As a passing-by observation, the registration in the World Heritage list is not the end in itself, but only a first step to establish the cultural, tourist and economic role of the site. Most importantly, it should be a way to recognise the value of the site for any present and future generation of visitors.

I would like to conclude with some further observations: as heritage sites are opened, long term plans are fundamental, but not all the points of it need to be implemented straight away since its opening. The entire extension of the site itself should be targeted, as early planning will avoid problems of conservation, land encroachment and other similar issues. But no plan can be considered as eternal: any method used to promote the site and its interpretation should be implemented and reviewed time to time as new theories and techniques come into being.

Acknowledgment

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Appendix 1: Definition of cultural tourist

"1. The *purposeful cultural tourists* —cultural tourism is the primary motive for visiting a destination, and the individual has a deep cultural experience.

2. The *sightseeing cultural tourist* —cultural tourism is a primary or major reasons for visiting a destination, but the experience is more shallow.

3. The *serendipitous cultural tourist*—a tourist who does not travel for cultural tourism reasons, but who, after participating, ends up having a deep cultural tourism experience.

4. The *casual cultural tourist*—cultural tourism a week motive for visiting a destination, and the resultant experience is shallow.

5. The *incidental cultural tourist*—this tourist does not travel for cultural tourism reasons but nonetheless participates in some activities and has shallow experiences."

Appendix 2: Interpretation

1) After Tilden (2007, 34-35):
"1. Any interpretation that does not somehow relate what is being displayed or described to something within the personality or experience of the visitor will be sterile.
2. Information, as such, is not interpretation. Interpretation is revelation based upon information. But they are entirely different things. However, all interpretation includes information.
3. Interpretation is an art, which combines many arts, whether the material presented are scientific, historical, or architectural. Any art is in some degree teachable.
4. The chief aim of interpretation is not instruction, but provocation.
5. Interpretation should aim to present a whole rather than a part and must address itself to the whole man rather than any phase.
6. Interpretation addressed to children (say, up to the age of twelve) should not be a dilution of the presentation to adults but should follow a fundamentally different approach. To be at its best it will require a separate program."

2) After Mc Kercher and duCros (2002, 216):
"[F]ive main principles drive interpretation:
1. It is not teaching or instruction in an academic sense, although it does involve the transfer of information.
2. It must be enjoyable for visitors, for it is made to be fun and enjoyable, noncaptive visitors are likely to pay attention longer.
3. It must be relevant for visitors, and visitors must be able to relate it to their own frame of reference.
4. It must be well organized so that visitors can follow it easily.
5. It should be focused around a few discrete themes, rather than simply presenting the information in a disconnected manner.

Urban Development Pressure at the Peri-urban Areas: Challenges to the Agriculture Sector

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Abstract

Urbanization has caused built environment to be expanding over the countryside, changing the rural landscape and lifestyle of the rural communities, forming urban-rural interface at the peri-urban areas. Furthermore, urban development has caused land especially at the fringe areas under constant pressure. This phenomenon has threatened the livelihoods of local farmers and sustainability of agriculture sector at the peri-urban areas. This study aims to investigate the challenges faced by agriculture sector due to urban development pressure at the peri-urban areas in Seberang Perai. The study was undertaken using quantitative data collection involving 321 households selected using convenience sampling and qualitative data collection focusing on 12 farmers living in areas experiencing intense urban development pressure in Seberang Perai, Penang State. The study found urbanization has caused reduction of agriculture land size and jeopardized farming activities. Various adaptation strategies including getting involved in multiple job sectors, investing in agriculture business and diversifying farm products were adopted by local farmers. These findings could be used in formulating appropriate policy towards safeguarding agriculture activities at the peri-urban areas and ensuring sustainable agriculture sector in Penang State.

Keywords: Urbanization, peri-urban areas, agriculture, Malaysia

1.0 Introduction

Urbanization has become major planning and policy concern at all spatial scales. This is because more than half of the world's population is living in urban area and the majority is in the developing countries. The adoption of industrialization policy has led to rapid growth of urban population in the cities of developing countries including Malaysia. For example, the number of urban population has increased drastically from 200 million in 1900 to about 2.9 billion in 2000, and it is estimated to reach 5 billion by 2030 (Ademola and Takashi, 2007). According to the United Nations (2008), urbanization of the Asian and Pacific region will continue and a majority of the region's population will live in urban areas by the year 2025. Furthermore, in the Pacific sub-region, over 70 per cent of the population already lives in urban areas while in the East and South-East Asia, urban population is expected to reach the 50 percent level before the year 2015 (UN, 2008; McGee, 2011).

Urbanization has brought economic benefits to many countries with substantial improvement in the provision of social services to the communities. However, urbanization, which caused urban expansion or physical increase of built environment, also brought ecological and socio-economic effects to the communities. For example, the conversion of agriculture land into urban built-up areas reduces farmland that is available for food and crop production (Raddad

et al., 2010). In the United States, for example, the total area of cropland, pastureland and rangeland has decreased by 76 million acres in the lower 48 states between 1982 and 2003, while the total area of developed land increased by 36 million acres (Wu, 2008). Similarly, China also experienced drastic decrease of farmland due to urban expansion. Between 1996 and 2002, for example, cultivated land was reduced from 130.03 million hectares to 125.93 million hectares (Qi et al., 2005). Similarly, in Peninsular Malaysia for example, urban built-up areas had increased from 437,090 hectares to 759,900 hectares between 2001 and 2008, while, agriculture areas had decreased from 6,668,730 hectares to 6,267,300 hectares; a reduction of 400,430 hectares between the same period (JPBD, 2005; JPBD, 2010). Although built-up areas covered approximately 5% of land in Peninsular Malaysia, proper planning and control should be undertaken since more than 70 % of the population is living within urban areas (Samat, et al., 2011). Furthermore, urban expansion towards urban fringe has created high pressure on the agricultural land, and subsequently, brought negative impacts on socio-economic conditions of the communities (Mandere et al., 2010). This study aims to investigate the impact of urban expansion at the peri-urban areas and challenges faced by the agriculture sector. The following section discusses background of the study.

2.0 Background of the Study

Urbanization mainly due to rural-to-urban migration and natural population growth has caused built-up areas to expand towards the fringes or peri-urban areas (McGee, 1989, 2011). Peri-urban areas, the urban fringe and the periphery (Bryant et al., 1982; Wilson 2007) are some of the terms and concepts use to describe areas outside urban core but under a certain urban influence with heterogeneous pattern of settlement at the urban-rural interface, replacing the former model of an urban-rural dichotomy (McGee, 1989; Zasada et al., 2011). Peri-urban area refers to a transition or interaction zone particularly the stretches of land connecting two city centers, where urban and rural activities are juxtaposed, and landscape features are subject to rapid modification induced by human activities (McGee, 1989; Simon et al., 2004; Samat et al., 2011). This area often understood as mixed areas under urban influence but with rural morphology and might include arable agriculture land, areas of sensitive landscape, open spaces or wetlands that provide important component of the ecosystems. These areas have been termed as *Desakota* to describe village-town in Southeast Asian cities (McGee, 1989), *Ruralization* to explain link between urbanization and rural areas (Simon et al., 2004) and *Chengzhongcun* to mean urban village in China (Yuting et al., 2010). These three concepts are used to describe the spatial linkages between urban and rural features (agriculture areas). The availability of good transport infrastructure allows easy access between urban centers and rural areas (Mandere, et al., 2010), which caused the transition zone between the city and its countryside becoming unclear and diffuse, blurring the former clear distinction between urban and rural areas (Champion and Hugo, 2004; McGee, 2011). Furthermore, the expansion of urban lifestyle into peri-urban areas is partly due to in-migration of affluent people into rural settings, out-migration of people based on economic necessities such as affordable housing or job availability, and displaced urbanization of low income groups or young families who cannot afford suitable housing and living environment in the inner city (Zasada et al., 2011). Subsequently, this phenomenon has caused the city and countryside to function as home to a range of activities, spanning from agricultural production to residential and recreational areas (Thompson, 2004).

Various studies have been conducted that investigate the impact of urban development pressure on agriculture land at the peri-urban areas (Zasada et al., 2011). For example, Wilson (2007) asserts that arable agricultural land in many countries is shrinking due to

urbanization, land abandonment, infrastructural developments or irreversible land degradation such as desertification or salinization. Furthermore, loss of productive land was due to conversion of land into non-farm activities in order to support rural economy. Other factors contributing towards agriculture land loss at the peri-urban areas included political instability, low return from farming activities, and physical constraint such as drought and unfertile soil (Raddad et al., 2010). In developed nations such as Denmark, for example, societal transition at peri-urban areas towards enhanced environmental consciousness, urban lifestyles and the rise of aging and leisure-oriented society, where farming is becoming one of the hobbies rather than economic reason, is challenging the predominant mono-functional agriculture (Wilson, 2007; Zasada et al., 2010). These processes have jeopardized food security since the existing land might not be able to produce enough food to satisfy the demand for the growing population (Brown, 1995), and thus, threaten the livelihood of the communities (Wilson, 2007; Ademola and Takashi, 2007; Clark et al., 2007; Raddad et al., 2010).

In order to investigate challenges faced by the agriculture sector in Penang State, this paper adopted the framework in farmer agent model developed by Johnston and Bryant (1987) in investigate farmers' adaptation strategies at the peri-urban areas. As illustrates in Figure 1, the model anticipates challenges could be two forms namely positive and negative changes in farming activities might due to urbanization. The positive context includes adaptations or vertical growth strategies and normal or managerial adjustments, such as the adoption of new agricultural technologies which would increase efficiencies and enhance farm production. In contrast, negative adaptation strategies includes exit from farming, remain no change, lack of investment and reduction in farm size or production intensity (Johnston and Bryant 1987). Based on this model, the study anticipates both negative (decline in farming activities) and positive adaptation such as capital investment, multifunctional, and urban oriented marketing behaviors might have occurred at the peri-urban areas of Penang State. The following section will discuss the methodology used to conduct this study.

Figure 1: Analytical Framework used in the Study
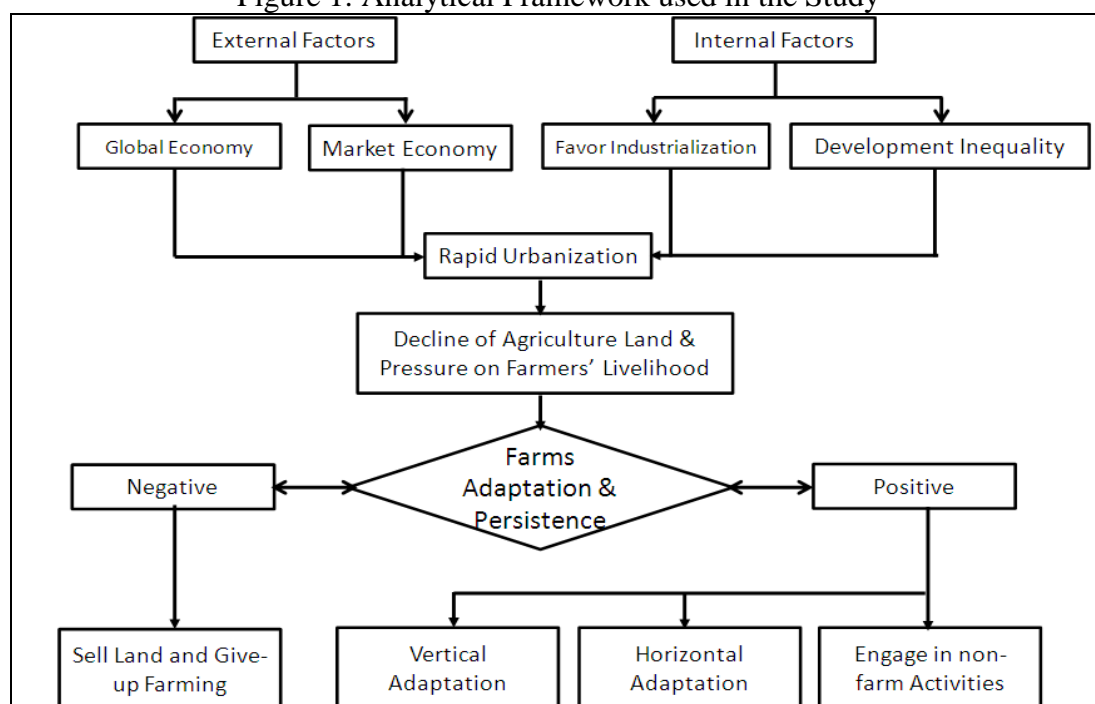
Source: Johnston and Bryant (1987)

3.0 Methodology and Data Development

This study engages both quantitative and qualitative methodologies that involved 321 respondents and in-depth interview with farmers living within areas experiencing urban development pressure. Areas experiencing intense urban development as calculated by Samat et al. (2010) and Samat et al. (2011) were used to identify areas under development pressure in Seberang Perai, Penang State. Kepala Batas and Sungai Dua areas in the Northern District and Bukit Mertajam and Juru areas in the Central District (Figure 2) were identified as areas experiencing urban development pressure from 1990 to 2007. Thus, samples for household survey were selected among those living in these areas. Convenience sampling is used because the area is homogenous and the number of population living within the areas experiencing intense urban development is unknown (Troachim, 2006). 321 respondents were selected and interviewed by using questionnaires in order to understand socio-economic conditions of those living within areas experiencing intense urban development. The quantitative data was analyzed using IBM Statistical Package for Social Science (SPSS) version 19.0.

In-depth interviews were conducted with 12 key players in agriculture sector involving six respondents from paddy field production; two respondents are in rubber cultivation, and one respondent each from synergy farming, palm oil nursery, agro-based industry and dairy farming. The qualitative data was analyzed using content analysis, since it allows for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns (Hsieh and Shannon, 2005). Thus, clear picture on the challenges faced by farming communities could be understood. This approach is flexible as it allows individuals to speak for themselves using their own words in expressing the problems or condition they faced (Ghazali, 1999).

4.0 The Study Area

Seberang Perai which is the mainland part of Penang State, is located in the northwest coast of Peninsular Malaysia, between 5° 05' N and 5° 35' N latitude and 100° 20'E and 100° 40'E longitude, and has an approximate total area of 738.4 km^2 (Figure 2). This area is selected as case study since it is experiencing rapid urban development primarily as a result of industrialization (Samat, 2002). Since the adopted of industrialization policy to foster economic growth, various infrastructures such as North Butterworth Container Terminal, North-South Expressway, and Butterworth-Kulim Expressway were developed to support the need from industrial areas and promote the economic development in Penang (JPBD, 2007). Furthermore, this area is located within the Northern Corridor Economic Region (NCER), which is being developed as a growth center of the Northern Region of Peninsular Malaysia, and planned to achieve a world-class economic regional status by year 2025. Hence, this area stands as a potential local center for population growth and economic development in the northern region (JPBD, 2007; Samat et al., 2011). Therefore, it is expected urban area will continue to expand towards arable agriculture land at the peri-urban areas.

Population in Seberang Perai is growing steadily. The population census of 1970 recorded that 342,625 people lived in Seberang Perai. By 1991, this had increased to 545,688 people, with annual growth rate of 2.4 %, which is higher than the state annual growth rate of 1.5% (Department of Statistics, 1991; 1996). In 2010, Seberang Perai's population is 856,800 and it is estimated to reach 990,000 and 1.1 million people in 2015 and 2015 respectively (JPBD, 2007; Department of Statistics, 2010). The increase of its population will require significant

amount of land to accommodate the demand for housing and related facilities. For example, between 2000-2005 and 2006-2010, additional 35,877 units and 30,033 units of houses were required for Seberang Perai respectively (JPBD, 2010). Its population is projected to reach 1,414,719 people in 2020 (JPBD, 2007). Therefore, built-up area is expected to continue to expand towards arable agriculture land in the near future.

Figure 2: The study area – SeberangPerai
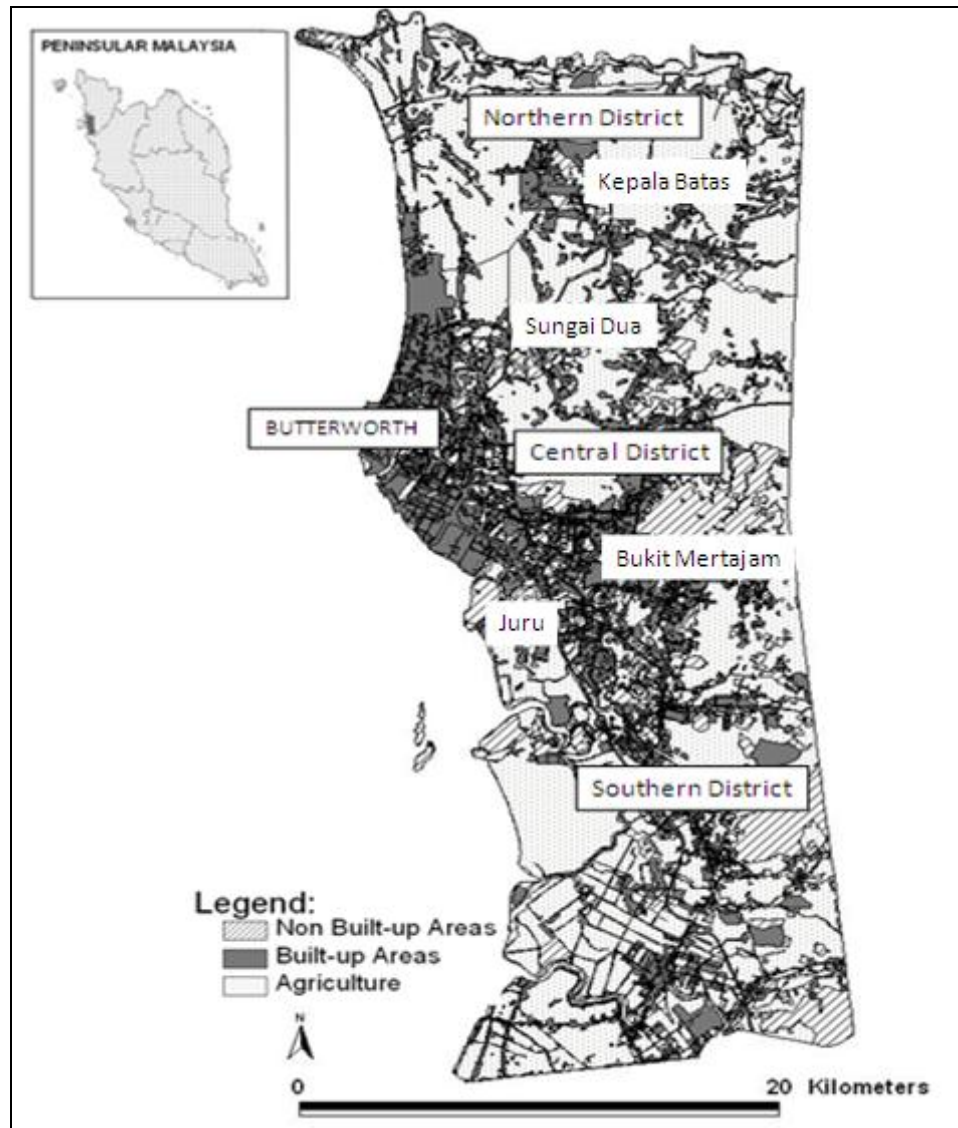
5.0 Demographic and Socio-economic Profile of the Respondents

There were 321 respondents selected which comprised of 40 respondents (12.5 percent) from Sungai Dua, 85 respondents (26.5 percent) from Kepala Batas, and 113 respondents (35.2 percent) and 83 respondents (25.9 percent) from Bukit Mertajam and Juru respectively. Demographic and socio-economic profiles of the respondents are shown in Table 1 below.

Table 1: Demographic and Socio-economic Profile of the Respondents

Town Surveyed	Frequency (N)	Percent (%)
Sungai Dua, The Northern District	40	12.5
Kepala Batas, The Northern District	85	26.5
Juru, The Central District	83	25.9
Bukit Mertajam, The Central District	113	35.2
Total	321	100.0
Gender	**Frequency (N)**	**Percent (%)**
Male	133	41.4
Female	188	58.6
Total	321	100.0
Education Level	**Frequency (N)**	**Percent (%)**
Never been to school	13	4.0
Informal Education	4	1.2
Primary School	98	30.2
Secondary School	179	55.8
College/university/Technical	25	7.8
Others	2	0.6
Total	321	100
Age (mean = 48.0)	**Frequency (N)**	**Percent (%)**
0-30 years	38	11.8
31-40 years	58	18.1
41 – 50 years	95	29.6
51 – 60 years	62	19.3
61 – 70 years	51	15.9
71 – 80 years	17	5.3
Total	321	100.0
Socio-economic Status	**Frequency (N)**	**Percent (%)**
Low income family	37	11.5
Middle income family	269	83.8
High income family	15	4.7
Total	321	100.0

The respondents comprises of 41.4 % male and 58.6 % female. In term of education level, most of the respondents at least had primary education and above, while only 4 % of the respondents had neither received formal nor informal education. Mean age of the respondents is 48 years old, which means all respondents, are matured and have seen urban expansion surrounding their areas in the past 20 years. In term of socio-economic status, only 4.7 % (15 respondents) is from high income family, and the majority is from middle income family (83.8 % or 269 respondents) and 11.5% (37 respondents) is from low income family. The following section discusses negative and positive adaptation strategies undertaken by agriculture sector due to urbanization.

6.0 Negative Adaptation: Declining of Agriculture Activities

Urbanization has caused reduction of agriculture land size which caused some farmers to seek employment in other employment sectors. For example, the study by Samat et al. (2010) found that agriculture land size in Seberang Perai has declined from 51,880.427 hectares in

1990 to 42,038.228 hectares in 2007, while built-up areas has increased 15,590.646 hectares to 21,029.959 hectares between 1990 and 2007. Paddy field was hit hard by urbanization process, where the size of paddy fields has declined from 27531.0 acres in 1999 to 12472.0 acres in 2008, a reduction of more than 50% (refer to Table 2). This table also illustrates that only small reduction of farm size used for other type of agriculture activities between the same periods.

Table 2: Size (in acre) of land used for five major agriculture activities in Seberang Perai

Type	1999	2000	2004	2005	2007	2008
Paddy	27531.0	27582.0	12472.0	12472.0	12472.0	12472.0
Rubber	10444.0	10391.0	9390.0	9137.6	9511.6	9511.6
Palm Oil	12931.1	12750.0	13316.5	12992.6	13195.9	13195.9
Coconut	1931.0	1931.0	1591.7	1591.7	456.2	384.8
Fruits	3568.1	3481.2	3168.9	3359.2	2989.9	3282.1
Total	56405.2	56135.2	39939.0	39553.1	38625.6	38846.4

Source: State Department of Agriculture (2009).

The study also investigates agriculture land owned by the respondents. Based on 321 respondents interviewed, only 29 people (9.03%) own agriculture land; however, the size of land is quite small. As stated in Table 3 below, the average land size owned by respondents is 2.944 acres, thus, becomes uneconomical to continue working on the land.

Table 3: Land size owned by the respondents in the study area

Land size (Relong)	Land size (Acres)	Frequency	Percentage
1	0.67	9	31.03
2	1.33	4	13.79
3	2.00	4	13.79
4	2.67	5	17.24
6	4.00	2	6.90
10	6.67	2	6.90
11	7.33	1	3.45
16	10.67	1	3.45
20	13.33	1	3.45
Total		**29**	**100.00**

Note: 1 relong is equivalent to 0.28 hectares. Average land size is 4.414 relung or 2.944 acreas.
Source: Field survey (2011)

Furthermore, quantitative data shows that based on 155 respondents who are employed, only 5.8 % are employed in agriculture sector as compared to 22.6 % in the past. As shown in Table 3 below, the respondents that were previously work in agriculture sector shifted to manufacturing and related, operator, transportation and labor category, services, or sales. In addition, the study found that majority of the respondents (233 respondents or 72.6%) felt that urban development has caused reduction of agriculture land size, while only 88 respondents or 27.4% disagreed to that. However, only 54 respondents or 16.8% felt that their land would be converted to built-up areas within short period of time, while 157 respondents or 48.9 % disagreed to that.

Table 4: Cross Tabulation of Respondents' Past and Present Employment Categories

Job Categories	Past Employment Sector		Present Sector	Employment
	Frequency	Percent (%)	Frequency	Percent (%)
Professional, Technical and Related	25	16.1	25	16.1
Administrative and Management	14	9.0	14	9.0
Clerical and Related	11	7.1	11	7.1
Sales	15	9.7	31	20.0
Services	15	9.7	18	11.6
Agriculture, rearing, forestry, fisheries, and hunting	35	22.6	9	5.8
Manufacturing and related, operator, transportation, and labor	40	25.8	47	30.3
Total	155	100.0	155	100.0

Various challenges faced by the agriculture sector in the study area. In addition to declining agriculture land size due to growing demand from housing and related services, several problems faced rice production found in the in-depth survey. These include spread of disease, high cost of input, flood disaster, unstable market, and low soil fertility Diseases like weedy rice[1], the golden apple snail[2] and rats were major threats to paddy fields. As stated by Respondent 1, (Male, Farmer/Security Guard, 58 year old, in-depth interview, 2011)

> "The snails are hard to kill and can cause the paddy for the whole plot dead and get less output. The diseases are unstoppable and will come in large amounts. So, we have to prevent it from an early stage by using pesticide, which could be bought at local shop and check the field regularly to ensure the snails do not enter the plots. For weedy rice, high quality seed needs to be used".

To cost for pesticide and high quality seed are expensive. Farmers usually bought less expensive pesticide and seed, at a subsidized price from regional farmers' association office; even though, they felt that the pesticide or seed are less effective. In addition to cost of input, farmers also have to pay local or foreign labor to take care of the fields, while the machineries are used for harvesting and ploughing the fields. Disease, high input cost and labor cost are among the burden faced by rice farmers.

This study found that most of farming activities are undertaken by farmers while family members preferred to work in non-agricultural sector. For example, Respondent 2 (Male, Pensioner/Farmer, 61 years old, in-depth interview, 2011) stated that

> "Young people preferred to work in the factory since they earn monthly salary, receive various benefits and access the work easily since the factory provides transportation for their workers. So I have to hire two foreign workers from Bangladesh to work on my paddy fields"

Due to high input cost, small scale farming is no longer suitable at the peri-urban area. Thus, farmers feel that they need least 20 *relung* to earn decent living. For example, Respondent 3, (Male, Government Officer and part-time farmer, 45 years old, in-depth interview, 2011) stated that

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[1] Weedy rice or locally known as padi angin, is easy and spontaneous shattering rice reduces yield.

[2] The golden apple snails, locally known as *siput gondang emas*, scientifically known as *Pomacea canaliculata* and *Pomacea insularum* become major threat to paddy from the early stage of farming.

> "*to have a comfortable life and secured your livelihood as farmer, one must have at least 20 relung of paddy field. This size will ensure good return and provide decent living for farmers. Due to high operating cost, the return from small piece of land will be very small, thus, farmer would not generate enough income to support their family. I've to depend on my salary as a government officer to support my family*".

Furthermore, Respondent 4 (Male, Security Guard/Farmer, 55 years old, in-depth interview, 2011) stated that

> "*the yields for five relung is around MR6000, but I pay the rent at MR400 for one relung, seed, pesticides, transportation and harvesting. All are costly. The profit in every season is approximately MR3000. This is better than nothing as I did it as part time job*".

This implies that a farmer who has five *relung* can hardly get RM600 or USD200 per month, which is below the poverty income line as determined that is at RM720 per month (Elhadary & Samat, 2012). Although the size of land is small, some farmers do not want to sell it, at least for the time being. As stated by Respondent 5 (Male, Farmer/petty trader, 52 years old, in-depth interview, 2011)

> "*The Malays should not sell their land. Malays will not have anything in Penang. Once sold, we will not be able to get the land back*"

In contrast, others are willing to sell the land if the price is right. As stated by Respondent 6 (Male, Farmer/petty trader, in-depth-interview, 2011)

> "*I need compensation in cash in order to invest in another business. I will sell the land but the government should multiply the current price by four or five times*".

The respondent will sell the land if the compensation is five times the current market price. Furthermore, farmers are aware that development in their area will result with the increase of land value, thus, they are hoping to get good price for their land.

From in-depth interview shows that farming particularly paddy farming has become a secondary occupation for most of the farmers, who work as government servants, factory worker, teacher, security guard or military pensioner. Growing rice has become a mean to support the income from other source and leisure activity. As stated by the respondent

> "*This is my part time job and I love to work in the paddy field because I can get healthy. Every day after I come back from my office about 5.30 pm, I will go to field and do my work until 7.00 pm*"

Similarly Meert et al. (2005) and Zasada (2010) found that in the developed nations such as Belgium, farmers are also working in other job sector, and farming has become a weekend and leisure activities. Based on analysis undertaken, this section concludes that high cost of input, small farm size and low profit are among the reasons for the decline of rice growing activities in the study area. Similarly, rice production in Malaysia faces various challenges including decline in cultivated area, negligible gains in productivity, continued increases in the cost of production and decrease of profitability (Man and Sadiya, 2009). Therefore, proactive actions such as marketing mechanism or ensuring stable price of rice need to be undertaken to control conversion of arable agriculture land into other activities (Sharp et al., 2007).

7.0 Positive Adaptation: Growth, Multifunctional and Intensification in Agriculture Sector

While the rice production as noted above is in decline or at least remain without growth, other capital intensive activities and crops oriented to urban market (swift-let farming, dairy, vegetable and fruits) are growing very rapidly (UPEN, 2009). Most of these farms have started after the year 2000. Unlike the paddy farmers, these types of farming are more profitable and both land size and products sale are growing. For example, Synergy Farm (SF) is one of the successful companies specializing in plantation, processing and packaging of Cavendish banana under the brand name *"Tropicoast"* for export and for local market. The plantation started with 174 acres and has now reached about 250 acres, dedicated mainly for plantation of Cavendish banana and other commercial fruits, and agro-tourism (UPEN, 2009; Dawood et al., 2011; Mohd, 2011). Another activity is nursery farming which is also a lucrative business. An in-depth survey with Respondent 7, (Male, Oil Palm Nursery Owner, 56 years old, in-depth interview, 2011), the nursery farmer started his business with three acres of land for planting oil palm tree in Baling, Kedah and now moved to the south of Seberang Perai, where the size of his land reached 30 acres. The respondent is unwilling to sell his land and he preferred the land as replacement if his land to be developed. Agriculture sector has to change from subsistence to agro-based industry (UPEN, 2009). Agro-farming developed by Respondent 9 (Male, Farmer/businessman, 64 years old, in-depth interview, 2011) revealed that he started to rear goat imported from Australia and then expended his business to open a restaurant originally to provide meals to customers interested in buying goats at his farm. The restaurant is very well received and at present, his farm becomes a touristic place offering a relaxation atmosphere for dining and triggers a nostalgic memory for Malay visitors (Dawood et al., 2011). These activities generate job opportunities for at least 150 people include local residents, Malay from other states and migrant workers most from Bangladesh, Nepal and Indonesia.

The locations at close proximity to urban market encourage farm owners to run a profitable farm enterprise. As indicated by Wilson (2007) the location near urban agglomerations opened multiple and different multifunctional opportunities for farmers due to both higher purchasing power of urban populations and varied consumer demand for agricultural products. Respondent 8 (Male, Dairy Farmer, 45 years old, in-depth interview, 2011) revealed that

> *"My land is 45 minutes drive from urban core and easily accessed by good road network. I used to distribute the milk to urban dwellers with motorbike, but now I expanded my business and used car to access my clients. Demand for fresh milk is increasing and it becomes a lucrative business. My customers are mostly foreigners living in urban centers".*

Unlike rice production where farming is a secondary activity, agro-based industries operated in the Seberang Perai region generated high-value income or can be called "winner of development". Unlike the rice farmers, none of the respondents are willing to give up their land for urban development.

Farming activities at the peri-urban areas should be focused on multiple products, which is called multifunctional agriculture (Wilson, 2007). Agro-farmer and dairy farmer, for example, used animal waste to produce fertilizer, which is sold at RM6.00 per kilogram to the locals. In addition, local fruits and vegetables are also grown in the farm and sold at the local markets. The study also found that the key success of agro-based farming activities in Penang state is high purchasing power (urban people), good road network in addition to the

accessible and affordable transportation systems (UPEN, 2009). It has been observed that the study areas is easily accessible with asphalt roads and most of the household have accessed to one or more means of transport (private) beside the availability of public one. Contrary to rice production, the problems faced by agro-based industries are different. For example, theft, unskilled labor, and lack of local labor are among problems faced by farmers. The current crucial challenge is to meet the demand of the growing demand. Farmers are aware of the need to expend toward multifunctional agriculture since land has become scarce. Multifunctional in the context of this paper implies that generating different businesses (farming or non-farming) by adding new enterprises to the existing one with or without increasing the area. According to Meert *et al.* (2005), such farms would include both diversifications 'within agriculture' and 'outside agriculture'. Unlike intensification where increase the production of same crop within same land, multifunctional is adding on new production systems fundamentally different from the existing range of farm activities such as adding vegetables onto a livestock operation, combining a grain operation with growing produce and an on-farm retail shop, or transforming raw agricultural products through value-adding activities (Sharp et al., 2007). This type of agriculture plays vital role in providing food to urban dwellers, generating job opportunities and at the same time promoting cluster network (Dawood et al., 2011). For example, goat breeding is mixed with restaurant with touristic environment opens network for 26 local suppliers who supply the farm with different items (oil, onion, vegetable, etc). In the face of climatic change and market liberalization, multifunctional agriculture is considered as one of the coping strategies, which reflects Johnston's and Bryant conceptualization of a positive adaptation.

8.0 Conclusion

The study has shown that despite massive urban encroachment, agriculture at the peri-urban area in Seberang Perai, Penang is still in practice. This activity, however, has been transformed to cope with the pressure of shrinking land size and benefit generated from urban markets. Both negative and positive adaptation strategies discussed were adopted by farmers in the study area. Based on the studies, it was found that the future of paddy fields in Penang state as well as in the country is diminishing unless serious action is undertaken. Rice farmers are willing to give-up farming activities, since most of the farmers have to rely on jobs in non-agriculture sector to support their living. In some cases, farming has become leisure activity. To ensure the sustainability of staple production (rice), there are the needs to implement zoning regulation which prevent conversion of paddy fields to other usage. Given the dynamic and complex nature of peri-urban area, co-operation between all stakeholders such as urban planners, farmers and decision makers are crucial in planning for sustainable agriculture development.

Acknowledgement

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Social and Human Capital in Family Firm Sustainability: A Malaysian Case Study

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Abstract

Sustainable entrepreneurship and traditional entrepreneurship have different reasons for pursuing economic development but they share the same underlying concern in needing to stay alive as an entrepreneurial venture. As many entrepreneurial ventures begin as SME's in the form of family businesses, it is important to understand the factors influencing their success or failure. One such factor concerns the contribution of family social and human capital to business strategy and sustainability. An investigation into this was conducted by way of a case study of a family business from inception and growth to decline. The biographical and narrative based inquiry led to findings that suggest that family social and human capital were pivotal to the entrepreneurial venture's early and growth stages. However, the lack of a re-evaluation of that social and human capital in the light of changing industry conditions impacted the future sustainability of that business.

Keywords: Sustainable entrepreneurship, social and human capital, family business

1.0 Introduction

Family business have stocks of capital that consist of social and human capital that are at the disposal of the family and which contribute to the family firm's performance (Danes, Lee, Stafford and Heck, 2008; Danes, Stafford, Haynes and Amarapurkar, 2009; Sorenson and Bierman, 2009). The family's social and human capital are resources arising from within the family itself that become inputs into the family and its business structures, processes and transactions to achieve the short-term (viability) and long-term (sustainability) goals of the family business (Danes, et al., 2008).

1.1 Family Social Capital

As Danes, et al., (2009) point out, family social capital is made up of the goodwill that exists among the family members and between the families and their community members that are encapsulated in inter-personal relationships. They further state, that social capital is embedded in relationships in contrast to human capital which is within the individuals themselves. In both the family and its business, social capital can take the form of trust, mutual respect, love, selfless concern and reciprocal exchanges within family members and with their staff (Brewton et al., 2010)

Family social capital may give the family business a competitive edge over non-family business in that it is embedded within family relationships which are unique to the family and which cannot be transferred or replicated elsewhere (Sorenson and Bierman, 2009; Barney, 1991; Derickx and Cool, 1989). Family social capital can be both a resource and a constraint (Danes, et al 2008). Harmonious and co-operative relations among family members are a positive resource whereas the existence of conflicts or the lack of trust can undermine relationships and act as a constraint (Sorenson and Bierman, 2009). As Olsen (2003) points

out, the nature of interpersonal relationships among family members are a contributory factor to high or low rates of generational family business succession. On the other hand, she notes that in times of economic downturns, family businesses have the propensity to survive not so much due to their business performance as it is because of the family. Scholars point to 'bonding' social capital with a focus on the internal relationships among family members and 'bridging' social capital that refers to the external links it has with other groups (Adler and Kwon, 2002; Sharma, 2008; Steier, 2007).

Danes, et al., (2009) point to research studies that show how social capital and social networks have contributed to firm success, such as in tapping business opportunities, gaining access to finance, generating customer and worker loyalty and in aiding the development of human capital in subsequent generations. Sorenson and Bierman (2009) point to research showing that family social capital can provide family support that helps family entrepreneurs to embark on venture start-ups. Sorenson, et al. (2009) reveal a significant positive correlation between family social capital and firm performance.

Research studies show that social capital can precede both human and financial capital in that positive family social capital can be instrumental to obtaining the human capital of family members to help out in the business (Chang et al., 2009; Rodriguez et al., 2009) and also attract family financial capital in the form of personal loans, financial gifts and other financial resources in developing and sustaining the family business (Sorenson and Bierman, 2009).

1.2 Family Human Capital

Family human capital resides in the stocks of knowledge, experience, capabilities and energy in the individual family members as well as their attitudes and values. (Sorenson and Bierman, 2009). As Brewton et al., (2010) point out, human capital is determined by the genetic make-up of the individual but this can also be further supported by investments over time. It is a feature unique to family human capital that family members may be willing to work without pay (Danes, et al., 2009).

The availability of human capital can also come from family members who are not working in the family business if there is positive family social capital, such as in looking after the family members (Sorenson and Bierman, 2009). Brewton et al., (2010) show for example, that the trust that exists among family members can be transferred to their business context regardless of whether that family member is working in the business or not. This implies that family human capital is a resource that is flexible enough in being put to use in either the family or the business dimensions of the family firm and which as a result, can improve the quality of life of family members (Rothausen, 2009; Stafford and Tews, 2009).

2.0 The Research Inquiry and Methods

This paper looks at how family social and human capital supported the creation and growth of a family business and the conditions that led to its decline, with implications for family firm sustainability.

This research was conducted as a single case study on a Malaysian family business that specialised in ship repair engineering. It was based on adopting the biographical and narrative-based research method that involved an in-depth, qualitative interview conducted with a second generation owner-founder of the family business.

2.1 The Case Study Research Method

'Case study is the study of the particularity and complexity of a single case, coming to understand its activity within important circumstances.' (Stake, 1995, p.xi) Stake continues to add that the central focus of the case study is 'particularisation' and not generalisation (p.8) and consequently, that the main reason for using the case study as a research method, is to understand the case itself as opposed to producing generalisations.

The purpose and rationale of the case study is as Remenyi et al. (1998) state, that sometimes a full picture of the social interaction of variables or events can only be gleaned from a careful scrutiny of a practical, real-life instance.

2.2 Biographical and Narrative-Based Research Methods

The information obtained for this case study research was derived from the biographical and narrative-based methods of data collection.

According to Rosenthal (2004), biographical research focuses on an individual's subjective perceptions of his or her actions and experiences, what meaning they attribute to them and their contexts, in order to understand and explain their behaviour. Adopting a narrative approach, according to Riessman (2003), does not assume objectivity but emphasises subjectivity instead and is aimed at investigating the story itself.

Fenton and Langley (2011) trace the application of narrative-based methodologies to studies and research on business strategy from the period 1991 to 2007 and show findings that have contributed to our understanding of the practice of strategy in aspects such as the construction of shared understandings of strategy, forms of strategy practitioners' engagement with strategy, the content and communication of strategy and how it can influence the thrust and direction of strategy activities (p.1190).

Silverman, (2000), provides two approaches to the methodology of narratives, via open-ended interviews, as follows:
1. A widespread approach is to view them as descriptions of a reality external to the interviewees, such as facts or events, or an internal experience, such as feelings and meanings. This attempts to gauge the impact of objective forces upon subjective dispositions.
2. An alternative approach views narratives as 'culturally rich' and 'plausible accounts of the world' so that the attempt is to share the subjects' perspectives of how they perceive their world. This is centrally concerned with seeing people's responses as 'cultural stories' (Silverman, 2000, pp.122–124).

In the field of entrepreneurship research, Larty and Hamilton (2011) trace the application of the narrative analysis approach from 2000 to 2010 that have enriched our understanding of entrepreneurship and the small business in areas such as entrepreneurship concepts and processes, entrepreneurial roles, the nature of interactions among entrepreneurs and stakeholders, entrepreneurial identity and goals, the cultural contexts and social networks of entrepreneurship and entrepreneurial perceptions of opportunities and risks (pp.221 and 222). In drawing attention to the 'opportunity-creative time' (Hjorth, 2007) in the entrepreneurial process, Hjorth points out that a narrative approach to the study of entrepreneurship provides insights from a 'creative social energy' perspective with an emphasis on the 'process of

creating opportunities' instead of the 'management of created opportunitites' (p.719). In this way, Hjorth states that the narrative approach does not negate but complements the prevailing and dominant economic and managerial approaches to entrepreneurship.

3.0 The Case Study

3.1 The Family's First Company-RSK LTD. (1979)

Members of a Malaysian family, related to each other as siblings and by marriage, and a small number of their friends, were brought together in a business interest towards the latter part of the 1970's. Their relationships to each other are shown in Figure 1 below.

Figure 1: Relationships among the Family Members and Friends

N*———T
(Husband + Wife)

(**Some friends**)

(**Sisters**)   **K** (Brother)

(Sister)   **B**
(Husband +Wife)

S (Brother)   **M** (Brother) — **G** (Friend)
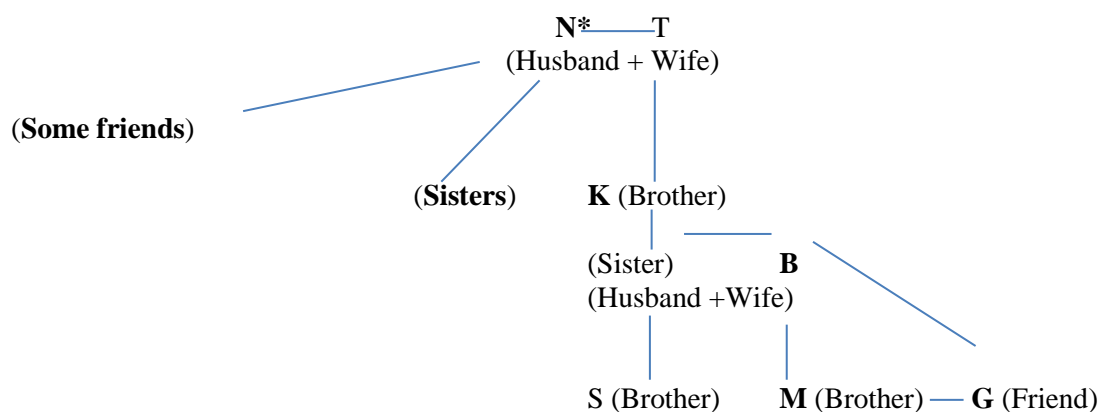
*Bold letters indicate those who invested financially in the business.

The idea for setting up a family business originated from K, who had been working for some years as a manager in a shipyard based in Singapore. In the course of his working experience there, K gained managerial and technical expertise in heavy-duty welding and engineering work in ship repairs. At that time, there was little or no such expertise or service available in the Malaysian shipyards. K felt it was a good opportunity to bring his knowledge and expertise over to Malaysia and to set up a business in ship repair work at a Malaysian port. Consequently, K mooted the idea for setting up a business in this area focusing primarily at Port Klang in Malaysia, to members of his family.

This was discussed at the start with his brothers-in-law B and N. In the case of B, his family had been very successful in their own business and they had over the years, built up a strong business reputation and network for themselves. B's expression of his own personal interest and belief in the proposed business' potential gave further impetus to the family's intention to proceed with the idea more so, in view of B's own family's proven business track record.

Where N was concerned, a financial investment in the proposed family business provided a potential source of further earnings that he could add to his own salaried employment, which was a modest sum. In order for this promise to take hold, N had to solicit for further investment funds from his sisters and a few friends. This was necessary as B had insisted that the business raise a paid-up capital of half a million (Malaysian Ringgit), beforehand.

In 1978, RSK Ltd. (abbreviated name) was formed as a family business with a total of half a million (Malaysian Ringgit) in paid-up share capital. The ownership and management structure of the family members and friends are shown in Table 1 below.

Table 1: Ownership and Management Structure of RSK Ltd

Name (abbreviated)	Status in the Company
B	Managing Directors / Shareholders
M	
N	Directors / Shareholders
K	
G	
N's sisters and friends	Shareholders

Through business networks of B, M and K, initial business took off in the form of repairs on small tug boats. That was soon followed by the decision to take on scrap vessel work where ships destined to be scrapped by its owners are bought and broken down to be re-furbished or they could be dismantled and parts of the ship are then sold as scrap metal. There was an opportunity to do the latter, with the purchase of two scrap ship vessels by the company. Unfortunately, in the process of doing so, one of the ships caused a major damage in the shipyard where it docked, which resulted in expensive litigation proceedings being taken against RSK Ltd. This was a financial setback for the new company that already had heavy operating costs to bear which included having to pay high rentals for workshop facilities in order to run the business.

Furthermore, during this time, a situation had arisen where the directors were experiencing a lessening of trust among some in the directorate. As well, with the litigation against the company, some of the other shareholders were beginning to lose confidence in the viability of the new business in less than a year from its inception.

This led B, K and N to decide to return the investments to the others and to form a new company by themselves to continue the business venture. This resulted in the incorporation of the second family business entity in MT Ltd.

3.1.1 Social and Human Capital in the Formation of the Family Business

The family capital in the form of social and human capital residing within the family members themselves (and a few friends), were pivotal to the inception of their first family business and the initial business that came in.

The starting point was the existence of human capital in K's valuable expertise in ship repairs which he obtained while working in Singapore which at that time was (and still is), one of the major ports in the world. This provided the seed to germinate the idea for a similar type of work to be performed for ships that berth at Malaysian ports. It also meant that the family business did not need to look outside of their group to recruit and pay for the relevant skills

and knowledge in this area, which would be the core skills resource of their business enterprise. At least, at the fragile start-up stage, this vital capability would not run the risk of the potential costs, losses and breach of trust that could come with non-family, externally sourced, paid staff and staff turnover.

To turn the idea into a business reality required financing. At this stage of the business, being unknown and without any track record to support the ability to obtain substantial external funding, the original proponents had to look for the resource among themselves. This was also a necessity in view of the high costs that would come with external sources of funding, which would have imposed further constraints on the business at a crucial time when it was just beginning to take off.

Social capital in the form of the family's strong relationship with each other and their united vision and commitment to turn the idea into a reality, provided the start-up capital for the business, which was set at half a million ringgit. With the exception of B, who was more financially well-off, the rest of the original family member investors were in paid employment in their respective jobs and were of lower- to middle-class standing. There was therefore, the common goal to help each other raise their standard of living by investing, and working (and the perception of being better able to influence their future), in a business venture of their own.

Social capital at this stage, also took the form of the reliance they placed in B's perception and judgement of the potential success of the business idea that K had in mind. B belonged to a family business that was already successful and reputable. The others in the family felt that K's idea had credibility and gained weight with B's engagement and involvement in the proposed business. This bolstered their personal belief and subsequent investment in it.

Thus, human capital which the family had in their own personal possession gave inspiration to the business venture and social capital in the strong family ties and their common vision and goals to be entrepreneurs enabled the creation of the needed financial capital that started the business and got it going.

The disintegration of social capital towards the end as trust and confidence were being eroded and what outcomes this could have had for the family business did not fully materialise as the business was already prevented from continuing by the litigation processes in place.

3.2 The Family's Second Company-MT LTD. (1980)

With litigation pending against the first company and a growing loss of trust and confidence among some of the members of the original group, B, K and N formed a new company to carry on the business venture.

This led to the incorporation of MT Ltd. (abbreviated name). The three of them decided to return the investments of those who had shown a preference for not wanting to continue to be involved in the business as well as to reduce the number of directors.

The resulting ownership structure in the new company is shown in Table 2 below:

Table 2: Ownership Structure of MT Ltd.

Name (abbreviated)	Shareholding	RSK share investment returned
B		Returned M's share investment
K	One-third shareholding each	Returned G's share investment
N		Returned sisters' and friends' investment (at a discounted price)

Business under the new company MT Ltd. started off well. B's strong business ties enabled him to be pivotal in securing a major client in the form of a national shipping line. Similarly, K who had begun earlier, to canvass for business from the small coastal vessels, was beginning to see the result of his efforts as he was becoming well known and established in their circles, for the quality of his work and for his good relations with them. The business under MT Ltd. was growing and on its way to becoming financially viable.

A period of time later, K and N became concerned with B's director expenses that were being supported by and were becoming a heavy strain on the company's financial resources. This caused the available funds for distribution to N and K as investors to shrink. Furthermore, K, as the only skilled member in the group who did all the work, was getting what he perceived as a small sum for his hard efforts.

K therefore, proposed to N that they return B's share investment in MT Ltd. and to bring in his brother, S who, like himself, had been trained in Singapore and had the necessary skills and knowledge for the business. Aware of the differences that were arising among them, B on the other hand, suggested to N that they buy out K's shares instead and replace him with S in the business. N therefore, found himself in the middle what appeared to be two opposing and conflicting factions in the family.

N chose to go along with K as he felt that the latter had been with the business from the outset and had helped to see it through the difficult phases of its growth whilst S was relatively a newcomer on the scene. N and K therefore, returned B's share investment in the business. S was recruited to join them as a working staff member.

Business grew strongly. The national shipping line continued to be its major customer. Also, by this time, K's capabilities were being acknowledged and together with his skills in networking in the business, he was becoming well known by persons such as shipyard superintendents and shipping managers in senior management and who had the decision-making powers to engage him for the work to be done.

By the early 1980's the family business was doing very well and had begun to establish a name for itself in ship repairs in Malaysia. It had a staff of twenty people and its scale of operations extended nationally to include the ports in Penang, Port Dickson, Johor and Kuantan.

3.2.1 Social and Human Capital in the Early Growth of the Family Business

Although RSK Ltd. suffered a serious set-back at a time when it was still at a survival stage in its business, strong family relationships ensured that the family members' (and friends') financial investments in it were returned to them as much as was possible. Although, this was not legally required, B, K and N felt they had a moral obligation to do so, to maintain family unity. Thus, the common goal to maintain harmonious family relationships helped to ensure that there were no obstacles placed in the way of those members like B, K and N, to pursue their entrepreneurial 'dream' while at the same time, paving the way for those who wished to part ways with the business.

Both 'bridging' and 'bonding' social capital (discussed above), supported the strong growth in the family business under MT Ltd. The role played by 'bridging' social capital can be seen in B's own family's well-connected business relationships that helped to secure a major and profitable client for them. In addition, K's reputation for his work and his knack in social and business networking helped to spread the business' name and goodwill among the smaller but numerous coastal vessels that existed as well as brought them to the attention of shipyard superintendents and managers who were responsible for outsourcing the work in the shipyards. Similarly, N himself was able to communicate with and gain the confidence of banks and other lending institutions that enabled the business to obtain external loans and other credit facilities from time to time when that was crucially needed.

Contrastingly, 'bonding' social capital was less strong and negative impacts on the business could have resulted had it not been resolved. The conflict that arose among the three of them could have interrupted or impeded their energies and focus on the family business, and it occurred at a critical stage of its early growth. As it turned out, the differences and disagreements that arose among B, K and N that led them to split into two factions were settled by mutually agreeing among themselves to return the share investment of B. The need to maintain family unity prevailed over any acrimonious or litigious positions that could have been taken by any of them. The overlapping nature of family and business systems that link 'functional families' with successful family business (Stafford, et al., 1999 p.197) was evident here as B, K and N resolved their differences in such a manner that the family 'squabble' did not get in the way of the business venture.

The business' stock of human capital grew in parallel to its growing customer base, in K himself who is later joined by his brother, S and its team of paid, non-family staff members. Furthermore, the family business had the advantage of being first-movers in the industry and was able to leverage on its early learning, experience and goodwill that resulted from it. It was also a time when demand for the services that they offered outstripped its supply, a factor that operated in their favour at this stage of their family business.

4.0 The Strong Growth Years in the Family Business (1985-1998)

In 1985, K proposed to N that they form another company for his brother, S. This led to the incorporation of WG Ltd. (abbreviated name).

The ownership structure of WG is shown in Table 3 below:

Table 3: Ownership Structure of WG Ltd.

Name (abbreviated)	Shareholding	Family relationship
MT Ltd.	50%	(K and N, brothers-in-law)
K	25%	Brothers
S	25%	

Business under the two companies, MT Ltd. and WG Ltd. grew strongly. By this time they had five major national shipping lines as their customers, as well as the servicing of the local coastal vessels as before. Although they still remained as one of the relatively smaller ship repair firms around at that time, there was enough work to keep all of them busy. Profit margins were also very lucrative and could be as much as 300% and beyond, particularly for repairs performed on board ships while they were at sea.

Their companies, and firms similar to theirs, were low cost competitors as they were cheaper than their Singapore counterparts due to the lower exchange rates for the Malaysian currency. Although they were more relatively more expensive than Indonesia and Thailand, there was as yet, no available matching expertise from those two countries. Furthermore, their family firm had added competitive advantages – both K and S had been trained in Singapore which was (and is) a major shipping port in the world with superior technical knowledge and competencies in ship repair engineering. The brothers, K and S had also over the years, built a reputation for themselves in their work.

The family business later diversified into industrial cleaning and maintenance and the building of incinerators that involved similar technical expertise, for major clients that included global companies, which increased business revenue. As before, most of the business came through K and S's strong business network ties and good quality work.

5.0 The Declining Years in the Family Business (1998-2005)

In this latter part of the family business, many factors contributed to its declining growth and cessation of business: (1) The economic meltdown in 1998 resulted in significantly less work being available for the business and loss of potential revenue although they managed to survive it. (2) Their (non-bumiputera) family business was re-positioned to second/third tier contractors in work done for the national shipping line which resulted in reduced earnings. (3) The company was later prevented from being contractors for a national shipping line (non-disclosable reason) which was a major loss of consistent earnings. (4) New players in the field and changing industry conditions negatively impacted their earlier competitive advantage. (5) It is arguable that the second-generation owner-founders did not have the capabilities of N, K and S or could not develop new capabilities to respond to those changing business conditions. (6) Later on, the creation of more companies by K and the complexities that ensued from the business management of those companies, led to problems that depleted the financial resources of MT Ltd. and WS Ltd.. Of these, only item (4) is elaborated here.

In the early part of 2000, it was evident that there were changes in the business environment that affected the family business:

(a) By this time, the supply and demand for ship repair engineering work had balanced up, with considerably less work being available than before for the suppliers.

(b) Lower cost competitors were now in the industry from Indonesia, Thailand and the Philippines, which significantly eroded their earlier cost competitiveness.

(c) Ships were becoming more technologically advanced and efficient and required less of the type of ship repair engineering work that K and S specialised in.

(d) Marine insurers made it compulsory for ship repairs to be done only by qualified engineers that they approved and with contractual guarantees for the work they performed, which therefore, excluded K and S as they did not have the recognised qualifications.

(e) For work that could be performed by non-certified engineers, the Philippines were favoured. This was because many of them had by now, retired as long-time sailors with rich tacit knowledge and skills in work on board ships and were often recruited to 'second engineer' positions on ships as an appropriate and more cost-effective solution for the shipping lines.

(f) As a major world port, Singapore provided the expertise for high-end marine engineering work while the Philippines (in having the necessary expertise and at low cost), was sourced for low-end jobs. This meant that the family business was 'stuck-in-the-middle' (Porter, 1980) and could not effectively compete as before.

Thus, in the high growth period, the family's stock of social and human capital continued to strongly support and expand the family business. In that period, financial viability was no longer a major concern as they were enjoying high revenues. Bridging social capital fuelled its main business in its core business and later on, enabled it to diversify into related factory engineering works with international companies. The human capital in K and S continued to be relevant and in demand then.

However, in its declining years, it was in the area of human capital that undermined its previously held strengths. In view of changing conditions in the industry, the expertise that resided in K and S became irrelevant. They had not attended to nurturing and growing their own knowledge and skills as a necessary strategic response or plan for alternatives such as the employment of professional engineers who had the requisite capabilities. Unfortunately, there was also no one in the next/second generation who could have taken the technical skills in K and S to a higher level, such as for example in being qualified engineers in line with changing demands in the industry. This would have enabled them to keep the required skills within the family members.

Given the significant changes in the business environment outlined above, the failure to strategically manage its social and in particular, its human capital impacted the sustainability of the family business which gradually led to a cessation of the family business in MT Ltd. and WS Ltd..

6.0 Discussion

Family social and human capital were instrumental to the inception of the family business. Human capital residing in the technical expertise of one family member became the seed to potentially create a business venture. Social capital embedded in the close family relationships and the strong business ties made available to them through family member connections, kept the idea alive. That social capital also led to the initial and substantial financial start-up capital to make the business a reality.

Along the early turbulent and costly path of the business that saw family differences and some lack of trust and loss of confidence among them, social capital in the family's common goal to maintain unity and harmonious relations helped to facilitate entry and exit of family members without jeopardising the business future success. Thereafter, the combination of (a) bonding social capital in the smooth relations among the key family member directors/investors and (b) bridging social capital in their good information and communications networks and hard-earned reputation and goodwill, strongly facilitated the business' growth and development. The level and quality of their human capital that originated with their world-class training in Singapore was bolstered by first-mover advantages and the early learning, experience and reputation they gained which gave them a head start as the shipping port industry began to take hold in Malaysia. Their family business grew in parallel with industry growth.

However, while social capital remained more or less intact within the family business, changes in the industry eroded their stock of human capital. Business strategy had been relatively simple and straightforward in the growth years as they were favoured with the imbalance in demand over supply of their services, cost efficiencies and industry growth. As that industry matured however, a more strategic outlook was needed in order to ensure that their stock human capital was continually being managed within a changed competitive context (Habbershon and Williams, 1999).

Thus, while social and human capital initiated, grew and expanded the family business, they had to be re-evaluated and strategically managed in the light of changing conditions. Both the business family (internal) and the family business (external) have to be managed for parallel growth, development and sustainability.

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Intellectual Capital Efficiency of Malaysian Software Public-Listed Companies

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Abstract

This study aims to investigate the efficiency of Malaysian public-listed software companies in transforming intellectual capital into corporate values by using the data envelopment analysis (DEA) methodology. Value Added Intellectual Coefficient (VAIC^{TM}) is utilized as the input variable, whereas the output variables consist of Tobin's Q and return on equity. Examining a sample of 25 companies, our findings illustrate that companies listed on the Main market of Bursa Malaysia are less efficient than those listed on the ACE market. Of all the sample companies, Eduspec Holdings Berhad is the most efficient company with the highest frequency of reference. The sample companies have been ranked. The benchmarking analysis of this study may shed light for the managers in software companies to benchmark and improve their efficiency in intellectual capital management.

Keywords: Intellectual capital; data envelopment analysis; VAIC^{TM}; software company

1.0 Introduction

Software industry is a knowledge-intensive industry with significant intellectual capital (IC). The development of new software depends on key inputs including human capital and structural capital. This means that software companies rely on IC to a great extent in generating profits (Ahangar, 2011). Hao (2010) corroborates that technology-oriented software industry has intangible information. As such, software companies have to understand the value of IC and attempt to manage it in order to gain competitive advantage.

Igel and Islam (2001) document that majority of Malaysian software companies had achieved competitive advantages in software quality, efficiency, software innovation, and responsiveness to customers, with focuses on customer-needs orientation, people management, and technological emphasis. The authors, however, also note that rapid technological development and human resources remain the constraints that limit the growth and development of the Malaysian software companies. The findings suggest that IC plays an important role in the Malaysian software companies' value creation in today's challenging business environment.

Specifically, managing IC efficiently is the key to sustain competitive edge. As documented by Kujansivu (2009), IC management is about managing and transforming various intangible resources with the focus on value creation or value maximization. Recently, data envelopment analysis (DEA), a non-parametric approach, has become fashionable in the IC

management research (for e.g., Wu et al., 2006, Lu et al., 2010, Yang and Chen, 2010, Lu and Hung 2011). Following the prior studies, we also employ DEA to evaluate the IC efficiency management of Malaysian software industry. As noted earlier, Malaysian software industry provides us with an appropriate setting to examine IC efficiency management.

It is noteworthy that IC efficiency management is a complex process (Lu et al., 2010), due to the problems of identification and measurement (Sáez et al., 2007). According to Khalique et al. (2011), IC comprises few major components, namely human capital, customer capital, structural capital, social capital, technological capital, and spiritual capital. Therefore, using traditional performance measurement method such as the uni-dimensional financial ratios analysis with subjectivity issue is not sufficient to analyze the effect of IC on the corporate performance (Feroz et al., 2003). On the contrary, applying DEA allows multiple inputs and multiple outputs to be evaluated concurrently. Furthermore, prior information about the relationship among multiple performance measures is not required in DEA, a proven effective performance evaluation method that accommodate interactions among various performance measures objectively (Hung et al., 2010).

The last few decades have seen a great deal of works on IC measurement but there is still no consensus on IC measurement (Uziene, 2010) and they are focused on single dimensional evaluation of IC. In this study, Value Added Intellectual Coefficient (VAIC^{TM}) developed by Pulic (2000) is utilized to gauge IC value. As noted earlier, the development of new software depends on key inputs including human capital and structural capital, which are covered by VAIC^{TM}. However, it is important to stress that IC measurement per se is not the concern here. Furthermore, VAIC^{TM} has been widely applied in the IC literature (Tseng and James Goo, 2005; Phusavat et al., 2011; Rehman et al., 2011; Young et al., 2009).

In the spirit of furthering the debatable issue, this study focuses on combining VAIC^{TM} with DEA methodology to measure the IC efficiency of Malaysian software companies in increasing corporate value. Evaluating IC efficiency using DEA, we are able to identify the companies that are on the efficient frontier. Such directions are needed so that the DEA benchmarking analysis could help software managers in improving the IC management. Moreover, the findings could serve as an indicator for managers when making IC investments.

The remaining sections of this study are organized as follows. The next section reviews prior literature. The third section explains our data collection and research methodology. The fourth section presents and discusses the findings. The final section offers conclusions, limitations, and suggestions for further research.

2.0 Literature Review

2.1 Intellectual Capital

Why companies worth more than their book values? IC is the answer. As argued by Edvinsson and Malone (1997), the worth of a company lies not in bricks and mortar, but in intangible kind of asset: Intellectual Capital, which is hidden behind the company's book values. IC marks the difference between the market value and book value of a company (Roos et al., 1998). Edvinsson (2002) states that $1 + 1 = 11$ can be realized in firm value, uncovering the hidden values of intellectual capital.

Different definitions of IC can be found, since there is no single right or wrong definition of IC (Marr 2007). Stewart (1991), in his novel report in Fortune Magazine, points out that IC includes patents, processes, management skills, technologies, information about customers and suppliers, and old-fashioned experience, of which when added up together strengthen a company's competitive edge in the marketplace. Stewart (1997) defines IC as intellectual material – knowledge, information, intellectual property, experience – that can be put to use to create wealth in his widely-accepted book. Edvinsson and Malone (1997) delineate IC as the possession of the knowledge, applied experience, organizational technology, customer relationships, and professional skills that give a company a competitive edge in the market.

Another definition is contributed by Lynn (1998) who describes IC as intangible asset – knowledge that is transformed to some items of value to the organization. The author further maintains that sustainable value added is created within a company when information is organized into knowledge, and knowledge is transformed into IC. Similarly, Bose and Thomas (2007) conceptualize IC as the knowledge capability of a firm to convert knowledge, skills and expertise into assets that can become profitable. Hsu and Fang (2009) summarize IC as the total capabilities, knowledge, culture, strategy, process, intellectual property, and relational networks of a company that create value or competitive advantages and help a company achieve its goals.

Taken together, IC is the accumulation of all the intangible assets or knowledge that include, but not exhaustive, intellectual property (like patents and trademarks), intellectual resources (for example, customer relationship), and intellectual capabilities and competences (for instance, employees' professional skills). When the abovementioned knowledge is transformed efficiently, companies gain competitive advantage and are sustainable, suggesting that IC drives firm performance and value creation (Roos and Roos, 1997, Bontis 1998).

2.2 Intellectual Capital Measurement

Bontis (2001) provides a comparative analysis of various IC measurement methods. His study clearly shows that Skandia led the way in 1994 by developing and issuing the first IC report in addition to traditional financial report in order to convey supplementary information on its effort in measuring knowledge assets. Much research has been devoted to explore new measurement methods (for example, Brooking, 1996; Stewart, 1997; Roos et al., 1998; Pulic, 2000).

A list of 42 methods for measuring intangibles can be found in Sveiby (2010). The author classifies the assorted methods into four measurement approaches, specifically: i) direct intellectual capital (DIC) methods like Brooking's (1996) Technology Broker, ii) market capitalization methods (MCM) such as Stewart's (1997) Calculated Intangible, iii) return on assets (ROA) methods as can be seen in Pulic's (2000) VAIC^{TM}, and iv) scorecard methods (SC) like Edvinsson and Malone's (1997) Skandia Navigator^{TM} as well as IC-Index^{TM} by Roos et al. (1998).

Each approach offers different advantages and disadvantages and that is the reason for not having a single, best or consensus solution for IC measurement as of today (Lu et al., 2010). Among them, VAIC^{TM}, a well-known and widely used method (Rehman et al., 2011; Young et al., 2009), is capable of evaluating IC within a firm (Young et al., 2009; Phusavat et al., 2011). VAIC^{TM} is a sum of the value creation efficiency of the physical capital and IC

(human capital and structural capital). One of the main advantages of VAIC^{TM} is that it highlights weak areas requiring intervention (Pulic, 2000). In this study, the VAIC^{TM} is employed to estimate the value of IC.

2.3 Data Envelopment Analysis

Several studies have utilized DEA to measure IC efficiency. Wu et al. (2006) apply DEA and Malmquist productivity index (MPI) to examine the efficiency in IC management of Taiwanese IC design companies. Using two-stage DEA model, Lu et al. (2010) measure the capability of Taiwanese fables companies in creating tangible value and intangible value in the second stage. Yang and Chen (2010) employ DEA and principal component analysis (PCA) to analyze the efficiency of IC management of Taiwanese IC design industry. Following prior studies, we also use DEA to measure the process of IC efficiency. In this study, however, VAIC^{TM} is used as the inputs that represent IC (see Figure 1 for the process of IC efficiency).

3.0 Data Collection and Methodology

3.1 Data Collection

The data used in this study are obtained from the annual reports of the sample companies that are available publicly. The sample used to test the hypotheses of this study consists of Malaysian public-listed software companies, among which four are listed on the Main market and the remaining are listed on the ACE market of Bursa Malaysia in 2010. Sample companies with missing values in input and output variables required to derive DEA scores are eliminated. From the selection criteria, the final sample is comprised of 25 unique companies. The total assets of these software companies account for approximately 94% of that of the 29 initial sample companies, suggesting that the sample used in this study are representative of the Malaysian software industry.

3.2 Input and Output Variables

As can be seen in Figure 1, the input variables are made up of the items of VAIC^{TM}, namely capital employed efficiency (CEE), human capital efficiency (HCE), and structural capital efficiency (SCE). More specifically, CEE is an indicator of value added (VA) of capital employed. HCE indicates VA efficiency of human capital, whereas SCE represents VA efficiency of structural capital. Algebraically, they can be defined as follows, respectively:
CEE = VA/CA
HCE = VA/HC
SCE = SC/VA
where VA = operating revenues – operating expenses; CA = the book value of net assets; HC = total salaries and wages; SC = VA – HC.

Figure 1: The Process of IC Efficiency
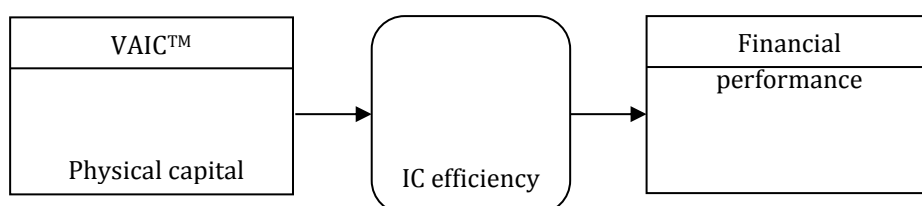
Following Lu et al. (2010), the output variables used in this study are the intangible value and tangible value. We use the Tobin's Q of a DMU as at year end to proxy for intangible value. Tobin's Q is defined as the ratio of market value to the book value of total assets. The return on equity (ROE), calculated as the ratio of net income to stockholders' equity, is used to proxy the tangible value. Table 1 presents the descriptive statistics of both inputs and outputs for our sample. On average, the software companies have greater HCE, followed by SCE and CEE.

Table 1: Descriptive Statistics (N = 25 companies)

Variable	Mean	Standard deviation	Minimum	Maximum
CEE	2.86	0.63	0.07	3.40
HCE	23.79	5.00	0.09	26.52
SCE	19.39	5.40	0.23	35.47
Tobin's Q	3.14	3.14	0.87	16.52
ROE	3.74	0.80	0.17	4.40

To further illustrate the input variables, Figure 2 shows a comparison between companies listed on the Main market and ACE market of Bursa Malaysia. The "radar graph" format indicates that those listed on the Main market have higher mean HCE and CEE, but lower average SCE relative to those listed on the ACE market.

Figure 2: A Comparison Between Companies Listed on the Main Market and ACE Market
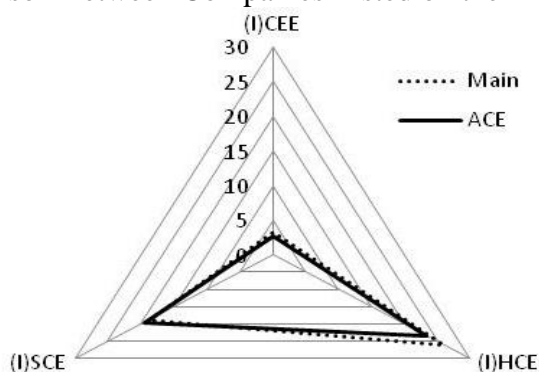
3.3 Research Methodology

DEA, a widely used linear-programming-based composite tool, is developed by Charnes et al. (1978) and extended by Banker et al. (1984). DEA, a mathematical technique comparing multiple inputs and outputs of decision-making units (DMUs) for measuring relative DMUs' efficiency, allows the identification of benchmarking. Instead of using merely uni-dimensional ratios and other individual financial variables, IC indicators such as human capital and structural capital can be accommodated so that possible interactions between them can be captured to derive efficiency scores using DEA. Moreover, DEA approach provides added information (Feroz et al. 2003).

Specifically, a DEA study aims to project the inefficient DMUs onto the production frontiers, whereby we can opt for either input-oriented or output-oriented direction. The former refers to the objective to proportionally reduce the input amounts with the output amounts held constant at the present level, and the reverse it is for the latter. As can be seen in Figure 1 earlier, it is clear that software managers have the discretion to determine the input amounts

(intellectual capital and physical capital), but not the output amounts (Tobin's Q and ROE). Therefore, this study applies the input-oriented models.

The CCR model proposed by Charnes et al. (1978) is the most basic yet important DEA model. The CCR model is assumed to be under constant returns to scale (CRS) of activities. However, the CRS assumption is not appropriate if not all firms are operating at the optimal scale. The BCC model developed by Banker et al. (1984) overcomes this problem, allowing for variable returns to scale (VRS). Assume there are n DMUs (DMU$_1$, DMU$_2$, …, and DMU$_n$) with s different outputs and m different inputs. DMU$_j$ ($j = 1, 2, …, n$) consumes amount x_{ij} ($i = 1, 2, …, m$) of input i to produce amount y_{rj} ($r = 1, 2, …, s$) of output r. The linear programming in the envelopment form of an input-oriented BCC model to evaluate the efficiency of DMU$_0$ is shown as follows:

$$\text{Min } z_0 = \theta - \varepsilon\left(\sum_{i=1}^{m} s_i^- + \sum_{r=1}^{s} s_r^+\right) \tag{1}$$

Subject to:

$$\sum_{j=1}^{n} x_{ij}\lambda_j + s_i^- = \theta x_{io}, \ i = 1, 2, ..., m;$$

$$\sum_{j=1}^{n} y_{rj}\lambda_j - s_r^+ = y_{ro}, \ i = 1, 2, ..., s;$$

$$\sum_{j=1}^{n} \lambda_j = 1$$

$$\lambda_j, s_i^-, s_r^+ \geq 0, \ j = 1, 2, ..., n.$$

where z_0 is the efficiency score for DMU$_0$, λ is the weight assigned by DEA. DMU$_0$ is considered as BCC-efficient efficient if and only if $z_0 = 1$ and the slack variables, s_i^- and s_r^+, are equal to zero. The CCR model differs from the BCC model in which the former is without the additional constraint, the convexity condition $\sum_{j=1}^{n} \lambda_j = 1$.

Using the same data, the dual (multiplier) form of the BCC model in Equation (1) can be used in the following form:

$$\text{Max } z_0 = \sum_{r=1}^{s} u_r y_{ro} - u_o \tag{2}$$

Subject to:

$$\sum_{r=1}^{s} u_r y_{rj} - \sum_{i=1}^{m} v_i x_{ij} - u_o, \ j = 1, 2, ..., n;$$

$$\sum_{i=1}^{m} v_i x_{ij} = 1$$

$$v_i \geq 0, \ u_r \geq 0, \ u_o \text{ free in sign}$$

where u_r is the output weight and v_i is the input weight. u_o is the condition $\sum_{j=1}^{n} \lambda_j = 1$ in Equation (1). Using $(\hat{x}_o, \hat{y}_o)$ as the coordinate point that corresponds to multiple inputs and outputs for DMU$_o$ on the efficiency frontier, we can identify one of the three situations for returns to scale (RTS) for the BCC model: i) Increasing RTS (IRS) prevails at $(\hat{x}_o, \hat{y}_o)$ if and only if $u_o^* < 0$ for all optimal solutions; ii) Decreasing RTS (DRS) prevails at $(\hat{x}_o, \hat{y}_o)$ if and

only if $u_o^* > 0$ for all optimal solutions; and iii) Constant RTS (CRS) prevails at $(\hat{x}_o, \hat{y}_o)$ if and only if $u_o^* = 0$ for at least one optimal solution.

Figure 3 further provides a graphical illustration of measuring input-oriented efficiency using a single input and a single output. Assume that there are five DMUs, A, B, C, D, and E. Ray 0BC is the CRS frontier (the CCR model). The BCC model or VRS frontier consists of the line connecting A, B, C, and D. For instance, the CCR efficiency of DMU E is calculated as PQ/PE. The other 4 DMUs (A, B, C, and D) that lie on the frontier are considered as operating at efficiency. With respect to RTS, IRS prevails at any point on line AB, while DRS prevails at any point on line CD. Any DMU that lies on the CRS frontier is operating at CRS.

Figure 3: Graphical Illustration of the BCC Model and the CCR Model
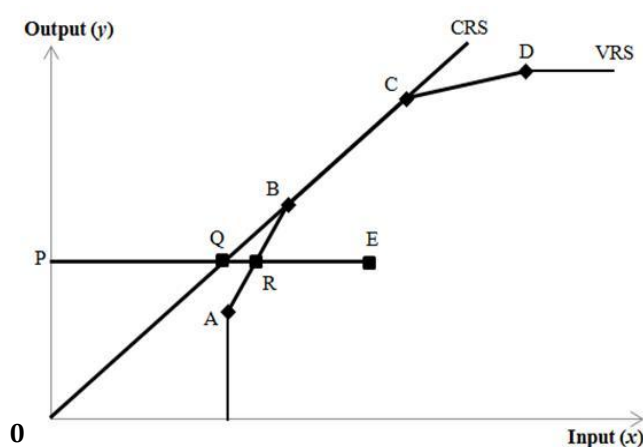
The outcome of the BCC model represents pure technical efficiency (PTE), while that of the CCR model reflects the technical efficiency (TE) of the target DMU. Dividing TE by PTE, the scale efficiency (SE) can be obtained. The SE represents the proportion of inputs that can be further reduced after pure technical inefficiency is eliminated if scale adjustments are possible (Hung and Lu, 2007; Hung et al., 2010).

Both TE and PTE values lie between 0 and 1, while SE has a value less than or equal to 1. A value of 1 for either TE or PTE means that the target DMU is efficient. If a DMU is efficient under both the CCR and BCC models, it is operating in the most productive scale size or constant returns to scale size (Cooper et al., 2006). A DMU with efficiency score less than 1 is considered inefficient.

4.0 Findings and Discussions

Table 2 presents the efficiency scores of the sample companies. The overall average values of technical efficiency (mean TE = 0.948), pure technical efficiency (mean PTE = 0.951), and scale efficiency (mean SE = 0.997) suggest that managers of software companies are inefficient in managing intellectual capital, due to the technical problem and not the scale problem. Therefore, managers should first attempt to improve their technical efficiency, and subsequently scale efficiency. The findings show that 80 percent of the software companies are inefficient in transforming intellectual capital into tangible and intangible values.

In addition, we classify the companies into those listed on either the Main market or ACE market. The *t*-test points out that the Main-market companies have significantly lower average TE (0.885) and PTE (0.889) than those of the ACE-market companies (TE = 0.960, PTE = 0.962). However, there is no significant difference in the mean SE between them. The findings mean that the Main-market companies are on average 88.5 percent to 88.9 percent as efficient as the benchmark companies. In comparison, the results range from 96.0 percent to 96.2 percent for ACE-market companies.

As noted earlier, this study also examines the condition with respect to the returns to scale of the software companies. The analysis shows that all of the companies are operating at constant returns to scale technology, implying that the inefficient companies may be reduced in size so as to increase efficiency.

Table 2: Efficiency Scores of the 25 Software Companies

		TE	PTE	SE	RTS
	Main market				
1	CBSA Berhad	0.957	0.960	0.997	CRS
2	Excel Force MSC Berhad	0.957	0.961	0.996	CRS
3	Green Packet Berhad	0.681	0.689	0.988	CRS
4	Willowglen MSC Berhad	0.946	0.948	0.998	CRS
	Mean	0.885	0.889	0.995	
	ACE market				
5	Ariantec Global Berhad	0.943	0.947	0.996	CRS
6	Asdion Berhad	0.933	0.934	0.999	CRS
7	Cuscapi Berhad	0.941	0.943	0.997	CRS
8	CWorks Systems Berhad	0.969	0.973	0.996	CRS
9	DSC Solutions Berhad	0.976	0.984	0.992	CRS
10	eBworx Berhad	0.956	0.956	1.000	CRS
11	Eduspec Holdings Berhad	1.000	1.000	1.000	CRS
12	Elsoft Research Berhad	0.965	0.967	0.998	CRS
13	Extol MSC Berhad	0.967	0.971	0.996	CRS
14	Fast Track Solution Holdings Berhad	1.000	1.000	1.000	CRS
15	Green Ocean Corp. Berhad	0.954	0.954	1.000	CRS
16	Infortech Alliance Berhad	0.969	0.973	0.996	CRS
17	I-Power Berhad	1.000	1.000	1.000	CRS
18	M3 Technologies (ASIA) Berhad	0.949	0.949	1.000	CRS
19	mTouche Technology Berhad	0.913	0.913	0.999	CRS
20	N2N Connect Berhad	0.976	0.979	0.997	CRS
21	Nova MSC Berhad	1.000	1.000	1.000	CRS
22	Rexit Berhad	0.956	0.959	0.997	CRS
23	SMR Technologies Berhad	0.949	0.966	0.982	CRS
24	TechnoDex Berhad	1.000	1.000	1.000	CRS
25	The Media Shoppe Berhad	0.838	0.840	0.998	CRS
	Mean	0.960	0.962	0.997	
	Difference in mean (p-value)	0.033	0.034	0.275	
	Overall mean	0.948	0.951	0.997	

In Table 2, it is found that five companies are relatively efficient (efficiency score = 1.000), based on both the CCR and BCC models. Table 3 shows that the most frequently referred company is Eduspec Holdings Berhad. Next to Eduspec Holdings Berhad is Fast Track Solution Holdings Berhad, which has 19 times of reference. I-Power Berhad, TechnoDex Berhad, and Nova MSC Berhad are tracking behind in sequence, respectively.

Table 3: Reference Set and Ranking

		Reference set	Frequency	Ranking
	Main market			
1	CBSA Berhad	11, 14	0	14
2	Excel Force MSC Berhad	11, 14	0	13
3	Green Packet Berhad	11, 17	0	25
4	Willowglen MSC Berhad	11, 14	0	19
	ACE market			
5	Ariantec Global Berhad	11, 14	0	20
6	Asdion Berhad	11, 14	0	22
7	Cuscapi Berhad	11, 14	0	21
8	CWorks Systems Berhad	11, 14	0	9
9	DSC Solutions Berhad	11, 14	0	6
10	eBworx Berhad	11, 14, 17	0	16
11	Eduspec Holdings Berhad	11	21	1
12	Elsoft Research Berhad	11, 14	0	11
13	Extol MSC Berhad	11, 14	0	10
14	Fast Track Solution Holdings Berhad	14	19	2
15	Green Ocean Corp. Berhad	11, 14, 17	0	17
16	Infortech Alliance Berhad	11, 14, 24	0	8
17	I-Power Berhad	17	6	3
18	M3 Technologies (ASIA) Berhad	11, 14	0	18
19	mTouche Technology Berhad	11, 14, 17	0	23
20	N2N Connect Berhad	11, 14	0	7
21	Nova MSC Berhad	21	1	5
22	Rexit Berhad	11, 14	0	15
23	SMR Technologies Berhad	11, 14	0	12
24	TechnoDex Berhad	24	2	4
25	The Media Shoppe Berhad	11, 17	0	24

5.0 Conclusions

This study examines the efficiency of Malaysian public-listed software companies in intellectual capital management. With VAIC^{TM} as the input variables and corporate values (tangible and intangible values) as the output variables, the DEA methodology is employed. The findings are summarized as follows: i) the sample companies have greater HCE as compared to SCE and CEE; ii) the Main-market companies have greater HCE and CEE, but

lower SCE than ACE-market companies; iii) the Main-market companies are less efficient than the ACE-market companies; and iv) Eduspec Holdings Berhad is the most efficient company of all the sample companies, since it has the highest frequency of reference and falls in the "stars" zone. The benchmarking analysis of this study may shed light for the managers in software companies to improve their efficiency in intellectual capital management.

Our model, nevertheless, do not allow us to determine the underlying reasons that result in efficiency. Besides, we also cannot specify the role of managers in influencing the efficiency. Another limitation is that our results might not be generalized beyond knowledge-intensive industries. Moreover, this comparison is based on a relatively small sample; hence, it has to be viewed as suggestive only. We leave the mentioned issues for future research.

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A Preliminary View of the Relationship between Incubator Performance and their Length of Establishment

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Abstract

The objective of this paper is to examine the performance of business incubators world-wide using their length of establishment. How do younger incubators perform compared to older incubators? There is a lack of research in comparing the performance of older and younger establishment of business incubators in different countries. Secondary data related to characteristics and performance of different incubators world-wide are collected and evaluated. These incubators are compared based on the number of graduate firms versus the number of existing client firms per year. Preliminary results indicate that older establishments in general may perform better than younger ones. This is probably due to the experience involved in managing these entities. However, this does not hold true in all cases. In fact, for some of the incubators compared in this study, younger incubators are doing relatively good compared to those of older ones. This led to the preliminary conclusion that the length of an incubator, while important, may not be the determining factor on how such an entity will perform. It is speculated that the skills in managing these centers, along with proper mission, strategy, and planning are more critical in influencing the success of an incubator.

Keywords: Incubators, length of establishment, performance, graduate firms.

1.0 Introduction

Business incubator is important to economic development of a region. Based on the guidelines provided by the UK Business Incubation (UKBI, 2010), National Business Incubation Association (NBIA, 2010) and infoDev–an arm of the World Bank Group (infoDev, 2009), business incubation can be defined as a dynamic process of business enterprise development with a flexible combination of business development processes, infrastructure and people, that aims at promoting the economic development of its community by supporting start-up companies and their business developments. In essence, business incubators provide high level business support/management services under one roof for entrepreneurs and new ventures to create synergy (e.g., Allen and McCluskey, 1990; Aerts, et. al., 2007; Al-Mubaraki and Busler, 2012a).

Today, business incubators contribute to international economy and play a vital role not only in economic recovery but also in economic development. International adaptation of business incubators leads to the support of diverse economies, the commercialization of new technologies, jobs creation, and wealth building. In addition, more than 7000 incubation programs worldwide are engaged in supporting the development of new high-growth businesses. For example, Europe recently has been funding incubators with the goal of job creation and economic recovery (Al-Mubaraki and Busler, 2010a). For a business incubator

to succeed, it has to accomplish the following five tasks: (1) establish clear metrics for success, (2) provide entrepreneurial leadership, (3) develop and deliver value-added services to member companies, (4) develop a rational new-company selection process, and (5) ensure that member companies gain access to necessary human and financial resources to succeed (Wiggins and Gibson, 2003).

While incubators in Europe and North America have longer history of establishment, incubators in other parts of the world (e.g., Asia, the Middle East, Africa, and South America) are relatively new and much younger. An interesting question is how are these younger establishments fair against their older counterparts. The objective of this paper is, therefore, to have a preliminary view into how younger incubators (e.g., those in Asia, the Middle East, and Africa) perform compares to their older counterparts (e.g., those in Europe, United States, and Australia). The results reported here is part of larger effort to understand the characteristics of incubators, the strategy of managing these entities, and how these entities become value-added components of an economy.

The remainder of the paper is structured as follows: Section 2 reviews some research done by these authors on incubators' best practices worldwide. Section 3 describes the research methodology. Section 4 shows the results linking the length of establishment to performance for ten incubators world-wide. Section 5 concludes the study.

2.0 Literature Review

Al-Mubaraki and Busler (2010b) investigate three practical business incubations and their adoption: the United Kingdom, France, and Germany. These three countries contain approximately 83% of all the incubators located throughout Europe today. The study focuses on (1) the nature of incubator financing, (2) the incubator's mission and strategy, and (3) graduation it in turn offers its incubatee clients. The result of a S.W.O.T analysis reflects the positive strengths of each program. It shows that compliance with the mission and objectives of an incubator allows great opportunity for better performance and planning of future initiatives.

Al-Mubaraki and Wong (2011) evaluate ten existing incubators across Europe in an effort to underscore the value of these organizations in revitalizing economy of a nation. They focus on four performance indicators that can be used to measure the value of an incubator: number of companies formed with the support of an incubator, number of companies graduated from an incubation program, number of entrepreneurs assisted, and number of jobs created. They found that some incubators perform better than others. This may be attributed to differences in size, types of services provided, focus of service, and source of sponsorship.

Al-Mubaraki and Busler (2011a) examine ten incubators in developing countries. They found that business incubators as serve as an effective and innovative tool to support start-up businesses. They also highlight some implications to successfully develop and implement business incubation programs.

Al-Mubaraki and Busler (2011b) and Al-Mubaraki et. al. (2012) found that even though incubators are well-established in the United States and other developed countries, in developing countries such as the GCC member states, the idea of business incubators is just starting to emerge. They make the following recommendations:

1. Further research should focus on the four dimensions of a business incubator: the number of businesses graduated over a period of time, the number of businesses still in business over a period of time, jobs created by incubator clients, and salaries paid by incubator clients.

2. As the industry grows, new and existing incubators around the world should continue to track the measures of effectiveness in order to empirically demonstrate the value of business incubation.

3. Independent researchers, incubator funders, and governments should cooperate with practitioners in obtaining data related to these four measures of success.

Al-Mubaraki and Busler (2012b) identify four strategic outcomes of business incubation programs: 1) entrepreneurial climate, 2) commercialization technologies, 3) employment, and 4) innovation and diversification of local economies. These outcomes are important value-added component of an incubator to the economy of a region. The study also provides useful roadmap to both academics and practitioners on worldwide incubator implementation.

Al-Mubaraki and Busler (2012c) show the results of quantitative and qualitative responses used to determine success rates and key indicators of incubators in various countries. The study found that successful graduation of incubating companies is reliant upon: (1) clear objectives, (2) incubators location, (3) access to services, (4) employment creation, and (5) economic development strategy. The study indicates that business incubators can help young firms to survive and grow during their start-up years, and can play a key role in the economic development of a community or region. In developing countries, including Kuwait and the other GCC member states, business incubators can be particularly valuable in helping to develop local economies, promote technology transfer, create new enterprises, and generate jobs. In addition, recommendations are provided on how to maximize the success of incubators, including matching services offered to the needs of clients and involving a range of community stakeholders in the development of their programs. A number of options are proposed for developing and expanding the business incubator concept in Kuwait and the GCC member states (Al-Mubaraki and Busler, 2010b).

3.0 Research Methodology

The research methodology used for the overall study is comprised of desk-research, interviews and case studies. Figure 1 illustrates the research process. For this particular study, only secondary data is used to examine the length of establishment time and the performance of the incubators. Ten incubator cases are used.

Figure 1: The Process of Developing a Research Methodology
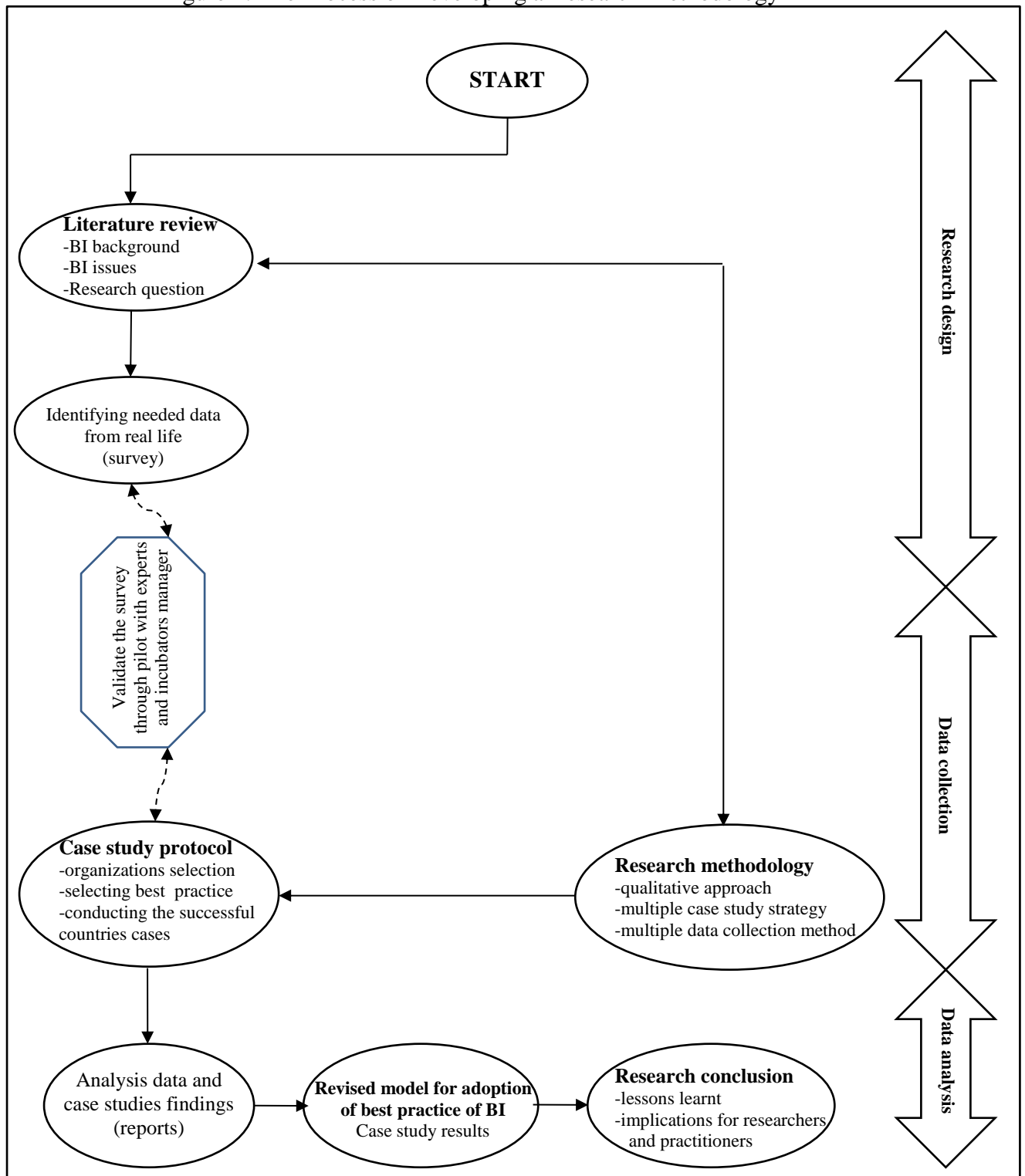
2.0 Results and Discussions

Table 1 shows the basic information of ten incubators. Six of them are located in developed countries and have been in existence for a much longer time (i.e., ranging from ten years to 31 years). The rest are located in developing countries and are on average much newer in establishment (i.e., ranging from six years to 11 years). The number of client firm varies from

six, being a very small scale incubator to 2123, being a large-sized incubator. Similarly, the number of graduate firms varies from three to 609.

Table 1: Basic Information of Ten Incubators

No.	Country name	Key performance indicators					
		1	2	3	4	5	6
		Incubators Goals	Incubator Types	Services offered by incubators	Year of establishment	No. of Client Firms	No. of Graduate Firms
1	USA	1) Entrepreneurship awareness, 2) Income generation, 3) Job creation, 4) Profitable enterprises, 5) Research commercialization	Technology & Mixed	1) Finance, 2) Advisory services, 3) Mentoring/ coaching , 4) Incubation services, 5) International business services, 6) Networks and synergy, 7) Technology transfer, 8) Commercializing technology, 9) Facilities	1998	99	32
2	UK		Technology & Mixed		1994	105	111
3	France		Technology & Mixed		1999	11	75
4	Germany		Technology & Mixed		2002	10	6
5	Austria		Technology		1981	170	404
6	Australia		N/A		1997	358	90
7	Jordan		N/A		2004	6	3
8	Morocco		Private sector		2005	8	4
9	China		N/A		2004	2123	609
10	Malaysia		Academic		2006	31	4
11	Thailand		Government		2002	173	145
12	India		N/A		2001	18	11

Table 2 shows the performance of each of the incubators. Specifically, the incubators are compared based on (1) the number of client firms per year, (2) the number of graduate firms per year, and (3) the ratio of the number of graduate firms to the number of client firm e year. As is evident from the table, China has the highest number of client firms per year. This is not surprising since it has the highest number of client firms in total. What is more meaningful is to look at the ratio between the number of graduates and the total number of client firms per year. France has the highest ratio (at 6.82) indicating that it is the most successful among the ten incubators. Even though China has the highest number of client firms per year and the highest number of graduate firms per year, relatively, its ratio of the number of graduate firms to the number of client firms is very low. In fact, it is the third lowest among the ten incubators, followed by Australia (at 0.25) and Malaysia (at 0.13). Even though the length of existence may play some roles in affecting the ratio, such as in the case of France, Austria, and the UK, but this does not hold true for all incubators. Australia and the USA, for example, have been in existence for 15 and 14 years respectively, but their ratios are only 0.25 and 0.32. Jordan, Morocco, China, and Malaysia are closer in terms of the length of establishment (ranging from six to eight years), but the ratio seems to vary (from 0.13 to 0.50). Thailand is relatively young but it seems to be doing relatively better with a ratio of 0.84, compared to that of Germany (ratio of 0.60) and India (ratio of 0.61).

Table 2: Performance of Incubators

No.	Country name	Length of establishment (up to 2012)	Performance		
			No. of client firms per year	No. of graduate firms per year	Ratio of the no. of graduate firms to the no. client firms per year
1	USA	14	7.07	2.29	0.32
2	UK	18	5.83	6.17	1.06
3	France	13	0.85	5.77	6.82
4	Germany	10	1.00	0.60	0.60
5	Austria	31	5.48	13.03	2.38
6	Australia	15	23.87	6.00	0.25
7	Jordan	8	0.75	0.38	0.50
8	Morocco	7	1.14	0.57	0.50
9	China	8	265.38	76.13	0.29
10	Malaysia	6	5.17	0.67	0.13
11	Thailand	10	17.30	14.50	0.84
12	India	11	1.64	1.00	0.61

3.0 Conclusion

This paper presents some preliminary examination of incubators in ten different countries to look at the extent of their success rate based on the length of their establishments. Those that have been in existence for a longer period of time in general are doing better than those that are newer. This is probably due to the experience in managing such entities. However, the relationship between length of establishment and the ratio of the number of graduating firms to the number of client firms per year does not hold true all the time. In fact, the data shows that some younger incubators are doing much better. This means that other factors beyond age of the establishment may come in to play in affecting the performance of an incubator. Examples of such factors are the goals and missions of the entities, the degree of facilitation and guidance provided to participating client firms, and the existence of supporting culture toward such entities. Nonetheless, since the value of incubators have been demonstrated over the years in many cases, governments should really put effort into establishing such entities in an effort to instill the spirit of entrepreneurship and in developing local economies.

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Evidence on the Predictability of Malaysian Stock Market Movement by Present Value Model (PVM)

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Abstract

Within the framework of Present Value Model (PVM) which is employed by Humpe and Mamillan (2009), this study examines the respond of the Malaysian equity market on selected macroeconomic variables, namely industrial production, inflation, money supply and interest rate. By using the autoregressive distributed (ARDL) bounds test proposed by Pesaran et al. (2001), this study has documented evidence of informational inefficient by the presence of a long-run relationship between real share prices and real economy activity, measured by real industrial production, real consumer prices, real money supply and real interest rate. The long-run coefficients suggested that Malaysian share prices were influenced positively by money supply and interest rate and negatively by inflation. Additionally, the results from the error correction mechanism indicate that real returns are Granger caused by real money growth and real interest rate. This study also reveals that real interest rate is verified to be a proper indicator as significant relationship has been perceived. From the policy perspective, the results suggest that, the monetary policy aimed at stabilizing inflation can generate positive effect to the stock market. Since the movement of stock market is highly elastic to inflation, it needs to be accounted for the goodness of Malaysia economy.

Keywords: Present Value Model, Autoregressive Distributed (ARDL) Bounds Test

1.0 Introduction

There has long been interest in using macroeconomic variables to make reliable predictions for stock markets, for instance, Fama (1981), Chen *et al*. (1986), Schwert (1989, 1990), Thornton (1993), Mukherjee and Naka (1995), Ibrahim (1999), Maysami and Koh (2000), Wong *et al*. (2006) and Humpe and Macmillan (2009). In fact, the idea that stock returns can be predicted by publicly available information is a violation of the principle of information efficiency of the stock market. If this is true, then investors' investment decisions is influenced by exploiting past macroeconomic information. This exploitable opportunity would distort the market's ability to efficiently distribute scarce resources. Moreover, this also motivates researchers to further analyze the relationship between stock market prices and macroeconomic variables.

In this area of study, the linkage between macroeconomic variables and stock market return is mainly through Arbitrage Pricing Theory (APT), where Ross (1976) purposed that multiple risk factors can explain financial asset returns. Earlier studies based on the APT theory in modeling short-run relationship generally found a significant relationship between stock market returns and changes in macroeconomic variables (Fama, 1981; Schwert, 1990; Cheung and Ng, 1998). On the other hand, a recent study made use of the simple Present Value Model (PVM) framework of stock price formation in selection of the macroeconomic

variables (Humpe and Macmillan, 2009). Through the PVM model, stock price is related to the future expected cash flows and the future discount rate of these cash flows. Unlike the APT theory, PVM model can be applied to focus on the long-run relationship between stock market and macroeconomic variables. Based on this approach, any macroeconomic variable that may influence future expected cash flows could influence stock price in the long-run. In the literature, the PVM model has been used by Chen *et al*. (1986) in an investigation of the impact of systematic risk factors upon stock return. Another study by Campbell and Shiller (1988) also empirically tested the relationship between stock prices, earnings and expected dividends by using PVM model. Therefore, PVM model is useful in estimating a long-run relationship between stock prices and macroeconomic variables.

In developed countries, earlier studies of Schwert (1989), Kaneko and Lee (1995), and Maysami and Koh (2000) have shown significant evidences on the impact of macroeconomic variables on stock market index in U.S., Japanese and Singapore stock markets, respectively. Also, the study by Nasseh and Strauss (2000) found significant long-run relationship between stock prices, industrial production, consumer price index and interest rates in France, Germany, Italy, the Netherlands, Switzerland and the U.K. Contrary, no statistical relationship existed between macroeconomic variables and stock prices in Canada, France, Japan, Taiwan and the U.S. as reported by Huang and Yang (2004). Overall, the relationship varies from market to market and it does not yield a general rule for all markets.

In the case of Malaysia, empirical works have provided some evidences for the effect of a number of macroeconomic factors on stock return. However, the evidences are not consistent because of different data sets and testing methods used. For instance, Ibrahim (1999) found that Malaysian stock market was informational inefficient by observing seven selected macroeconomic variables and the Malaysian stock market. Another study conducted by Ibrahim and Aziz (2003) found that there is a positive long-run relationship between stock prices and industrial production for the period of January 1977 to August 1998. More recently, Mahmood and Dinniah (2009) focused the relationship between Malaysian stock price and three macroeconomic variables which consist of inflation, output and exchange rates and they found no evidence of long-run relationship between these variables over the period January 1993 to December 2002. Contrary with the study of Mahmood and Dinniah (2009), covering the sample size from January 1986 – March 2008, Abdul Rahman *et al*. (2009) showed the changes in Malaysian stock market index do perform a cointegrating relationship with changes in money supply, interest rate, exchange rate, reserves and industrial production index. Furthermore, Rasiah (2010) applied the multivariate cointegration methodology to establish the possible causal relations between real stock returns and measures of aggregate economic activity including industrial production, consumer price index, money supply and real exchange rate. The study found evidence of positive long-run relationships between these variables over the period 1980:01 to 2006:12. From the literature, we notice that the result from previous studies cannot yield a general rule for the relationship between macroeconomic variables and stock prices in Malaysia.

By reviewing previous studies, we found that there is still lack of studies in considering the linkage between Malaysian stock market and its macroeconomic variables. Therefore, the purpose of this study is to fill in the gap by examining the respond of the Malaysian equity market to macroeconomic variables (industrial production, inflation, money supply and interest rate) during the period of 1997 Asian Financial Crisis and 2008 Global Financial Crisis. By including the crises period in our study, we are able to examine the impact of the regional and global financial crises on Malaysian market predictability. In this case, the

selected macroeconomic variables would objectively reflect the general situation in the economy and also the financial status of Malaysia. Also, motivated by the PVM framework, this study extends the previous literature by concerning the interest rate of long-term government treasury bills in the function of share price movement. To our best knowledge, this vital variable has not been included in any previous case study of Malaysia. Furthermore, in contrary to Malaysia case study of Ibrahim (1999), Ibrahim and Aziz (2003), Mahmood and Dinniah (2009), Abdul Rahman et al. (2009) and Rasiah (2010), exchange rate is not included as an explanatory variable in this study. We agree with the point stated by Humpe and Macmillan (2009), where exchange rate fluctuations have limited influence on share prices. They reasoned that domestic economy should adjust to currency developments and thus, reflect the impact of foreign income due to exports measured in domestic currency over the medium run. Moreover, in this study, instead of using the Kuala Lumpur Composite Index (KLCI), we utilize the real share prices published by IMF to remove effects of price changes over time.

The study is further organized as follows. Firstly, the model specification is briefly discussed then following by data and methodology in section 3. The next section discusses the findings and the final section concludes.

2.0 Data and Model Specification

This present study postulates the model of Humpe and Mamillan (2009) in modeling the long-term relationship between macroeconomic variables and Malaysian stock market movement. The selection of the explanatory variables considered for the movement of the stock market is the industrial production index, consumer price index, money supply (M1), and interest rate of treasury bills. Note that the share price index, industrial production index and the consumer price index are all in real term with constant price (2005 = 100). M1 series is converted to real M1 by dividing consumer price index, while treasury bills series is adjusted with inflation. All the data series are in quarterly from 1980:1 to 2011:3 and they are taken from the IMF.

Those selected variables could be most valuable in tracing the relationship between Malaysian share prices and macroeconomic variables. According to Fama (1981), Chen *et al*. (1986), Cheung and Ng (1998), Ibrahim and Aziz (2003) and Janor *et al*. (2005), financial resources are closely related to aggregate output such as Gross Domestic Product (GDP) or industrial production. In this regard, we make use of industrial production index since industrial sector prevails in Malaysian economy. Inflation is most often measured by consumer price index and it has a negative effect on stock prices through unexpected changes in the price level. Unanticipated inflation may reduce corporate income due to speedily increasing costs and slowly adjusting output prices (DeFina, 1991). Moreover, discount rate may be affected by inflation and thus, present value of future company cash flows is reduced (Humpe and Mamillan, 2009).

Another popular macroeconomic variable is money supply (M1). Money supply is likely to affect share prices through a few mechanisms. It may negatively relate to share price because changes in the money supply may be related to the increase in inflation. On the other hand, money supply may bring positive effect to the share price through its impact on economic activity. For more details on the role of money supply, see the papers of Urich and Wachtel (1981) and Chaudhuri and Smile (2004). Interest rate stands for another macroeconomic variable which many researchers embrace in the relationship between stock market prices and

macroeconomic forces (Chen et al., 1986; Wong et al., 2006; Alam and Uddin, 2009; Humpe and Macmillan, 2009). The interest rate directly changes the discount rate in the valuation model and hence influences current and future values of cash flows. In this regard, we have chosen the interest rate of Malaysia government treasury bills and it dominates the short end of the government securities market, with maturities normally less than one year.

3.0 Methodology

This study employs the autoregressive distributed (ARDL) bounds test proposed by Pesaran et al. (2001). By using this testing procedure, the cointegration relationship can be identified by estimating the model using ordinary least squares (OLS) technique, once the lag order of the model is selected. Moreover, the test is relatively more efficient in small or finite sample data sizes. Another advantage of this bounds test is it can be used irrespective of whether the regressors in the model are purely $I(0)$, purely $I(1)$ or mutually cointegrated. However, the procedure will crash in the presence of $I(2)$ series. Therefore, before estimating the ARDL model, the order of integration for the explanatory variables must be known. In this study, the Phillips-Perron unit root test is performed before we proceed to the bounds test for cointegration. For brevity, the methodology of Phillips-Perron unit root test is not presented here, see Phillips and Perron (1988) for more details.

The ARDL model pertaining to the five variables is stated below:

$$\Delta \ln SP_t = \lambda_0 + \sum_{i=1}^{p} \lambda_{1i} \Delta \ln SP_{t-i} + \sum_{i=0}^{p} \lambda_{2i} \Delta \ln IP_{t-i} + \sum_{i=0}^{p} \lambda_{3i} \Delta \ln CPI_{t-i}$$

$$+ \sum_{i=0}^{p} \lambda_{4i} \Delta \ln M1_{t-i} + \sum_{i=0}^{p} \lambda_{5i} \Delta \ln TB_{t-i}$$

$$+ \lambda_6 \ln SP_{t-1} + \lambda_7 \ln IP_{t-1} + \lambda_8 \ln CPI_{t-1} + \lambda_9 \ln M1_{t-1} + \lambda_{10} \ln TB_{t-1} + \varepsilon_t \qquad (1)$$

where Δ is the first difference operator, ε_t is a disturbance term assuming white noise and normally distributed and ln is natural logarithmic transformation. *SP* is the Malaysian share price index, *IP* is the industrial production index and *CPI* is the consumer price index. *M*1 represents the money supply in national currency and *TB* is the interest rate for Malaysia government treasury bills. In selecting an approximate lag length (*p*) for the ARDL model, a set of the model was estimated with maximum lag length of four. A lag length is preferred where the model has a minimum Akaike information criterion (AIC) value.

In testing the cointegration relationship between share price index and the explanatory variables, Equation (1) is estimated by OLS technique. Wald test will be performed on the null hypothesis of no cointegration, $\lambda_6 = \lambda_7 = \lambda_8 = \lambda_9 = \lambda_{10}$ against the alternative hypothesis of $\lambda_6 \neq \lambda_7 \neq \lambda_8 \neq \lambda_9 \neq \lambda_{10}$. For some significance level, if the calculated is lower than the lower bound critical value, then the null cannot be rejected which implies that no long-run relationship can be concluded. Conversely, if the F-statistic is higher than the upper bound critical value, then the null hypothesis of no cointegration can be rejected. Thus, a long-run equilibrium relationship occurred among the variables in the function. If the F-statistic falls between the upper and lower bounds, then a conclusive inference cannot be made.

In contrary with previous studies, this study considers the general to specific approach to derive the simplest ARDL model. In this practice, the first difference variables that the

absolute *t*-statistic is less than one is dropped sequentially to ascertain the explanatory variables to be included in the model. Then, the final model is checked by diagnostic test for robustness. The Equation (1) stated above is the general ARDL model and the general to specific approach is applied to the equation to derive the simplest ARDL model.

From the estimated ARDL model, the long-run and short-run estimated coefficients provide some useful information regarding the relationship. The long run elasticities are the coefficient of the one lagged explanatory variables in level multiplied with a negative sign and then divided by the coefficient of the one lagged dependent variable in level (Bardsen, 1989). For instance, the long-run industrial production and relative share price elasticities in Equation (1) is calculated as $-\left(\lambda_7 / \lambda_6\right)$. The estimated coefficients of the first differenced variable in the model represent the short-run elasticities.

Once cointegration is established, we estimate the long-run ARDL (p, q_1, q_2, q_3, q_4) model for the share price (SP_t) as follow:

$$\ln SP_t = \delta_0 + \sum_{i=1}^{p} \delta_{1i} \ln SP_{t-i} + \sum_{i=0}^{q_1} \delta_{2i} \ln IP_{t-i} + \sum_{i=0}^{q_2} \delta_{3i} \ln CPI_{t-i} + \sum_{i=0}^{q_3} \delta_{4i} \ln M1_{t-i}$$

$$+ \sum_{i=0}^{q_4} \delta_{5i} \ln TB_{t-i} + \xi_t \tag{2}$$

In Equation (2), all the variables are as previously defined. The orders of the lag (p, q_1, q_2, q_3, q_4) in the five variables are selected by AIC. The estimated residual series of Equation (3) is known as error correction term (*ECT*). Next, we estimate the error correction model associated with the one lagged *ECT* to obtain the short-run dynamic parameters. The error correction model is based on the re-parameterization of the estimated long-run ARDL (p, q_1, q_2, q_3, q_4) model and it is stated as below:

$$\Delta \ln SP_t = \mu_0 + \sum_{i=1}^{p} \mu_{1i} \Delta \ln SP_{t-i} + \sum_{i=0}^{q_1} \mu_{2i} \Delta \ln IP_{t-i} + \sum_{i=0}^{q_2} \mu_{3i} \Delta \ln CPI_{t-i}$$

$$+ \sum_{i=0}^{q_3} \mu_{4i} \Delta \ln M1_{t-i} + \sum_{i=0}^{q_4} \mu_{5i} \Delta \ln TB_{t-i} + \theta ECT_{t-1} + e_t \tag{3}$$

where μ_{1i}, μ_{2i}, μ_{3i}, μ_{4i} and μ_{5i} are the short-run dynamic coefficients of the model convergence to equilibrium. A negative and significant coefficient obtained for ECT_{t-1} will establish the presence of cointegration and it also represents the adjustment speed.

4.0 Empirical Results and Discussion

Before we proceed by examining the cointegration relationship by ARDL bounds test, we confirm the integrational properties of the five variables using the Phillips-Perron test, which examines the null hypothesis of stationarity. The results are reported in Table 1. In the case of the four log-first difference variables (share price, industrial production, consumer price index and money supply), the obtained test statistics are all greater than the critical value at the 1% level of significance, implying that the null hypothesis of unit root is rejected; hence, we conclude that this three variables are integrated of order one. For the variable of treasury bills, it is stationary in level as the test statistic is greater than the 1% critical value. In the bounds test procedure, the asymptotic distribution of the F-statistic is non-standard under the null hypothesis of no cointegration relationship, which means that the assumption can be examined irrespective of whether the explanatory variables are *I*(0) or *I*(1). Therefore, the

treasury bills in $I(0)$ will not be a limitation for us to proceed to bounds test for cointegration.

Table 1: Phillips-Perron Unit Root Test Statistics

Variables	Level	1st Difference	Outcome
ln *SP*	-2.9661	-9.2306*	*I*(1)
ln *IP*	-1.5127	-9.6988*	*I*(1)
ln *CPI*	-3.0774	-8.7248*	*I*(1)
ln *M*1	-2.6754	-11.5166*	*I*(1)
TB	-4.7920*	-18.5666*	*I*(0)

Significance Level	Critical Value
1%	-4.0331
5%	-3.4462
10%	-3.1480

Notes: Null hypothesis of the Phillips-Perron unit root test is the series has a unit root. *SP* is the real Malaysian share price index; *IP* is the real industrial production index, *CPI* is the real consumer price index; *M*1 is the real money supply; and *TB* is the real interest rate of Malaysian treasury bills. * denotes significance level at 1%.

The results from the bounds test for cointegration are reported in Table 2. As mentioned earlier, if the estimated F-test statistic is higher than the critical value of the upper bound or $I(1)$, then the null hypothesis of no cointegration is rejected. If the F-test statistic is lower than the lower bound or $I(0)$ critical value, then the null hypothesis cannot be rejected. In our case, we found that the calculated F-test statistic of 5.61 for the general model, and 5.49 for the specific model, both are greater than the 1% critical value. This implies that there is a cointegration relationship among the variables. The general and the specific model pass through a number of diagnostic tests[1]. As displayed in Table 2, the computed Breusch–Godfrey serial correlation Lagrange multiplier (LM) test for AR[2] is 0.92, which is statistically insignificant at conventional significance levels and this suggests that the disturbances are serially uncorrelated. The adequacy of the model is indicated by the insignificant test value of the Ramsey RESET test and the White heteroskedasticity test shows that the residual has a constant variance. The ARCH (1) test values show the absence of heteroscedasticity in the disturbance term.

Table 2: The Bounds Test for the Existence of Cointegration Relationship

	General Model		Specific Model	
F-test statistic	5.6128		5.4938	
Significance Level	1%		1%	
Outcome	Cointegration		Cointegration	
Diagnostic Tests	F-test statistic	Probability	F-test statistic	Probability
BG (2)	0.9215	0.4010	0.8989	0.4099
JB	70.8872	0.0000	83.3078	0.0000
ARCH (1)	0.3882	0.5344	0.2942	0.5885
HET	0.8378	0.6966	0.6523	0.8630
RESET	0.2384	0.6263	0.0710	0.7904

Notes: The critical bound (k=5) for 1% significance level: $I(0)$ – 3.41, $I(1)$ – 4.68. Source of critical values: Table C1 (iii) of Pesaran et al. (2001) - Unrestricted intercept and no trend. The diagnostic test statistics are: BG (*n*) = Breusch-Godfrey Serial Correlation Lagrange multiplier test for the *n*th order autocorrelation; JB =

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[1] Violation of normality in the residual series is shown by the Jarque-Bera test. In our case, the problem with the residual distribution is mainly due to one or two large errors. From the residual plot, the large errors can be observed around the period of Asian financial crisis in 1997; hence, they can be explained as unique events.

Jarque–Bera test for normality of residuals; ARCH (m) = Engle's mth order autoregressive conditional heteroskedasticity test; HET = White's test for heteroskedasticity; and RESET = Ramsey's test for functional form misspecification.

The estimated general model and specific model are reported in the Panel A of Table 3. In selecting an approximate lag length (p), a set of the ARDL model was estimated with lag length of one, two, three and four. As a result, a lag length with one quarter is preferred which minimized AIC. In the general model, the first difference variables with absolute t-statistic less than one is dropped sequentially. For instance, the coefficient of $\Delta \ln IP_t$ has the smallest absolute t-statistic which is less than one, hence, it is dropped from the estimation of the model. Then the model is estimated again with the remaining variables. The dropping process stops when all the coefficients of the first difference variable have t-statistic value greater than one. The variables of $\Delta \ln IP_t$, $\Delta \ln IP_{t-1}$, $\Delta \ln CPI_t$ and $\Delta \ln CPI_{t-1}$ were dropped from the general to specific exercise. The estimated long-run elasticity is presented in the Panel B of Table 3. From the specific model, the estimated long-run elasticities of the determinants are 0.1338 (industrial production), -3.6293 (consumer price), 1.7822 (money supply) and 0.0671 (treasury bills).

Table 3: The Estimated ARDL Model for Bounds Test and the Long-run Elasticity Relative to the Malaysian Share Price

Panel A: Estimated ARDL model for bounds test (lag 1)				
Variable	**General Model**		**Specific Model**	
	Coefficient	t-statistic	Coefficient	t-statistic
λ_0	-4.7270*	(-3.2956)	-4.7799*	(-3.5199)
$\Delta \ln SP_{t-1}$	0.1664***	(1.9403)	0.1655***	(1.9580)
$\Delta \ln IP_t$	0.1759	(0.8415)	-	-
$\Delta \ln IP_{t-1}$	-0.2027	(-0.9598)	-	-
$\Delta \ln CPI_t$	-1.6126	(-0.5750)	-	-
$\Delta \ln CPI_{t-1}$	2.9744	(1.1370)	-	-
$\Delta \ln M1_t$	0.9864*	(3.6021)	0.9887*	(4.0084)
$\Delta \ln M1_{t-1}$	0.6431**	(2.0487)	0.5285***	(1.8350)
ΔTB_t	-0.0301	(-1.4170)	-0.0172	(-1.4675)
ΔTB_{t-1}	-0.0288*	(-2.6570)	-0.0340*	(-3.4882)
$\ln SP_{t-1}$	-0.3030*	(-5.0284)	-0.2871*	(-5.1202)
$\ln IP_{t-1}$	0.0684	(0.9962)	0.0384	(0.6027)
$\ln CPI_{t-1}$	-1.1241*	(-2.9656)	-1.0419*	(-3.2511)
$\ln M1_{t-1}$	0.5238*	(3.7522)	0.5116*	(3.9907)
TB_{t-1}	0.0193**	(2.1063)	0.0193**	(2.2370)
Panel B: Long-run elasticity				
	SP	IP	CPI	M1	TB
General Model	-1.0000	0.2258	-3.7105	1.7291	0.0637
Specific Model	-1.0000	0.1338	-3.6293	1.7822	0.0671

Note: *, ** and *** denote significance level at 1%, 5% and 10% respectively. Figure in parenthesis is the t-statistic for the respective coefficient. For definition of the variables, see Table 1.

Table 4 presents the error correction estimations for the money demand model. The results are based on the re-parameterization of the estimated ARDL (2, 0, 2, 4, 2) model. Based on the results, the lagged error-correction term carries its expected negative sign and is highly significant. The coefficient of the error correction term is -0.85 and this reveals that approximately 85% of the previous quarter's discrepancy between the actual and equilibrium value of the share price is corrected each quarter. A significant error correction term implies a long-run causality from the determinants variables to share return while the short-run dynamics in the model are captured by the lagged differences. We find that money supply and interest rate Granger cause share return both in the short and long-run as well. We also assess the stability of the model between share return and its determinants. As displayed in Table 4, the model passes through a number of diagnostic tests.

Table 4: Granger Causality Test Results

Regressors	$\Delta \ln IP$	$\Delta \ln CPI$	$\Delta \ln M1$	ΔTB	ECT_{t-1}
		F-test statistic			
$\Delta \ln SP$	0.0786	0.1851	4.9427*	5.0996*	-0.8502* (-4.1992)

Diagnostic Tests	F-test statistic	Probability
BG (2)	0.2119	0.8094
JB	37.2310	0.0000
ARCH (2)	1.2763	0.2829
HET	1.0426	0.4247
RESET	0.3376	0.5624

Note: The *ECT* is obtained from the estimation of the long-run ARDL (2, 0, 2, 4, 2) model as Equation (3). Figure in parenthesis is the t-statistic for the coefficient of ECT_{t-1}. * denotes significance level at 1%. For definition of the variables and diagnostic test, see Table 1 and Table 2 respectively.

From the analysis, an insignificant positive long-run relationship is found between industrial production and share price. In addition, we also found that industrial production does not contribute significantly to the stock return in the short-run. The insignificant positive impact implies that innovation on industrial production has less influence on the corporate in their expectations of future cash flows. Although this result is uncommon, it is supported by the bivariate analysis of Ibrahim (1999) where industrial production has no significant long-run relationship with stock price and it does not Granger case Malaysian stock returns.

In the case of consumer price index, the result is in line with Chen *et al*. (1986) that have generally theorized the relationship as negative. As one of the determinants, consumer price index has a significant long-term relationship with share prices. Furthermore, consumer price index has the highest sensitivity among other determinants. An increase in the consumer price index will cause the share prices to have a largely negative movement. Therefore, this result indirectly alerts those policy markers to focus more on consumer price index to maintain the stability of the stock market. In common with previous research by Mukherjee and Naka (1995) and Rasiah (2010), the money supply shows a positive influence on share prices in short-run and long-run. As mentioned earlier, the increase in share prices is influence by economic stimulus provided by money growth. This result also in common with the portfolio theory, which suggest that an increase in money supply cause a portfolio shift from non-interest bearing money to financial assets including stock.

The long-run relationship between the share prices and interest rate of treasury bills is found to be positive. Moreover, in the short-term, changes of interest rate is found to Granger cause

share returns. The positive impact contradicts to the theory that interest rate and share prices should move in opposite direction. An alternative argument is given here based on the cause for changes in interest rates. Inflation rate in Malaysia is accelerating since 1990s and hit the highest rate in the third quarter of 2008. At the same time, economy of Malaysia also experienced sustained rapid growth. In this situation, the government may apply inflation targeting policy to control the inflation rate. This monetary policy follows the principle proposed by Taylor (1993) in adjusting the interest rate in response to changes in the inflation rate and the output gap. In particular, this rule states that for each one-percent increase in inflation, the central bank should raise the nominal interest rate by more than one percentage point. If the purpose of the central bank in rising interest rate is to limit inflation pressures due to strong levels of economic growth, then it would have an overall positive impact on the stock market.

5.0 Conclusion

Using the bounds testing procedure and the error correction Granger causality tests, the study investigates the interaction between share prices and relevant macroeconomic variables for Malaysia. From this study, it has documented evidence of informational inefficient by the presence of a long-run relationship between real share prices and real economy activity, measured by real industrial production, real consumer prices, real money supply and real interest rate. The long-run coefficients suggest that Malaysian share prices were influenced positively by money supply and interest rate and negatively by inflation. Additionally, the results from the error correction mechanism indicate that real returns are Granger caused by real money growth and real interest rate growth. This paper also reveals the real interest rate verify to be proper as significant relationship have been perceived. In summary, the analysis does not support the hypothesis of informational efficiency in Malaysian stock market. From the policy perspective, the results suggest that, the monetary policy aimed at stabilizing inflation can generate positive effect to the stock market. Since the movement of stock market is highly elastic to inflation, it needs to be accounted for the goodness of Malaysia economy.

Acknowledgement

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Crisis Typologies and Tourism Demand

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Abstract

This paper investigates the impacts of different crisis typologies on international tourism demand across 96 countries in the world from 1995-2009. Crisis is defined from two perspectives in this study, one is defined by its gestation period (cobra/python) and another one is based on human involvement (man/natural). We find thatcobra has significantly negative relationship with tourism demand, while instead the effect of pythonis statistically insignificant; while only man shows significantlynegative impact, but the effect of natural is insignificant. We further interact the crisis variables alternatively and find that the effects of man and natural hasovercome the effect of cobra and pythonon tourism demand.

Keywords: Tourism; demand; crisis; typologies

1.0 Introduction

Tourism is often described as a fragile industry in that demand for travel is highly susceptible to numerous shocks, such as wars, outbreaks of deadly contagious diseases, incidents of terrorism, economic fluctuations, currency instability, energy crisis and so on. During the last two decades, a series of regional and global catastrophic incidents had devastating impacts on the tourism industry, which varied from micro to macro levels (Santana, 2004). It was argued that the globalization of tourism market is so complex that small scale crisis in one part of the world can have significant impact on other parts of the world (Maditinos and Vassiliadis, 2008). Asia Pacific, the second largest tourism destination in the world (UNWTO, 2010), has witnessed a wave of crises since Asian financial crisis in 1997 to recent economic recession which started in second half of 2007 (Hall, 2010). In fact, the crises have affected tourism at global and regional scale. According to latest statistics from UNWTO (2010), international tourist arrivals suffers a decline of 4.3 per cent in 2009 compared to the preceding year. Not exception for Southeast Asia, because of economic crisis and the effects of H1N1, tourism in the region declined by 7% between January and June 2009.

Tourism is therefore highly vulnerable to external factors and pressures in the wider operating environment. Literature on tourism crises has grown considerably in recent years, particularly in the light of the impacts of other political events, natural disasters, diseases, crimes or wars (Martin, Sinclair, and Yeoman, 2005 in Maditinos and Vassiliadis, 2008). Prior studies have discussed about various definitions of crisis typologies. Coombes (1995) explains about the *faux pas* in the crisis events and Meyers (1986) identifies 9 types of business crises.Evan &Elphick (2005) denote that crisis typologies defined by the gestation period for crises is useful for managers. This is consistent with Parsons (1996)suggesting an

interesting classification of tourism crisis typologies depending on their gestation period: a) *Immediate* crises, where the crisis hits in sudden withoutwarning, b) *emerging* crises, which is slow in developing and might be stopped or limited by organizational action, c) *sustained* crises, which may last for weeks, months or years. Similar to Parson's classification is the one of Seymour and Moore (2000), who classify crises into two: the *cobra* type, which strikes suddenly and the *python* type, which occurs gradually. In opposite, Sausmarez (2007) classifies crisis in traditional way as either natural disaster or man-made.

Varied from prior studies which tend to investigate the impacts of particular crisis event, we utilize crisis typologies defined by Seymour and Moore (2000) and Sausmarez (2007) in empirical study to investigate their impacts on tourist arrivals. This study covers 96 countries in the world from 1995-2009. Analysis on crisis typologies may reveal much more information to understand the tourists' concerns about a crisis when making travelling decision relative to the study on a single crisis events to tourism demand.

2.0 Crises Typologies

In a tourism destination, potential crisis or disaster may be avoided, or at least, their worst effect can be minimized by active crisis management. Adjustment of the tourism industry tocrisis is becoming an essential empirical question with respect to the emerging literature for crisis management in tourism policy planning. Policy makers are confronted by the issue of how crisis management actions and policies can be planned regarding extend and depth of crisis pre-planning, management, reporting, communication, knowledge sharing and organization learning. By knowing the nature of crisis from various perspectives, government policy can be adjusted accordingly to a new equilibrium which is less costly, hence only can reach the effectiveness of the crisis management framework.

Ren (2000) asserts that tourism related crisis events occurred in an identifiable time and space, with their impacts may be longer lasting. Greening and Johnson (2007) argue that the limited duration of a high impact crisis event tends to cast attention from the media and magnify the seriousness of a crisis event. The media hence should not be neglected towards the tourism demand. Literature about influence of mass media in the management of crisis in travel is discussed in Glaesser (2004).

Contradict to the definition of Pearson and Clair (1998) describing crisis as a sudden shock which is unanticipated, Seymour and Moore (2000) suggest to classify the crises into *cobra* type(namely *cobra* henceforth) and *python* type (namely *python* henceforth) according to the ways in which they develop. The *cobra* strikes suddenly, for example, the 911 attacks which may come as a shock, whereas the *python* occurs gradually, such as the brewing of a war since a period of time ago, for instance, the Second Intifada (or also known as Oslo War) began in the late September 2000 and ended roughly around 2005 (Wikipedia Second Intifada, http://en.wikipedia.org/wiki/Second_Intifada). Booth (1993) classifies crises in slightly different ways, namely gradual, periodic or sudden, where gradual crises threaten parts of the organization, periodic crises threaten part or all of the organization and sudden crises threaten the entire organization. However, concluded from their studies,defensive response is given to sudden threat/*cobra* whereas bureaucratic response is taken when the crisis is not recognized, and negotiated response is favoured when the crisis is recognized.

On the other hand, Sausmarez (2007) defines tourism crisis according to whether human is involved in the crisis event, i.e. man-made and natural disaster. For example, tourism is

influenced by natural disasters (namely *natural* henceforth) such as hurricanes and earthquakes and man-made (namely *man* henceforth) such as industrial accidents, plane crashes and terrorist events. Similarly, Karagiannis et al. (2006) also suggest an alternative approach by using human involvement factor in the crises (*direct*, *indirect*, *no human involvement*). Nonetheless, Faulkner (2001) defines a crisis as an event which disrupts the smooth functioning of an organization (or destination), and of which a large part of its effects can be prevented or reduced by human efforts. Table 1 outlines crisis events from year 1995-2009 which affect international tourist arrivals, arranged according to various typologies of crises defined by Seymour and Moore (2000) and Sausmarez (2007).

Plenty of the historical events show that tourism crisis has significantly affected tourism for millennia. Prideaux and Witt (2000) discuss the Australian tourism industry over the Asian financial crisis. Pizam and Fleischer (2002) discover the negative relationship between the frequency of terrorist activities and tourism demand in Israel. Song and Lin (2009) demonstrate autoregressive distributed lag model to determine the inbound and outbound tourism in Asia, suggesting that financial and economic crisis were negatively related but the demand would rebound from 2010. Goodrich (2001) analyzes the immediate impact of 911 attacks on tourism in the United States and the subsequent industry response. Kuo*et al.* (2008) investigate the impacts of infectious diseases including Avian Flu and SARS on international tourist arrivals in Asian countries. They find that Avian Flu has greater damage than SARS, hence necessary precautions in the event of an outbreak of Avian Flu and pandemic influenza need to be given further attention and action.

Presently, the classification of the crises is only restricted to the area of management research which is theoretical based, and none of the research has been carried out to examine the impact of different typologies of crises on tourism demand through empirical analysis. This area of research comes to its significance when the trend of tourists flow is necessarily to be understood in time of crisis, so that pre-crisis planning strategy could be implemented on the right tract to sustain tourism demand in the period of downturn. This may solve the problem of implementing crisis management frameworks suggested by Laws and Prideaux (2005) due to the lacking of information with one of which is attributed by the crisis analysis, which hopefully will open up a new consciousness to the studies of crisis management framework.

Table 1: Crisis Typologies and the Crisis Events from Year 1995-2009

Typologies of crisis[*]	Year[**]	Events[**]
Terrorism : *man-cobra*		
	2001	911 attacks
	2005	Bali Bombings
Natural Disasters : *man-cobra*		
	1996	SE Asian haze
	2006	SE Asian haze
Natural Disasters : *natural-cobra*		
	2004	Indonesian tsunami
	2005	Hurricane Katrina
	2006	US heat wave
	2007	European heat wave
	2009	US cold wave
Political instability and War: *man-python*		
	2004	2nd Gulf War
	2006	Israeli invasion of Lebanon
Epidemics – diseases: *natural-python*		
	2002	SARS
	2003	SARS
	2009	Swine flu pandemic

(Source: * Maditinos and Vassiliadis, 2008; ** Hall, 2010)

3.0 Methodology

Yearly data of international tourist arrivals for 96 countries in 1995-2009 is collected from World Bank, including countries from the regions of East Asia and Pacific, Europe and Central Asia, Latin America and Caribbean, Middle East and North Africa and lastly, Sub-Saharan Africa region. Universal variables are used similar with majority of the studies in this line of research, i.e. relative price, income and exchange rate variables. Dummy variables of different typologies of crises are inserted simultaneously. In this paper, we use international inbound tourists (overnight visitors) as our measurement tools for tourism demand. However, our data is constrained to the total tourist arrivals in the destination from countries all around the world, without knowing the total arrivals of individual country. Due to this limitations, the price and income factors used in the regression are with respect to the world price index and world income while currency exchange rate is measured relative to the international currency, i.e. US$. The following model is developed using panel regression with one-way cross-sectional fixed effect. Our sample has a total of 1440 observations (96 countries x 15 years), from 1995 to 2009.

$$ARRIVAL_{it} = \alpha + \beta_1 EX_{it} + \beta_2 PRICE_{it} + \beta_3 INCOME_t + \beta_4 TYPOLOGY_{it} + \varepsilon_{it} \tag{2}$$

where α is a drift component and ε_{it} is the error term. $ARRIVAL_{it}$ is the numbers of tourist arrivals in country i in year t. EX_{it} is the exchange rate of the local currency of the destination i against USD in year t[1]. $PRICE_{it}$ is the CPI of the destination country i divided by the CPI of world in year t. The world income factor, $INCOME_t$ is the gross domestic price (GDP) of world in year t. The three variables are valued in logarithm form. $TYPOLOGY_{it}$ is used to represent for *python*/*cobra* and *man/natural.* Instead of investigating the individual impact of each crisis typology, we bring our analysis forward a step closer to reality, by which we interact *cobra/python* with *man/natural*.

4.0 Results

Table 2 reports the estimates for our sample of 96 countries from year 1995 to 2009. Exchange rate is negatively related to tourism demand, but it is not statistically significant. The negative relationship of tourism price and positive relationship of income with both are statistically significant,indicating that they are playing a key role to determine tourism demand. Come to our subject of interest, we find that only *cobra*is negatively related to tourism demand, with its effect isstatistically significant. However, for *python*, the elasticity is positive but it is statistically insignificant. The effect of *man* is negative which is statistically significant while *natural*instead has insignificant positive elasticity.

Column (3) in Table 2 shows the interaction between *cobra/python* with *man/natural*. We find that*man-cobra* is negatively related to tourism demand which is statistically significant. *Natural-cobra* however has no significant effect. In this case, the effect of *natural* has overcome the effect of *cobra,* leading to the insignificant effect of their interaction. We further find that *man-python*is negatively related to tourism demand with its effect is statistically significant. The main effect of *natural-python* is positive but weakly significant, or almost near to the level of insignificant.Conclusion can be made from the findings that

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[1]Since our data are limited to know the origin of individual visitor in a destination country, we take the currency of the destination country relative to international currency, USD in this case, by assuming that the exchange rates of visitors' countries currenciesrelative to USD are constant.

tourists are more sensitive over *man/natural* rather than *cobra/python* where their travelling decisions are significantly influenced by whether human is involved in the crisis.

Table 2: Relation Between Various Typologies of Crises and World International Tourist Arrivals

	(1)	**(2)**	**(3)**
Constant	-54.9149***		
	(0.0000)		
DPYT	0.0111		
	(0.2810)		
DCOB	-0.0662**		
	(0.0474)		
DMAN		-0.0745**	
		(0.0140)	
DNAT		0.0086	
		(0.5106)	
*DPYT*DMAN*			-0.1660*
			(0.0896)
*DPYT*DNAT*			0.0147*
			(0.0901)
*DCOB*DMAN*			-0.0572**
			(0.0459)
*DCOB*DNAT*			-0.0817
			(0.1686)

Note: Red. FE test refers to redundant fixed effect test which is report in t-statistics.
*, ** and *** denote the level of significance at 10%, 5% and 1% respectively.The results of correlation test (not shown in this paper) show that low correlations exist among the variables.

4.0 Conclusion and Implications

Hall (2010) gives a notion that there is an increasing numbers of disaster and crisis since year 1997, ranging from natural to human influenced incidents, such as bio security threats, natural disasters terrorist attacks and political instability. The crisis events exert pressure onpolicymakers to take a serious concern for the impacts of crises on the tourism industry and develop strategies to protect tourism business.Based on the literature (Seymour and Moore, 2000 and Sausmarez, 2007), crises have been classified into two major perspectives, one is classified based on their gestation period (*cobra/python*) and another one is taken into account of human involvement (*man/natural*).The estimates resulted from our panel regression reveals that *cobra*has significantly negative impacts on tourism demand, while the effect of *python*is insignificant. This may be logical as the sudden shock of *cobra* is likely to cast the attention of media to report sensationally, hence magnify the worry of tourists to travel. For *man/natural*, only *man* shows significantly negative impacts on tourism demand, neither for *natural*. Thismay imply that tourists are actually worry about the human involvement type of crisis than natural disaster. We believe that tourists are relatively confident over the high-end technologies such as the disaster early warning systemand the precaution effort made by the local government to minimize the tragedy of the crisis. Oppositely, human-emotional type of crisis like *man* is difficult to be detected compared to natural disaster like earthquake, tsunami and hurricane. In addition, we find that the travelling decisions of tourists are likely to be influenced by*man* and *natural* rather than *cobra* and *python*. In sum,the results in this study suggest to policy makers that serious consideration

must be taken upon human-involvement type of crisis when planning for tourism crisis management framework.

Acknowledgement

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An Empirical Investigation on the Behavior of Intellectual Capital Performance

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Abstract

Intellectual capital (IC), knowledge related intangible assets, is known as the foundation of organizational success in the knowledge economy. Reflecting this asset base transformation, the present study aims at investigating, empirically, the behavior of IC performance over the financial years 2000 to 2010 using a sample of listed banking sector firms in the New York Stock Exchange (NYSE). The Value Added Intellectual Coefficient (VAIC^{TM}) method was employed to measure IC of selected firms. Summary statistics show that the IC level of firms has declined over the years with a substantial decrease in 2001, 2002, 2007 and 2008, seemingly, during financial turbulent situations in the economy. Regression results for pooled sample (2000-2010) indicate positive and highly statistically significant associations between IC and selected corporate performance measures in the study such as productivity, profitability and investor expectation on the firm. However, estimates for individual years provide contrasting findings (except for the relationship between IC and profitability on equity) compared to evidence for pooled sample. This study is the pioneering example to explore the IC performance of the selected context and also provides evidence using longitudinal data which has been cited as a probable research area in many retrospective IC performance research. Further, we extended the efforts of prior researchers who have attempted to empirically validate the VAIC^{TM} method to diverse settings.

Keywords: Intellectual capital, firm performance, banking sector, VAIC^{TM}, NYSE.

1.0 Introduction

A firm may utilize both tangible and intangible assets in creating value for its stakeholders. This interpretation is supported by resource-based view (RBV) of the firm since RBV identifies resources as the main driving force behind competitiveness and performance of the firm. Traditionally, tangible assets are considered as more important in the process of value creation whilst intangible assets are recognized as relatively less important in creating value for stakeholders. This was clearly evident in the production economy in which production factors (land, labour and capital) were given priority.

The immensity placed on intangible assets can be identified as the most recent shift over in the asset base of the firm. Arguably, the asset base transformation might be a consequent of the emergence of using intangibles as strategic assets to survive in a highly competitive business environment in which business firms and other groups are competing for exceptionally limited resources. Further, the growing importance of knowledge as a commodity may also a factor to intensify the said asset base change over. Subsequently, IC, which consists of knowledge-related intangible assets, has become more important than physical assets during last two decades within the growing knowledge-based economy (Yalama and Coskun, 2007). Having recognized the impetus that IC could bring to the asset

base of organizations, the process of valuing IC, and practices to assess and report the value creation of IC may have led to the development of 'intellectual capital' as a distinct discipline in business.

The inconsistent distribution of research among different settings and the inability to generalize findings of available studies to diverse settings due to contextual differences - social, political, cultural, technological- are intrinsic features of the extant IC studies. In addition the focus of most research works in the discipline is confined to external reporting, and exploration of the impact of IC on firm performance and the investor response on firm have not adequately studied. More importantly, review of literature highlights dearth of studies providing how the value of IC and its impacts on firm performance are behaving in the long-run. Based on the the above-discussed distribution of IC research, we conducted this study relating to the areas of establishing the association between IC and firm performance, and investor response on the utilization of IC resources in value creation paying special attention on how the value of IC and said causal effects are behaving in the long-term.

Following Firer and Williams (2003) and Kamath (2007) who documented that financial services firms emphasize more on IC resources, we limit this study to the NYSE listed banking sector firms to assess the following research objectives:

1. To explore the behaviour of IC value during the financial years 2000 to 2010.
2. To investigate the relationship between IC and firm performance in and over the time period selected for the study.
3. To explain the relationship between IC and investor response for the same time period as above.

The remainder of the paper is organized as follows: Section 2 reviews the related prior research. Section 3 describes the methodology used in the study along with hypotheses. Penultimate section presents findings of the study. The final section summerises and concludes with implications, limitations and suggestions for additional research.

2.0 Literature Review

The review of prior studies which attempted to establish the association between IC and firm performance shows that the findings of relatively similar studies reveal comparatively dissimilar results. Perhaps, this may be due to country-specific reasons or methodological differences (Abeysekara, 2007). The argument can be supported by documenting the findings of several studies in the field. Number of examples exist for positive impact of IC on firm performance such as Riahi-Belkaoui (2003) found a positive contribution of IC to total performance of a firm based on net value added over total assets in the US based multinational firms; Chen et al., (2005) reported a positive impact from IC on market value and financial performance of Taiwanese Listed Companies; and Tan et al., (2007) found that IC and company performance are positively related in the listed companies on the Singapore Exchange. Similarly, Yalama and Coskun (2007) identified a significant contribution from IC on the profitability of quoted banks in the Istanbul Stock Exchange and Zéghal and Maaloul (2010) report that IC has a positive impact on economic and financial performance of selected UK firms. Chu et al., (2011) report a positive association between IC and profitability of selected firms in Hong Kong Stock Exchange.

In contrast to positive impacts cited above, Firer and Williams (2003) failed to find any strong association between IC and profitability of South African publicly traded companies. Shiu (2006) and Maditinos et al., (2011) provided generally limited and mixed findings. Statistical evidence in Maditinos et al., (2011) has failed to support most of the hypothesized relationships between IC and financial performance of selected Greek firms. Therefore, these contrasting findings provide avenues for further investigations on the role of IC in different settings to further explore the implications of IC.

With regard to recommendations for further research, Kamath (2007) has pointed out that there is a necessity for extending the research on IC to alternative settings, and also, to alternative industries in both manufacturing and service-oriented, as existing findings in diverse settings may be difficult to generalize. In another way Tayles et al., (2007) have concluded by recommending to establish whether the associations between IC and performance are supported by stock market performance, based on secondary data sources rather than using self-reported performance. Further, Ghosh and Wu (2007) suggest further research to identify the investors' evaluation on the IC of the firm, and Chen *et al.*, (2005) pointed out the importance of investigating the investor response on IC.

3.0 Methodology

3.1 Conceptual Framework

The review of literature showed contrasting findings for the relationship between IC and corporate performance. Also, it concluded that the generalization of findings become unproductive as country-specific factors are mostly influential in determining the level of IC of firms. Therefore, this study attempts to find out the association between IC and performance of listed banking sector firms in the NYSE where a similar study is in dearth. The predicted relationships of the study along with predicted directions are presented in Figure 1.

Figure 1: Conceptual Framework
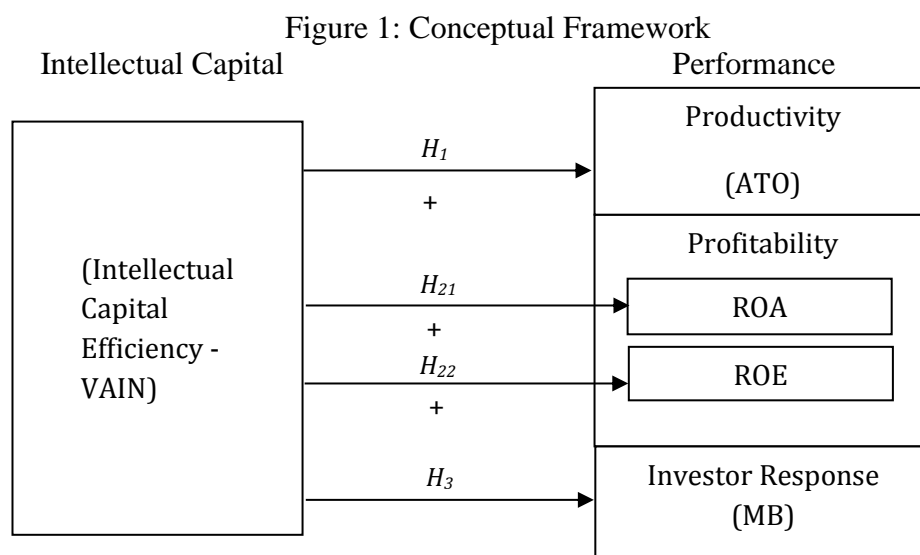
3.2 Hypotheses

First hypothesis of the study developed to identify the relationship between IC and productivity of selected firms. Following Chu et al., (2011), asset turnover ratio (ATO) has

been selected as the proxy measure for productivity. The VAIC^{TM} method (see section 3.3.1 for details) was used to measure IC of the firm. The first hypothesis of the study can be stated as:

H_1 : There is a positive relationship between IC and ATO of the firm.

Second hypothesis which predicts the association between IC and profitability of the firm has been divided into two dimensions, namely, ability of the firm to generate returns using common stocks of shareholders and efficiency of utilizing available assets to generate profits (Chen *et al.,* 2005 and Pal and Soriya, 2012). Considering the impracticability of combining these two profitability indicators into a single performance indicator, the divided hypotheses are presented as below:

H_{21}:   There is a positive relationship between IC and ROA of the firm.
H_{22}:   There is a positive relationship between IC and ROE of the firm.

Third hypothesis expects to examine the relationship between IC and investor response. The market-to-book value ratio (MB) of companies is used in measuring the investor response as Ghosh and Wu (2007) documented it as a proxy measure for investor response. The third hypothesis is as follows:

H_3: There is a positive relationship between IC and MB of the firm.

3.3. Definition of Variables

3.3.1 Independent Variable

As shown in Figure 1, intellectual capital efficiency (VAIN) is included as the proxy measure for IC and the same represents the main independent variable in regression models (presents in section 3.4). The VAIC^{TM} method was used to measure IC owing to various favourable arguments available it as the most appropriate method to measure IC (see Chen *et al.,* 2005; Shiu, 2006; Kujansivu and Lőnnqvist, 2007; Tan *et al.,* 2007; Yalama and Coskun, 2007; Kamath 2007; Zéghal and Maaloul (2010); Chu *et al.,* 2011; Maditinos *et al.,* 2011 and Pal and Soriya, 2012). The elaboration of the VAIC^{TM} model is as follows.

VA = Wages and salaries + Interest paid + Depreciation + Tax paid + dividend paid
                + Retained earnings
CA = Capital employed = Shareholders' fund − Deferred expenses
HU = Human capital = Total staff cost
SC = Structural capital = VA − HU (VAIC^{TM} model assumes that there is a reversal association between HU and SC)

VACA (Value creation efficiency of capital employed) = VA/ CA
VAHU (Value creation efficiency of human capital) = VA/ HU
STVA (Value creation efficiency of structural capital) = SC/ VA
VAIN (Intellectual capital efficiency) = VAHU + STVA
VAIC^{TM} (Value added intellectual capital coefficient) = VACA + VAHU + STVA

3.3.2 Control Variables

Apart from using VAIN as the main independent variable, we use some other control variables namely efficiency of physical capital, leverage, firm size and earnings for ordinary shareholders (EPS). Physical capital influences performance of the firm and VACA in

VAIC^{TM} model measures the physical capital intensity. Komnenic and Pokrajčić (2012) also adopted the capital employed efficiency which is very similar to VACA as a proxy measure. Debt asset ratio (DAR) is used as the proxy measure for leverage in Model 1 and Model 2 following Riahi-Belkaoui (2003), Kamath (2008), Chu *et al.,* (2011) and Ahangar (2011). The DAR measures as a ratio of total debts to total assets of the firm. Total debts to equity ratio (DER) is used as the control variable for financial leverage (Pal and Soriya, 2012) in Model 3 and 4. According to Firer and Williams (2003), Zéghal and Maaloul (2010), Chu *et al.,* (2011) and Pal and Soriya (2012) natural logarithm of market capitalization (MKTCAP) is another control variable to represents the firm's size effect on the dependent variable. EPS, which indicates the reported annual earnings for shareholders, is also used as a control variable and EPS is calculated by dividing net income (after deducting dividends on preferred stock) from average outstanding shares.

3.3.3. Dependent Variables

Productivity, profitability and investor response are used as dependent variables of the study. Revenue divided by total assets forms the asset turnover ratio (ATO) which denominates the productivity of the firm. Profitability is measured through return on assets (ROA) and return on equity (ROE). ROA reflects the effectiveness of utilizing available assets in creating profits and the ratio of operating profits to total assets is used to calculate it. ROE represents return generation on common stocks of shareholders and ROE has identified as an important financial indicator for owners. The computation of ROE is done using the ratio of net income to average shareholder equity. In addition, investor response of external investors has also included as a dependent variable. As pointed out in the literature review, market-to-book value ratio (MB) is used as the fair proxy measure to reflect the investor response. The MB is market value of common stocks divided by book value of common stocks, where, market value of common stock is average stock price multiplied by number of shares outstanding and average shareholder equity represents the book value of common stocks.

3.4 Regression Models

Based on the discussion thus far, we construct the following regression models to estimate the predicted relationships of the study.

$$ATO_{it} = \beta_{01} + \beta_{11} VAIN_{it} + \beta_{21} VACA_{it} + \beta_{31} DAR_{it} + \beta_{41} \log(MKTCAP)_{it} + \varepsilon_{it} \qquad (1)$$

$$ROA_{it} = \beta_{02} + \beta_{12} VAIN_{it} + \beta_{22} VACA_{it} + \beta_{32} DAR_{it} + \beta_{42} \log(MKTCAP)_{it} + \varepsilon_{it} \qquad (2)$$

$$ROE_{it} = \beta_{03} + \beta_{13} VAIN_{it} + \beta_{23} VACA_{it} + \beta_{33} DER_{it} + \beta_{43} \log(MKTCAP)_{it} + \varepsilon_{it} \qquad (3)$$

$$MB_{it} = \beta_{04} + \beta_{14} VAIN_{it} + \beta_{24} VACA_{it} + \beta_{34} DER_{it} + \beta_{44} \log(MKTCAP)_{it} + \beta_{54} EPS_{it} + \varepsilon_{it} \quad (4)$$

Model 1 estimates the relationship between IC and productivity of the firm, and Model 2 is used to identify the association between IC and profitability to available assets of the firm. The Model 3 explains the relationship between IC and profitability from owners perspective, whereas, Model 4 identifies the degree of contribution of IC on investor response. We expect a positive sign for the VAIN coefficient (the main independent variable of the study), in all models. The expected sign for the coefficients of VACA and log(MKTCAP) in all models,

and for the EPS in Model 4 is also positive. However, the expected coefficient sign for DAR and DER is negative.

3.5 Sample

249 Listed banking sector firms in the NYSE have selected to represent the sample of the study. However, data of some companies has been omitted due to not fulfilling the sampling requirements of the study. Under such requirements, companies should have held their listing status throughout 2000 to 2010 and should have published financial statements. In line with these requirements, 58 firms have been omitted from the sample and 191 retained. Data for financial years 2000 to 2010 has been extracted from published financial statements.

4.0 Empirical Results

4.1 Sample Summary Statistics

Table 1 provides the summary statistics for the selected firms. Figures related to the value creation efficiency of intellectual capital (VAIN) and value creation efficiency of physical capital (VACA) have steadily declined, on average, approximately 50% by 2010 compared to values in 2000. The larger means for VAIN in comparison to medians during 2000 – 2007 indicate that sample includes a small number of very large companies whereas figures for market capitalization (MKTCAP), the variable for size of the firm in the study, further confirms that the above fact with its substantially higher means over medians. The earnings per share (EPS) figures in Table 1 shows a steady increase at both the median and mean within the first half of the sample period and similar behaviour in both the MKTCAP and market-to-book value ratio (MB) indicates that investor expectation has grown over the sample firms. In contrast, the deductions in the both median and mean values of the ROE and EPS during 2006 to 2009 indicate that the profitability from shareholders' perspective of the selected firms has decreased. Moreover the value creation efficiencies (both intangible and physical resources) and indicators for investor expectations (MKTCAP and MB) followed the similar behaviour as the ROE and EPS. An observation on the medians and means for 2010 on variables in the Table 1 that denominate value creation efficiencies, profitability for shareholders and investor expectations shows a positive trend compared to the behavior in recently concluded four financial years. In reasoning out the possible causes for the negative trend of profitability and value creation efficiency variables during 2006 – 2009, the decline of overall revenue of firms within the period as a reflection of the financial turbulent situation in the economy stands forefront. The eventual collapse of share prices following loss of faith in the profitability of firms reflects a similar negative trend in MKTCAP and MB. The above-discussed crisis effect is further evident with the reported positive momentum for variables in 2010 as the financial turbulence eases out. The behaviour of indicators for financial leverage (DAR and DER), profitability (ATO) and profitability on assets (ROA) in Table 1 remained relatively constant throughout.

Table 1: Summary Statistics

Year	VAIN Median	VAIN Mean	VACA Median	VACA Mean	DAR Median	DAR Mean	DER Median	DER Mean	MKT CAP ($ millions) Median	MKT CAP ($ millions) Mean	EPS Median	EPS Mean	ATO Median	ATO Mean	ROA Median	ROA Mean	ROE Median	ROE Mean	MB Median	MB Mean
2000	5.59	6.09	0.76	0.77	0.07	0.10	0.76	1.15	94.10	401.80	1.00	1.52	0.08	0.08	0.03	0.03	0.12	0.12	1.30	1.45
2001	5.54	5.93	0.77	0.80	0.08	0.10	0.85	1.13	119.99	511.36	1.13	1.66	0.08	0.08	0.03	0.04	0.12	0.11	1.43	1.59
2002	4.76	5.08	0.68	0.68	0.08	0.10	0.87	1.16	148.72	600.13	1.29	1.75	0.07	0.07	0.04	0.04	0.13	0.12	1.67	1.74
2003	4.44	4.66	0.62	0.62	0.09	0.10	0.90	1.22	201.21	633.57	1.39	2.09	0.06	0.06	0.03	0.03	0.13	0.12	1.77	1.92
2004	4.24	4.47	0.57	0.58	0.09	0.10	0.93	1.23	248.14	731.46	1.47	2.05	0.06	0.06	0.03	0.06	0.11	0.12	1.93	2.10
2005	4.51	4.77	0.64	0.63	0.09	0.10	0.98	1.17	263.91	725.74	1.59	2.43	0.06	0.06	0.03	0.03	0.12	0.12	1.89	1.98
2006	4.93	5.26	0.70	0.69	0.08	0.09	0.89	1.07	290.97	779.76	1.61	2.31	0.07	0.07	0.03	0.03	0.12	0.11	1.83	1.95
2007	4.97	5.25	0.69	0.69	0.09	0.10	0.98	1.16	239.84	703.16	1.48	1.94	0.07	0.07	0.03	0.03	0.09	0.09	1.53	1.62
2008	4.02	3.84	0.53	0.49	0.09	0.10	0.94	1.24	174.19	520.68	0.89	-0.98	0.06	0.06	0.03	0.03	0.05	-0.01	1.08	1.19
2009	3.26	3.09	0.37	0.31	0.08	0.09	0.80	1.12	114.64	387.87	0.37	-2.06	0.06	0.06	0.03	0.03	0.02	-0.13	0.67	0.79
2010	3.09	2.89	0.37	0.40	0.06	0.07	0.63	0.52	144.43	531.61	0.68	0.24	0.06	0.06	0.03	0.03	0.05	0.01	0.80	0.86

Table 2: Correlation between VAIN and Dependent Variables

Panel A: Pooled Sample (2000 – 2010)

Variable	ATO	ROA	ROE	MB
Correlation	0.13 [α]	0.05 [α]	0.25 [α]	0.14 [α]

Panel B: Year-wise (2000 -2010)

Variable	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
ATO	-0.110	-0.110	-0.172 [β]	-0.165 [β]	-0.204 [α]	-0.249 [α]	-0.306 [α]	-0.304 [α]	-0.320 [α]	-0.137 [γ]	-0.106 [γ]
ROA	-0.129 [γ]	-0.141 [γ]	-0.084	-0.165 [β]	-0.032	-0.135 [γ]	-0.246 [α]	-0.289 [α]	-0.309 [α]	-0.138 [γ]	-0.073
ROE	0.165 [β]	0.147 [β]	0.147 [β]	0.230 [α]	0.224 [α]	0.169 [β]	0.060	0.167 [β]	0.671 [α]	0.311 [α]	0.132 [γ]
MB	-0.038	-0.133 [γ]	-0.022	0.001	-0.097	-0.087	-0.080	-0.069	-0.077	-0.044	-0.183 [β]

Notes: Significant at [α] 1, [β] 5 and [γ] 10 per cent level respectively. Pooled sample correlations are based on 8404 firm-quarters. Year-wise correlations for 191 firms in individual years.

4.2 Correlation Analysis

Figure 2 and Table 2 enunciate correlation between VAIN (proxy measure for IC) and performance measures for pooled sample and year-wise data. Figure 2 depicts weakly positive relationships between VAIN and dependent variables. Further it illustrates a relatively higher correlation between VAIN and profitability from owners' perspective (ROE), whereas, weakest for VAIN and productivity (ATO). Panel A of Table 2 further confirms (statistically significant as well) the observed correlations in Figure 2. Accordingly, all the established hypotheses in the study cannot be rejected for the pooled sample. However, the correlations for individual years in panel B of Table 2 provide contradictory evidence for H_1, H_{21} and H_3 and identical for H_{22} in comparison to pooled sample.

Figure 2: Scatter Diagrams for VAIN and Dependent Variables
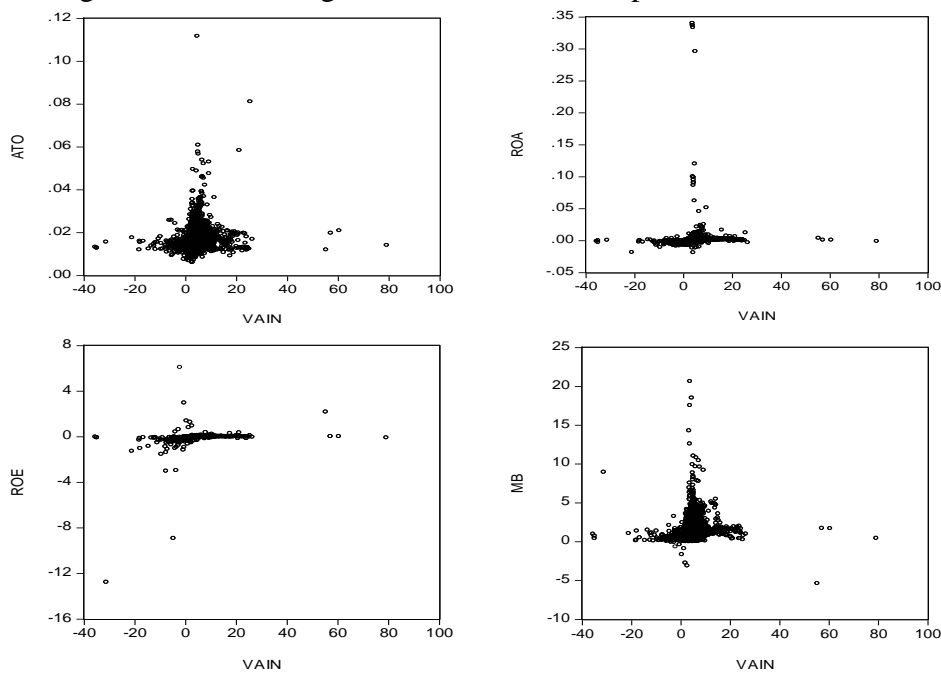
4.3 Regression Results

The results of the correlation analysis constitute a first approach to test the established hypotheses. Next, we continue to test these hypotheses through constructed regression Models. Before performing the analysis the correlation coefficients between explanatory variables were analyzed to ascertain the absence of multicollinearity problem. Correlations of all possible associations between explanatory variables in pooled sample and across eleven years are ranged between -0.320 and 0.576. Hence do not provide evidence of any multicollinearity problem.

Model 1: Table 3 exhibits the results of the regression model for all explanatory variables using productivity (ATO) as the dependent variable for pooled sample and for individual financial years (2000-2010). In panel A of Table 3, all the coefficients in the Model 1 reported the expected signs and β_{11} and β_{21} are highly statistically significant. Coefficient for β_{31} is statistically significant and β_{41} does not significant. In contrast, as reported in panel B, the VAIN coefficient is negative in all of the eleven annual regressions with t-statistics > 1.65, except for 2010. Both Z_1-statistic (which assumes residual independence) and Z_2 (which accounts for cross-sectional and temporal residual dependence) for VAIN indicate that across-

years significance level of VAIN is 0.01. Based on the statistical evidence in Table 3, H_1 (which hypothesizes a positive relationship between IC and productivity) cannot be rejected for pooled sample and can be rejected in individual years, specifically for 2000 - 2009. In conclusion, coefficients of VAIN in both data arrangements provide contradictory evidence for the theoretical expectation of IC that expects to create superior performance for the firm.

Table 3: Regression Results for Productivity *(t-statistics in parentheses)*

Panel A: Pooled Sample (2000 – 2010)

Model 1 : $ATO_{it} = \beta_{01} + \beta_{11}\, VAIN_{it} + \beta_{21} VACA_{it} + \beta_{31} DAR_{it} + \beta_{41}\log(MKTCAP)_{it} + \varepsilon_{it}$

Dependent variable	$VAIN_{it}$	$VACA_{it}$	DAR_{it}	$\log(MKTCAP)_{it}$	Adj R^2	F-value
Productivity	0.0002^{α}	0.0004^{α}	-0.002^{γ}	$6.64E\text{-}07$	0.026	58.06^{α}
	(3.504)	(5.636)	(-1.739)	(0.008)		

Panel B: Year-wise Regressions (2000 -2010)

	$VAIN$	$VACA$	DAR	$\log(MKTCAP)$
Mean coefficient	-0.0011	0.0111	-0.0054	0.0008
Number of coefficients > 0	0	11	3	9
Number of *t*- value >1.65	10	9	4	8
Z_1	-11.20	10.73	-1.68	6.59
Z_2	-7.44	8.64	-1.01	3.76

Notes: Significant level $^{\alpha}$ 0.01 and $^{\gamma}$ 0.1. Regression results for pooled sample are based on 8404 firm-quarters and reported *t*-statistics are based on White (1980) standard errors. Panel B results are for 191 firms in separate financial years.

$Z_1 = (1/\sqrt{T}) \sum_{j=1}^{T}(t_j/\sqrt{k_j/(k_j - 2)})$, where t_j is the *t*-statistic for year j, k_j is degrees of freedom, and T is number of years.

Z_2 = mean *t*-statistic / (standard deviation of *t*-statistics / $\sqrt{T - 1}$).

The above findings are consistent with previous studies in a mixed manner. Relationship in pooled sample is consistent with Chen *et al.,* (2005) and Tan *et al.,* (2007) and negative relationships for individual years are similar to Kamath (2008) and Chu *et al.,* (2011).

Model 2* and *3: We conducted two separate tests to investigate the association between IC and profitability of firms. First, we used profitability on available assets (ROA) as the dependent variable and Table 4 summarises the empirical results. Second, we substituted return on equity (ROE) in the place of ROA and Table 5 presents the estimates for ROE model. Panel A of both Table 4 and 5 reports expected signs (except for β_{43} which is insignificant as well) and those are highly statistically significant. In addition, the ROE model provides a much improved coefficient for VAIN, explanatory power (14.3%) and efficiency in explaining the variation of dependent variable compared to the ROA model. The results in panel A of Table 4 and 5 support H_{21} (predicts a positive relationship between IC and ROA) and H_{22} (hypothesizes a positive association between IC and ROE) of the study, respectively. These findings corroborate Riahi-Belkaoui (2003), Chen *et al.,* (2005), Tan et al., (2007),

Zéghal and Maaloul (2010) and Chu et al., (2011) who all found significant positive association between IC and financial performance. Despite a significant positive association between IC and ROA for pooled sample, panel B of Table 4 does not report any positive VAIN coefficient for across-year regressions. In contrast, it summerises eight negative coefficients for VAIN with t-statistics > 1.65 (except for 2002, 2004 and 2010) and related Z-statistics substantiate these are statistically significant over the years. Nevertheless, this finding is mostly similar to Firer and Williams (2003), Kamath (2008) and Maditinos (2011).

Table 4: Regression Results for Profitability on Assets *(t-statistics in parentheses)*

Panel A: Pooled Sample (2000 – 2010)

Model 2 : $ROA_{it} = \beta_{02} + \beta_{12} VAIN_{it} + \beta_{22} VACA_{it} + \beta_{32} DAR_{it} + \beta_{42} \log(MKTCAP)_{it} + \varepsilon_{it}$

Dependent variable	$VAIN_{it}$	$VACA_{it}$	DAR_{it}	$\log(MKTCAP)_{it}$	Adj R^2	F-value
Profitability on assets	0.0002^{α}	0.0002^{α}	-0.004^{α}	0.0002^{α}	0.007	15.65^{α}
	(4.608)	(6.381)	(-4.002)	(6.700)		

Panel B: Year-wise Regressions (2000 - 2010)

	$VAIN$	$VACA$	DAR	$\log(MKTCAP)$
Mean coefficient	-0.0016	0.0288	-0.0006	0.0003
Number of coefficients > 0	0	7	3	9
Number of t- value >1.65	8	0	2	2
Z_1	-7.32	1.01	-0.75	2.34
Z_2	-5.22	1.07	-0.53	2.88

Notes: Significant level $^{\alpha}$ 0.01. Regression results for pooled sample are based on 8404 firm-quarters and reported t-statistics are based on White (1980) standard errors. Panel B results are for 191 firms in separate financial years.
$Z_1 = (1/\sqrt{T}) \sum_{j=1}^{T} (t_j / \sqrt{k_j/(k_j - 2)})$, where t_j is the t-statistic for year j, k_j is degrees of freedom, and T is number of years.
Z_2 = mean t-statistic / (standard deviation of t-statistics / $\sqrt{T-1}$).

Table 5: Regression Results for Profitability on Equity *(t-statistics in parentheses)*

Panel A: Pooled Sample (2000 – 2010)

Model 3 : $ROE_{it} = \beta_{03} + \beta_{13} VAIN_{it} + \beta_{23} VACA_{it} + \beta_{33} DER_{it} + \beta_{43} \log(MKTCAP)_{it} + \varepsilon_{it}$

Dependent variable	$VAIN_{it}$	$VACA_{it}$	DER_{it}	$\log(MKTCAP)_{it}$	Adj R^2	F-value
Profitability on equity	0.018^{β}	0.0086^{α}	-0.036^{α}	-0.0008	0.143	352.95^{α}
	(2.536)	(4.152)	(-3.683)	(-0.273)		

Panel B: Year-wise Regressions (2000 -2010)

	$VAIN$	$VACA$	DER	$\log(MKTCAP)$
Mean coefficient	0.0417	0.300	-0.037	0.0122
Number of coefficients > 0	10	11	0	11
Number of t- value >1.65	9	11	11	9
Z_1	8.19	37.30	-24.58	12.22
Z_2	4.82	6.46	-2.77	6.11

Notes: Significant level $^{\alpha}$ 0.01 and $^{\beta}$ 0.05. Regression results for pooled sample are based on 8404 firm-quarters and reported *t*-statistics are based on White (1980) standard errors. Panel B results are for 191 firms in separate financial years.
$Z_1 = (1/\sqrt{T}) \sum_{j=1}^{T} (t_j / \sqrt{k_j/(k_j - 2)})$, where t_j is the *t*-statistic for year *j*, k_j is degrees of freedom, and *T* is number of years.
Z_2 = mean *t*-statistic / (standard deviation of *t*-statistics / $\sqrt{T-1}$).

Across-years regression coefficients for VAIN in panel B of Table 5 are consistent with the same coefficient in pooled sample. Moreover, panel B of Table 5 reports ten positive coefficients for the VAIN (negative and non-significant in 2009) within eleven years and nine of them (except for 2001) have *t*-statistic greater than 1.65. Based on Z_1 and Z_2 for VAIN coefficients in panel B of Table 5, the across-years significance level is 0.01.

The association between IC and ROE in both pooled and cross section data arrangements comply with the theoretical assumption that IC impacts positively on profitability. However, the association between IC and ROA only in pooled sample supports the theoretical assumption. Review of extant studies in IC literature that attempted to establish the association between IC and ROE points out a significantly positive association in almost all studies. Also, it is pertinent that the relationship between IC and ROA has reported relatively weak in majority of previous studies. Referring to average values for ROA and ROE (see Table 1) in this study, we suspect that usual higher values for ROE due to its method of calculation may partially influence on the difference between strength of the said profitability associations.

Estimates of **Model 4** which constructed mainly to explain the IC (VAIN) and investor response (MB) are reported in Table 6. Evidence derived for pooled sample in panel A indicates that IC is significantly positively, as expected in this study, related with investor response for selected firms. Thus, the result provides supportive evidence on H_3 of the study. However the same coefficient, as shown in panel B of Table 6, is not significant in annual regressions although it reports seven positive coefficients during 2000 to 2010. This is further evident that *t*-statistics for positive coefficients are less than 1.65 and both Z_1 and Z_2 are very low. Therefore, empirical evidence does not support for H_3 in individual years. This finding further implies that investors do not appreciate the importance of IC of the subsamples in this study. Meanwhile, the statistical evidence for the association between IC and MB of Zéghal and Maaloul (2010) and Pal and Soriya (2012) is similar to the results shown related to individual years in the present study.

Table 6: Regression Results for Investor Response *(t-statistics in parentheses)*

Panel A: Pooled Sample (2000 – 2010)

Model 4: $MB_{it} = \beta_{04} + \beta_{14} VAIN_{it} + \beta_{24} VACA_{it} + \beta_{34} DER_{it} + \beta_{44}\log(MKTCAP)_{it} + \beta_{54} EPS_{it} + \varepsilon_{it}$

Dependent variable	$VAIN_{it}$	$VACA_{it}$	DER_{it}	$\log(MKTCAP)_{it}$	EPS_{it}	Adj R^2	F-value
Investor response	0.020^{β}	-0.050^{γ}	0.004	0.297^{α}	0.007^{α}	0.21	452.43^{α}
	(2.55)	(-1.72)	(0.21)	(19.975)	(3.87)		

Panel B: Year-wise Regressions (2000 -2010)

	$VAIN$	$VACA$	DER	$\log(MKTCAP)$	EPS
Mean coefficient	0.001	-0.050	0.082	-0.159	-0.003
Number of coefficients > 0	7	6	7	1	9
Number of *t*- value >1.65	0	0	2	10	4
Z_1	0.22	-0.57	1.45	-16.62	3.42
Z_2	0.61	-0.64	1.19	-6.72	1.35

Notes: Significant level $^{\alpha}$ 0.01, $^{\beta}$ 0.05 and $^{\gamma}$ 0.1. Regression results for pooled sample are based on 8404 firm-quarters and reported *t*-statistics are based on White (1980) standard errors. Panel B results are for 191 firms in separate financial years.

$Z_1 = (1/\sqrt{T}) \sum_{j=1}^{T}(t_j / \sqrt{k_j/(k_j - 2)})$, where t_j is the *t*-statistic for year *j*, k_j is degrees of freedom, and *T* is number of years.

Z_2 = mean *t*-statistic / (standard deviation of *t*-statistics / $\sqrt{T - 1}$).

5.0 Conclusion

Discerning the role of IC as a strategic asset in the modern day business organizations, this study attempted to provide empirical evidence on the behavior of IC and its impact on firm performance based on data from the NYSE listed banking firms during 2000 to 2010. Findings of the study have important implications. First, the average IC value of selected firms has declined by 50% during the period of the study and the decline is substantial during crisis situations in the economy. The decline indicates that the importance of IC as a strategic asset could not hold its recognition in the long-run or organizations are not investing as past to maintain the same IC level in the long-run. Also it clues a financial turbulent situation plays a significant role in diminishing the IC base.

Second, estimates for relationships between IC and productivity, profitability and investor response in pooled sample (2000 – 2010) indicated statistically significant positive relationships. Apart from the association between IC and ROE, the remaining relationships are reportedly contrasted in annual regressions compared to relationships in pooled sample. This finding in relation to individual years may create an uncertainty among managers to invest more on IC in order to enhance the corporate performance of the firm. However, it is a clear guideline for them to utilize available IC assets more efficiently to increase the existing revenue volume to overcome this deficiency. The contrasting relationships between IC and profitability, such as, IC has a negative association on profit generating ability on total assets available in the firm and a positive relationship between IC and profitability on shareholders' common stocks may provide more informational support to managers and owners. Although the managers were failed to generate adequate amount of profits to fulfill the expectations of all stakeholders who financed the total assets of the firm, they make necessary amount of profits to match the interest of shareholders. Finally, the results of individual regressions show that the level of IC of firms has not been able to draw a positive response from external investors or external investors do not place a positive response on the IC of selected firms.

This study is not without its limitations. First, the coefficients related to the impact of control factors on dependent variables are mixed and not significant in certain cases. Further studies may give more attention to control factors and could eventually introduce different control factors to provide clearer results. Second, the sample firms are consisting of different characteristics and it is worthy to apply same models used in this study to find out whether the results are identical for firms which have similar characteristics i.e. firms with higher market capitalization, firms with higher level of IC, and etc. Third, replication studies are important for firms listed in the NYSE under other sectors and similar type of firms in other countries to view the consistency of the findings in this research. Finally, additional research could focus on some basic assumptions of the VAIC^{TM} method and assess their potential consequences for the validity of empirical testing and results. Moreover, given the fact that extant IC literature does not persist with a comprehensive and most efficient method to measure IC a possible study can be carried out by adopting alternative approaches to measure IC, considering the data availability.

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Determinants of Directors' Compensation Among IMT-GT Banks

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Abstract

Compensation of the Board of Directors in the banking industry has been a major area of controversy in the developed world for over two decades now. Corporate scandals, reflected in excessive management compensation and fraudulent accounts, have been cited as some of the factors causing such controversy. The proposition of the Agency theory to link compensation of the directors as closely as possible to firm performance is a major benchmark to contain the scope of controversial decisions of the bank Boards (Bruno and Margit, 2004). Against this background, present paper reports findings of its analysis on the determinants of Board of Director Compensation (BODC) of banks in Indonesia, Malaysia and Thailand (IMT-GT countries). The data of 18 banks in Indonesia, 9 banks in Malaysia and 12 banks in Thailand were analysed over eight year period of 2000-07. Size of banks, measured in terms of total assets, level of BOD education, and Balance of Payment (BOP) are found to be the significant driver of BODC for banks in the IMT-GT countries. Interestingly, Growth Domestic Product (GDP) is not found to be significant determinant. Significance of other parameters like pre-tax income, operating expenses, net income, age, number of employees, number of insider board member, number of outsider board member, tenure, education, experience, inflation etc. included in the analysis, vary from country to country.

Keywords: Banking, corporate governance, directors' compensation

1.0 Introduction

Compensation plans for the members of the Board of Directors has always been an anathema. It is argued that many compensation plans were flawed by poorly designed incentives that allowed directors to win, but never lose. Particularly in financial service industry, pay structures often encouraged directors to focus on short-term gains without regard to its sustainability; dice is rolled on high-risk strategies in order to trigger incentive pay, neglecting long-term implications[1]. Problems with compensation structure are symptomatic of the larger challenge of ethical standards. If one wishes to visualize the role of members of the Board of Directors as stewards, ethics and ethical leadership should be belong at the core of any discussion on their compensation. Addressing specific flaws in directors' compensation plans is critical and therefore, identification of best metrics to measure performance is part of the answer. We believe that establishing an effective compensation is a critical first step that sets the stage for an attractive compensation plans. Attractive

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[1] 2009 Executive Pay Watch, http://aflcio.org/corporatewatch/paywatch/

compensation package is one of the strategic considerations in attracting able directors who could shoulder the dual responsibility of a good steward and a strategic visionary leader in charting a bank's future plans (Smith and Watts, 1992; Lewellen and Huntsman, 1970; and Chris, 2006). Parameters that should be taken into consideration in designing compensation to attract able directors remain a challenging issue in the banking sector.

In this paper, we examine the influence of both internal and external factors in determining the Board of Directors' Compensation (BODC) of commercial banks in Indonesia, Malaysia and Thailand Growth Triangle (IMT-GT) countries. The findings of this study provide fresh evidence on the determinants of Compensation BODC of commercial banks in IMT-GT banks. This paper is divided into five sections. Section-2 reviews related past studies while Section-3 explains the methodology. Section-4 discusses the findings of this study and finally Section-5 concludes the paper.

2.0 Theory and Past Studies

Several theories viz., Agency Theory (Aisenhardt, 1989), Stewardship Theory (Muth & Donaldson, 1998) and the Expectancy Theory (Vroom, 1964) form the theoretical background of the present study. According to Stewardship theory, having a strong BOD with higher level of expertise, ensures more efficient discussion on key issues within the management and facilitates better bank performance. The Expectancy theory suggests that in traditional-attitude work situation, an employee's motivation depends on the kind of reward offered for doing a good job and whether workers believe more efforts will lead them to that reward (Montana & Bruce, 2008). Agency theory suggests that BOD should exercise internal control and monitor managers to act consistently with shareholders' interests.

Gomez and Tosi (1994) found that directors' compensation, as dependent variable, has three components: salary, bonus, and long-term compensation. Long-term compensation includes a wide array of deferred compensation benefits like pensions, profit sharing, stock options and bonus deferrals.

There are several independent variables that have been identified in past studies as having significant contribution to BODC. Aigbe Akhigbe *et. al* (1997) found in his studies that a bank's size is positively related to total compensation levels of its CEOs for commercial banks. Hristos , Janto and Askary (2007) found out that 'bank size' is one of the key determinants of directors' pay in Australian banking. Firth *et. al* (1996) finds a positive relationship between CEO pay and corporate size. Study by Hambrick and Finkelstein (1996) predicts a positive impact of the 'number of employees' on CEO pay. Kevin (2003) found that company 'revenue' (measured as net income), were statistically significant in explaining CEO cash compensation.

Shams, Michael, and Wickramanayake (2007); James and Rajaram (2003); Linda (1997) indicated that the relationship between insider and BOD compensation is negatively significant. Martin and Simon (1998); Trond and Jim (2002) showed that the Board's pay and firm performance are more aligned in banks with outsider-dominated boards in the remuneration committees. A study by Grey and Fabrice (1993) shows that, large banks are able to offer better compensation packages to their experienced directors and it is argued that the experience of director becomes part of an individual's cognitive and emotional makeup (Hambrick and Mason,1984) that have bearing on the decisions he or she makes (O' Reilly et al.,1988). Aigbe, Madura and Ryan, (1997) found that 'accumulated human capital'

(education) of CEOs is positively related to the total compensation levels of bank CEOs for commercial banks. Researcher Miller and Wiseman, (2001) used human capital (education) factors to test the assertion of director pay level; their findings indicated that human capital factors (degree earned) provides more explanation for director compensation.

John, Ross and Bruce, (2001) evidently indicates that there is a significant, and economically important, negative relationship between inflation and banking sector development.

3.0 Methodology

The sample countries in this study are Indonesia, Malaysia and Thailand Growth Triangle countries. This study used secondary and panel data of 39 commercial banks consisting of 9 banks from Malaysia, 18 from Indonesia and 12 from Thailand for the period of year 2000 to year 2007.

In the present study, director's total compensation (measured as cash compensation plus the value of stock and options granted) as dependent variable. The independent variables are divided into three broad groups: viz., bank specific, board of director's characteristic and economic factor. The bank specific cluster consists of bank size (total assets), bank age, numbers of employees, pretax income, operating expenses and net income. The board of director's characteristic consists of inside director, outside director, tenure, education, experience. The economic factors include inflation, Growth Domestic Product and Balance of Payment. The study used multiple regression analysis. Table 1 presents the definition of dependent variable and independent variables used in this study.

Table 1: Definition of Dependent and Independent Variables

Variables	Variable Definition
Total compensation (BODC)	The base cash compensation plus the value of stock and options granted for directors. Salary and cash bonus plus the value of autos, housing, retirement and health benefits as well as the value of stock options.
Bank Size (TA)	Total assets.
Bank Age (FA)	Number of year's bank incorporated.
Number of Employees (EMP)	The number of employees in the year prior to the compensation observation.
Pretax Income (PRETAXY)	Income before tax deduction. Pretax income measure effects at gross level.
Net Income (NETY)	Income after tax deduction. Net income measure effects at net level. After taking into account tax effect. This is done because every country has different taxation structure.
Operating Expenses (OPEEXP)	Expenses that been used for business operating.
Insider directors (INSIDER)	Total number of insider directors. Inside directors are the managers or are relatives of currents managers.
Outsider directors (OUTSIDER)	Total number of outsider directors. An outsider director is the board that is managers are not relatives of currents managers.
Tenure (TEN)	The average number of years the BODs has held his or her position in the bank.
Education Background (EDU)	Average level of the BODs education, e.g. diploma, degree, master and PhD.
Experience (EXP)	The average number of years in experience for the BODs in the bank.
Inflation (INF)	Inflation rate of the country at the end of the year.
Balance of Payment (BOP)	Openness of the country measured by value of trade at the end of the year.

Growth Domestic Product (GDP)   Gross Domestic Product of the country at the end of the year.

The regression equation used in order to identify significant factors that determine the BOD compensation of banks in respective countries is as follows:

$$BODC_{it} = f \text{ (PRETAXY, NETY, OPEEXP, TA, FA, EMP, INSIDER, OUTSIDER, TEN, EDU, EXP, INF, GDP, BOP)} \qquad (1)$$

4.0 Findings

4.1 Indonesia

Table 2: Regression and Coefficient Analysis - Indonesia

Country	Indonesia
Variables	B (t)
Pretax Income (USD '000)	.106*** (3.791)
Operating Expense (USD '000)	-.003 (-.067)
Net Income (USD '000)	-.105*** (-4.583)
Total Assets (USD '000)	.761*** (21.425)
Age (no. of years)	.039** (2.065)
Employee (no. of employee)	.254*** (7.999)
Insider Board (no. of member)	-.054*** (-2.849)
Outsider Board (no. of member)	-.067*** (-3.766)
Tenure (no. of years)	.016 (.661)
Education (level)	.086*** (4.530)
Experience (no. of years)	-.124*** (-6.749)
Inflation (%)	.031 (1.979)
BOP (USD '000)	.140*** (8.326)
GDP (%)	.033 (1.962)
No. of Significant Variables	10
Adjusted R square	.967
F value	384.939
Sig.	.000

Note: ***, ** and * denotes significantly at 1%, 5% and 10% level of significant respectively. Figures in the parentheses are the *t*- statistics values.

Table 2 shows the finding of regression model summary and coefficient analysis of Indonesia model. The finding indicates that adjusted R square is 0.967, which is significant at 0.01. This result explains that 96.7% of the variance in BODC is been significantly explained by the regression model.

Total asset is found to be significantly and positively related to BODC. Standardized coefficients estimated for total assets is 0.761 (t- statistic = 21.425); which reflects that that 76.1% increase in BOD compensation has been significantly explained by an increase in total asset. This finding support past studies by Shamsul (2006); Akhigbe *et. al* (1997); Gregoriou and Fabrice (2003). Hence, 'total assets' as a proxy of bank's size is an important factor in determining BOD compensation.

The number of employee variable is significant positive related to BODC with 0.254 (t- statistic = 7.999), which is significant at 0.01. This result shows that 25.4% increase in BODC is significantly explained by a 1% increase in number of employee. This finding is also supported past studies by Chris (2006) and Aamer (2008).

BOP coefficient is estimated to be 0.140 (t- statistic = 8.326). The finding indicates that 14% variance in BODC is been explained by the BOP. Experience is found to be significant but negatively related to BODC with coefficient estimate of -0.124 (t- statistic = -6.749). The result shows that 1% increase in experience decrease 12.4% in BODC in Indonesia banks.

Pretax income is found to be significantly and positively related to BODC with coefficient estimate of 0.106 (t- statistic = 3.791). This finding indicates that 10.6% increase in BODC is attributable to a 1% increase in pretax income.

Table 2 shows that net income coefficient estimated is -0.105 (t- statistic = -4.583). The result indicates that net income is significant but negatively related to BODC. The finding explains that an increase in BODC will reduce a bank's net income by 10.5%. This might be due to an assumption that the Indonesia banks were forced to offered higher compensation to acquire experienced and talented directors.

On the other side, education coefficient estimated is 0.086 (t- statistic = 4.530). This result indicates that level of education is significantly positive related to BODC. Higher education will give a better knowledge on theory and practice where will lead to a good and wise decision making and build shareholders confidence (Miller and Wiseman, 2001).

Outsider board and insider board coefficient estimation is -0.067 and -0.054 respectively. Outsider board and insider board is significant but displays an inverse relationship with BODC. This finding shows that 6.7% and 5.4% of the decrease in BODC could be due to an increase in the number of outsider and insider board directors respectively.

Bank's age significantly and positively related to BODC with 0.39 (t- statistic = 2.065). This finding shows that 3.9% increase in BODC has been significantly explained by a 1% increase in bank age. Bank's age is the number of years the bank has been incorporated (Cordeiro and Rajaram, 2003); in other words, an established bank in Indonesia pays higher BODC.

In essence although there are ten significant variables, the three most important variables in determining a bank's BODC in Indonesia are : 'total asset' (proxy for bank asset), 'number of employees' and 'BOP'. Taking these factors into consideration, BODC in Indonesian banks can be expected to be structured both attractively and carefully.

Based on the result in Table 2, the model to determine BODC in Indonesian banks is expressed in equation 2:

$$BODC_{it} = -2.087 + 0.761\ TA_{it} + 0.039\ AGE_{it} + 0.254\ EMP_{it} + 0.106\ PRETAXY_{it} + (-0.105\ NETY_{it}) + (-0.054\ INSIDER_{it}) + (-0.067\ OUTSIDER_{it}) + 0.086\ EDU_{it} + (-0.124\ EXP_{it}) + 0.140\ BOP_{it} + \varepsilon_{it} \tag{2}$$

4.2 Malaysia

Table 3 shows that value of R square is 0.906 and the adjusted R square is 0.895; which reflects that 89.5% of the variance in BODC in Malaysia has been significantly explained by the regression model.

Table 3: Regression and Coefficient Analysis – Malaysia

Country	Malaysia
Variables	B (t)
Pretax Income (USD '000)	.384*** (6.279)
Operating Expense (USD '000)	.239 (1.946)
Net Income (USD '000)	-.055 (-.448)
Total Assets (USD '000)	.570*** (9.515)
Age (no. of years)	.281*** (5.580)
Employee (no. of employee)	.132 (.929)
Insider Board (no. of member)	-.054 (-.964)
Outsider Board (no. of member)	.025 (.534)
Tenure (no. of years)	-.333*** (-3.650)
Education (level)	.175** (2.549)
Experience (no. of years)	.362*** (5.474)
Inflation (%)	-.094** (-2.228)
BOP (USD '000)	.027 (.521)
GDP (%)	.009 (.152)
No. of Significant Variables	7
Adjusted R square	.895
F value	81.703
Sig.	.000

Note: ***, ** and * denotes significantly at 1%, 5% and 10% level of significant respectively. Figures in the parentheses are the *t*- statistics values.

Table 3 shows that the coefficient estimate of 'total assets' is 0.570 (t-stat = 9.515), which is significant at 1%. The result indicates that 57% of the variance in BODC is significantly explained by bank size (measured by total assets). Bank's size is therefore found to be highly significant and positive. This result indicates that the larger is the bank size is the higher will be the dollar amount of BODC expected to be paid (Hristos *et. al*, 2007; Eunsup and Joop, 2003).

'Pretax income' is also positively and significantly related to BODC with .384 (t- statistic = 6.279). The result shows that 38.4% variance in BODC is explained by pre-tax income. The positive sign indicates that the higher the pretax income achieved; the higher would be the BODC for Malaysia banks.

Coefficient estimate of 'experience' is .362 (t-statistic = 5.474). This result indicates that 36.2% variance in BODC has been explained by the model. The positive sign of the coefficient shows that the longer a director experienced, the higher would be the BODC. A bank needs directors with a longer year of experiences to make wise and strategic decision. This finding is supported by past studies by Miller and Wisemen (2001) and Buchholtz *et. al* (1998).

On the other side, 'tenure' coefficient estimates significant but negatively related to BODC with coefficient estimate of -0.333 (t-statistic = -3.650). Tenure represents number of years as BOD in the banks. This result suggest that a director with lesser number of years joining the banks as a director could possibly be paid higher BODC due to his/her expertise, networking and special business acumen.

Bank's age is also found to be significant and positively related to BODC. Table 2 shows the coefficient estimate of 'bank age' is .281 (t-statistic = 5.580), which is significant at 0.01. This finding shows that 28.1% of the variance in BODC is been explained by bank age. Bank age is the number of years the bank has been incorporated. A well establish bank is represented by a longer number of years incorporated. An established bank has higher ability to hire best and leadership skilled directors to be in their board in order to make good and timely business decisions. This result is supported by past studies by Lerong He (2007) and Tosi (1997).

'Education' coefficient estimation is 0.175 (t- statistic = 2.549). This result indicates that 17.5% of the variance in BODC is determined by the level of directors' education. A well-educated and qualified director brings greater confidence to the shareholders and depositors on their ability to manage the banks (Chris, 2006; Morris, 2000; Sudipta *et. al*, 2007).

'Inflation' coefficient estimated result is significant but negatively related to BODC at -0.094 (t- statistic = -2.228). The finding shows that an increase of 1% in inflation causes BOD compensation decrease by 9.4%. This result could be explained if we consider real value of money.

Though there are seven significant variables identified that have influence in determining BODC of Malaysian banks, the three most important ones are the total asset, pretax income and experience. It can therefore be concluded that these three parameters should be kept under purview while structuring BOBC in Malaysian banks.

Based on the result in Table 3, the model in determining BODC on a Malaysia banks is expressed in equation 3:

$$\text{BODC}_{it} = 8.346_{\,+}\, 0.570\ \text{TA}_{it\,+}\, 0.281\text{AGE}_{it\,+}\, 0.384\ \text{PRETAXY}_{it\,+}\, (\text{-}0.333\ \text{TEN}_{it})_{\,+}\, (\text{-}0.094\ \text{INF}_{it})_{\,+}\, 0.175\ \text{EDU}_{it\,+}\, 0.362\ \text{EXP}_{it\,+}\, \varepsilon it \tag{3}$$

4.3 Thailand

Table 4: Regression and Coefficient Analysis by Country

Country	Thailand
Variables	B (t)
Pretax Income (USD '000)	.022 (.851)
Operating Expense (USD '000)	-.109*** (-3.269)
Net Income (USD '000)	-.028 (-.1.091)
Total Assets (USD '000)	1.017*** (41.526)
Age (no. of years)	-.012 (-.507)
Employee (no. of employee)	.135 (1.493)
Insider Board (no. of member)	-.056*** (-2.759)
Outsider Board (no. of member)	.042 (1.381)
Tenure (no. of years)	-.004 (-.154)
Education (level)	-.065*** (-2.229)
Experience (no. of years)	-.007 (-.267)
Inflation (%)	.006 (.240)
BOP (USD '000)	.145*** (7.179)
GDP (%)	.010 (.486)
No. of Significant Variables	5
Adjusted R square	.960
F value	514.584
Sig.	.000

Note: ***, ** and * denotes significantly at 1%, 5% and 10% level of significant respectively. Figures in the parentheses are the *t*- statistics values.

Table 4 shows the regression model summary and coefficient analysis of Thailand banks. The finding indicates that adjusted R square is 0.960. This result shows that 96% of the variance in BODC is significantly explained by the regression model. The F-value shows 514.584 and it is significant at 1%.

Findings suggest that in Thailand banks have five significant variables which influence the BODC: total assets, insider board, education, BOP and operating expenses. Table 4 shows that the coefficient estimate of total assets is 0.974 (t-statistic = 43.090), which is significant at 0.01. This result indicates that 97.4% of the variance in BODC of Thailand banks is significantly and positively influenced by bank size (measured by total assets). This finding support past studies by Firth *et. al* (1996).

Unlike Malaysia, BOP variable is found to be positively and significantly related to BODC in Thailand banks with coefficient estimate of 0.131. The result indicates that 13.1% increase in BODC in Thailand banks is contributed by a 1% increase in BOP.

However, 'education' and 'insider board' is significant but negatively related to BODC with coefficient estimates of -0.129 and -0.067 respectively. This means that directors with lower level of education director may earn higher compensation in Thailand banks due to his/her experience in his status as an 'insider director'.

Operating expenses coefficient estimate also indicates a significant and negative result related to BODC with coefficient estimate of -0.109 (t- statistic = -3.269). This finding shows that 1% increase in operating expenses would result in 10.9% decrease in BODC of Thailand banks which implies that banks in Thailand that have higher operating expenses might have less fund to pay BODC This finding support past study by Grey and Fabrice (2003).

While structuring BODC of banks in Thailand, three most significant variables that consists of total assets, BOP and operating expenses for a better result.

Based on the result in Table 4, the model in determining BODC on Thailand banks is as followed in equation 4:

$$BODC_{it} = -54.51 + 1.017\ TA_{it} + (-0.109\ OPEEXP_{it}) + 0.145\ BOP_{it} + (-0.56\ INSIDER_{it}) + (-0.065\ EDU_{it}) + \varepsilon it \tag{4}$$

5.0 Conclusion

Regression result shows that seven variables are significant determinants of BODC of banks in Malaysia. They are pretax income, total assets, firm age, tenure, education, experiences and inflation. In Thailand, five significant variables consisting of operating expenses, total assets, insider board, education and balance of payment. In Indonesia, ten variables are found to have significant influence in determining BODC there. They are pretax income, net income, total assets, firm age, employee, insider board, outsider board, education, experiences and balance of payment.

Bank's size measured in terms of total assets is found to be important in deciding BODC; banks that rely more on cash compensation to reward successful executive performance, tend to be larger in size and have larger earnings in IMT-GT countries. BOP, which is an indicator of economic solvency, is also found to be significant to determine BODC of banks in IMT-GT countries. The results shown by BOP are new finding since BOP has not been tested in BODC studies before. The higher the BOP, the greater the opportunity for banks to generate profit, hence higher the capability of banks to pay higher BODC. Additionally, pretax income and experience also had shown a significant variable in determining BODC (Grey and

Fabrice, 2003) of banks in IMT-GT countries. The findings of this paper are expected to benefit for not only the academia but also those concerned in structuring compensation structure of the members of the Board of Directors.

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Developing Human Capitals in Higher Education: Paving the Path towards Sustainable Knowledge Based Economies

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Abstract

The role of higher education in navigating the development of human capital toward sustainability is vital. While it is often argued that higher education plays a lead role in training and educating communities, industries and societies toward sustainability cause, often times the enhancement of human capital within higher education itself seems to be ignored. In order to create constructive relationships between the entity of higher education and the industries and communities it is in touch with -thus culminating in the development of the human capital, higher education must therefore adopt initiatives that aspire to develop its human capital toward sustainability. This concept is currently more vital as the economic productivity and services are being increasingly based on knowledge-intensive activities that rely more on intellectual capabilities than on physical inputs or natural resources.
Higher levels of education are necessary for greener and more sustainable jobs. The human capital trained through higher education can increase productivity, help achieve MDGs more quickly and raise standards of living. Therefore, this paper examines and argues the ways in which human capital in higher education sectors (encompassing both administrative and academic staffs) can be trained and developed in terms of knowledge production, dissemination and technology transfer to ensure the inclusivity and progress of the economic growth. This process would also enable the higher education sector to extend its sustainability outreach activities in developing human capital beyond its borders. For this reason, some of the most important elements in developing knowledge-based human capital in higher education sectors such as personnel selection, developing university-industry relations, motivation, indicators, leadership and management policies, codes and auditing will be further discussed in this paper.

Keywords: Sustainable development, knowledge economies, education, business, policies

1.0 Introduction

The United Nations pronounced the years 2005-2014 as the Decade of Education for Sustainable Development (DESD) with the aim of incorporating the main elements, ethics and practices of sustainable development into all levels of education and learning. Most universities around the world still practice extremely disciplined methods of research, teaching and administration. Although the concept has resulted in a fair amount of sustainability movements among universities across the world, in reality, the concept of

infusing sustainability into higher education remains a massive challenge for many Institutes of Higher Education. Some of the pertinent questions revolving around such challenges are "What needs to be done?" and "How will it be done?"

Most universities around the world still practice extremely disciplined methods of research, teaching and administration. This unfortunately is the main obstacle against implementing a concept as holistic as sustainability, with such regimented institutions being incompatible with the sustainability agenda – a challenge not easily overcome. As Cortese (1999) argues, "Many schools around the world are making important strikes toward necessary changes in education." This reflects the intense efforts that go into transforming conventional higher education systems toward one centered on the tenets of sustainable development.

When utilizing the Brundtland (1983) definition of sustainable development as a pattern of development which "meets the needs of the present without compromising the ability of future generations to meet their own needs," one is made aware that this concept is not limited to a specific number of disciplines or areas, but that it is applicable to a larger, global scale encompassing all communities and ecosystems – both man-made and natural, now and in the future.

With regard to the connection between the definition of sustainable development and the concept of education, Agenda 21 - the international action plan drawn up at the United Nations Conference on Environment and Development (UNCED, Rio, 1992) identifies education as a crucial component in bridging the divide. It clearly states that 'education is critical for promoting sustainable development' and that 'countries should stimulate educational establishments in all sectors, especially the tertiary sector, to contribute more to awareness building.' (Agenda 21, 1993, Chapter 36.3/ 36.10.d).

Although sustainable development may appear to be a relatively new concept in higher education, it is important to note that many sustainability-related activities and elements are already in place in existing curricula and structures of many universities around the world. Therefore, it is necessary to bear in mind that sustainability in higher education is not so much a revolution as it is an evolution of currently existing platforms. On the other hand, it is also important to note that in many instances, the current framework of higher education is unable to accommodate sustainability on its own and therefore a fundamental change is needed if it is to be made compatible with the sustainability agenda. According to Sterling (2003), "Sustainability does not simply require an 'add-on' to existing structures and curricula, but implies a change of fundamental paradigm in our culture and hence also in our educational thinking and practice. Seen in this light, sustainability is not just another issue to be added to an overcrowded curriculum, but a gateway to a different view of curriculum, of pedagogy, of organizational change, of policy and particularly of ethos."

In a 2006 article on sustainable campuses in the Chronicle of Higher Education, Carlson argues that university initiatives on sustainability are only minor steps that aim to project the appearance of sustainability - in other words, a form of "green-washing." Echoing this sentiment are criticisms by certain groups who point out that universities are taking a very slow approach with regard to sustainability integration in comparison to corporate entities.

In light of such criticisms, Cortese's (2001) definition of a sustainable university may prove invaluable in assisting us in our understanding of the fundamental elements of a sustainable university - "A sustainable university can be considered as an institute of higher education as

a whole or as a part, that addresses, involves and promotes, on regional or global level, the minimization of environmental, economics, societal and health negative effects in the use of their resources in order to fulfill its main functions in teaching, research, outreach and partnership, and stewardship among others as a way in helping the society make the transition to sustainable lifestyles."

Universities are rarely discussed from the perspective of the "tragedy of the commons." This however is the very plight affecting universities and societies (business communities, public communities, etc.) due to the effects of globalization. Although universities have an excellent record in serving the needs of both the university and the outside community, they are too often trapped in reconciling "conflicts of interest" which ultimately condemn universities as dumping grounds, scapegoats or testing platforms for different problems - ranging from the environmental to the social as well as the economic. Fortunately, certain better-informed approaches have already been introduced to arrest this situation and change it for the better. Various new reformations are occurring among different universities which ultimately produce new concepts such as knowledge based economy, quality assurance, policy revisions, university corporatization, etc.

Using these new concepts, the institutions of higher education around the world are trying to generate graduates with first-rate minds and innovative ideas to create a high-income nation from greater productivity through the use of skills and innovation, improved coordination, stronger branding and compliance with international standards and intellectual property rights. The notions of green technologies and sustainable jobs which are focused in the economic plans of many countries around the world these days are in parallel with the current objectives of most universities in generating sustainable practices in science, technology and innovation. The knowledge based economy as it is has been emphasized in the economic plans of many countries is based on creating, evaluating and trading knowledge. This concept is in fact in line with UNESCO's goals of Education for Sustainable Development (ESD) as "to help people to develop the attitudes, skills and knowledge to make informed decisions for the benefit of themselves and others, now and in the future, and to act upon these decisions."

2.0 Education for Knowledge-Economy

The term 'knowledge economy' (K-economy) indicates that intangibles such as 'knowledge' and 'know-how' are playing an increasingly central role in economic prosperity. In the modern world, knowledge is the most basic form of capital, and economic growth is driven by accumulation of knowledge. In the late 19th century, communities facilitated an economic shift from agriculture to industry by investing in the physical infrastructure necessary for mass production and long-distance transport of goods. In the 21st century, physical infrastructure is still important, but not sufficient for optimal economic growth. In today's economy, what companies produce is not as important as what they know and how they apply that knowledge, as firms such as Microsoft have aptly demonstrated.

Proactive societies today must solve contemporary development challenges by building a new kind of infrastructure designed to help generate and apply knowledge. This new infrastructure must include the physical, informational, educational, institutional, organizational, and cultural resources needed to facilitate learning and action towards building a sustainable society. Knowledge management portals used for e-learning will also be important. Knowledge infrastructure represents both physical and intellectual space to support a knowledge society. Without correction, the widening gap between the haves and

the have-nots could be transformed into a widening gap between 'knows' and 'know-nots' (Nayyar, 2008).

3.0 Knowledge Infrastructure for Inclusive Economic Growth

Inclusive economic growth requires investment in both physical and academic infrastructures that support knowledge generation, dissemination and transfer. Following Ackoff's hierarchy, 'knowledge' here includes data, information, knowledge, understanding and wisdom. Data and information provide facts and figures to answer questions of 'who', 'where' and 'when'. 'Knowledge' applies data and information to answer questions of 'how'. Yet to be truly innovative, we need to move beyond data, information and knowledge to understanding and wisdom, asking questions of 'why', and evaluating our own understanding. Understanding and wisdom are crucial for the innovation and excellence NEM articulates. A knowledge economy needs sufficient numbers of people at all levels of the knowledge pyramid. This is the foundation of NEM's inclusiveness pillar.

4.0 ESD–The Education for Knowledge-Economy

In order to produce knowledge economy, do we simply need more of the type of education we already have, or do we need a different type of education altogether? The answer is that we need an education approach that:

- integrates the values inherent in sustainable development into all aspects of learning, at all levels,
- pays equal attention to knowledge generation (research, development and innovation), dissemination (teaching, training, nurturing and awareness building) and *transfer* (public policy and management, private sector development, civil society engagements) and,
- fosters experiential learning, critical thinking and creative leadership to find adaptive solutions to shared planetary problems.

"Education for Sustainable Development" is such an education system. ESD has the potential to change human behaviour, promoting equitable development. The United Nations has declared 2005-2014 the decade of ESD, recognizing that education and learning are key to promoting a sustainable way of life. The conceptual basis of ESD, its socio-economic implications, and its environmental and cultural connections make it an enterprise that potentially touches on every aspect of life. When implemented in a true spirit, ESD will help build not only knowledge societies but also 'wisdom societies' where people choose to behave on the basis of knowledge and shared values.

5.0 Encouraging Entrepreneurship

Entrepreneurship can play an important role in moving every country (especially the developing countries) towards a knowledge economy that focuses on sustainability. Entrepreneurs are characterized by innovation and risk-taking, essential traits for succeeding in a changing and competitive global marketplace. While highly structured and programmed educational systems stifle creativity, graduates trained in critical thinking have the potential to increase every nation's scope for development dramatically.

Entrepreneurship should be in line with the institutions of higher education's desire to produce a highly skilled workforce, generating value-added indigenous workers who can command better working conditions than low-wage immigrants. Universities and higher educational institutions have a key role to play in this area. Social enterprises are also important in an advancing economy, and fostering their growth can help shape a better society. These organizations combine a social mission with market-based strategies. Business and economic activity contribute directly towards fulfilling their objectives of social improvement and increased sustainability. Developing countries could encourage entrepreneurship by enacting legislation such as bankruptcy laws, encouraging seed and venture capital, and providing institutional frameworks that support entrepreneurship.

6.0 Developing a Trans-Disciplinary Curriculum

Sustainability is both holistic and trans-disciplinary in nature. As Kleiber (2001) notes, "Our objective must be to combine knowledge from different fields and traditions in such a way as to increase their power of expression and interpretation." Institutes of higher education are becoming an integral part of the sustainable development movement. As large institutions with thousands of employees and students and vast facilities, higher education institutions can have a vital impact on environmental, social, and economic sustainability of their societies.

Trans-disciplinary studies are needed to solve a growing number of complex real-world problems for which knowledge of a single scientific discipline or societal field is insufficient. Full implementation of proper sustainable economic plan will require the sort of clear, multi-faceted understanding that trans-disciplinary studies provides, as well as the included training in leadership, teamwork, communication and management.

The US Department of Labor has identified the following areas as those in which the most future employment growth may be expected:

- Technology, e.g., software engineers, nanotechnology, network system analysts
- Finance, e.g., financial examiners, financial advisers
- Health care, e.g., biomedical engineers, molecular medicine, medical information systems, care delivery, counseling
- Environmental sciences, e.g., environmental engineers, green economists, green energy experts, environmental scenario generators
- Business administration, e.g., marketing survey researchers, sports and entertainment personnel

The emphasis here is on specialists who have a broad base of understanding.

7.0 Reorient Research

Research can encourage innovation on a commercial scale. This is especially true when:

- Industries and educational institutions interact
- Public sector seed funding is boosted by substantial private sector investment
- R&D is aligned with national development needs

This sort of research requires extensive knowledgeable human capital and a strong research base. A systematic ability to address and solve problems is a prerequisite for a successful knowledge economy.

In order for any developing nation to become a leading economy, substantial increases in the nation's gross expenditure on research and development (GERD) as a function of GDP will be required. Unlike some more developed countries, many developing countries spend only a relatively small percentage of its GDP on R&D.

It is also important to remember that simply increasing GERD/GDP will not ensure a nation's successful transition to a knowledge-based economy if there is no demand for the knowledge and inventions produced by scientists and engineers. Increased R&D spending must reflect increased efforts to commercialize technology locally and overseas, especially through contract research to solve specific problems. More collaboration is needed between educational institutions and the private sector in order to align R&D with economic growth areas that show potential to move a country higher in the global value chain and to create new jobs and opportunities. Furthermore, experience shows that multidisciplinary team research is more efficient than individual efforts.

Applying university research in an industry setting may involve patents, licensing, spin- off firms, etc. Although the application of academic research to industry is widely accepted as a crucial factor for industrial growth and competitiveness, it is not an effortless process. Education must remain relevant to present and future technological needs, including green technology. Young people must be trained with state-of-the-art disciplinary knowledge and the skills to apply it to solve real-world development challenges.

Research findings are most useful when they become the basis for innovative solutions to technical problems and development challenges. Effective research is often multi-disciplinary in nature, and bears more fruit when research scientists and business enterprises collaborate. Research and innovation centres and business incubators are the perfect solution to transfer technology from universities and corporations to new entrepreneurs. There is no question that such incubators help diversify the local economy. Incubators are particularly helpful to SMEs with limited venture capital and a need for quick results. Research and innovation centres may attract talented international researchers to establish joint research and development projects with local experts. However, such centres will excel only when they emphasize 'decision time scales', encourage risk taking, and reward individuals on the basis of merit rather than status or bureaucratic procedures.

8.0 Businesses-Academia Links

Sustainable links between business and academia should be developed to enable these sectors to benefit from each other's potential and competencies. As well as providing innovative solutions to short-term socio-economic problems, business-academic partnerships will allow mutual sharing of the considerable intellectual capital of the universities and the financial capital of the businesses. This will encourage cutting-edge research resulting in innovative products and services. Not only will such partnerships ensure countries' a more competitive position within existing markets, but they will also help the national businesses and industries to develop new, uncontested markets.

9.0 Incorporating Sustainability into Curriculum and Service

The principles and practices of sustainable development must be incorporated into the national curriculum at all levels. The integration of sustainability education at all levels, especially at the university level, must be given urgent consideration to ensure that the graduates have the right blend of sustainability knowledge and marketability in terms of skills. Sustainable development is here for the long-term, not a passing fashion, and it is a field that requires life-long learning and improvement to remain competitive. The incorporation of sustainability issues into the syllabus must be done in a carefully planned and strategic manner so that it represents an evolutionary, not a revolutionary process.

In-service education and learning can play a significant role in integrating sustainability among university students and staffs – especially among staffs who have yet to go through proper sustainability related orientation programs following their employment at the university. This type of education seeks to extend a person's concern and involvement beyond their individual self – meaning the manner in which they view their interactions and relationships with the rest of the world. These programs would also encourage critical thinking among staffs - imperative when dealing with sustainability issues, seeing as the field of sustainability is rife with taken-for–granted assumptions and practices that have long gone unquestioned.

While it is important to bring about critical awareness among individuals regarding unsustainable lifestyles and practices, individuals should nonetheless be guided and encouraged to move beyond awareness and toward making constructive contributions. In other words, individuals undergoing sustainability education should be guided to become more "future-focused" in order to enable them to examine, plan and realize probable and possible sustainable futures. It is essential therefore that a long-term perspective or outlook with regard to sustainability education is continuously maintained.

10.0 Facilitating Technology Transfer

In technology transfer, skills and knowledge resulting from scientific research are shared with the larger society, enabling the development of practical and commercially relevant applications and products. Technology transfer involves patents and intellectual property rights, and seeks to aid both new and existing businesses by promoting technologies that encourage economic growth, as well as generating high quality jobs and new products.

Connections need to be developed between industries and research organizations. Industry's particular research needs must be identified, and research currently being done must be applied in a practical manner. In order to accomplish this, industries need to be involved in the early stages of research, as research questions are being defined. At the same time, public sector research organizations must be prepared to better support industries, working to tear down barriers to successful technology transfer. With this sort of cooperation, innovative solutions can be sought for contemporary social issues.

Small and Medium Enterprises (SMEs) play a pivotal role in many economies around the world. However, given their limited capital they are at times unable to handle the costs and risks of technological expansion. Technology transfer can provide SMEs with both pioneering and contemporary technologies that will enable SMEs to continue contributing to nation's socio-economic well-being. Corporate research laboratories regularly fund the

development of profitable technologies aimed at wealthy consumers. Technologies and products needed by the poor, however, or those that address societal needs, often fail to attract private-sector attention. A sustainability focus offers a suitable framework for addressing the needs of the poor through technology transfer.

11.0 Conclusion

The higher education strategy should aim to create mutual understandings between the academia and industries working toward the national economic goals of any country. This will create an environment where universities and industries are both mutually understanding and supportive of each other in talent development and management. With this collaboration, countries (especially the developing countries) will have not only sufficient talents to meet their needs but also an excess in talent which may be exported. Subsequently, the R&D will also sufficiently improve to meet the demands of industries and the possibility of sharing the expertise with international partners.

Once misconceptions have been clarified and provisions made for better information and understanding of knowledge based economies, countries will be able to continue moving forward. When the correct meaning of a knowledge based technology and economy becomes the language of policy makers and implementers, a high knowledge based technology will also then become the norm for economic development. As a result, proactive policies will become a country's trademark and resources will then be focused on strategic industries. This will allow the nations to substantially expand their economies.

In order to enable the human resource/capital strategy to become the focus of capacity building efforts for the promotion of knowledge based economies, there must be the drive to become producers of high value added and knowledge based products. The human resource policies will then shift toward fulfilling the demands for local skilled workers and at the same time implement a selective policy on foreign workers. This will not only create an environment for competitive wages but also for wages that match productivity. Thus, the country will be able to create higher incomes for all levels of society in relation to job specifications. Therefore, the role of universities in building the proper capacity to lead the countries toward a knowledge based economy is vital.

Acknowledgement

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The Impact of Organizational Culture and Structure on Knowledge Sharing

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Abstract

The aim of this paper is to examine how organizational culture, structure influence knowledge sharing in Malaysian MNCs. We pointed out that knowledge is shared through the organizational culture and structural systems which involve some key factors, i.e., support and collaboration, learning and development, leadership and commitment, formalization and centralization. As support and collaboration encourage learning and development within knowledge worker where leadership roles can be exercised with its full potential in the circumference of the organizational culture. On the other hand structure can be an essential factor that constrains knowledge sharing practice in the organization. The approach of this research is quantitative in nature. The research findings indicate that out of the five independent variables, learning and development, leadership commitment and formalization are positively related to knowledge sharing. MNC's operating in Malaysia may use these findings to improve the practice of knowledge sharing among their employees. The findings of this research are limited to MNC's only. Furthermore, most respondents are from electrical and electronics companies. The conclusions of this study are based on the interpretation of survey results administered to 90 managerial staff in Multinational Corporation in Penang, Malaysia. Further studies are required to draw a more generalized conclusion. The paper contributes to the body of knowledge relating to knowledge sharing in high-tech semiconductor industry.

Keywords: Knowledge sharing, organizational culture, organizational structure

1.0 Introduction

Effective use of intellectual capital is one of the important issues faced by organizations in today's global and information-driven economy where managing knowledge is considered as a key component of the strategy to create a sustainable competitive advantage (Oliver and Kandadi, 2006; Walczak, 2005). Since the management of knowledge is an integrated array of processes that capture, store and disseminate knowledge in an organization, the term organizational knowledge refers to more than just the database and information systems in the organization (Obeid and Moubaiddin, 2010). Organizational literature represents a range of definitions and perspectives on knowledge e.g. Maruta (2012), knowledge is basically acquired through one's own experience and combining knowledge with these experiences can lead to expertise; it can also be acquired by learning another person's experience. Considering these learning and experience issues; Obeid and Moubaiddin (2010) and Alavi and Leidner (2001) urged that the information becomes knowledge once it is processed in the mind of an individual and managing knowledge allows knowledge workers and decision

makers to learn what they need, when they need it and to improve organizational performance. The combination and exchange of knowledge for creating new knowledge require the presence of social capital. Guzman (2008) believes that knowing is a form of social practice that involves "knowledge in action situated in the historical, social and cultural contexts in which it emerges and is embodied in a variety of forms and media. Gold *et al.* (2001) mentioned that three key factors - culture, structure and technology enable the maximization of social capital towards knowledge sharing. Previous research which examined the importance of social capital in the sharing of knowledge between individuals suggested that knowledge sharing is contingent upon social interaction, and this is important for management to be aware of in order to make successful decisions in determining the organization's competitiveness (Adler and Kwon, 2002; Nahapiet and Ghoshal, 1998; Barner-Rasmussen, 2003; Kostova and Roth, 2003; Reiche, Kraimer and Harzin, 2007). Based on this premise, it would be interesting to study how Malaysian MNCs make decisions on gaining competitive advantage over others. This study focuses on two areas: culture and structural dimension, from the social capital perspective that were previously found to have higher impacts on knowledge sharing.

2.0 Literature Review

2.1 Knowledge Sharing

Knowledge is considered a key element in business success. The importance of knowledge for organizations is due to the fact that the sum of knowledge, acquired externally and internally, constitutes a sustainable resource for maintaining competitive advantage (Kamasak and Bulutlar, 2010). Teh and Sun (2012) and Lin (2007) define knowledge sharing as a "social interaction culture, involving the exchange of employee knowledge, experiences, and skills within the whole department or organization". Nonaka *et al.* (2006) define knowledge creation as a continuous process of learning by acquiring a new context, a new view of the world and new knowledge in overcoming the individual boundaries and constraints imposed by existing information parameters (Kamasak and Bulutlar, 2010). An effective knowledge management system pays off in fewer mistakes, less redundancy, quicker problem solving, better decision making, reduced research development costs, increased worker independence, enhanced customer relations and improved service by disseminating knowledge from one individual or group to another within the organization (Ford and Chan, 2003; Becerra-Fernandez, 1999). Ghobadi and D'Ambra (2012) and Szulanski (2000) also found that knowledge sharing provides individuals with a better understanding of the know-how and skills of others, and makes them capable of responding to situational demands even though the complexity of the task is beyond the cognitive capabilities of each member. Ryan, Windsor, Ibragimova and Prybutok (2010), believed that material assets will depreciate in value with usage whereas knowledge assets appreciate in value with usage because ideas breed new ideas, and shared knowledge stays with the giver while enriching the receiver (Davenport and Prusak, 1998). Once knowledge is created there is an economy of scale that results from its sharing because shared knowledge stimulates the creation of new knowledge which enhance its competitiveness. On the other hand Gupta and Govindarajan (1991) and Inkpen and Tsang (2005) found that MNC can be regarded as a network of capital, product, and knowledge transactions among units, and the primary reason why MNCs exist is because of their ability to transfer and exploit knowledge more effectively and efficiently in the intra-corporate context than through external market mechanisms.

2.2 Organizational Culture

A knowledge-enterprising culture is arguably one of the most important conditions leading to the success of knowledge sharing (Kazi, 2005) as organizations represent different culture which gradually develops overtime to reflect the organization's identity (Islam, Ahemd, Hasan and Ahmed, 2011). According to Tuan (2012) and Koot (2004) organizational culture can be defined from a dynamic, constructivist, and holistic perspective in terms of an ongoing process of identity building/re-building and meaning-making in and around an organization, which enables its social integration as well as its subgroups' sustainability . On the other hand many authors have also identified culture as the most significant barrier to the sharing of knowledge (Ruggles, 1998; McDermott and O'Dell, 2001) as diverse cultures at the intra-organizational, organizational, transorganizational and supraorganizational level may act simultaneously and thus result in cultural complexity (Sackmann and Friesl, 2007). Therefore, a pertinent culture should be established to encourage people to create and share their knowledge within an organization as well as among business partners (Rivera-Vazquez, Ortiz-Fournier and Flores, 2009). Since the right organizational culture and infrastructure is important for knowledge creation and dissemination, it is a critical step to develop strategies and specific interventions to align the firm's culture with the knowledge management strategy in a way that culture supports knowledge sharing (McDermott and O'Dell, 2001). The cultural dimensions also deal with concepts such as employee resistance to change, motivation to share knowledge and leadership commitment (Davenport and Prusak, 1998; Rollo, 2002). Hurley and Hult (1998) proposed that learning and development, support and collaboration, power sharing and participative decision making affect organizational innovativeness. Although there are various characteristics of culture that affect knowledge sharing, this study focuses on three characteristics: Support & Collaboration, Learning & Development and Leadership Commitment.

2.3 Organizational Structure

The conceptualization of the firm as a knowledge integrating institution implies the importance of the internal structure of the firm, especially in terms of hierarchical design of the organization to authorize the decision-making power, standardize the rules and procedures, and integrate members and work (Capellen, Koppius and Dittrich, 2011; Chen, Huang and Hsiao, 2010). According to Willem and Buelensa (2009) the impact of coordination on knowledge sharing depends on the kind of coordination mechanisms used in the organization, and this is closely related to other structural dimensions such as centralization, formalization and specialization. Borgatti and Foster (2003) explained that the structure and content of individuals' networks are captured in the literature by the term 'social capital' which highlights the fact that social interactions are not only elements of social structures but can also be considered as resources for conducting social affairs and exchange. Inkpen and Tsang (2005) defined social aspect through social network which configure the network by assembling hierarchy, density, and connectivity that affect the flexibility and ease of knowledge exchange through their impact on the extent of contact and accessibility among network members in a way that the social network perspective can be utilized to explain how organizational structure influences the way knowledge flows and accumulates (Chen, Huang and Hsiao, 2010; Autio *et al.*, 2004). The structure can be classified using various taxonomies, namely simple, team structure, bureaucratic, mechanistic, organic and matrix. Mechanistic and organic structures are at the two extremes that mechanistic organization has relatively low decentralization and complexity in which it operates under specific rules and regulations with predefined functional roles whereas

organic structures are characterized by informal control mechanisms, adaptability and open communication (Burns and Stalker, 1961). The underlying characteristics that differentiate these two extremes are degrees of formalization and centralization. This study also focuses on these two issues to examine the knowledge sharing process in Malaysian MNCs.

3.0 Research Model

Based on the literature review, this study aims to examine the relationship between organizational culture, structure and knowledge sharing. Researchers took a modest attempt to design a model by considering five independent variables, namely support and collaboration, learning and development, leadership commitment, formalization, and centralization and a dependent variable, knowledge sharing. Figure 1 shows the research model and the next section provides the justification for hypothesis.

Figure 1: Research Model

Organizational Culture
Support and Collaboration
Learning and Development
Leadership and Commitment

Structure
Formalization
Centralization

H1- H5

Knowledge Sharing
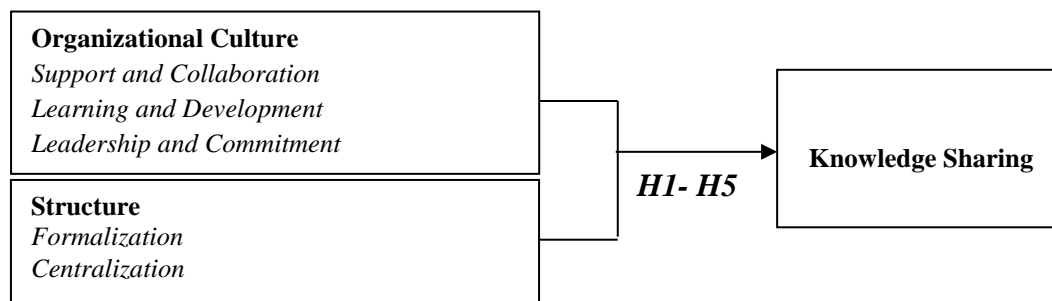
3.1 Support and Collaboration

The role of collaborative tools to support social construction of knowledge is evident in organizations around the world (Ryan et al., 2010) and the inclusion of knowledge management as an organization's best practice is meant to ensure that collaboration is institutionalized that knowledge sharing occurs (Rivera-Vazquez, Ortiz-Fournier and Flores, 2009). Support and collaboration refers to how people in an organization actively assist and support in work related issues as it is thought that it is the key ways in which knowledge is transmitted and created within the organization (Ryan et al., 2010). Studies by Parker and Price, (1994); Hurley and Hult (1998); Nahapiet and Ghoshal (1998) also found significant relationship between support and collaboration, and knowledge sharing. Hence, we hypothesized that:

H1: Support and collaboration has positive relationship with knowledge sharing.

3.2 Learning and Development

Learning and development refers to the extent to which an organization is willing to encourage its members to learn and develop themselves for long-term success. Organizational learning is also described as the way the organizations build, supplement and organize knowledge and routines around their business activities and business cultures, as well as the way they adopt and develop organizational efficiency by improving the use of broad skills of their workforces (Kumaraswamy and Chitale, 2012; Fiol and Lyles, 1985). This is due to the fact that organization relies largely on its employees' skills and knowledge

in order to produce breakthrough in its products and services (Tidd, Bessant and Pavitt, 1998) with competitive advantage (Islam, Mahtab and Ahmad, 2008). Hence, we hypothesized that:
H2: Learning and development has positive relationship with knowledge sharing.

3.3 Leadership Commitment

The term leadership acts as a role model for the manner in which knowledge sharing occurs with the use of non-coercive influences to direct and coordinate the activities of group members toward goal attainment as well as making the incentives for that achievement (Islam *et al.*, 2011; Ke and Wei, 2008; Kerr and Clegg, 2007). The study by Islam *et al.* (2011) found that leaders play an important role in organizational knowledge sharing because they are the appointed authority to provide guidance and translate business strategies (business knowledge) by proving "conceptual framework that helps employees makes sense of their own experience". Other studies by Seba, Rowley and Delbridge (2012), Capellen, Koppius and Dittrich, (2011); Abdullah, (1994), Kennedy and Mansor, (2000) also found that leadership commitment has positive impact over knowledge sharing. We, therefore, hypothesized that:

H3: Leadership commitment has positive relationship with knowledge sharing.

3.4 Formalization

Formalization is defined as "the degree of job codification and rule observation that exist in a firm" (Sciulli, 1998; Andrews and Kacmar, 2001). Chen, Huang and Hsiao (2010) suggested that the obedience to the rules and procedures may constrain the employees in combining the various sources of knowledge for developing new products or services. Less formal structure in organizational boundary exposes less formal rules and regulations, therefore necessary for effective knowledge management as it provides opportunities for employees to communicate with each other by sharing knowledge which creates greater flexibility and creativity, is conducive for knowledge sharing. Studies by Capellen, *et al.* (2011); Islam *et al.* (2010); Chen *et al.* (2010) found that less formal structure produces more organizational knowledge. Thus we hypothesized that:

H4: Formalization has negative relationship with knowledge sharing.

3.5 Centralization

Centralization refers to the hierarchical level of authority and extent that individuals may participate in the decision-making within the organization (Andrews and Kacmar, 2001). According to Damanpour (1991) centralization generates a non-participatory environment that lessens communication, commitment, and involvement among participants. Confirming this spectrum it also ensures inefficiency in creation and sharing of knowledge as employee has no discretion in their working environment (Chen et al., 2010; Janz and Prasarnphanich, 2003). Ryan et al. (2010) defines centralization as a hierarchical arrangement where coordination is inadequate because the knowledge which is tacit and sensitive is best communicated directly through individual specialists. According to Grant (1996, p. 118), "once firms are viewed as institutions for integrating knowledge, a major part of which is tacit and can only be exercised by those who possess it, then hierarchical coordination fails." Capellen et al.*,* (2011); Willem and Buelensa, (2009) and Tsai, (2002) also found that higher

degree of centralization in organizations tend to hinder knowledge sharing and creation. Thus, we hypothesized that:

H5: Centralization has negative relationship with knowledge sharing.

4.0 Research Methodology

This is a quantitative research by nature. The population for this study was managerial staff in the MNC's in Penang, Malaysia. Managerial staff were selected in this study as respondents because they are appropriate in terms of sharing of knowledge and are associated with decision-making process by playing the roles of moderators, mentors, leaders which are essential for knowledge sharing. A draft questionnaire was developed in earlier stage of the study and pilot tests were conducted by getting responses from a few academics and professors to validate these measures prior to finalizing the questionnaire to clear, understandable that both content and wording of the questionnaire were problem free. The primary source of data collection was through questionnaire survey. The questionnaire consists of seven sections with measurement scales for Support and Collaboration, Learning and Development, Leadership and Commitment, Formalization, Centralization and Knowledge Sharing. The primary means of distributing the survey questionnaire was through e-mail with a cover letter to explain to the participant the objectives of the study.

4.1 Scale Development and Statistical Analysis

To ensure content validity, items were selected from previous research and the questionnaires were mainly adapted from Gold et al. (2001), Yang (2007), Hedlund (1999), Hurley and Hult (1998), Siegel and Kaemerer (1978). Where appropriate, the items were modified for the present study. All questionnaire items were measured on a five-point Likert- type scale that ranged from "strongly disagree" (1) to "strongly agree" (5). Various statistical procedures were implemented to test the hypotheses by using statistical software SPPS version 15 for analysis. Cronbach's alpha was used to evaluate the internal consistency of the items, and regression analysis was used to test the hypotheses.

5.0 Results

Out of the 150 questionnaires distributed, 90 were returned, showing a response rate of 60%. Demographic data of the respondents show that 56.7% were male respondents and 43.3% were female. In terms of the age groups of respondents, 63.3% respondents were between the ages of 21 to 30 years old. The respondents were educated at post graduate (14.4%), degree (76.7%), diploma (5.6%) and secondary education (3.3%). Most of the respondents were at their job in current position for 3 to 5 years (33.3%), and between 11 to 20 years (4.4%). The type of industry that the respondents represented were mainly Electrical and Electronics companies (83.3%) followed by Logistics companies at 2.2%, and 14.4% of them belong to other industries. In terms of organizational annual revenue, 15.6% of the respondents responded that their organizations annual revenue is between RM501 million to RM1000 millions where only 1.1% have below RM10 Millions of revenue. Out of 90 respondents, 95.6% responded that the number of employees in their organization was more than 1,000 employees where only 4.4% have 501 and 1,000 employees. In terms of years of operation in Malaysia, 63.3% of the respondents responded that their organization has been operating in Malaysia for more than 20 years where other shows 3.3% for 16 to 20 years, 28.9% for 11 to 15 years and only 4.4% for 5 to 10 years.

Table 1 shows the reliability assessments for the independent variables, moderating variable and dependent variable. Cronbach's Alpha was used to establish this inter-item consistency.

Table 1: Summary of Reliability Analysis

Variables	Number of items	Number of items deleted	Cronbach's α
Support and Collaboration	5	None	0.86
Learning and Development	5	None	0.70
Leadership Commitment	6	None	0.67
Formalization	5	None	0.73
Centralization	5	None	0.70
Knowledge Sharing	6	None	0.74

Regression analysis was carried out to test the relationships between the dimensions of organizational culture, structure and knowledge sharing. A significance level of 0.05 or 5% significance was used as the basis for accepting or rejecting the hypotheses. The first regression models involved organizational culture and organizational structure as independent variables and knowledge sharing as the dependent variable. This is shown in Table 2. This regression analysis was conducted to test Hypotheses 1 to 5. The coefficient of R^2 is 0.578 indicating that the independent variables of organizational context explain about 57.8% of the variance in the dependent variable, knowledge sharing. Durbin Watson statistic of 2.078 indicates there is no auto-correlation problem. Tolerance and VIF values are within the acceptable range for all independent variables, indicating that there are no multi-collinearity problems.

Table 2: Regression Summary

Variable	β	Sig.
Support and Collaboration	0.190	0.07
Learning and Development	0.373	0.00
Leadership Commitment	0.483	0.00
Formalization	0.367	0.00
Centralization	0.141	0.06

$R^2 = 0.578$
Sig. = 0.000
Durbin Watson = 2.078
F-value = 22.453

The results of the regression analysis led to the rejection of Hypotheses 1 & 5 and acceptance of Hypotheses 2, 3 & 4. It shows that Support and Collaboration (p = 0.07) and Centralization (p = 0.06) do not demonstrate significant relationships with knowledge sharing. On the other hand, the relationships between learning and development, leadership commitment and formalization, and knowledge sharing are significant ($p < 0.001$).

6.0 Discussions and Implications

6.1 Support and Collaboration

Support and collaboration was found to be having a positive but insignificant factor contributing to knowledge sharing process in this study. This result contradicts with the findings of Ryan et al. (2010) and Rivera-Vazquez, Ortiz-Fournier and Flores, (2009) which found the role of collaborative tools to support social construction of knowledge sharing to be significant in organizations around the world. Support and collaboration can play an important role in organizational knowledge management process but there is a problem in the inclusion of practices. Support and collaboration is thought to be a system that actively assist and support issues which are related to work and ensure a technical infrastructure that knowledge can gather from different units of the organization and strengthen its dissemination process that manger can take the advantage to formulate strategies (Ryan et al., 2010). This surprising outcome of multinational companies in Penang indicate another issue that support and collaboration has no effect on knowledge sharing because of knowledge hoarding that people are considering their knowledge more important that they may not be interested to share which pursue the normally tendency on an individual, in fact employees feel most empowered when they perceive that their superiors or managers are supportive (Parker and Price, 1994). Therefore, management of the MNCs should be aware of the support and collaboration issues that knowledge sharing must be confirmed in the internal environment since it is the source for new idea generation.

6.2 Learning and Development

Learning and development shows significant relationship with knowledge sharing and results are also consistent with the previous studies by Islam *et al*. (2008) and Yang (2007). Since in the organizational point of view learning and development is prior work to get long-term success in knowledge cultivation. Yang (2007) and Jones *et al.* (2003) state that learning through sharing information and knowledge among organizational members, enables individuals and organizations to reflect on the consequences of their behaviors and actions, to obtain insights from an environment where they operate, to understand the environment, and hence to interpret the meaning and react to it in more accurate approaches. So organization can rely largely on its employees' skills and knowledge in order to produce breakthrough in its products and services through its continued learning (Tidd *et al.,* 1998). Therefore, considering this finding it can be confirmed that MNCs in Penang are actually believed in the learning and development issue in the context of knowledge sharing.

6.3 Leadership Commitment

An important finding of this paper is to confirm the positive and significant relationship between leadership commitment and knowledge sharing. This finding supports the affirmation made by Capellen et al. (2011); Islam et al. (2011); Kerr and Clegg (2007) that leaders are important in organizational knowledge sharing by playing role as a role model who influences others in guiding and translating business strategies towards activities. It is also complied with the findings of Capellen et al. (2011) that commitment from leaders in organization produces belief in individuals that one has rights to donate knowledge as well as collect knowledge from others. Leadership commitment is an important factor to the success of knowledge sharing. Therefore, a possible explanation of this finding can be urged that leaders of the MNCs contributing in the development of intellectually and motivationally that subordinates can contribute their ideas by tapping on some fundamental cultural values that are meaningful to the organizational activities.

6.4 Formalization

Formalization has a significant negative relationship with knowledge sharing process. The finding is in agreement with prior studies by Capellen et al. (2011) and Islam et al. (2010). One of the reasons is illustrated from literature that organization with formal structure cannot exercise its knowledge contents with the full flow as it is proven by previous research that institution with the target set goals may dampen the knowledge sharing process. Since employees of the target specific environment did not want to express his or her self fully in the discussion of new ideas that is essential for effective Knowledge Management (Capellen, *et al.*, 2011; Islam *et. al.,* 2008). So informal structure in organizations with fewer formal rules and regulations can draw a necessary step to establish an effective knowledge management. Where employees can get the opportunities to communicate with each other by sharing knowledge in respect of their work as well as the personal matter which creates greater flexibility and creativity. Therefore, it would be a better situation for MNC's operating in Penang that a informal environment where employee feel free to react and consider the organizational member as family and share knowledge among themselves can eradicate the problem of sharing knowledge in an organizational structure.

6.5 Centralization

In this study, centralization was found to have an insignificant relationship with knowledge sharing. In fact this dimension of organizational structure is negatively related with knowledge sharing. That finding is different from the findings of Capellen et al. (2011); Ryan et al. (2010) and Kim and Lee, (2006). Centralization represents that organization is with hierarchical arrangement and MNC's operating Penang may practice these structure according to the findings. Capellen et al. (2011) and Tsai, (2002) stated that motivational factor should be consider as an important aspects in the organizational structure, affecting knowledge sharing that more hierarchical organizations as more centralized organizations tend to hinder knowledge sharing and creation. Since it is proven in previous research that centralized decision structure causes distortion, filtering, or reduction of the contents based on perceptions of what is desirable or, conversely, unacceptable to pass to higher levels of authority (Capellen et al*.,* 2011; Ryan et al., 2010; Kim and Lee, 2006). Therefore, to ensure knowledge as an organizational asset, MNCs in Penang must exercise horizontal knowledge sharing approach rather than a vertical system to allow employees to share their knowledge with each other to make a decision rather looking in the hierarchical paradigm.

7.0 Conclusion

In today's world of business, globalization is very familiar and its effects are recognized in all spheres of the business world. The market incursion rate is constantly shifting in day to day transaction in every economy of the world. To cope with these trends companies must be prepared with knowledge related issues on how to remain competitive. As knowledge sharing is thought to be a powerful source of competitive advantage with the assurance of most desirable idea that can make an effective decision, it is important to become accustomed to an environment where right knowledge flow can be assured. Conclusions from this study indicate that organizational cultural and structural factors are vital for knowledge sharing.

This research has limitations; the main limitation of the study was the sample size due to time and resource constraints. Another limitation lies in the use of convenience sampling which limits generalization of the results. Nonetheless, this technique has been widely used in knowledge management research (Islam et al*.,* 2011). This research did not cover all types of

organizations in Penang, therefore the findings are limited to multinational companies only. Also, there was also limitation due to the difficulty of getting responses. This could be due to the lack of understanding of knowledge sharing among the respondents from multinational companies operating in Penang, resulting in non-response from many of the organizations. Therefore, we suggest that future research should include other factors e.g. decentralization and different industries in different countries.

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Economic and Financial Sustainability of Renewable Energy Projects

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Abstract

Sustainability is built on an environmental, a social and an economic pillar. However, overemphasising environmental and technical issues, as it is often the case, and considering economic and financial aspects as a secondary "accounting" problem, will create serious problems even for well engineered projects: Without a solid economic and financial basis projects are doomed to fail in the long run. Some countries even over-subsidise certain renewable energy (RE)-technologies due to a lack of reliable economic data, with the consequence of market distortions and with the danger of impeding economically better-suited RE-technologies After a brief sketch of the recent impressive development of worldwide RE-investments and the state of discussion on economic and financial issues in literature, different levels of effects of RE-projects are being examined using some real life examples. These examples will show that the financial engineering of an environmental project is not just an accounting exercise, but also an important prerequisite for its feasibility, its chances for realisation and, at the end, its sustainability. A special problem of RE projects is the existence of benefits ("results"), which are difficult to quantify, like the cost-benefit ratio for an avoided ton of CO_2 or the achievement of technological leadership. But even if such effects cannot be quantified, it will be discussed how to include them into an evaluation, without mixing quantifiable with non-quantifiable results and wishful thinking with reality.

Keywords: Impact measurement, logical framework, financial and economic analysis, financial engineering, investment in renewable energy, offshore wind, output, outcome, renewable energy projects, results, solar home systems, subsidies, sustainability

1.0 Introduction

With a six-fold increase in investment in the last six years renewable energy ("RE") sources are not just a sideshow any more, they need to be considered seriously not just from a technological, but also from an economic and a financial (E+F) viewpoint. In fact, finance and economics can contribute decisively towards sustainability of such projects, if these disciplines do not limit their contribution to solely an accounting function. *Sustainability,* a term with many faces and often misused, is meant here in its original meaning originating from the Latin word *"sustenere",* meaning "to hold", "to maintain", and "to last". Sustainability has an *environmental, a social and an economic* aspect (Adams 2006, p.2): "More specifically, sustainable development is associated with non-decreasing utility in the long run" (Pittel and Rübelke, p.1639). Economic and, closely related, social sustainability play a crucial role if an idea should become reality. This, by the way, has been the case for all innovations: cars, steamships, railways, planes and computers could only change from a toy-status to a usable technology once they had crossed a certain economic borderline.

This paper will contribute to fill the gap that exists in analysing economic and financial prerequisites for renewable energy projects. *Finance* contributes by identifying risks, checking cost as well as revenues and showing feasible alternatives of how to raise the funds of a project. *Economics* sheds light on how to identify external effects and social cost of RE-

projects and in particular how to objectively evaluate effects like a decrease in CO_2 emission or an improvement of quality of life. Finally the *overall view* shows us how to distinguish between different levels of results of such RE ventures, how to identify them and how to put them into perspective.

2.0 Literature Review

2.1 Fact Finding and Data Collection Sources

These sources, mostly published by institutions involved in RE-energy planning and financing are not limited to data collection. They also contain valuable comments and conclusions on different aspects of renewable energy development, mostly from the financing point of view. The UNFCCC puts it "*..access to public and private financing can be improved by introducing financing considerations early in the project development*" (UNFCCC, p. 3), emphasising the point that isolated planning of only technical aspects of renewables will not lead to a satisfactory result (p. 15).

Bloomberg, in co-operation with a United Nations agency (UNEP) gives a valuable overview on global trends of renewable energy investment: The perception, that "*renewables are an entertaining, albeit expensive, sideshow*", has been out-of-date for many years: with a world-wide investment volume of US-$ 211 Billion in 2010 there was a six fold increase from 2004 (Bloomberg, p. 25). Developing countries surpassed the investment volume of developed countries for the first time in 2010 (Bloomberg, p.11), with China (US-$ 42 Billion) as the major investor, and Asia/ Oceania with almost the same investment volume as Europe and USA together (Bloomberg, p.5).

With an investment volume of US-$ 95 Billion wind energy is leading, followed by solar energy (US-$ 26 Billion) and biofuels (11 Billion). This order also represents existing capacities (World Bank 2010b). These figures do not include small-scale investments, where there is a very surprising amount of US-$ 60 Billion in solar rooftop investments mainly in Europe, caused by attractive and somewhat market-distorting feed in tariffs and lower prices for solar panels (Bloomberg, p.12). Generally, the RE-sector still remains in the hands of small and medium sized companies, the largest pure RE-firm in the world (Iberdrola Renovables) ranks only at place 452 of the Financial Times top 500 firms. In spite of considerable participation of the private sector in financing (Bloomberg, p.43), there is still a considerable amount of public subsidy via feed in tariffs, tax rebates and other governmental support schemes.

The future potential of RE is already visible, because "*renewable power, excluding large-hydroelectric, made up 8% of total world electricity generation capacity in 2010 and 5% of actual generation*", but "*it accounted for 34% of additional capacity and 30% of additional generation*" (Bloomberg, p.25). Another niche has also been discovered for use in poorer developing countries with projects like the use of rice husks for power generation, solar energy for provision of electricity in remote areas or using biomass for gas or power generation (Bloomberg, p.54).

Figure 1: Countries with Largest Investment in Renewable Energy (2010)

FIGURE 11: FINANCIAL NEW INVESTMENT AND SMALL DISTRIBUTED CAPACITY IN RENEWABLE ENERGY BY COUNTRY, 2010, AND GROWTH ON 2009, $BN

		Growth:
China	49.8	28%
Germany	41.0	100%
United States	29.6	56%
Italy	13.8	136%
Brazil	6.9	-5%
Canada	5.2	52%
Spain	4.9	-53%
France	4.0	26%
India	4.0	29%
Czech Republic	3.6	102%

■ Financial new investment   ■ Small distributed capacity

Top 10 countries. Adjusted for re-invested equity

Source: Bloomberg New Energy Finance, UNEP

Ecofys, Ernst and Young et al. (2011, p.17) emphasise tremendous differences in RE-generation cost, for example from 20 €-cents/kWh in sunny Spain to 1.10 €/kWh in UK for photovoltaic energy and from 5 cents/kWh in UK for on-shore wind to 20 cents/kWh[1] for offshore wind in Italy, leaving ample room for discussion whether all forms of renewable energy should be supported in all countries.

2.2 Economic and Financial Approaches

Apart from very specific topics, which will not be discussed here, there are comparatively few approaches looking at renewable energy economics from a predominantly economic or financial view. There are several methodologies of very general environmental cost-benefit analyses, like "sustainability checklists", "environmental footprinting" (Chambers et al., 2000; Hammond, 2006, p.38), "multi-criteria decision analysis" (Elghali et al., 2007) or "sustainability appraisal framework" (Parkin 2000). However, as Hammon and Winnet (2006, p.158) found: whereas the uncertainty band in technical estimates of energy systems fluctuates around ±20%, "estimates of environmental costs and benefits were found to reflect variations of up to the factor of 10", thus demonstrating the fragility and unreliability of the "present generation of monetary valuation methods".

Awerbuch (2004) wonders about the criticism of the riskiness of renewable energy, opining that nobody seems to realise the damage done by the tremendous price volatility of fossil fuels: "… *fossil volatility significantly disrupts the economies of consuming nations, potentially extracting hundreds of billions of dollars from the US and EU economies alone.*" (Awerbuch, p.ii). He considers investing in least-cost alternatives comparable to investing in just one stock on the share market, which, according to portfolio theory, is a risky venture. Awerbuch, pp.1). The idea, that adding "*expensive strawberries to a salad is making the salad more expensive*", seems compelling, but he considers it as simply wrong: "*First, the cost of salad making will vary over time –season to season and even day to day- The cost of future salad making is unpredictable as is the cost of generating electricity 20 years from*

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[1] In mid 2012 : 1 € = 1,20 US-$ (in the project calculations in chapter 3 for 2011 a rate of 1,30 $/€ is used)

now….." (pp.3). This idea is based on earlier reflections on the mix between fossil fuels from Bar-Lev and Katz (1976).

An issue frequently discussed among economists is the "willingness to pay" for clean energy. Aravena, Hutchinson and Longo in an investigation in Chilean households applied some innovative interview techniques developed to find out whether this willingness is genuine or just "sweet talk". The methodology is based on the so-called "double bounded dichotomous choice contingent valuation" (DBDC). The core idea is that respondents receive a small sum of money for the interview (around one or two Dollars), but they will have to return some or even all of the money, if in their answers they tend to choose the expensive (renewable) alternatives. Even if the threat of having to give back some small amount will not be a 100% predictor of the actual behaviour, the initiators believe they have found a more reliable instrument to forecast a disposition to pay more. They found a willingness to pay around 16-19% more on the monthly electricity bill for clean alternatives (Aravena et al., p.218). Similar approaches are discussed by Borchers, Duke and Parsons (2007) and Wiser (2007). There is still ample room for further research, in particular regarding the long-term reliability of such results. Nevertheless the issue of willingness to pay (slightly more) for renewable energy remains an important topic within the field of renewable energy economics and finance.

2.3 Development Economics Approaches

Renewable energy has become a central topic for all multilateral and bilateral development organisations. The issues on the economic side are "climate finance" to reduce greenhouse gases (World Bank 2010a and b), rural development and electricity supply to develop remote areas. Rural development, although it appears to be a niche area in a global context, should not be underestimated, especially for poor countries: In Bangladesh, for example, irrigating paddy fields with altogether 330.000 electric pumps consumes about one third of the total electricity peak production in summer, leading to massive shortages of electricity (Worldbank, GTZ 2009, p.13). Given that rice is the backbone of the food supply, the conversion of irrigation pumps to a solar powered alternative would reduce capacity problems considerably.

The approaches for developing and emerging economies are numerous and it would exceed the scope of this paper to touch them all. A very helpful contribution made by the field of development economics, however, was the classification of effects or results originating from a project, mostly based on the "logical framework approach" (IFC et al., 2008, p.34; NORAD, 1999; Örtengren 1004, DAC, OECD, 2009, pp.10; IFC, GTZ and DFID 2008, p. 41). The logical framework approach suggests to identify and classify objectives as well as all the "results" of a project into outputs, outcomes and impacts, resulting in the following pattern:

Initially, the ***Objectives/ purpose*** of a project must be defined.

Inputs are all physical and non-physical resources being used for the installation and operation of a project: land, machinery and capital, manpower, raw materials, fuels and other consumables as well as monetary inputs like capital, loans and subsidies.

Outputs are products, goods and services resulting from a project: in the case of a RE-project electricity or gas, energy saved and greenhouse gases avoided.

Outcomes are likely or achieved short or medium term effects of a project output: Health and quality of life improvement because of less pollution, cost savings, more working or reading time with electric light, process improvements etc.

Impacts are positive or negative, primary and secondary long term effects caused by a project or a project type from a macro-view, like GDP and income changes, improvement of balance of payment, less global warming, technology gains or increase in competitiveness for a selected industry.

Indicators (quantitative or qualitative) must be defined for measuring the above results, preferably also determining what level must be reached for a project to be considered successful, unsuccessful or moderately successful. DAC (DAC, OECD, 2009) have also defined further criteria like relevance, effectiveness, efficiency or sustainability of a particular result reached. These criteria should be kept in mind for a much more detailed analysis as it is intended here.

The more the results deviate from "outputs" (which can be measured in kilowatt-hours, cubic–meters, heating values or monetary units), the vaguer they become and the more different causes can be made responsible. Whereas *financial analysis* usually will just take monetary output into consideration by comparing cost and revenues, this vagueness constitutes a problem for the *economic analysis*: Here there is a two-dimensional problem: Firstly the difficulty of *quantification* of outcomes/impacts like less pollution, better health, or reduction of global warming. As we will also see in chapter 3, we still do not have reliable methods to evaluate what is a fair price of a ton of CO_2 reduction and we also cannot measure the monetary effect which the support of RE-project has on technical progress or technological leadership of a company or a country. Secondly the so called "*attribution gap*": if in a village economic situation has improved, this may be caused by having electricity, but also by a general economic upswing and, somewhat counterintuitive, the results of electrification might not show statistical evidence because of an economic decline in the region.

This does not mean that hard to attribute impacts and outcomes should not be considered, but "*impact evaluators must be forthright about the existence of the gaps, must describe them as well as possible, and must construct the links that plausibly bridge the gaps between the project and the observed impact*" (Baur et al., p.8). The logical framework approach does not solve all these problems, but it makes them visible and it forces the project planners to establish a hierarchy of objectives and, as a consequence, qualitative or quantitative indicators. Since in most environmental issues there is a strong tendency for emotions to interfere with objective judgements, such a classification helps to bring the judgment down to a more rational level.

3.0 Renewable Project Evaluation Examples: Presentation and Discussion

3.1 Solar Home Systems in Bangladesh

3.2 Project Setup

Between 2006 and 2010 a "solar home project" was carried out by several development organisations, mainly the German KfW, but later it was supplemented and extended by World Bank and Asian Development Bank to Bangladesh where it was mainly managed by a

governmental body called IDCOL. (Stocker 2011, Kamal 2010). The idea was not so much to contribute towards reduction of greenhouse gases, but mainly provide people in remote areas with a simple form of electric energy. Several sizes of solar home systems (SHS) were offered, starting from a 20-Watt system for one or two fluorescent light bulbs to several hundred watts for lighting, using a TV and maybe even a small refrigerator (Khamal 2010 p. 20). The purchase of these systems was supported by micro-loans from Grameen bank with repayment frames of 2-3 years. The project turned out to be a striking success, with the target of 100.000 households soon reached and with several follow up projects reaching nearly 800.000 households by beginning of 2011. IDCOL expects to reach up to three million SHS by 2015, which would add almost 10% to the existing electric power capacity in the entire country. A one time flat subsidy of approximately 40 US-$ was paid to each user and the entire project was accompanied by the training of technicians to install and maintain the systems as well as establishing a quality control unit to avoid that low quality solar systems are sold. The life span of the systems was estimated to be 20 years, the batteries having to be replaced every 5 years. Loans of 100% of the investment (minus subsidy) are provided by Grameen bank with an annual interest rate of 11%. Data on a medium scale project are given in annex 1.

3.1.2 Project Evaluation

The discounted price per KWh – depending on the discount rate- ranges between Taka 12.7 and 20 (USD 0.17 and 0.27), being about five to seven times the low consumption tariff of 2.6 Taka/KWh (Annex 1). According to economic theory, demand should be very low. How do we explain that demand for solar home systems was so tremendously high? First of all, the alternative of being connected to the grid does not exist in a foreseeable time span. Secondly, the present alternative (kerosene lamps, use of dry cells or batteries) is not only inferior in quality (dim light, pollution), versatility (TV and electric gadgets do not work with kerosene, but only with dry cells or car batteries) but also in cost. One could also attempt an explanation using the behavioural concept of framing: The user of such an SHS does not spend much thought about calculating the cost per kilowatt-hour, he or she will probably just think about monthly cost and whether they are affordable.

Another approach, still on the level of outputs, is the *economic evaluation* from the viewpoint of the users, who compare the situation with what they had before: Based on data collected from Grameen Bank and IDCOL, a rough economic comparison has been carried out comparing the cost of such alternatives, using a mix of kerosene, dry-cells, and car batteries, with the cost of the SHS installation. The result is an internal rate of return of 15,7% in favour of the SHS-alternative, even without the subsidy paid (Annex 2).

3.1.3 Summary of Results (Solar Home Systems)

People were briefly asked about the benefits (Kamal, 2010) and they came up with the "*outcomes*" of being able to read and work in the evenings, receive more and better information with a TV, charge a mobile phone, have better air and consequently less health problems, and also use a laptop. A more systematic approach would be a thorough survey asking about the individually achieved improvements, including quantitative scales in selected questions. But nevertheless, quantification or even monetary justification remains difficult, subject to bias and, depending on the standpoint of the researcher, even manipulation. Therefore, and also for the sake of credibility of financial and economic

analyses of environmental projects it is very important to maintain high research standards when investigating and interpreting ambiguous results.

On the *impact* level results become even vaguer: Has the income of a village –compared to a control group village- been improved? Are there any other indicators for improvement: Long-term health improvements, number of successful school leavers or increase in small-scale economic activity like tailoring, weaving or repair shop activities and how about the contribution to CO_2 reduction? The latter could be theoretically calculated by asking how many hours kerosene lamps/other devices were used before and converting the result into quantities of CO_2 (see also section 3.2.4). On other impacts there has been some anecdotal evidence[2], but so far no really systematic research has been undertaken. The absence of such research, however, does not mean that there are no such benefits, but of course we are facing the problem of attribution gap again: There might be other factors like a new school, a new road or a health station which may also have influenced the well being of the population. One or two very thorough long-term research projects could be a valuable basis for extrapolating outcomes and impacts of such a project on a bigger scale.

The overview on results and indicators in figure 2 can be used as a checklist to be adapted to the individual project, but it may also be used as a basis for further research.

Figure 2: Different Levels of Results of the SHS Project

	Input	Output	Outcome	Impact
Results	Solar panels, electric system, batteries Loans, capital	Light and electricity, less in house-pollution/ by kerosene lamps/ candles Long term cost savings	Possibility to read and work at night, productive use (e.g. repair shops, sewing) Better information (TV, internet, mobile phone charging) "Quality of life" GHG-reduction	Increase of income because of possibility to work and read longer hours, better education of children etc., Reduction of global warming
Indicators	Cost calculation: investment cost, interest rate, discount rate	Cost calculation (cost per kWh), Meters (and theoretical calculation of pollution effects, questionnaires)	Questionnaires (before and after or compared with control group) with qualitative and rank order questions of differences in life before and after. Quantification is difficult	Attribution gap: Estimation, also based on regular (sample) surveys. Identification of a target and a control area, trying to neutralise other influences and take baseline data. Extrapolation of effects.

The project also shows a classical feature of most RE projects: *High initial investment cost and low maintenance cost*. This reduces the volatility of the price development in the long run, but on the other hand it needs well tailored financing. Without such a finance package for the customers this project would most probably never have taken off.

3.2 Off-shore Wind in Germany and China

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[2] Based on the author's interviews with Grameen and Idcol representatives in February 2011

China is the number one country in wind energy capacity, followed by the USA and Germany (figure 3). China has ambitious plans: "*it is also erecting 36 wind turbines a day and building a robust new electricity grid to send this power thousands of miles across the country from the deserts of the west to the cities of the east. It is part of a long-term plan to supply 15% of the country's energy from alternative and renewable sources by 2020*". (Watts, 2012). Germany has been selected as another important player with great expansion plans in the field and it appears to be interesting to compare a high-income country with an emerging country on a much lower cost level.

Figure 2: Top 10 Countries in Wind Energy Capacity[3]

Top 10 Countries by Total Capacity [MW]
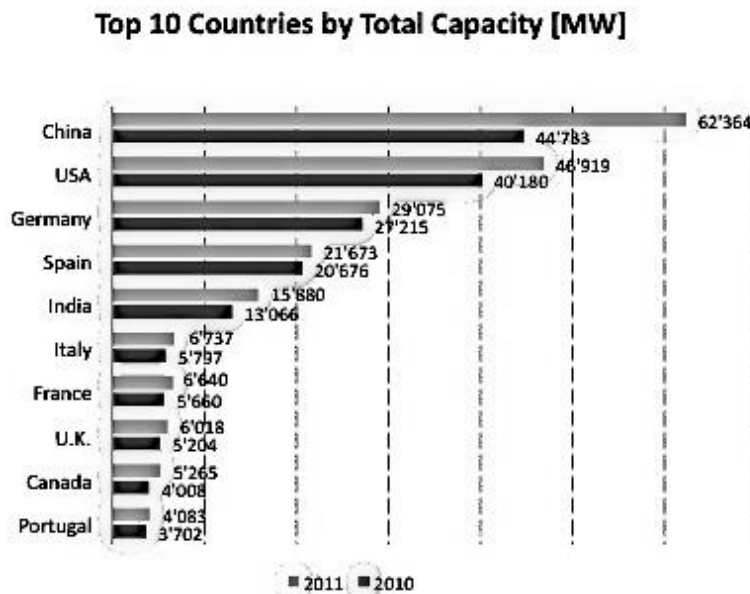
Bearing in mind the risks of the innovative offshore technology, it can be expected that in both countries the real decisive challenges are still to be seen in the next years. (offshore.windenergie.net 2012).

3.2.1 Project Set Up

A detailed description and discussion of all the details of an offshore wind investment would exceed the scope of this paper. The following comments are based on two research papers finalized within a project work of two research groups of the Ohm-University Nuremberg. (Baeva et al. 2012 as well as Zellmann et al. 2011). In both countries a financial and economic analysis including a sensitivity analysis and, on the basis of WACC and CAPM[4] with different debt/equity ratios have been calculated. For the base case presented here, 100% equity shall be assumed.

A summary of two projects is shown in Figure. These projects do not exist exactly in this form, because most data on on-going projects are kept confidential, but they are set up according to data available from real projects and locations selected for such projects as well as data from Bloomberg (2012), World Bank (2010c) and KPMG (2010). For a detailed

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[3] World Wind Energy Association 2011, p. 4
[4] WACC= Weighted average cost of capital; CAPM= Capital asset pricing method

calculation for the project in China refer to Annex 3, with the German project being calculated in the same manner.

Figure 4: Comparison of Offshore Wind Projects in Germany and China

	Germany	China
Size/ capacity	80 x 5 MW =400 MW	100x3 MW =300 MW
Location	North sea; 40 km offshore; 40 m water depth	Jiangsu province, 20 km offshore, 20 m water depth
Capacity factor (net)	42% = 1,471,680 MWh per year	29% = 772,632 MWh per year
Investment cost	US $ 1,650 Million	US $ 730 Million
Annual O&M cost	US $ 30 Mn (+2% p.a., up to US-$ 53,6 Mn.)	US-$ 15 +2.8% p.a. (up to US $ 25 Mn.)
Terminal value	Set off by dismantling cost	
Feed in tariff (FIT)	18 US-cents; after 6 years less 7% for every year; up to 14 years	0.737 CNY/KWh (10.9 US cents); recently determined by public bidding
Construction phase	2 ½ years	2 years
Life duration	20 years	20 years
Financial estimates		
Risk-free interest rate r_f	2.0%	3.5%
Market premium r_p	5.5%	8,7%
Beta (ß)	0.86	0.86
Debt interest	4.0%	5.5%
Financial Results		
Required equity return ($r_f + ßr_p = WACC_{100}$)	6.7%	11.0%
IRR	5.4%	5.7%
$WACC_{30}$ (30% Equity)	4.8%	7.14%

3.2.2   Financial and Economic Results of Both Projects

Higher investment and O&M cost in Germany are compensated by a significantly higher feed in tariff. The German project also expects a much higher capacity factor, which is partly due to more wind, but also a higher priority for wind powered electricity to be fed into the grid. Both projects will, with an internal rate of return (IRR) *of 5.4% (China) and 5.7% (Germany)*, not fulfil the respective *financial* "WACC-requirements" of 6.7% for Germany and 11% for China. The German project is closer to its financial threshold, and if in the German case the a debt equity ratio is raised to 70:30% (WACC: 4.8%) the result would be sufficient to qualify it for a private financing. The Chinese project, due to the higher equity return requirement of 11%, would not reach this even with a high debt ratio. Levelised unit cost (discounted cost/discounted kWh) amount to 10.3 US-cents for the Chinese and 12.8 US-cents per kWh for the German project.

From an *economic viewpoint* the financial IRR's will not be applicable, because they are reached on the basis of considerable social cost by subsidies (see next chapter): *the economic return* on the basis of market prices for the electricity will be negative, showing that about

three quarters of the investment cost will indirectly be reimbursed by the taxpayer or consumer. This, however, does not yet consider other effects ("impacts") like the reduction of greenhouse gases, for which a quantitative evaluation method has still to be developed (see section 3.2.4)

Figure 5: Cost Structure of Offshore Wind Projects
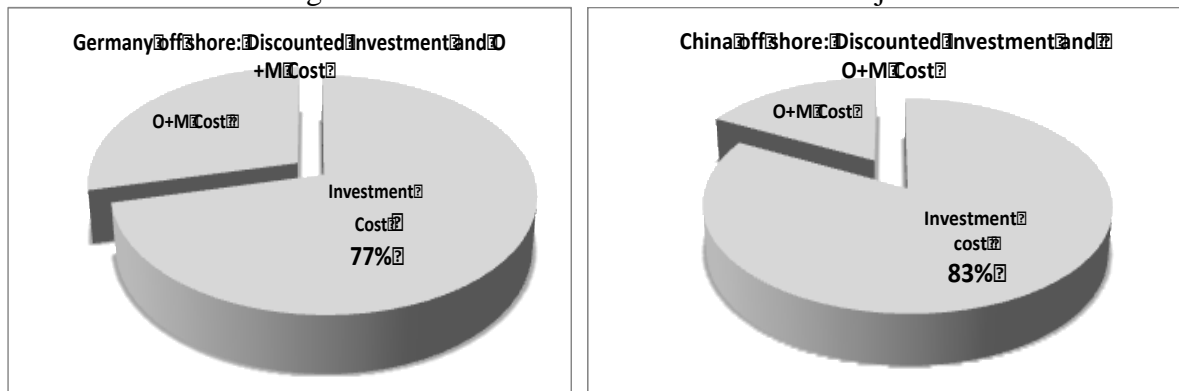
Error! Reference source not found. Figure 5 shows the *enormous share of capital cost* in RE-rojects, which is a characteristic feature: Hence the financing issue is a very crucial point for RE-projects, even though the "WACC"-calculation will only be an estimate and reality will show whether project sponsors from non-government sources can be found. In many cases, especially for risky offshore ventures additional government guarantees or insurances will be required (KPMG, pp.56).

3.2.3 Subsidies

There are quite a few *public supports*, first of all the guaranteed feed-in tariffs (FIT's), which are 80% higher in Germany, but even in China FIT's are higher than market rates and guaranteed for a longer time span. Compared to the kWh-price on the European Energy Exchange EEX (www.eex.com), fluctuating around 5 US-$-cents, the German project is subsidised with up to 8 US-cents on every kWh-produced. During these 14 years of guaranteed FIT the taxpayer (or the electricity consumer) subsidises this project with an amount of about three quarters of the initial investment cost. Even in China the project is subsidised by about 5,5 US-cents/kWh (plus the US-$ 6 Million initial subsidy). Whether this level of subsidy makes sense, must be decided on the political level. The analyst's role here is to *point out the exact cost* to facilitate such decisions and in addition to help to find a meaningful priority for different RE-project types.

Depending on the country there are *other hidden subsidies*: government guarantees, subsidised loans or loans with a public first loss element reducing risk for private debtors (KPMG pp. 52). Another issue, which has not been discussed in the past, because the share of RE-electricity was negligible, is the *hidden cost* burdening suppliers of conventional energy because of the possibility of feeding in any amount of renewable electricity at almost every time. This acceptance means that conventional power providers have to run their stations in an up and down modus to allow the RE-electricity to come in as the sun shines and as the wind blows. There have been some calculations on this issue (von Roon and Huck, 2010; Sensfuß 2011 as well as Groscurt and Bode 2011b). The discussion is still open, but it will gain importance with an increasing share of renewable energy. (Bode and Groscurt 2011a).

3.2.4 Reduction of Greenhouse Gases

When discussing the sense of subsidies, a central target of renewables has to be remembered: the "outcome" of *reduction of greenhouse gases (GHG), mainly CO_2*. The generation of electricity with an average fossil based plant produces around 690 kg of CO_2 per MWh (EPA 2012)[5] and a few other greenhouse gases in much lower quantities, but we shall take the CO_2 value as an indicator for the emission level of GHG here. Multiplied by the electricity produced the wind-powered alternatives will save 552,000 tons for the Chinese example and 1,014,000 tons for the German case per year on the average.

Calculating the difference of the kWh-cost (levelised unit cost) of the offshore projects (10.3 in China and 12.8 US-cents/KWh in Germany) to the above 5 US-cents/kWh (which we assume as the kWh- cost for the fossil alternative), the annual average cost per ton of CO_2 saved amounts to around 40 for the Chinese and 58 US-\$/ton CO_2 for the German project. Unfortunately we do not have a reliable valuation method for comparing the value of CO_2-avoidance with the project-cost. An indicator could be cost of CO_2-emission rights (around € 8/ton in 2012) if there were no artificial oversupply of certificates, which appears to be the case at present. Maybe in 2013, when a new system of emission rights trading will take effect in the EU, prices may come closer to reflect the market situation. (Pauer, p. 106). For the time being we can just compare the cost per ton CO_2 with other emission saving alternatives, for example an energy efficiency project, a solar plant or a house insulation project to determine the most cost effective investment path in terms of environmental aspects.

3.2.5   Summary of Results (Offshore Wind)

Bearing in mind the high level of subsidies, *neither financial nor economic results of the two projects are satisfying:* They cannot be considered economically sustainable and high subsidies might set wrong signals for artificial expansion. But these evaluations have been made purely on the *output level*. Potential *outcomes and impacts* have not yet been considered due to the vagueness of the results. Such an evaluation would have to take the following issues into account:

- The *CO_2 (GHG)-reduction*, which can be compared to alternatives: Even here the two projects do not really show an impressive result, because for quite a few alternatives (e.g. the solar home project in Bangladesh, but also energy saving measures in industry) there will be benefits and not cost for CO_2 saved. (Passive-House Institute 2012).
- If the prices of emission certificates do reflect market prices, which might be the case in 2013 in the EU, the *CO_2 reduction* could be *valued and compared to the cost*, especially the question could be answered, whether this reduction justifies the subsidies, (which is presently not the case with cost of 40-58 US-\$/ton CO_2 and an emission-certificate price of around 8 US-\$/ton CO_2)
- Outcomes like *improvement of health* by less pollution can only be estimated and maybe categorised in a rank order or interval scale.
- For Germany, the alleged *increase in safety by the shutdown of nuclear power stations* is also difficult to quantify.
- Hidden objectives for the high level of government supports appear to be *technological leadership* as well as the achievement of *future cost reductions in industry*: Both objectives can be verbally described and categorised, but so far there is no method of concrete quantification in sight. It could, however, reduce

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[5] Depending on the power generation mix the CO_2 output per MWh can vary between 500 and 1100 kg

public opposition to subsidies if politicians would be *more open about such a hidden agenda*.

Figure 6: Levels of Results of the Offshore Wind Projects in China and Germany

	Input	Output	Outcome	Impact
	Wind turbines (Foundation, mast, wheel, electric system, trans-mission-lines) Subdidies	Electricity generation and replacement of fossil/ nuclear generation) Capacity effects on conventional stations; conflicts (fishermen/ ship routes/ bird endangerment; cost increases for power consumers)	Decrease of GHG, safety increase, health improvement, less smog etc. due to less pollution, Know how gains and cost reduction for further projects	BoP improvement (less fuel imports) global warming reduction, Technological leadership and cost reductions by know-how gains
Indicators:	Cost calculation: Investment and O+M cost	Meters, system check-ups, ex ante and ex post- measurements; cost per ton CO_2; questionnaires	Surveys, but difficult to measure, benefits will be distributed widely, GHG reduction to be calculated theoretically	Attribution gap: Estimation based on output and coal/oil equivalent; Technology gain: Exports of wind technology (ex post)

4.0 Conclusion

The two examples presented here should demonstrate how to screen an RE project economically and financially, how to evaluate its different dimensions and to pinpoint at potential weak points and risks. The *solar home example revealed a positive and sustainable overall result*. Both *offshore wind-projects proved to be questionable* from the financial as well as the economic view, but the question remains whether the hidden and non-quantifiable *impacts and outcomes could still justify the projects*. If economic and financial evaluation should exceed a mere accounting exercise, this point must be taken very seriously: In this case, if monetary results cannot justify a project, the first option is to find objective criteria whether (1) non-monetary or non-measurable outcomes and impacts (GHG reduction, technological progress, expected future cost reductions) can justify the negative results. If this proves to be impossible the second option is (2) to search for alternative project-solutions reaching the same impacts with a better cost/benefit ratio (e.g. could CO_2 reduction better be reached with energy saving measures instead of an offshore-wind project?). With qualitative interpretations, however, we are entering a difficult terrain and it is very important here to distinguish between wishful thinking and coherent (though not quantitative) facts.

To sum it up, economic and financial analysis can *contribute towards sustainability of RE projects* by adhering to following guidelines:
- Identification of *different levels of results* (outputs, outcomes and impacts). *Indicators* especially for non-quantifiable results must be defined. Monetary estimates like investment cost, O&M cost and revenues should be confirmed by sources, which are independent from project sponsors.

- Breaking down and separating *genuine market income and subsidised income* including hidden subsidies helps to assure long terms survival chances of a project. It also helps government planners to avoid market-distorting levels of subsidies
- Distinction between *financial and economic view*. For the financial analysis the models of CAPM and WACC may be used. Economic analysts will usually ignore the share of debt (leverage), but social cost must be included and better methods for evaluating outcomes and impacts must be developed.
- For long-term RE-projects with a heavy front-loaded expenditure structure much effort must be put into finding a *correct discount rate* (which was not discussed here).
- There must a *consensus on the expected objectives* of a RE-project and on *what contribution subsidies* should make to these objectives. Such objectives should also be clearly mentioned and not concealed in some hidden agenda.

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Annex 1

Calculation of Solar home systems in Bangladesh

	Taka	Euro	US-$	
Initial Investment medium size	26,800	276	359	
Subsidy	31	40	40	
Battery exchange	10,3	13	13	every 5 years
Annual maintenance cost	50	0,52	0,67	
Loan interest	11%	(calculated on full amount)		

1	23,800	260		10,551
2	50	260		9,729
3	50	260		8,856
4	50	260		50
5	50	260		50
6	10,050	260		50
7	50	260		10,050
8	50	260		50
9	50	260		50
10	50	260		50
11	10,050	260		50
12	50	260		10,050
13	50	260		50
14	50	260		50
15	50	260		50
16	10,050	260		50
17	50	260		10,050
18	50	260		50
19	50	260		50
20	50	260		50
Sum	54,750	5,200		59,986

Disc, Value	5%	41,132,22	3,240,17		44,048,32
Disc, Value	10%	33,342,56	2,213,53		34,883,66
Disc, Value	20%	25,270,88	1,266,09		25,175,07

			in EUR/kWh	In US$/kWh	Taka/kWh	
Cost per kWh	5%	12,69 Taka/kWh	0,131		13,59	
Cost per kWh	10%	15,06 Taka/kWh	0,155		15,76	
Cost per kWh	20%	19,96 Taka/kWh	0,206		19,88	
Cost per kWh	0%	10,53 Taka/kWh	0,109		11,54	

*) Minus subsidy of 3000 Taka in the first year

Exchange rate Taka/Euro:	97 Tk/EUR
Exchange rate Taka US-$	74,6 Tk/USD

Annex 2

Economic comparison of SHS with alternatives
Kerosene, dry cells and/or car batteries

Average annual savings (Taka) from*)

Year	Cost Taka	Kerosene	Dry cells	Car Battery	Total savings	Cash Flow (Cost SHS minus savings)
1	26,800	3,134	1,780	160	5,074	-21,726
2	50	3,134	1,780	160	5,074	5,024
3	50	3,134	1,780	160	5,074	5,024
4	50	3,134	1,780	160	5,074	5,024
5	50	3,134	1,780	160	5,074	5,024
6	10,050	3,134	1,780	160	5,074	-4,976
7	50	3,134	1,780	160	5,074	5,024
8	50	3,134	1,780	160	5,074	5,024
9	50	3,134	1,780	160	5,074	5,024
10	50	3,134	1,780	160	5,074	5,024
11	10,050	3,134	1,780	160	5,074	-4,976
12	50	3,134	1,780	160	5,074	5,024
13	50	3,134	1,780	160	5,074	5,024
14	50	3,134	1,780	160	5,074	5,024
15	50	3,134	1,780	160	5,074	5,024
16	10,050	3,134	1,780	160	5,074	-4,976
17	50	3,134	1,780	160	5,074	5,024
18	50	3,134	1,780	160	5,074	5,024
19	50	3,134	1,780	160	5,074	5,024
20	50	3,134	1,780	160	5,074	5,024
Sum	57,750	62,680	35,600	3,200	101,480	43,730
IRR:						15,7%

*) Savings weighted: Kerosene 55%; Dry cells 40%; Car batteries 5%
Based on data from Grameen Bank and Idcol (2011)

Annex 3

Profitability analysis for an offshore wind power project in China

	Year	Investment Cost (CNY)	Total costs in CNY (pro 100 turbines):	Scenario 1*) Total Revenue CNY	Scenario 1 Net Cash Flow	Scenario 1 DCF, DF=11,6%
1	2012	1,472,624,292	1,472,624,292		-1,472,624,292	-1,319,555,817
2	2013	3,436,123,348	3,436,123,348		-3,436,123,348	-2,758,927,933
3	2014		98,174,989	314,714,892	216,539,903	155,792,072
4	2015		101,120,238	569,429,784	468,309,546	301,909,120
5	2016		104,153,846	569,429,784	465,275,938	268,775,464
6	2017		107,278,461	569,429,784	462,151,323	239,220,852
7	2018		110,496,815	569,429,784	458,932,969	212,862,861
8	2019		113,811,719	569,429,784	455,618,065	189,359,622
9	2020		117,226,071	569,429,784	452,203,713	168,405,539
10	2021		120,742,853	569,429,784	448,686,931	149,727,466
11	2022		124,365,139	569,429,784	445,064,645	133,081,276
12	2023		128,096,093	569,429,784	441,333,691	118,248,801
13	2024		131,938,975	569,429,784	437,490,809	105,035,088
14	2025		135,897,145	569,429,784	433,532,639	93,265,941
15	2026		139,974,059	569,429,784	429,455,725	82,785,729
16	2027		144,173,281	569,429,784	425,256,503	73,455,421
17	2028		148,498,479	569,429,784	420,931,305	65,150,825
18	2029		152,953,434	569,429,784	416,476,350	57,761,018
19	2030		157,542,037	569,429,784	411,887,747	51,186,941
20	2031		162,268,298	569,429,784	407,161,486	45,340,134
21	2032		167,136,347	569,429,784	402,293,437	40,141,617
22	2033		317,136,347	569,429,784	252,293,437	22,557,641
					NPV:	-1,491,008,772
					IRR:	5.7%

*) Scenario 1 is based on the most likely feed in tariff (0,737 CNY/KWh and hypothetical 100% equity finance

Are the Socially Responsible Investing Fund Managers in Luxembourg Skillful?

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Abstract

Socially Responsible Investing (SRI) funds refer to the funds that undergo screening process which satisfied the environmental, social and governance criterion. The main purpose of SRI is to create a sustainable environment for the benefit of all. This paper investigates whether the fund managers in Luxembourg are skilled in handling SRI funds. Luxembourg is well known as the largest fund investment centre in Europe and played an important role in promoting SRI funds. We employ two market timing models which are widely used in literature for the analysis. We find that the SRI fund managers in Luxembourg are skillful. In other words, they are good in forecasting the market trends.

Keywords: Luxembourg, SRI funds, performance measurement, market timing

1.0 Introduction

Socially Responsible Investing (SRI) no longer a new term in financial markets. Benson et al. (2006) and Rennebourg et al. (2008a) concluded that SRI not only provides the investors an attractive returns but also the opportunity to contribute to the society through investment. The objective of SRI is consistence with the statement from Hamilton et al. (1993) that "doing well while doing good". Throughout the years, debating on SRI funds performance still continue as people argued SRI funds tend to has lower return than non-SRI funds due to lack of diversification that could be leaded to higher risk.

The less diversified portfolio that leads to higher risk is the main worry for conventional investors. In line with Markowitz (1959), investors in general are assumed to be risk averse and they must be compensated with higher return in order to take higher risk. Markowitz (1991) explained that diversification enable a portfolio to reduce risk. Moreover, the leftover stocks after screening process that funds need to undergo further examination during portfolio formation usually came from the same industry, the fund managers have to choose this correlated stocks to form the portfolio, which is believed that the portfolio contains higher risk. Previously, the performance of SRI portfolio relative to conventional portfolio are examined in terms of stock selection skill, studies such as Bauer (2005), Lee et al. (2011), Rennenboorg (2008b) and Schoder (2004) proved that SRI funds in fact have the same performance with the conventional funds. In other words, the stock selection of fund manager for SRI funds and conventional funds are the same.

This study investigates whether SRI funds managers have market timing ability to predict stock market's movement and to change fund composition in accordance to the market condition. This research intends to answer this question for the case of Luxembourg. We study 146 SRI funds for the period of April 2001 to June 2010.

We study the SRI funds in Luxembourg for two reasons. First, favorable tax law in Luxembourg encourages fund managers to invest in Luxembourg in order to achieve higher excess return (Rennebourg et al. 2011). Second, Luxembourg is one of the leading countries in Europe that developing SRI in the country recently.[1]

Our research intends to fill in the gap to contribute to the literature. Moreover, the finding will benefit the market players and investors as SRI funds is an alternative investment instrument which actually performed as equally well as conventional funds and benchmarks.
The remainder of the paper is organized as follow. Section 2 reviews the literature of SRI funds and Section 3 describes the data. Section 4 presents the methodology and Section 5 discusses the finding of studies. Lastly, we conclude in Section 6.

2.0 Literature Review

In term of stock selection skill, previous studies (Bauer et al., 2005, 2006; Benson et al., 2006; Bello, 2005; Boasson et al., 2006; Cortez et al., 2009; Derwall et al., 2009; Galema et al., 2008; Hamilton et al., 1993; Renneboog et al., 2008b; Sauer, 1997; Schroder, 2004) have showed that there is no significant difference between the performance of SRI funds and conventional funds or benchmarks. In other words, the fund manager's stock selection is unable to outperform the market benchmark. Studies of Europe mainly in United Kingdom due to data availability (Derwall et al., 2009; Gregory et al., 1997; Gregory and Whittaker, 2007; Mallin et al., 1995; Mill, 2006). More recently, researches conducted in other European countries such as Netherland (Scholtens, 2005, 2007), Sweden (Stenstrom and Thorell, 2007), Spain (Fernandes-Izquierdo and Matallin-Saez, 2007; Lozano et al., 2006; Munoz-Torres et al., 2004), Italy (Signori, 2009), and Asia-Pacific (Bauer et al., 2006; Cummings, 2000; Humphrey and Lee, 2011; Jones et al. 2008 and Tippet, 2001).

Nonetheless, there are two studies in Luxembourg which are Rennebourg et al. (2008b) and Rennebourg (2011). Rennebourg et al. (2008b) and Rennebourg et al. (2011) investigated the performance of SRI funds for 17 countries including Europe (Belgium, France, Germany, Ireland, Italy, Luxembourg, Netherland, Norway, Sweden, Switzerland and United Kingdom), North America (United States and Canada) and Asia Pacific (Australia, Japan, Malaysia and Singapore). Rennebourg et al. (2008b) found that SRI funds from most of the countries were underperformed the market benchmarks significantly. Rennebourg et al. (2008b) also found that mixed result for the smart money effect[2]. Besides, Rennebourg et al. (2008b) also found that inverse relationship between SRI fund's return with screening intensity. Lastly, larger fund size is found to have a lower return for conventional funds but not for SRI funds. Rennebourg et al. (2008b) also found little market timing skill in the UK, US and continental Europe but not in the Asia Pacific. However, market timing skill has not been examined in Luxembourg.

Rennebourg et al. (2011) investigated the flow-return relationship and whether SRI investors able to select funds that will do well in future. They found that SRI investors from the US, UK and Asia Pacific region care less about the past return than the conventional investors. Moreover, they also found that there is no relationship between the past money flow and future return of the fund for both SRI and conventional funds.

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[1] http://www.alfi.lu/publications-statements-0
[2] Smart money effect means investors are able to select funds that will generate superior performance in the subsequent period.

To be more specific on Luxembourg, we only discuss the finding for Luxembourg, Rennebourg et al. (2008b) investigated the performance of 12 SRI funds against 360 conventional funds in Luxembourg. The performance of 12 SRI funds is found to be underperformed the market significantly when measured by the Jensen alpha model. However, the difference in performance between SRI funds and conventional funds is not significant at all, which indicates that both performances are actually the same.

To the best of our knowledge, there is no single study of SRI funds in Luxembourg. We intend to fill in this research gap to contribute to the literature. The studies (Rennebourg et al., 2008b and Rennebourg et al., 2011) investigated Luxembourg SRI funds are smaller sample size than our study. Rennebourg et al. (2008b) studied only 12 SRI funds and Rennebourg et al. (2011) investigated 43 SRI funds. Our study could provide a more robust and comprehensive finding in the literature.

Based on our literature search, there is no single study on market timing skill for SRI funds also in Luxembourg so far. To the best of the knowledge, this paper is the first to investigate SRI funds in Luxembourg in a single country specified study.

3.0 Data

This study uses data from Eurekahedge database for 146 SRI funds in Luxembourg for the sample period of April 2001 to June 2010. There are two reasons this sample period is chosen. First, the number of SRI funds launched within this period is the highest. Second, this study intends to study the performance of SRI funds after the dot com bubble and the effect of global financial crisis in 2008. This database has an advantage that enabled us to collect all the required SRI funds at once. Moreover, Eurekahege is the world's largest alternative investment funds research house which specializes in hedge fund research.[3] Risk free rate used in this study is Euribor 1 month and Luxembourg stock market index, LUxX which are obtained from the Banque Centrale du Luxembourg website.[4]

4.0 Methodology

We employ market timing model to determine whether the fund managers possess market timing skill. Stock selection skill is the prediction of an individual stock movement while market timing skill is the prediction of the general stock market movement. Stock selectivity skill of fund manager as indicated by the alpha in CAPM model. Ideally, significant and positive alpha indicates that the stock selection skill of fund manager is excellent and vice versa.

For market timing skill, as indicated in Treynor and Mazuy (1966), the characteristic line relates the fund's return and market return. Fund managers who possesses the market timing skill will have the market return of a quadratic behavior. Treynor and Mazuy (1966) illustrated the market timing skill by including a quadratic term of market index into single index CAPM model. Thus, Treynor-Mazuy (1966) model is defined as:

$$R_{it} - R_{ft} = \alpha + \beta(R_{mt} - R_{ft}) + \gamma(R_{mt} - R_{ft})^2 + \varepsilon_{it}$$

(1)

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[3] http://www.eurekahedge.com/
[4] http://www.bcl.lu/en/statistics/series/03_Capital_markets/index.html

where
R_{it} = Return of the fund i at time t
R_{ft} = Return of risk free rate at time t
R_{mt} = Return of the market or benchmark
ε_{it} = Error term

Manager with timing skill will increase β during the market upturn and vice versa. Treynor and Mazuy (1966) explained that a positive β indicates the rates of return on the portfolio are more sensitive towards large positive market returns than large negative market returns.

A significant positive γ indicates that market timing skill of the manager exists (Girard et al., 2007). Insignificant or significant negative gamma means the market timing of fund managers does not exist. If fund manager does not possess market timing, the fund manager depends solely on stock selectivity skill in order to achieve abnormal return. Thus, positive significant α indicates that the stock selectivity skill of fund manager is excellent whereas negative and significant α means that the selectivity skill is poor.

Nonetheless, we employ Henriksson-Merton (1981) model for robustness checking. Henriksson-Merton (1981) model taken into account the hedge strategy. It is an improved model of Treynor-Mazuy (1966) and is widely used in hedge funds study. Henriksson-Merton (1981) model is defined as:

$$R_{it} - R_{ft} = \alpha + \beta(R_{mt} - R_{ft}) + \gamma \max(0, R_{mt} - R_{ft}) + \varepsilon_{it}$$

(2)

where
R_{it} = Return of the fund i at time t
R_{ft} = Return of risk free rate at time t
R_{mt} = Return of the market or benchmark
ε_{it} = Error term

Henriksson and Merton (1981) explained that unlike the Treynor-Mazuy (1966) model, fund manager who wish to time the market only need to predict whether $R_m \geq R_f$ (uptrend) or $R_m \leq R_f$ (downtrend) and select β where $R_m \geq R_f$ (Deb et al. 2007). Similarly, a significant positive γ indicates that the market timing skill of manager exists. Likewise, negative or insignificant γ symbolized the non-existence of timing skill. Furthermore, α measure the stock selectivity skill of fund managers.

More recently, Fama and French (1993) and Carhart (1997) found that size, value and momentum factors added value in explaining the return of portfolios. Thus, studies on market timing (Bollen and Busse, 2001, 2005) recently also incorporated size, value and momentum factors in the model. Furthermore, Ferson and Schadt (1996) measured the market timing skill by including the economic factors into the Treynor-Mazuy (1966) model. Due to data unavailability, we opt to employ only Treynor-Mazuy (1966) and Henriksson-Merton (1981) models although there are lastest version or extension of these models. Besides that, there are evidences from the literature that these two models are still applicable and valid to be used to investigate the market timing skill of fund managers, for example, Prather and Middleton (2006), Romacho and Cortez (2006), Rodriguez (2008), Sehgal and Jhanwar (2008), Raja and Rao (2009), Chopra (2011) and Kumar (2012) employed only Treynor-Mazuy (1966) and Henriksson-Merton (1981) models in their studies.

5.0 Result

Table 1 exhibits the descriptive statistics of SRI funds, Euribor 1 month and LUxX. It is found that LUxX has the highest mean. For instance, if the fund managers opt for passive strategy to track the performance of LUxX, the investor still able to obtain 0.05% of return in average. In term of risk as measured by standard deviation, Euribor 1 month has the lowest risk. Moreover, SRI funds have lower risk than LUxX. If the risk is measured by coefficient of variation, SRI funds have the lowest risk but LUxX has the highest risk per unit of mean. We find that the distribution is skewed to the right as indicated by the negative sign of skewness. For measuring the degree of fat tails, kurtosis value shows that the distribution has fat tailed except Euribor 1 month.

Table 1: Descriptive Statistics of SRI Funds, Euribor and LUxX

	SRI FUND	EURIBOR	LUxX
Mean	-0.0295	0.2321	0.0507
Std. Dev.	4.9142	0.1042	7.5655
Coefficient of Variation	-166.6899	0.4490	149.1060
Skewness	-1.01700	-0.2484	-1.6729
Kurtosis	7.8745	2.2713	7.4969

Table 2 shows the regression results of Treynor-Mazuy (1966) and Henriksson-Merton (1981) models. In Teynor-Mazuy (1966) model, we find that SRI funds underperformed LUxX significantly at 1% level. This means that SRI funds performed 0.18% lower than LUxX. The α is -0.1825 infers that the fund manager has poor stock selectivity skill. In terms of market sensitivity, the β is significant at 1% with an estimated coefficient of 0.4658. When LUxX increases by 1%, the fund return increases by 0.5%. As the market sensitivity is less than one, we can conclude that SRI funds are conservative. We also find that positive timing skill exist with the estimated γ of 0.0022. This infers that the SRI fund managers in Luxembourg are able to forecast the movement of stock market in general. For the goodness of fit of model, this model is able to explain 48% of the data.

For robustness checking, we employ another market timing model i.e. Henriksson-Merton (1981) model for estimation. The same conclusion can be drawn from this model. Only the estimated coefficients are slightly difference. SRI funds are found to be underperformed LUxX with 0.18%. However, as the market timing factor (0.0489) is more positive and highly significant. By Henriksson-Merton (1981) model, the model is successfully explained by 48% of the data.

In a nutshell, we can conclude that SRI funds are conservative funds and underperformed the LUxX. Furthermore, fund managers are found to be able to predict the stock market movement well.

Table 2: Results of Treynot-Mazuy (1966) and Henriksson-Merton (1981) Model

Model	Treynor-Mazuy	Henriksson-Merton
α	-0.1825***	-0.1838***
β	0.4658***	0.4202***
γ	0.0022***	0.0489***
Adj-R2	0.4840	0.4819

Note: *** significant at 1% level.

6.0 Conclusion

This paper investigates the performance of SRI funds in Luxembourg. The performance of SRI funds are compared against the stock market index. We find some interesting findings. The performance of SRI funds is worsen than Euribor-1-month in term of mean returns. Moreover, SRI funds are conservative funds. Fund managers are found to possess market timing skill and able to forecast the stock market movement in general. They are able to shift the composition of funds according to market condition.

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Medical tourism: Sustainability of Health Care Industry in Malaysia

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Abstract

Medical tourism as revenue generating industry for destination countries (Johnston, Crooks, Snyder, & Kingsbury, 2010) and as progressive vehicle to diversify nations economics, government of India, Thailand, Singapore, Malaysia, and the Philippines are attracting foreign investment, promoting job opportunities, building the health services industry using regional strength to benefit from the doctrine of competitive advantage (Turner, 2007). Therefore, various countries are competing on different market segment by specializing in different market niches based on the availability of resources and trade opportunities in the country (Cattaneo, 2009). During the Asia Financial Crisis in 1997, Malaysia's healthcare industry particularly the private healthcare sector with the encouragement from the government started promoting medical tourism industry in the country. Looking into this scenario, the purpose of the study is to identify factors that contribute to the sustainability of medical tourism industry in Malaysia through customer satisfaction from the aspects of pricing strategies, medical care and medical practices. Pricing strategies will be examined from the view of lower cost medical procedures, cheaper hospitals charges, lower travel and accommodation cost for patients and family with affordable air travel. Meanwhile, medical care will be analyzed by quality medical care by physicians, personalized care by nurses and support services, customer services, communication, transportation, admission and discharge procedures, care during recuperation period, quality accreditation and waiting hours. Whereas medical practices will be observed through pre-appointment with doctors, treatments success rate, ethics in medical treatment especially in transplant tourism and reproductive tourism and continuity of care after treatment. The main implication of the study is focused to the management of the healthcare centers to sustain competitive advantage in the medical tourism industry in terms of customer satisfaction through the available resources.

Keywords: Medical tourism, competitive strategies, medical tourist's satisfaction

1.0 Introduction

Medical tourism as a multibillion dollar industry adds value to the economy of the participating countries and increasingly diversifying job opportunities to directly and indirectly related fields (Farrugia, 2006). In Asia, medical tourism is expected to earn US$4.4 billion by 2012 (Gupta, 2008). Looking at these opportunities, in Southeast Asia, Singapore, Malaysia and Thailand are developing medical tourism through deliberate marketing strategy (Chee, 2007). Malaysia which is neighboring competitive counterparts Singapore and Thailand ventured into medical tourism especially after the 1997 Asian Financial Crises. Besides that, under New Key Economic Area (NKEA), which was initiated under the Malaysian government's Economic Transforming Program (ETP) is intended to reform healthcare as an economic commodity as well as social right. Therefore, medical tourism industry is expected to fulfill the reformation of healthcare system in Malaysia.

2.0 Literature Review

2.1 Medical Tourism Perspectives

2.1.1 Economy of Destination Countries

Medical tourism is identified as revenue generating industry for destination countries (Johnston et al.,2010) especially in the regions with low wages, low rates of corporate taxes or special economic zones with no corporate taxes, inexpensive real estate, low-cost or non-existent malpractice insurance, favorable currency exchange rates and competent medical care which could attract the international patients (Turner et al. 2007). Therefore, regional and national government of India, Thailand, Singapore, Malaysia, and the Philippines see medical tourism as progressive vehicle to diversify their economics, attracting foreign investment, promoting job creating, building the health services industry and using regional strength to benefit from the doctrine of competitive advantage (Turner et al., 2007).

As an indirect positive effect, the hotel industry has evolved tremendously due to the growth of medical tourism industry. The hotel industry which was catering services for leisure travelers and hosting meeting and conferences is focusing to medical travelers (Cormany, 2009). Moreover, hotels also emerge 'aftercare' facilities adequate for those recovering from cosmetic surgery where these patients need more privacy and shaded outdoor areas. Besides that, hotels also supplement family members with tourism and relaxation experiences. Hotels cater different and greater levels of support services for post-major surgery travelers. By being "medical traveler friendly", the hotel industry is adapting new trends in staff services and facilities modification besides providing more job opportunities.

2.1.2 Healthcare Industry in Destination Country

There are positive and negative effects of medical tourism on the destination healthcare sector. Increased volume of international patients is expected to generate better clinical outcomes as the high volume of patients combined with high specialization enable providers to reduce errors while performing medical procedures besides cross-subsidizing publicly funded health care using the revenue generated from the international patients (Turner et al., 20070). Moreover medical tourism also ensures development of health care infrastructure (Turner et al., 2007) besides setting Western-oriented standards of health care in destination countries (Johnston et al., 2010) and permits expansion of the private and public health care sector.

On the other hand, the increased number of international medical tourist could have negative effects upon local patients of the destination countries, health care facilities and economies. Due to, many countries are making significant investments to become regional medical hub, it is understood medical tourism as the user of public resources (Johnston et al., 2010). As an example, free National Health Plan endorsed by Parliament of India in 1983 reported to be abandoned gradually over the years due to poor implementation of regulations (Tattara, 2010). It is also understood that India's public healthcare is under-utilized and inefficient whereas the private healthcare sector is more efficient and better quality of services are provided. Even though India's achievement is excellent in medical tourism industry compared to its counterparts in the region, the industry's contribution towards the people's to enjoy quality health care is questionable. Moreover, it is also unclear about the national economic strategies on medical tourism by Indonesia, Hong Kong, Malaysia, the Philippines, South

Korea and Taiwan (Turner et al. 2007). Therefore it is suggested that public resources might be better to put into publicly funded health care rather than spending on promoting medical tourism. Therefore government's involvement to outline guidance in investing revenue earned through medical tourism to the public healthcare is essential for future of the nation.

When large number of international medical travelers flows into the country, the cost of health care is likely to climb for local patients due to the increase in salary of physicians, nurses and other health care providers. Higher cost of health care could be less accessible for the local patients (Turner et al. 2007). This scenario can be overcome by investing public funds into preventive medicine, public health care and basic social infrastructure rather than directing those funds towards specialized medical centers and advanced biotechnologies (Turner et al., 2007).

2.1.3 Healthcare Centers in Destination Countries

Medical tourism has entrepreneurial opportunity in a new emerging international business (Lee, 2007). In the past, international travel for medical tourism was mainly for treatments that are not available in the home countries. Since the 'new' medical tourism involves private hospitals or private healthcare providers which are funded mostly by the medical tourist themselves it has been common for entrepreneurial ventures to increase revenue to remain self-sufficient in the emerging industry. Efforts by healthcare centers such as Raffles Hospital & Parkway Groups are taking initiative to market Singapore's medical tourism in China, South Asia, the Middle East, Indonesia and Russia (Teh, 2007) shows that healthcare centers themselves are taking the initiative to promote medical tourism to increase their customer market which increase revenue earned and to optimize productivity by utilizing available resources.

When attracting individual clients is time consuming and inefficient, medical tourism promotion activities change its trends (Turner et al. 2007) where medical tourism companies are learning to attract high volume of medical tourist by offering company packages. As medical brokerages shift to establishing out-of-country health care for corporate clients, collaboration between medical tourism companies and healthcare centers has become important factor to gain higher volume of medical tourists. Moreover, collaboration with travel and tour agencies, home-country hospitals, tourism industry and government bodies also contribute to attract significant volume of international patients.

Thailand hospitals are collaborating through tie-ups and affiliations with travel agencies, referral agencies and patients' home-country hospitals besides making significant investment in the latest technology, acquiring quality certification (ISO), accreditations and attracting highly skilled doctors (Teh et al., 2007). Whereas hospitals in India are coordinating with tourism industry, among national government, state government and numerous federal bodies to promote medical tourism in the county (Heung Kucukusta & Song, 2010).

2.2 Government's Role of Destination Countries

Government as the policy maker had realized the potential of medial tourism for the local economy by playing an important role in promoting and supporting the growth of medical tourism industry. Therefore, as reported by Deloitte (2008), the Department of Health in the Philippines has produced a medical tourism guidebook that will be distributed throughout Europe and the Korean medical tourism promotion policy has led to the planning of new

medical institutions for international patients. Whereas in Taiwan, the government has announced a $318 million project to help further develop the country's medical services. In Malaysia, the government has increased the allowed stay under a medical visa from 30 days to six months and the government of Singapore has formed a collaboration of industry and governmental representatives to create a medical hub in Singapore. It is identified that, strong economic development in developing countries has provided the resources and opportunities to build massive health care centers for patients travelling from all around the world.

Governments are also involves in promotion and marketing medical tourism industry either in multi-lateral or bi-lateral trade. Government's encouragement through incentives for investment by private healthcare centers either for infrastructure and medical facilities, tax deduction for revenue earned through medical tourism; flexible visa for medical tourists (Chambers, 2008) will determine the sustainability and the growth of medical tourism industry in the nation.

Thailand government is making significant investment to promote medical tourism by implementing simplified visa procedures, construct new hospitals, and funding students to attain higher education abroad (Teh et al. 2007). Government of India is putting its effort to promote medical tourism to medical tourists from Britain and Canada (Lancaster, 2004) where British National Health Service are subcontracted to India (Bies and Zacharia, 2007). Besides that, India also provides special zoning law, reduced tariffs for imported medical devices, lower corporate taxes and investing in transportation infrastructure such as airports (Turner et al. 2007) and issuing M-visas which are valid for one year for the patients and companies (Chinai, 2007).

Government's encouragement is vital to the growth of medical tourism as it is recognized as an important source of foreign exchange (Smith, and Chanda, 2011) besides preventing external "brain drain", exchange expertise knowledge in medical world, expose to latest or advanced technology in medical field (Turner et al., 2007) and improves nation's public healthcare services and facilities if revenue earned through medical tourism is managed strategically and invested back into the public health system and able to reverse the brain-drain (Smith et al., 2011).

Consequently, government's effort in bi-lateral trade relationship may result in greater quality assurance, as well as better litigation procedures and at the same time benefits both the importing country and the exporting country (Smith et al., 2011). For example Singapore government has memorandum of understanding with Bahrain, the UAE government sends citizens for cancer referrals to Singapore and Qatar and Kuwait citizens do not require visas to enter Singapore (Chee, 2006). Importing countries could negotiate on price directly which helps to save on the healthcare expenditure, specifying number of patients to be treated in specific, allow better planning in organizing the resources besides, increasing privacy and confidentiality with higher levels of personal care.

Branding the nation or the state as healthcare cluster or healthcare city with the support of government create confidence in medical tourists to travel to the unknown world for treatment besides sustaining the growth of the industry over time (Fitz, 2010) because patients are travelling cross-border and cross-culture. As an example Dubai healthcare City (DHCC) in the United Arab Emirates, Acibadem Healthcare Groups in Turkey, and Wockhardt Hospitals Limited in India demonstrates new models for global healthcare (Crone, 2008). Whereas in

India medi-cities like Gurgaon Medanta close to New Delhi, Aditya Birla Memorial Medicity in Pune, are explicitly projected as foreign exchange earners (Tattara et al., 2010).

These healthcare cities and medi-cities are providing comprehensive services, postgraduate medical training, and research programs which emphasis on quality with good clinical and administrative technology besides creating environment with potential to draw internationally trained professionals back to the region and encourage the public sector to improve to an equivalent standard (Crone et al. , 2008). As centre of excellence these healthcare clusters may create opportunity for 'one stop shopping' and will be able to coordinate care and offer package pricing (Fitz et al., 2010. In other words, healthcare cities create job opportunities for the locals in medical related field and may help preventing external brain-drain. Therefore, this study will look into opportunities that Malaysia has in the creation of healthcare cities or healthcare clusters which can help in the growth of medical tourism industry in this country.

2.3 Customer Satisfaction

Monumental changes in health care delivery systems have focused attention on more affordable, more available, more efficient and higher quality health care (Nesreen, Waleed and Aibedami, 2008). In today's challenging business environment, competitive advantage lies in delivering notable high quality service that resulted in satisfied customers (Shamwell, Yavas and Bilgin, 1998). Customer satisfaction represents a profitable competitive strategy variable because studies have shown that the public do not consider cost to obtain quality care which satisfies customers' needs and its value as a competitive tool where hospitals with better images have been able to convert these into increased utilization and market share (Boscarino et al., 1992).

Furthermore, customer satisfaction is recognized on influence of repeat purchases and word-of-mouth recommendations (Berkman and Gilson, 1986). Generally, service quality promotes customer satisfaction, stimulate intention to return and encourage recommendations (Nadiri and Hussain, 2005). Therefore, satisfaction of customers also happens to be the cheapest means of promotion. Due to that, this study is intended to identify the competitive advantage of healthcare centers to influence the medical tourists' satisfaction in the medical tourism industry.

3.0 Adopting Porter's Competitive Advantage Model in Medical Tourism Research

In order to increase firms performance competitive methods are used in the overall strategy development process by managers (Porter, 1980, 1985; Campbell-Hunt et al., 2000) which results between the linkage of cost leadership, differentiation and focused generic strategies (Fahy and Smithee, 1999). With the development of an overall cost leadership, differentiation, or focus approach superior performance can be achieved in a competitive industry (Porter et al., 1980, 1985; Day, 1988), concluded that establishing a generic strategy based positional advantage in the marketplace will provide a firm with superior performance Therefore, competitive advantage can be developed from particular resources and capabilities the firm possesses that are not available to competitors.

A firm sets out to become the low cost producer in its industry through cost leadership competitive advantage. Hospital managers have focused their attention on cost control measures in order to protect themselves from competitive forces arising in the industry (Hlavacka, Bacharova, Rusnakava and Wagner, 2001). Hospitals demonstrated efficiency in

using allocated resources through tight cost control methods. Through differentiation strategy firms seek uniqueness in its industry. Use of the latest technologies, perceived quality of medical staff, provision of "hotel" services, patient support services, provision of services not commonly offered are some examples of differentiation strategies. Meanwhile focus strategy involves narrow segments target of the market, rather than the market segment as a whole. Hospitals that adopt focus strategy will target on specific type of medical patient.

Adoption of Porter's Competitive Advantage Model in the manufacturing sector researches result that the model had contributed in manufacturing sector. Whereas adoption of this model in the private health care sector by Thilagavathi, Shankar and Jayaraman, (2010) explained that it only differentiation strategy is significant to customers satisfaction. Therefore, this study will adopt Porter's Competitive Advantage Model in medical tourism industry in Malaysia in order to see the relationship between the strategy adoption of health care centers and the medial tourist's satisfaction. The study also intends to identify factors that contribute to the sustainability of medical tourism industry in Malaysia through customer satisfaction and to gain bigger market share in the region. Due to that, Porter's Competitive Advantage Model is adopted to construct the theoretical framework of the study relating customer satisfaction as explained below.

Figure 1 shows the theoretical framework of the study which links the dimensions of Porter's Competitive Advantage Model (1980). The theoretical framework also includes strategies adopted by healthcare centers that lead to the sustainability of the medical tourism industry through medical tourist's satisfaction.

Figure 1: Proposed Theoretical Framework
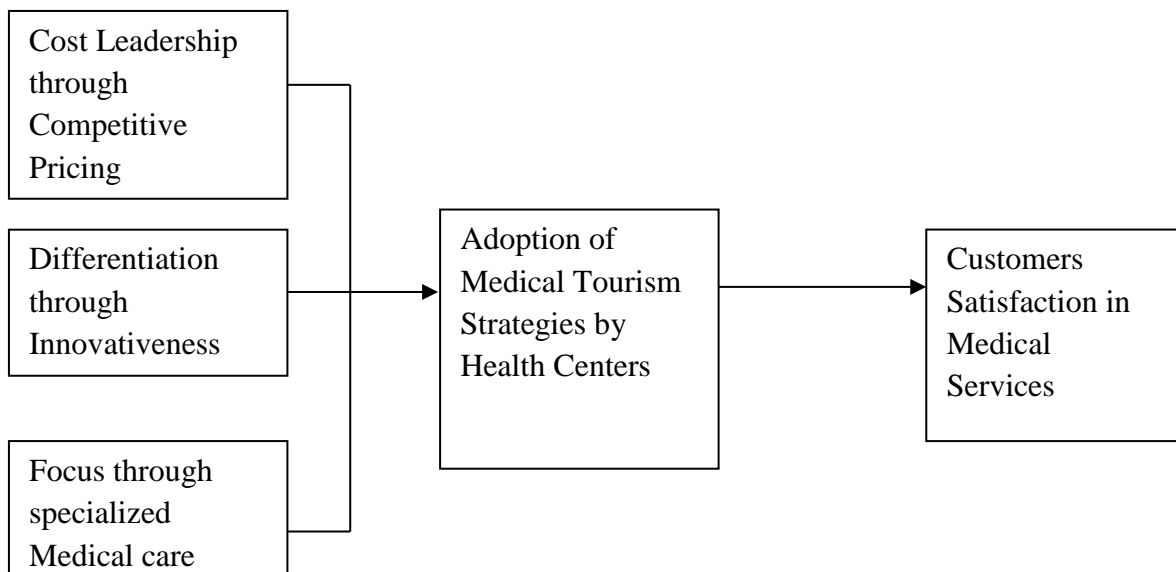
Since this study will be focused on medical tourists, low cost medical treatment through pricing strategies will be identified as one of the independent variable. Cost has been recognized as one of the important variable that influences the growth of medical tourism industry in 21st century (Deloitte et al., 2008). Based on economical point of view, supply of medical services at relatively cheaper cost in developing countries (Lin, 2010; Connell, 2006) became the major factor that attracts inbound medical tourists to the developing countries. Besides that, reduced cost of international travel (Connell et al. 2006), favorable economic

exchange rates (Chambers et al., 2008), are also identified as other important factors for cost sensitive medical tourists especially for those who are underinsured and uninsured from developed countries to travel abroad for medical services. Moreover, countries in Asia such as India, Thailand, Singapore and Malaysia are also gaining competitive advantage through favorable exchange rates besides easy accessibility of their medical tourism due to advancement in air travel (Lee et al. 2007). Therefore, in order to be competitive in the emerging medical tourism industry Malaysia needs to attract medical tourists based on competitive price but at the same time emphasis on the quality of the medical services offered in the country. Therefore this study will examine cost as one of the important factor that influences healthcare centers strategies and medical tourists' satisfaction at the same time. Therefore, it is assumed that low cost medical treatments are positively related to medical tourist's satisfaction.

Proposition 1. Low cost medical treatments give greater medical tourist's satisfaction.

Medical travelers seek high quality and faster services instead of lower cost (Ehrbeck, Guevara & Mango, 2008). Delivery of quality medical treatment by doctors as service personals gives the highest satisfaction to the patients (Thilagavathi et al., 2010). Moreover English-speaking physicians who are trained in developed countries such as England and United States of America (Lancaster et al. 2004). Due to that translation services become critical factor to attract prospective medical tourists. A good patient-doctor relationship can lead to better outcome of medical treatment and medical customer will achieve satisfaction (Thilagavathi et al., 2010). This indicates that good communication between patient and doctor will lead to better understanding of sickness and treatment required and will be able to tap larger international patients around the world. Adaptation of advanced technology conveys the message that these hospitals offer top-tier healthcare with advanced, specialized, elite, acute care hospitals facilities (Turner et al., 2010). Technological advancement and faster communication links especially through internet will allow the local surgeons to follow patients' progress in the abroad (Bennett, 2009). improvement of technology and standards of the medical state-of-art facilities (Connell et al., 2006), qualified and personalized post operative care (Leon-Jordan, Kuruvilla, & Jacob, 2010) and the hygiene and safety medical services offered in the developing countries are compatible to western countries (Connell et al. 2006 ; Chambers et al. 2008), availability of medical services that are not available in the US (Peters & Sauer, 2011), a very tourists friendly culture in countries like Thailand (Teh et al. 2007) and Philippine, and less waiting hours (Lin et al. 2010) are also identified as internal strategies adopted by health care centers to promote and attract international patients. Therefore it is assumed that medical tourist's satisfaction is positively related to quality medical care by highly trained physicians and staffs.

Proposition 2. Highly qualified physicians give greater satisfaction

Continuity of care after treatment especially for procedure-driven medical care such as orthopedic surgery, cardiac procedures, organ transplant and other procedures needs to be considered and ensured by providers of international medical care (Turner et al., 2010). The management team of healthcare centers adopts efficiency-optimizing techniques from the manufacturing sector and hotel managers are hired by these healthcare centers to improve on customer service (Turner et al, 2010). Leon-Jordan et al. (2010) address that some ethical issues revolve around medical tourism such as transplant tourism which is also known as organ trafficking, illegal purchase of organs needed for transplant has been alleged in some countries. Political, religious and social controversies also arise from the surrogacy practice.

Therefore, safety and quality issues also need to be addressed to increase competitive advantage for providers (Tattara et al., 2010). Therefore, medical tourist's satisfaction is assumed to be positively related to specialized medical practices offered by the healthcare centers.

Proposition 3. Specialized medical practices give better medical tourist's satisfaction.

4.0 Emerging Issues of Medical Tourism in Malaysia

Malaysia's medical tourism industry is still in its emerging phase and the structure isn't strong (Shah, 2008) and the perceived value of the industry show that the industry is active and vibrant to work with and major asset impact is on business relationships and manpower rather than finance. High-quality medical service has become important aspect in promoting medical tourism in Malaysia. Therefore, 35 private hospitals were selected as official private healthcare centres promoting health tourism and listed in the Association of Private Hospitals Malaysia (APHM) website. These 35 hospitals are categorized into four types by ownership. Government-linked company (GLC) (9 hospitals), transnational corporation (TNC) (9 are transnational in the sense they are privately-owned with a controlling stake by foreign company), Malaysian private companies (10), (Malaysian private company ranging from public-listed conglomerates (2) to smaller private limited companies (1) the others private limited companies), and non-profit organization (7) (Chee et al., 2006).

Malaysian government is deeply involved in the growth of medical tourism by providing the institutional framework for quality assurance. Private hospitals are encouraged to acquire government accreditation and quality (MS ISO 9000) which is implemented in collaboration with the Ministry of Health and Malaysian Society for Quality in Health. Moreover Malaysian government also has affiliation with world-renowned healthcare centres such as the MAYO Clinics, Johns Hopkins University Medical Centres, and Great Ormond Street Children's Hospital to ensure quality assurance (Chee et al. 2007).Besides that the government also provides the legal and policy framework to encourage the development of medical tourism (Chee et al. 2006). The government encourages the development of medical tourism through tax incentives for building hospitals, using medical equipments, pre-employment training promoting services and use of information technology (as cited in MOH 2002b). In addition, the national committee on health tourism has proposed further incentives, including tax exemption for the revenue earned from the foreign patients in excess of 5 percent of the total revenue for the hospital, double deduction for the money spend on accreditation, and reinvestment allowance in relation to accreditation requirement (as quoted in MOH, 2002:110).

The government also plays its role in marketing medical tourism industry through The Malaysian External Trade Development Corporation (MATRADE), Ministry of International Trade and Industry (MITI) and Malaysian Tourism Promotion Board by organizing seminars, road shows and other marketing activities in countries that have been targeted (Chee et al., 2006). The Malaysia Healthcare Travel Council (MHTC) as fully-functioning entity within the Ministry of Health, Malaysia becomes the main coordinating body between the various agencies involved in this sector (APHM website, accessed 3 July 2011). Apart from that collaboration between hotels, tourist agencies, and medical centres offering holiday packages combined with hotel accommodation together with health screening and medical check-ups (Chee et al., 2007) are also identified as some of the corporate strategies to promote medical tourism in Malaysia. It is also identified that health tourism agents add value to the medical

tourism industry by connecting hospitals, hotels, airlines and insurance companies to create a healthy medical tourism package for the medical traveller (Shah et al., 2008).

Even though requested by MOH availability of statistics on medical tourism is poor in Malaysia (Chee et al., 2007). However the available data shows increasing trend in the total revenue earned through medical tourism and the number of foreign patients coming to Malaysia. Middle and upper classes of medical tourist from countries where 'quality healthcare services are not available like Indonesia, Vietnam, China, Myanmar, Cambodia (Connell et al. 2006) and from developed countries where the waiting list are long and private services less affordable are the majority of medical tourist coming to Malaysia (Chee et al., 2007).

It is also identified that the most demanded procedures are coronary heart disease, plastic surgery, hip and knee implants, and high-end diagnostic services (Chee et al., 2007). In Penang, the most demanded medical services are cardiology, cardiothoracic surgery, general surgery, orthopaedic, eye, ob-gyn services and general medical screening (as quoted by Datuk Dr.K. Kulaveerasingam, head of health tourism committee in the APHM).

Modern healthcare facilities, qualified medical experts, and low prices are the chief characteristics of the Malaysian medical tourism. In addition, Malaysia has advantages of physical attractions such as beautiful beaches and resorts (Heung et al., 2010). In ASEAN region Malaysia is making a mark due to availability of medical and technical expertise, political and economical stability, high quality infrastructure, and scenic beauty of the land (Aniza, Aidalina, Nirmalini, Inggit, and Ajeng, 2009). Relatively low cost, establishment of Malaysia as tourist destination, maintaining confidentiality of patients and English-speaking health professionals are identified as Malaysia's strength in medical tourism (Aniza et al. 2009).

However shortage of medical professionals, nurses and nurses' specialists and lack of information about medical tourism in the Association of Private Hospitals Malaysia website, Ministry of Health website and Ministry of Tourism website (Shah et al., 2008), lack of impressive promotional activities and customer service, less focus on provision on medical treatment or branding are identified as some of the barriers in the growth of medical tourism in Malaysia (Aniza et al., 2009). Besides that Malaysia is facing threat from internationally successful counterparts in medical tourism industry which focuses on low cost (Thailand) and high quality medical care (Singapore) (Aniza et al., 2009).

Therefore, this study will identify relevant competitive strategies that Malaysia's health care centres have to adopt to enhance its medical tourists' satisfaction and to capture a larger market share in the region. The study will also investigate on factors that contribute to the sustainability of medical tourism industry in Malaysia through medical tourists' satisfaction Therefore, this study will adopt Michael Porter's Competitive Advantage Model to analyse healthcare centres strategies in three methods: cost leadership method, differentiation method and focus method. The outcome of the study will be focused to the management of the healthcare centres to sustain competitive advantage in the medical tourism industry in terms of customer satisfaction through the available resources. As Malaysia intend to become the regional medical hub, it is important to know its competitive advantage in medical tourism industry.

5.0 Conclusion

Porter's Generic Strategies will be adopted in this study with the intention to outline the strategies to gain competitive advantage to grow and sustain in medical tourism industry. The proposed framework will be able to identify the strategies based on cost leadership, differentiation, or focus strategy that the private healthcare centers need to adopt in order to gain bigger market share and attract high volume of international patients. As development of medical tourism varies according to countries and region there is some element that needs urgent emphasis. Therefore government institution or system, and policy could be the variable that contributes to the growth and sustainability of the industry. Therefore it is important to identify variables that can contribute to the competitive advantage that Malaysia has in the emerging medical tourism industry to become the medical hub in the region.

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Do Green Value Chains Contribute To Competitive Advantage?

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Abstract

This study looks at the effect of the green value chains of firms in creating competitive advantage. 'Green' refers to making organizations responsive to ecological and health concerns (Shrivastava, 1995). As the competition has shifted towards the ecological aspect, greening the value chain has become an important concern for consumers and firms alike as well as a strategy in gaining competitive advantage. However, the study of green value chains in achieving competitive advantage is still at the infancy stage. A review of the extant literature reveals that green value chains assist organizations to gain lower cost and differentiation via eco-efficiency. Eco-efficiency with regard to the utilization of resources helps to save cost and minimize waste while at the same time lowers the detrimental effect of the firms' operations on the environment. Moreover, being green is perceived by consumers' especially those who are environmentally-aware and concerned as being the correct thing for a socially-responsible firm to do. This contributes to enhanced corporate image therefore enhancing the firms' positioning in the market place. Thus, the theoretical arguments in this paper extend the concept and linkage between green value chain and competitive advantage as well as provides a better understanding of how do green value chains play a role in the competitive advantage of firms.

Keywords: Green value chain, competitive advantage, eco-efficiency

1.0 Introduction

Environmental issues such as pollution, depletion of natural resources, use of energy and waste disposal provide both opportunities and restrictions towards businesses. Firms can deal with the environmental issues through compliance to governmental regulations or tackle it in the strategically way to achieve competitive advantage (Handfield, Walton, Seegers, and Melnyk, 1997). For example, firms can respond to the issues by minimizing the waste produced through reverse logistics (Wu and Dunn, 1995). Reverse logistics refers to the effort to minimize the reverse flow of consumers returned, recyclable packages and packaging waste shipments in the logistic systems (Wu and Dunn, 1995). The minimization of the reverse flow helps to trim down the total quantity of waste in the whole organization and increase the efficiency use of raw materials as reverse logistics focuses on source or raw material reduction and substitution rather than reuse and recycling (Wu and Dunn, 1995). The implementation of reverse logistics is not only eco-efficient and minimize waste but may serve as additional profit if the firm enable to find a better way to change wastes in an industry into input in other industries and sold it off (Madu, Kuei and Madu, 2002).

In gaining competitive advantage, businesses should explore their green capabilities and opportunities through their own value chain activities in line with the pro-environmental evolution in the marketplace. The emphasis on the value chain activities is important as the value chain represent the fundamental activities conducted within a business to achieve competitive advantage (Porter, 1985). Value chain is a grouping of different activities performed by organizations to design, create, market, distribute as well as supporting their firm products (Porter, 1985). Value chain analysis has long been linked to the achievement of competitive advantage (Kaplinsky and Morris, 2001; Peppard and Rylander, 2006; Porter, 1980, 1985). However, the link between green value chain and competitive advantage is still in the infancy stage. A review of the extant literature reveals that by greening value chain could help organizations to gain lower cost and differentiation advantage (Madu et al., 2002; Melnyk, Sroufe, and Calantone, 2003; Miles and Covin, 2000; Porter and Claas, 1995). This paper suggest that addressing environmental issues may produce competitive advantage as well especially when organizations are able to use their own innovativeness in capturing value from the customers by greening their value chain activities (Porter and Claas, 1995). This paper begin with a review of the value chain concept and its relationship with competitive advantage. Next a discussion on green value chain shall follow. Finally, the green value chain concept developed will then be used to explain how addressing environmental issues can contribute to competitive advantage.

2.0 Literature Review

The growing consciousness of people on environmental protection and the shifting of competition towards the ecological aspect have encouraged businesses to move towards a more environmentally-friendly strategy in gaining competitive advantage (Tan and Zailani, 2009; Walton, Handfield and Melnyk, 1998). When assessing and implementing strategy to gain competitive advantage, firms must firstly focus on the value chain activities in their firms as it is the most fundamental strategy and roots to all the activities performed by a firm and has held the leading position in strategic analysis and study of businesses (Peppard and Rylander, 2006; Porter, 1985). By performing the value chain activities in a way that addresses the environmental issues is one of the strategies to respond to the current competition landscape. This section will give a brief idea on what is value chain and competitive advantage. In addition, this section will briefly explain the concept of green value chain and how does it contribute to competitive advantage.

2.1 Value Chain

The firms' value chain illustrate the collection of activities performed by firms which are essential in order to bring a product or service through variety of stages from the production, delivery of end products to consumers and disposal after use (Kaplinsky and Morris, 2001; Porter, 1985). From the way a firm performs their value chain activities reflect its strategy, history, the underlying economics of the activities and approaches in executing its strategy when running the business (Porter, 1985). The value chain model was built up and popularized by Porter in 1985 and the connected value chains among organizations formed the value system. Nevertheless, in the current age of better outsourcing and alliances, the connection between multiple firms' value creating practices have became more generally known as the value chain (Feller, Shunk and Callarman, 2006).

The value chain is basically a tool to separate a firm's processes into strategically significant activities that allows recognition of the source of competitive advantage by carrying out this

activities more economically or better-quality than its rivals (Brown, 1997; Porter, 1985). According to Dekker (2003), a value chain is the horizontal or parallel linked set of value-creating activities from fundamental raw material resources from component suppliers all the way through the ultimate end-use product and distributed into the hands of final consumers. Meanwhile Rabelo, Eskandari, Shaalan and Helal (2007) argued that the value chain is a traditional manufacturing or assembly supply chain accompany with additional component of service. No matter how the value chain is described, its importance and functions remains and it is still applicable in business nowadays.

In the current technological and competitive business era, firms are forced to change their strategic options accordingly with more new ideas and inventions to provide better customer value in order to remain in the market. Due to globalisation, the value chain has become an important role as its integration and coordination is necessary in making the sourcing and the supply chain process easier (Gereffi, Humphrey and Sturgeon, 2005). Globalization also bring forth alternatives value creation for the extended enterprise such as the investment on Internet businesses and Internet technologies where they are looking for other options of creating value through value chain and other business models which focus on resource-based view as well as core competitiveness (Feller et al., 2006; Prahalad and Hamel, 1990; Walters and Lancaster, 2000).

For many years, there are many initiatives being done on improving the efficiency of supply chain operations and manufacturing processes. Although there are still significant studies which can be done in those aspect, many researchers and practitioners of the more advance firms are starting to venture into a wider scope in order to keep on improving the competitive position (Feller et al., 2006). Along with improving competitive position, this require businesses to enhance their capabilities in the different operation aspects which add value to their business activities and in doing so involve shifting the perspective of supply chain to the value chain (Feller et al., 2006; Sherer, 2005).

Moreover, as the focus of economic changes towards the more ecological aspects, the use of value chain as a tool for businesses to opt for greener processes and operations in respond to increasing importance of the environmental management is necessary to sustain in the current market (Hartman and Stafford, 1998; Tan and Zailani, 2009).

2.2 Competitive Advantage

According to Porter (1985), in order to determine the competitive advantage of a particular firm, it is essential to describe a firm's value chain for competing in a specific industry. Competitive advantage is an advantage over competitors gained by firm via offering customers greater value, either through lower price or by providing better value or quality that justify higher price (Kotler & Armstrong, 2008, p. 480). Providing lower price and better value are two basic types of competitive advantage namely the low cost advantage and differentiation advantage. Cost advantage is gain if its cumulative cost of performing all value activities is lower than competitors' cost. Differentiation advantage is gain when firm differentiate itself from its competitors and achieve some specialty which consumers put high value on and beyond simply offering a low price

In competitive conditions, value is the quantity a buyer is willing to pay in order to receive what he/she wants from what the firm can provide (Porter, 1985). Value is measure by the total return, where it is the price level of a firm products times the units of the products it can

sell (Porter, 1985). Delivering goods and services at higher value to consumers at a lower cost of production is the most desirable goals for most businesses as this results in a higher profit margin (Porter, 1985). According to Peteraf (1993), firms that have varying capabilities are able to use resources more efficiently, manufacture more economically and better to satisfy customers' needs and desires. These varying capabilities possess by firms allow them to compete in the market-place in addition to, or at least, breakeven. Businesses with limited resources will be capable of only expecting to get a breakeven of profits while, firms with better resources will make better profit (Peteraf, 1993). Peteraf and Barney (2003) define competitive advantages from the resource-based view as "...An enterprise has a competitive advantage if it is able to create more economic value than the marginal (breakeven) competitor in its product market" (p. 314). While, the expression 'economic value' in the definition above refers the value created by an enterprise in the course of offering service or good is the difference among the perceived benefits achieve by buyers of the good and the economic cost to the business in manufacturing the good (Peteraf and Barney, 2003). These definitions is the more extended version of Porter's (1985) definition of value and how value contribute to competitive advantage. In short, to attain profit margin or just breakeven will be dependent on how effective and efficient the firms perform their value chain activities. It is through these activities that a business can attain the opportunity to create higher value from the customers. This is because by restructuring the activities in the value chain to provide lower cost or better differentiation as compare to other competitors, a firm can attained a competitive advantage (Peteraf, 1993; Peteraf and Barney, 2003; Porter, 1985).

Generally, whenever the topic of competitive advantage is brought into light, the value chain will be mentioned as it is the core towards competitive advantage. The source of the competitive advantage lies within the coordination and integration of the value chain activities.

2.3 Green Value Chain

The term 'green' refers to 'making the organization responsive to ecological and health concerns. It includes environmental management programmes, environmental preservation and enhancement, and environmentally-friendly products and technologies. Greening seeks to minimise the adverse environmental impacts of organizations activities and aims to create ecologically sustainable organizations' (Shrivastava, 1995, p. 187). The term 'green value chain' emerge through the modification of the value chain by focusing on all the value chain activities with embedded ecological characteristics for instance the operations activities will be green operations where all the activities will be performed in way that minimize waste and helps saves energy (Feller et al., 2006; Porter & Claas, 1995).

The study of the relationship between value chain and competitive advantage has been established (Porter, 1980, 1985), however the study of green value chain towards competitive advantage is still quite new as the concept of green value chain itself is still new (Feller et al., 2006). The green value chain can be formed by considering the mitigation plan to minimize the environmental attribute and impact (Tan and Zailani, 2009). There are nine activities in the green value chain which are the green inbound logistics, green operations, green outbound logistics, green marketing and sales, and green service which are categorize under the primary activities and the secondary activities which help to support the primary activities are the green procurement, green technology development, green human resource management and green corporate infrastructure.

3.0 Impact of Green Value Chain on Competitive Advantage

From the resource-based theory, competitive advantage is embedded within the firm in the form of assets that are valuable and unique (Barney, 1995; Grant, 1991; Peteraf, 1993; Russo and Fouts, 1997). Competitive advantage of a firm is determined by its potentials or competencies and management's abilities to organize these assets to create better performance by creating higher economic value than its rival (Peteraf and Barney, 2003; Russo and Fouts, 1997). In creating more value than its rival, a firm should construct its value chain activities in ways that reflects its strategy and goal (Porter, 1985). As the competition has shifted towards the ecological aspect, greening the value chain has become an important strategy for firms in gaining competitive advantage. The physical natural resource can be a source of competitive advantage if a firm can outperform its marginal competitors in the efficiency use of it (Barney, 1995). This helps the firm save cost by minimizing waste and overcome issues of natural resource shortage which differentiate themselves as more ecological firms and of higher value (Ferrer, 2008; Miles & Covin, 2000; Peteraf and Barney, 2003). Differentiation advantage can also be gained when firms differentiated their products, patented their technologies and ideas or having distinctive competencies regarding eco-efficiency or environmentally-friendly aspects (Hartman and Stafford, 1998). The impact of each green value chain activities towards competitive advantage is described as below.

3.1 Green Inbound Logistics

Green inbound logistics are the activities whereby a firm receives, stores and disseminates inputs to the product operations (Porter, 1985) which consist of some environmentally-friendly elements, for instance, the usage of more energy efficient and pollution reduction vehicle in transporting the raw materials. Implementation of "Just-in-Time" (JIT) delivery also helps to reduce cost and also helps to reduce the need of development of storage buildings which requires deforestation for more land. The usage of more fuel efficient transport help to minimize the cost in the long term (Wu and Dunn, 1995). Combining few trips of shipment into single shipment is another example of inbound logistics that help to gain competitive advantage in terms of cost because a vehicle full of loads will save the overhead cost as it is shared by more units of products (Wu and Dunn, 1995) as well as minimizing the trips or rounds travel. The margin saves in the overhead cost will also enable a firm to charge at a slightly lower price for per unit cost of product which enables it to achieve cost saving advantage. Good storage layouts also minimize storage and retrieval activities as well as save on operational costs in the logistics processes (Wu and Dunn, 1995). Thus, following proposition is formed:

Proposition 1: Green Inbound Logistics contribute to competitive advantage

3.2 Green Operations

Green operations are the processes of transforming inputs into final products forms (Porter, 1985) by production process standardization, reduce waste and pollutions, recycling, and using energy efficient equipment which will help to reduce waste and save time. Green operations activities include designing products that are reusable, recyclable, non-toxic, biodegradable and energy saving can help to encourage and provide means for buyer to purchase the products and at the same time educate and create environmentally friendly awareness. The usage of technology such as clean and pollution prevention technologies in carrying out the green operations help to save time and energy (Klassen and Whybark, 1999).

Clean technologies addresses process inefficiencies by requiring fewer raw materials, use less energy or both which may have long-term payoff in terms of cost saving as it minimizes the cost of resources used (Ferrer, 2008). Pollution prevention technologies such as water treatments, sound barriers, air cleaners and other pollution reduction artifices used by organizations that prevent pollution before it occurs helps to minimize disposal cost (Ferrer, 2008). Moreover, green operations can help firms to obtain certification and recognition from government such as ISO certifications that contribute to better reputation and develop the differentiation advantage for the firms. Thus, the following proposition is formed:

Proposition 2: Green Operations contribute to competitive advantage

3.3 Green Outbound Logistics

Green outbound logistic is the process of gathering, storing and physically distributing the products to buyer (Porter, 1985) by the means of energy efficient and pollution reduction vehicle in transporting. In addition, collocation of the products arrangement when transporting can also help to decrease the numbers of transport needed to decrease the pollution. Similarly to the inbound logistics, environmentally responsible or green practices tends to favour shorter movements, less shipments and handling, more direct routes and superior space utilization (Wu and Dunn, 1995). In carrying out the green outbound logistics, the proper management and planning the routes can minimize the time travel and saves on the petrol consumption. This not only save the cost and time in the process but at the same time minimize the transport emission (Moffat, 2010; Rao and Holt, 2005). The ability of firms to achieve all these will enable them to save their cost and increase their profit margins to gain competitive advantage. Thus, the following proposition is formed:

Proposition 3: Green Outbound Logistics contribute to competitive advantage

3.4 Green Marketing and Sales

"Marketing is the process by which corporations generate value for consumers and create strong relationships with them in turn to capture value from consumers in return" (Kotler and Armstrong, 2008, p.5). Marketing deals with customers and usually involve selling, advertising and promotions. On top of that, marketing involve understand customers' needs and wants as well as building customer relationship. Green marketing is the marketing activities that embedded with environmentally-friendly characteristics or with the minimal damaging impact on the natural environment (Polonsky, 1994). It is said to enhance the reputational and competitive advantage which eventually contributes to the improved financial performance and environmental performance (Miles and Covin, 2000). Environment certifications and labelling on the products are examples of green marketing in promote green products and create higher value for the buyers (Rex and Baumann, 2007). Packaging which are use to promote their products to a biodegradable or recycle packaging help to save cost in the marketing (Wu and Dunn, 1995). By performing green or environmentally-friendly activities can help firms to position themselves as different compare to their competitors. In some cases, businesses that achieve differentiation advantage can charge higher price for the green services or products offer at lower a cost of packing by using brown boxes which can be recycle. Thus, the following proposition is formed:

Proposition 4: Green Marketing and Sales contribute to competitive advantage

3.5 Green Services

Green services are the process of providing environmentally-friendly based service to buyers in order to improve or maintain the product value after their purchases (Porter, 1985). Refill services and collecting back the products for refurbishing or dissemble the selected parts to be re-enter into the production as raw material are the example of green activities (Van Hoek, 1999). By providing the collecting back and refill services will help firms to achieve competitive advantage in terms of cost as this help minimize the use of sources. Besides that, this also helps to position the firm that performed these services as environmentally-friendly which will contribute to differentiation advantage. Thus, the following proposition is formed:

Proposition 5: Green Services contribute to competitive advantage

3.6 Green Procurement

Green procurement is the process used in purchasing inputs (Porter, 1985) such as execution of purchasing codes and criteria that focus on environmental qualification, suppliers' environmental performance monitoring and provide education programs on green to suppliers (Green, Morton and New, 1998; Hartman and Stafford, 1998). The importance of green procurement is to address the issue of severe resource depletion and environmental problem, thus governments are setting various obligations, purchasing codes and quota to avoid further depletion of natural resources and encourage purchases of environmentally-friendly products and services (Geng and Doberstein, 2008). However, this obligation also contributes some opportunities to the firms as well. For instance, firms that are able to comply with these standards in their operations will achieve competitive advantage in terms of differentiation and able to charge at a higher price. The ISO standards are the examples of certification that enable firms to differentiate themselves. Moreover, firms can form green alliances with their suppliers as more businesses and consumers are now demanding for ISO certification when dealing in business. Green alliances is the joint partnerships involving ecological groups and businesses to pursue mutually advantageous goals (Hartman and Stafford, 1998). Green procurement also leads to cost saving as it reduce the overall cost of procurement from the green alliances and cost of disposal where green products or materials usually produce lesser toxic that need to be manage properly in term of disposal (Geng and Doberstein, 2008). Thus, the following proposition is formed:

Proposition 6: Green Procurement contributes to competitive advantage

3.7 Green Technology Development

Green technology development is the process of improving the expertise, procedures and technology in processing equipment for instance the development of new technologies that are fuel saving for transportation which can be used in the inbound and outbound logistic (Miles and Covin, 2000; Wu and Dunn, 1995). The green technology development helps to create innovation and product of higher quality which at the same time save cost and protect our environment (Porter & Claas, 1995). The development of green technology is like an investment which contribute to the long term cost saving advantages and differentiation advantage in some cases (Moffat, 2010). Technology development in enhancing green operations such as product redesigning, process modification, recycling and reuse of waste materials helps to safe cost in terms of resources used as well as cost of disposal of waste (Miles and Covin, 2000). These energy efficient technologies reduce the detrimental impact

on the environment and firms' dependence on natural resources (Nidumolu, Prahalad and Rangaswami, 2009). Therefore, the continuous improvements in the green technology development help organizations to achieve cost-based competitive advantage (Miles & Covin, 2000). Thus the following proposition is formed:

Proposition 7: Green Technology Development contributes to competitive advantage

3.8 Green Human Resource Management

 Human resource management is the process of employing, training, hiring, developing and compensating all types of employees (Porter, 1985). Greening human resource management may refer to enhancement to human management process that focus on environmentally-friendly aspect. For instances, hiring people who have knowledge on environmental sustainability aspects can help to increase the momentum of business to be competitive in the current environmentally responsible business era and ensure the smooth flow in the process of value chain (Argote and Ingram, 2000). Green human resources management policies that incorporate sustainable or environmentally-friendly aspects will ensure better coordination and better performance in carrying out the value creating activities. For instance, rewarding sustainable job performance and employee training on the green knowledge will produce better performance and moving the employees in achieving the firm's goals (Moffat, 2010). This will indirectly leads to competitive advantage with better performance and reputations. In green human resource management, business can encourage employees to work and telecommunicate from home as the travel time, cost and energy used are reduced (Nidumolu et al., 2009). This leads to cost saving in terms of cost of real estate as well (Nidumolu et al., 2009). Thus, the following proposition is formed:

Proposition 8: Green Human Resource Management contributes to competitive advantage

3.9 Green Corporate Infrastructure

Corporate infrastructure is the general administration, planning, financing, accounting, government affairs, legal and quality management which unlike other supporting activities and it supports the whole chain instead of individual activities (Porter, 1985). Greening the corporate infrastructure involves the improvement on the information system, manufacturing plants and office infrastructures that help the firm to implement the green activities (Menon & Menon, 1997). A well manage green corporate infrastructure can help to create competitive advantage for example, the ongoing cooperation and updating with regulatory bodies on the current green effort and ideas will help to create branding green image to the firm (Melnyk et al., 2003; L. P. Tan, 2005). In addition, the use of office equipments and infrastructures that are energy saving such as inverter air-conditions and led-lighting or energy saving bulb can help to minimize operation cost in the long term. Greening the corporate infrastructure not only save cost but at time help firms in achieving ISO certifications which are world recognized and indirectly achieve differentiation advantage (Moffat, 2010). In Malaysia, the Government provides tax exemption for building owners that achieve Green Building Index certification (Ministry of Finance, 2011). It is an environmentally-friendly rating index on eco-friendly buildings called green buildings (Ministry of Finance, 2011). This helps to save cost and at the same time achieve differentiation advantage as their reputation increase. Thus, the following proposition is formed:

Proposition 9: Green Corporate Infrastructure contributes to competitive advantage

From all the above proposition presented, it can be seen that by greening all the activities in the value chain, competitive advantage in terms of cost and differentiation can be realised. More importantly, these green activities are somehow dependent on each other and must therefore be linked in ensuring the smooth flow in the greening of the firms' whole operations to contribute to the firm's competitive advantage.

4.0 Discussion

There are various studies on value chains, however, the study on green value chain is still limited (Feller et al., 2006). With the concept of value chain, green value chain can evolve into a new segment of research in which researchers, firms, and government are concerned with the important issues of business and environment sustainability.

Greening the value chain involves minimizing waste because it consume resource without providing value (Handfield et al., 1997). Waste is regarded as defects, economic waste and inefficiency use of resources in the whole system (Handfield et al., 1997; Porter and Claas, 1995). Hence reducing waste via environmental policies, operation management and waste management that focus on ecological aspect to convert waste into valuable inputs help to save cost in term of resource usage, as more unit of output can be produce with the same amount of resource and at the same time reduce the disposal and liability cost (Handfield et al., 1997; Hartman and Stafford, 1998). Moreover, green operation activities such as the flat packaging design used by IKEA helps to optimise loads and reduce the transportation emission, at the same time reducing the warehousing cost and transportation cost (IKEA, 2011).

Therefore, environmental management strategies should be incorporated into each and every stages of the value chain, including all of the processes across manufacturing and assembly, product design, procurement, logistics, packaging and distribution in achieving competitive advantage (Handfield et al., 1997). This is because greening one of the value chain process activities will eventually need the support and integration of other activities in the value chain in achieving cost reduction and/or differentiation advantage. Thus, firms can actually gain competitive advantage by greening their value chain activities and this involve the integration within all the activities as well as innovations (Noci and Verganti, 1999; Salomo, Weise and Gemunden, 2007) from the ecological aspect to create higher value to the customers with the lower cost (Porter and Claas, 1995).

5.0 Conclusion

From the literature review conducted on value chain, supply chain, competitive advantage and environmental management, there is one thing in common that is mentioned in these studies. The commonality observed is that green or environmentally-friendly activities will contribute to competitive advantage in the form of cost and differentiation. Resource reduction and efficiency innovations help to gain cost advantage, while, differentiated products, patented technologies and distinctive competencies leads to differentiation advantage (Hartman & Stafford, 1998). Hence, this study examines the relationship between green value chain activities that will contribute to competitive advantage. Through the ideas of past literature on value chain (Feller et al., 2006; Kaplinsky and Morris, 2001; Walters and Lancaster, 2000) and green value chain (Handfield et al., 1997; Tan and Zailani, 2009) as well as the impact of environmental management on competitive advantage from the numerous reviews (Angell and Klassen, 1999; Green et al., 1998; Klassen and Whybark, 1999; Melnyk et al., 2003; Miles and Covin, 2000; Moffat, 2010; Nidumolu et al., 2009; Porter and Claas, 1995; Rao and

Holt, 2005; Shrivastava, 1995; L. P. Tan, 2005; Wu and Dunn, 1995), the outcome of this study is to explore the role of green value chain towards achieving competitive advantage in terms of cost and differentiation in current natural environment competitive landscape. With this, firms will be able to attain higher profit margin and competitive advantage but at the same time making their business more sustainable and socially responsible for the environment.

Acknowledgement

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Best Practises of 'Green' Websites: A Content Analysis of European and Asian Non-Governmental Organisations.

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Abstract

The purpose of this paper is to examine the best practises of the websites of environmental or green non-governmental organisations' (NGOs) using a content analysis approach. A total of 160 websites were selected from two different regions which are Asia (80) and Europe (80). Compared to the Asian websites, European websites are more experienced in practising "green" and most of their websites have been well-developed for disseminating information and communicating with the public (Ho, 2007). In order to identify the significant criteria for a green NGO's website, a coding sheet was developed based on the literature review and the Chi Square test has been used to analyse the differences between the green NGOs' websites from the two different regions. This study reveals there are significant differences between Asian and European green NGOs' websites based on the core content, webpage presence, interactivity with users, Web accessibility, and navigation. The study's finding can be used as a reference for developing or designing a green NGO's website to be more effective in disseminating green information to the public.

Keywords: Web design, interactivity, online communication

1.0 Introduction

Non-governmental organisations (NGOs) are formed by private individuals or organisations that operate without representation from any form of government for causes such as peace-making, environmental protection, and human rights (Zhang and Swartz, 2008). In recent decades, the number of NGOs with an environmental focus has increased dramatically (NGO Handbook, 2010; Brass, 2011). The terms of "environmental" and "green" have been used interchangeably in most of the environmental researches (Carpenter, 2001; Murphy and Poist, 2003; Ekins and Dresner, 2004; Chen and Chai, 2010). Green can also be defined as the practices that adopted to manage environment which is targeted to minimise the harmful impact on the environmental, for both over exploitation of natural resources and pollution to the earth (Tzschentke et al, 2008).

According to Warkentin (2001), most of the NGOs use Internet to facilitate internal communication, shape public perception, enhance member services, disseminate informational resources, encourage political participant, and realise innovative ideas. Besides that, Seo, Kim and Yang (2009) cited that organisation's website is the most important media tool for NGOs to provide public relation such as promoting the image of the organisation, fund-raising, providing information to journalists, interaction with the public, and networking

with other NGOs. In addition, website can also help NGOs to reach world publics efficiently, with fewer personnel, and less bureaucracy (Zhang and Swartz, 2008).

The Internet has also changed the way on how people access information and business process are carried out. One of the significant changes is the Internet allows the users to connect to one another and makes the information easily accessible to each other through using the World Wide Web (WWW) or the Web (Schneider, 2011). By using the Web, people who are not expert in computer science or web programming can still access to a variety of Internet resources due to its easy-to-use standard interface.

Generally, a well-designed website is very important as it can make the website more attractive (Liang and Law, 2003) as well as to attract more visitors and increase the popularity of the website (Chu, Shen and Hsia, 2004). Compared to the Asian websites, European websites are more experienced in practising "green" and most of their websites have been well-developed for disseminating information and communicating with the public. This paper will examine the best practises of the NGOs' websites based on the core content, webpage presence, interactivity with users, Web accessibility, and navigation. In the following section, relevant literature on best practises and the common criteria for website evaluation will be reviewed.

2.0 Literature Review

2.1 Best Practises

Best practise is used to share an effective method from one base with others that are having some particular problems (Fiquettse, Harding & Conroy, 2011). According to American Productivity & Quality Center, APQC, (as cited in Bowlby, Franklin and Lin, 2011):

What is meant by 'best' are those practices that have been shown to produce superior results; selected by a systematic process; and judged as exemplary, good, or successfully demonstrated. Best practises are then adapted to fit a particular organisation.

In order to find out the best practises for a website, many researchers study on the usability (Cappel and Huang, 2007; Youngblood and Mackiewicz, 2012), design (Nayak et. al. 2006; Wulf, et. al., 2006), user acceptance (Lederer et. al, 2000; Chung & Tan, 2004), and user satisfaction (Kim and Chang, 2007) by using several methods, such as content analysis, technology acceptance model (TAM), and etc., to evaluate the websites.

According to Barry (2011), not only content but interactivity and navigation are also important for the users to use the website. Nielsen (as cited in Abdullah et. al., 2010) revealed that the three important features in a website are layout/the web design, interactivity and navigation. Besides that, Malone (2009) suggested that the key criteria that can be used to evaluate the website are basic website content, appearance/layout, purpose/audience, and access/use. Based on the previous literature, the authors categorised the criteria under five dimensions which will be discussed in the following section.

2.2 Criteria for Website Evaluation

2.2.1 Core Content

Content can be referred to the information, features, or services that are offered by a website (Huizingh, 2000). The better the content is structured and presented, the more likely the visitors will experience a positive association with the website (Wulf, et. al., 2006).

2.2.1.1 Logo of the Organisation

It is recommended that the organisation should have included images or other subjects on their website which can express strong messages and clearly represent the organisation (Pohl, 2003). The logo of the organisation is usually place at top left corner and it links back to the homepage (Dohrman et. al., 2009). Besides that, the logo itself must be in an appropriate size, so that, it can be seen easily.

2.2.1.2 Contact Information

Contact information on the website is very crucial as it provides the information to the viewers to get in touch with the relevant contact person of the organisation. Generally, contact information included full names and also full address which are email address, postal address or telephone numbers (Kaaya, 2004).

2.2.1.3 Purpose of the Organisation

The purpose of the organisation should be stated clearly in the mission statement or objectives to avoid from misleading the visitors (Malone, 2009). Information about mission, goals and services of an organisation has to be included in the website so that the visitors can know more about the organisation (Pohl, 2003).

2.2.1.4 Frequently Asked Questions (FAQs)

Cravens (2011) mentioned that FAQs should be immediately and easily to be found from non-profit, NGOs, and small government agencies. Besides that, website's impression can also be enhanced by providing FAQs on the site (Kang & Kim, 2005).

2.2.1.5 Search Engine

Search has become one of the crucial computer activities due to the explosion of available information on the WWW (Manber and Bigot, 1998). Gehrke and Turban (1999) cited that a website with full of randomly access content should include search engine and ensure that it is prominent and easy to use. By using search engine, people believed that anything can be found easily from the Web (Brin and Page, 1998).

2.2.2 Interactivity with Users

Interactivity describes the extent of information exchange between a website and its users. It is an important feature to be included in the website as it allows the users to exchange information based on their experiences, gain valuable information, and participate in consultations (Eysenbach, 2008).

2.2.2.1 Web Forum

Web forum is application software for holding discussion and it also allows users to comment on messages or post any message. According to Elbegbayan (2006), message boards, discussion board, discussion group, bulletin boards or forums are regarded as web forum. Bulletins board should be monitored by appropriate personal to avoid the posting of incorrect and potentially harmful information (Ferney and Marshall, 2006).

2.2.2.2 Social Networks

By using social networking website, such as Facebook, Twitter, and etc., organisation can create, maintain and participate effectively in online communities as well as to reach broad audiences and publics (Jun, 2011). It can benefits and make people easy to share the information by linking the website with social networking sites (Microsoft ASP.NET Team, 2012).

2.2.2.3 Rich Site Summary (RSS)

RSS is an XML format for easily distributing online content where the users can subscribe to a website's content by using newsreader or RSS reader (Duffy and Bruns, 2006). The XML format of RSS present a structure for assembling news title and links and send them to user desktop or handhelds (Elbegbayan, 2006).

2.2.3 Webpage Presence

2.2.3.1 Homepage

According to Hsiao and Chou (2006), homepage is the entry point to an organisation's website and it gives the first impression of a website. Also, homepage is the main page of a website and it provides the links to the relevant pages within a site (Sharma & Goswami, 2001). Ferney and Marshall (2006) suggested that a website should have a homepage which provides access for the viewers to use the components of the website. In short, a homepage plays a crucial role in either luring the users into a website or in driving them away (Geissler, Zinkhan and Watson, 2001).

2.2.3.2 Text Usage

According to Signore (2005), there are some issues that need to be considered about the text presentation on Web. The fonts that use for a Web must be readable with adequate font size. Moreover, author also encouraged that the types of font must be limited in a single page. Besides that, large amount of text on a page and the use of large blocks of text can drive visitors away or become disinterested (Geissler, Zinkhan and Watson, 2001).

2.2.3.3 Colour Usage

A research found that website trust and satisfaction can be affected by the colour used in a website (Cyr, Head and Larios, 2010). The perception of the website can also be influenced by the colour as it has the potential to communicate meaning to the visitors. Russo and Boor (1993) mentioned that different colours convey different meanings based on different

cultures. Also, the font colour must be contrast with the background colour in order to make it easy to read (Hunt, n.d.).

2.2.3.4 Graphic Usage

The loading time of a page can be affected by the graphics or photos that posted on the page (Cravens, 2011). Therefore, it should avoid using large graphics as the content of the page, limiting the number of graphics in a page, or composing the graphics in order to reduce page load time.

2.2.4 Web Accessibility

There are numerous of Web accessibility challenges, such as unable to interact with the website due to the insensitivity of design (Harper and DeWaters, 2008), multimedia features that hinder the persons with disabilities from accessing the content of the Web (Chisholm, Vanderheiden and Jacob, 2001), problem on readability of information (Hussain, Sohaib and Ali, 2011), and etc., should take into consideration when developing a Web site.

2.2.4.1 Multimedia Features

Multimedia features such as audio, video, and animation are added to most of the text-based website in order to attract visitors and offer them an engaging experience (Hashmi and Guvenli, 2001). According to McMillan, Hwang, and Lee (as cited in Coleman, et al., 2008), users are more preferred a website with multimedia features.

2.2.4.2 Readability of Information

In general, English is the dominant language that widely used in the web, but somehow the percentage is decreasing (MSNBC.COM, 2004). If given a choice, some of the Internet users would preferred to read the information in their mother tongue. The language used in a website should avoid complicated sentence structures such as strive for clear and concise language (Perrault and Gregory, 2000).

2.2.5 Navigation

In a website, navigation is a mechanism that helps the visitors to move from one page to another. The success of a website can also be determined by the design of a navigation system (Rosenfeld and Morville, 1998). Furthermore, navigation system is also one of the compulsory components for evaluating a website (Nayak, Priest and Stuart-Hamilton, 2006). In most of the information system (IS) study, ease of navigation is the most frequently used criteria for website evaluation (Chiou, Lin and Perng, 2010).

2.2.5.1 Menus

Menu is a list where included all the subsections that can be accessed by the visitors (Scott and Jackson, 2002). Particularly, screen real estate or space usage in a Web can be saved by using drop-down menus as it occupied less space compared to a series of navigation buttons or text links (Weideman and Mgidana, 2004). By using drop-down menus, it saves time for the visitors to search for the information as it can directly locate the visitors to the page or the information immediately once the visitors click on the menu links (Dohrman, et. al., 2009).

2.2.5.2 Navigation Buttons

A navigation button is usually created by using graphic image, in either a format of GIF or JPEG, that links to a particular webpage (Weideman and Mgidana, 2004). Navigation button with appealing visual can easily draw attention to important parts of the website. In general, navigation buttons will be placed at the top and along the right side of the screen (Greenough et al, 2001).

2.2.5.3 Site Map

The common types of site map that used by most of the website are alphabetised index, full categorical and restricted categorical. A good site map should list out all the webpages of a site in a hierarchical format, so that, it can clearly showing the relationships between the primary webpages and sub-pages (Bowlby, 2008).

2.2.5.4 External Links

Two different websites can be connected through providing external links on each website (Suto, et al, 2007). An external link can be a link to other pages, such as a page of the partner organisation's website; and it can also be an exit of the website (Scott and Jackson, 2002).

3.0 Methodology

This research employed a quantitative research approach by using content analysis to study the differences between the green NGOs' websites from Asia and Europe. A sample of 160 website (80 from Asia and 80 from Europe) were collected for analysis purpose. All the 160 websites were visited to ensure that they are available. The 160 websites were selected from the result that we searched by using Google search engine with the keywords of "green non-governmental organisation" and "environmental non-government organisation". For each region, Asia and Europe, the first 80 relevant websites that listed on the search engine result page were selected.

Besides that, a coding sheet was created based on the five dimensions of the website criteria (core content, interactivity with users, web presence, web accessibility, and navigation) that have been discussed in the literature review. This coding sheet was used as a tool for evaluating the green NGOs' websites. It will be marked as "present" if the criteria exist; while, marked as "absent" if the criteria cannot be found from the website. After the coding process, the data will be analysed by using Statistical Package for the Social Sciences (SPSS). In order to identify the significant differences between the Asian and European NGOs' websites, Chi-Square test was employed in this study.

4.0 Analysis and Finding

Based on the analysis (Table 1), there are no significant differences between selected Asian and European NGOs' websites on including logo of the organisation on their websites, x^2 (1, N=160) = 2.31, p = 0.13; providing contact information on their websites, x^2 (1, N=160) = 0.00, p = 1.00; mentioning the purpose of their organisation, x^2 (1, N=160) = 0.60, p = 0.44; providing FAQs on their websites, x^2 (1, N=160) = 0.00, p = 1.00; offering Web forum for discussion purpose, x^2 (1, N=160) = 0.57, p = 0.81; providing a homepage that links to other pages of their websites, x^2 (1, N=160) = 0.51, p = 0.48; providing readable font type and size,

x^2 (1, N=160) = 0.00, p = 1.00; using contrasting colours for text and background, x^2 (1, N=160) = 0.13, p = 0.72; displaying graphics without delay, x^2 (1, N=160) = 0.57, p = 0.81; including multimedia features on their websites, x^2 (1, N=160) = 0.00, p = 1.00; using drop-down menu to save the screen real estate, x^2 (1, N=160) = 1.60, p = 0.21; and using site map to categorise their primary page and sub-pages, x^2 (1, N=160) = 0.74, p = 0.39.

Table 1: Chi-Square Test

Variables	Value	df	Asymp. Sig. (2-sided)
Logo of the Organisation	2.31	1	0.13
Contact Information	0.00	1	1.00
Purpose of the Organisation	0.60	1	0.44
Frequently Asked Questions (FAQs)	0.00	1	1.00
Search Engine	6.43	1	0.01
Web Forum	0.06	1	0.81
Social Networks	6.43	1	0.01
Rich Site Summary (RSS)	9.97	1	0.00
Homepage	0.51	1	0.48
Text Usage	0.00	1	1.00
Colour Usage	0.13	1	0.72
Graphic Usage	0.57	1	0.81
Multimedia Features	0.00	1	1.00
Readability of Information (multi-language)	22.92	1	0.00
Menu	1.60	1	0.21
Navigation Buttons	9.33	1	0.00
Site Map	0.74	1	0.39
External Links	4.57	1	0.03

On the other hand, there are significant differences between selected Asian and European NGOs' websites on including providing search engine on their websites, x^2 (1, N=160) = 6.43, p = 0.01; providing RSS of their websites, x^2 (1, N=160) = 9.98, p = 0.00; providing glyphs or icons of social networking sites on their websites, x^2 (1, N=160) = 6.43, p = 0.01; offering multiple languages for their websites, x^2 (1, N=160) = 22.920, p = 0.00; providing navigation buttons on their websites, x^2 (1, N=160) = 9.33, p = 0.00; and providing external links to link their websites with relevant websites, such as partners' websites, x^2 (1, N=160) = 4.57, p = 0.03. The significant differences of the variables will be discussed in following section.

5.0 Discussion

5.1 Search Engine

Based on the selected NGOs' websites, there are 52 from Asian and 67 from European have provided search engine on their websites. Most of the Internet users use search engines to locate information on the massive and unorganised Web (Lawrence and Giles, 2000). Therefore, it is essential to have search feature on a website in order to assist the visitors to seek for the information internally and externally.

5.2 Social Networks

There are 34 of Asia and 51 of Europe green organisations websites have registered themselves to social networking sites to get connected with potential members. Getting connected to the famous social networking sites, such as Facebook, can benefit to organisations in terms of engagement, marketing, efficiency, and innovation (Armitage, 2009).

5.3 RSS

By using RSS, users are able to keep track of their subscribed page automatically without visiting the website over and over again (Mishra, 2009). However, there are only 10 selected Asian NGOs included the RSS feature on their websites. For the selected European NGOs, there are 28 websites have provided RSS feature.

5.4 Readability of Information

There are 70 of the Asian NGOs' websites using English to communicate with their visitors. For the European NGOs' websites, 56 out of 80 are using English. Besides that, only 6 out of the selected Asian NGOs' websites provided other languages for visitors to choose. On the other hand, there are 33 of the selected European websites have offered multiple languages.

5.5 Navigation Buttons

In general, navigation buttons should be place on top or bottom of the page. For example, the most common navigation button, "back to top" navigation button, can be used to help the visitors to scroll back to the top of the page automatically after reading a lengthy page. Instead of scrolling up back to the top of the page manually, visitors can just click on the navigation button. Based on the observation, navigation buttons are more commonly used in European NGOs' websites compared to Asian NGOs' websites.

5.6 External Links

For NGOs' websites, the external link could be any relevant websites such as partners' websites or even government's websites. Pohl (2003) mentioned that suggesting other websites to the visitors enable them to get additional information on the relevant issues.

6.0 Conclusion

By evaluating and comparing the 160 of NGOs websites from Asia and Europe, we would like to conclude that the best practises for a "green" website should include the five dimensions which are core content, webpage presence, interactivity with users, web accessibility and navigation. Based on the result of this study, most of the listed criteria, especially logo of organisation, contact information, purpose of the organisation, search engine, social networks, homepage, text usage, colour usage, graphic usage, menu, navigation button, and external links, have been commonly practised by the European NGOs on their websites. On the other hand, Asian NGOs should provide FAQs, RSS feature, links of social networking sites, multiple languages, menu (especially drop-down menu), navigation buttons, and external links that link to relevant websites, on their website in order to achieve best practises of a "green" NGOs website. This study also provides important implications for

researchers who wish to research in the best practises for "green" website as well as for the web developers who need to design a website for a green or an environmental NGO.

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The Use of the Term 'Competitive Advantage' in Strategic Management Journal: A Content Analysis

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Abstract

The term 'competitive advantage' has been the central focus of various strategic management theories. Competitive advantage denotes the foundation for a firm to compete and sustain in the marketplace. Nonetheless, the usage of the term in strategic management academic research articles has received rather limited attention. This study uses content analysis to analyse the usage of 'competitive advantage' in the articles in Strategic Management Journal from 1980 to 2010. Manifest coding is used to count the number of time the term appears in the research article. The findings suggest that the usage of 'competitive advantage' in term of the count per volume, average count per article in a volume, number of article with the term per volume and average number of article with the term per volume have increased from 1980 to 2010. It is also observed that the number of count per volume for 'competitive advantage' fluctuates greatly since early 1990s as some articles used the term greatly. On the other hand, the number of article and average number of article uses the term 'competitive advantage' shows the sign of stagnation since late of 1990s and drop slightly since 2003. Based on the findings, it is concluded that the research on competitive advantage has developed greatly over the last 30 years and has shown its dominance in Strategic Management Journal. This study is exploratory in nature and could be extended to identify the definition for competitive advantage and theories for competitive advantage used by the research articles.

Keywords: Competitive advantage, content analysis, Strategic Management Journal

1.0 Introduction

Researches on competitive advantage have gained high level of attention and subsequently lead to production of high number of academic literatures (Powell, 2001). The importance of competitive advantage study can be witnessed as the dominant strategic management theories such as industry analysis, generic strategies, value chain analysis (Porter, 1980, 1985) and resource-based view (Wernerfelt, 1984; Barney, 1991; Peteraf, 1993) are focusing on explaining a firm's competitive advantage and thus superior performance. The development of competitive advantage study also lead to the emergence of various related terms such as sustainable competitive advantage, competitive parity and competitive disadvantage (e.g. Varadarajan, 1985; Coyne, 1986; Barney, 1991; Powell, 2001; Hoffman, 2001) to complement the explanation of competitive advantage. Nonetheless, understanding the firm competitive advantage is the fundamental to explain the competitiveness and sustainability of the firm in the market.

Despites of competitive advantage has established as one of the dominant fields of research in strategic management, limited attention has been given to analyse the usage and development of the term. Thus, this study uses content analysis to study the usage of the term 'competitive advantage' in Strategic Management Journal, one of the most reputable journals in the field. The analysis starts from volume 1 of the journal (1980) to volume 31 (2010). This study contributes to the understanding of the usage of 'competitive advantage' in strategic management research and ascertains the importance of studying competitive advantage in strategic management. The exploratory nature of the study provides various possibilities for future research such as to understand the definitions used for competitive advantage and the important theories and arguments for competitive advantage.

2.0 Defining Competitive Advantage

In general, competitive advantage denotes the creation of goods and services by a firm that worth more than their cost in the marketplace (Porter, 1985). Similarly, Peteraf and Barney (2003) use the term "economic value" creation to indicate the differences between the value of goods and services created by a company and the cost incurred in creating the goods and services. On the other hand, Ong, Yeap and Hishamuddin (2010) define competitive advantage as the relative advantage owned by a firm to enable the firm to outperform its targeted competitors in creating economic value to the buyers. Along the usage of competitive advantage, others complement terms such as competitive parity, competitive disadvantage and sustainable competitive advantage have also emerged. Competitive parity means a similar level of a firm competitiveness relative to the competitors while competitive disadvantage indicates lesser level of competitiveness (Varadarajan, 1985). On the other hand, sustainable competitive advantage represents a situation where the competitive advantage created by a firm can be prolonged (Hoffman, 2000). However, it is not common for study to intentionally distinguish competitive advantage from sustainable competitive advantage. As argued by Ong (2008), if competitive advantage does not incorporates the idea of sustainability of the advantage, it would be unlikely to attract so much of attentions.

3.0 Research Methods

This study uses content analysis to count the number of time 'competitive advantage' appears in the research articles in Strategic Management Journal. The Strategic Management Journal is selected as the population for the study due to its credibility in the field of strategic management research. All the research articles and research notes and communications published in Strategic Management Journal from 1980 (volume 1) to 2010 (volume 31) are included as the samples for the study. However, book reviews, editor's introduction to special issue by the guest editor(s) and issue 13 in volume 27 (2006) and in volume 23 (2002) are excluded from the analysis. The exclusion of the two issues is due to the articles in the two issues focus on the five year index of the journal instead of the ordinary research article. A total of 1711 articles were analysed in this study. The counting of the appearance of 'competitive advantage' in the article is only restricted to the article title, abstract, keywords, main content, footnotes and appendices. The term that appears in the section of references and acknowledgement are not included in the calculation. Since this study is only interested with the usage of the term, the manifest content analysis is used to count the appearance of the term disregards of the meaning of the term. The observation is on yearly (volume) basis. This study is interested with the total usage of the term 'competitive advantage' per volume, the average count for the term appears per article in a volume, the number of article with the term per volume and average number of article with the term per volume. To calculate the

frequency of appearance in research article per volume, every appearance of the term in research articles is counted as one. The sum of the counts within a volume will form the total usage in the research article per volume (Count), while the average count per volume (Average count) is calculated based on the total count per volume divided by total number of article within the volume. On the other hand, the number of article uses the term 'competitive advantage' (Article) is measured by the total number of article that uses the term in a volume, regardless of its frequency of use. That means a dummy code of '0' and '1' are used to indicate whether or not an article uses the term. The average number of article with the term in a volume (Average article) is measured by dividing the total number of article with the term over the total number of article in the volume.

4.0 Research Findings

The results of the content analysis are presented in this section. Table 1 shows the findings of the use of the term "competitive advantage" in the Strategic Management Journal from 1980 to 2010 in term of the total number of count per volume (Count), average number of count per article in a volume (Average count), the number of article with the term (Article) and the average number of article with the term in the volume (Average article). The data is then plotted into graphs as shown in Figures 1, 2, 3 and 4 to have clearer view on the trend of development over the 31 years of observation on the four dimensions stated above.

Table 1: The Appearance of 'Competitive Advantage' in Strategic Management Journal between 1980 and 2010

Year	Volume	Count	Average count	Article	Average article
1980	1	2	0.08	2	0.08
1981	2	5	0.18	2	0.07
1982	3	10	0.33	5	0.17
1983	4	18	0.64	5	0.18
1984	5	37	1.42	5	0.19
1985	6	36	1.57	7	0.30
1986	7	40	1.14	10	0.29
1987	8	66	1.50	14	0.32
1988	9	82	1.44	20	0.35
1989	10	70	1.37	20	0.39
1990	11	49	1.14	16	0.37
1991	12	260	4.06	27	0.42
1992	13	123	2.05	24	0.40
1993	14	160	2.76	27	0.47
1994	15	300	5.00	33	0.55
1995	16	158	3.22	28	0.57
1996	17	114	2.00	29	0.51
1997	18	145	2.30	24	0.38
1998	19	184	2.63	41	0.59
1999	20	381	6.05	39	0.62
2000	21	246	3.57	44	0.64
2001	22	453	7.43	35	0.57
2002	23	361	5.08	44	0.62
2003	24	348	4.52	53	0.69
2004	25	226	3.32	33	0.49
2005	26	208	2.97	38	0.54
2006	27	174	2.76	33	0.52
2007	28	242	3.32	36	0.49
2008	29	318	4.18	45	0.59
2009	30	293	4.13	32	0.45
2010	31	557	7.63	45	0.62

Figure 1 and Figure 2 show the graphs for the number of count of "competitive advantage" per volume and average number of count per article per volume for the 31 volumes between 1980 and 2010. Both graphs show increasing trend from 1980 to 1990. In 1980, the total count was only 2 with an average count of 0.08 per article. The number of count has increased drastically to 557 with an average of 7.63 per article in 2010. Based on the graphs, the increasing trend continues until 1990. Since then, fluctuations can be observed in both graphs with the peaks at 1991, 1994, 1999, 2001 and 2010. The highest number of counts was in 2010 with a total of 557 counts for the volume, followed by 453 counts in 2001. After taking into consideration of the number of article in the volume, 2010 remained the highest count per article with an average of 7.63 counts per article while 2001 also remained as the second highest with an average count of 7.43 counts per article.

Figure 1: Number of Count by Year
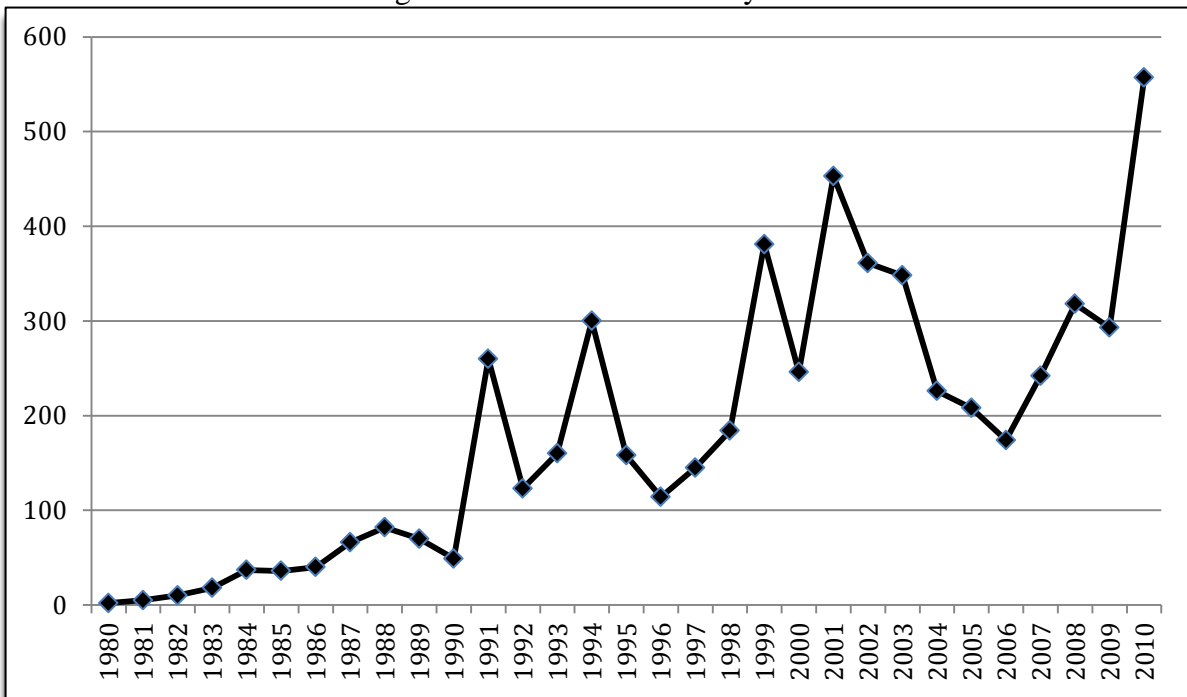
Figure 2: Average Number of Count by Year
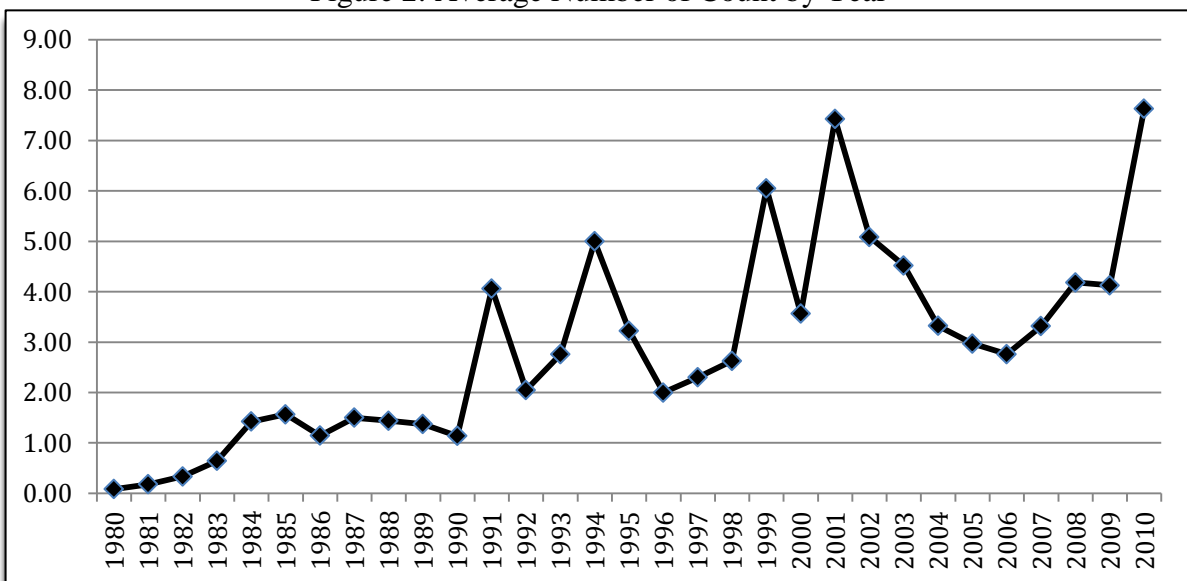
On the other hand, figure 3 and figure 4 show the number of article with the term "competitive advantage" per year and average number of article with the term per year from 1980 to 2010. Compared to the count and average count for the number of time the term appears as shown in figure 1 and figure 2, counting the article and average article with the term shows a more stable increase over the 31 years. The number of article with the term in 1980 with the average article of 0.08 and the numbers have increased to 45 and 0.62 respectively in 2010. An interesting point to observe through both of the graphs is after 1997, the growth became stagnant, in fact a minor drop can be observed especially in the graph for average article per volume. The highest number of article with the term "competitive advantage" was recorded in 2003 with 53 articles, followed 45 articles recorded in 2008 and 2010 and 44 articles in 2000 and 2002. In term of average number of article per volume with the term "competitive advantage" per volume, 2003 recorded the highest number with 69% of the articles used the term, followed by 2000 with 64% and 1999, 2002 and 2010 with 62%.

Figure 3: Number of Article by Year
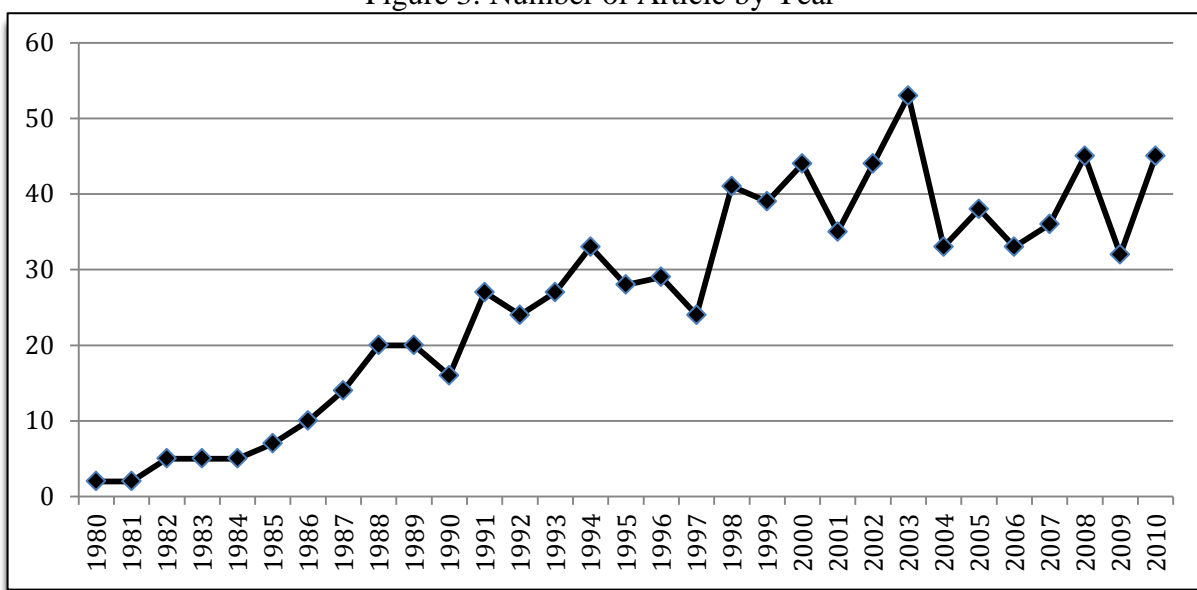
Figure 4: Average Number of Article by Year
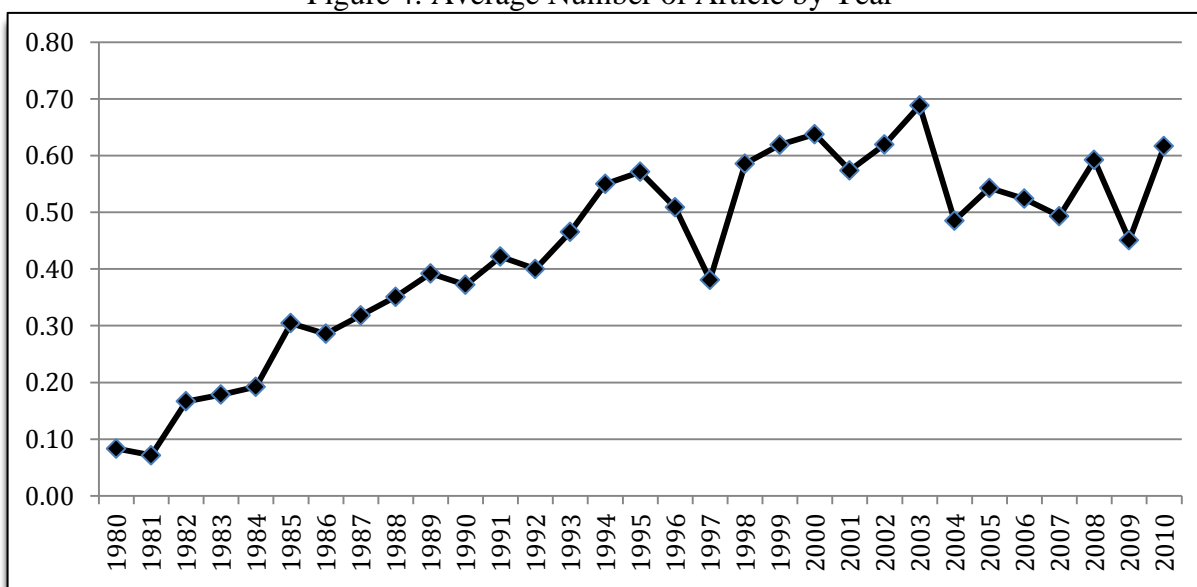
5.0 Discussion

The usage of 'competitive advantage' in Strategic Management Journal starts humbly in 1980 and grows stably until 1990 for both number of count and article with the term. Since then, the frequency of "competitive advantage" appears in the article is found to fluctuate greatly but continues to growth until 2010. On the other hand, the article with the term "competitive advantage" continue the growing trend until the end of 1990s but the growth had stagnant and had shown the potential of decreasing trend since then. The findings suggest that the studies focus on competitive advantage has grown since 1980 until the end of 1990s but since 2003, slight decrease in the average number of article with "competitive advantage" per volume can be observed. This could be due to the limited breakthrough in the theories of competitive advantage after the generic strategies, industry structure analysis, and resource-based view, which were developed in early 1980s and 1990s. However, this requires further research to conclude.

The fluctuations in the number of count since 1990 is due to some articles use the term greatly. For example, in 1991, Grant's (1991) study used the term for 110 times. Porter (1991) and Fiegenbaum and Karnani (1991) have used the term for 50 times and 31 times respectively. In 1994, Collis (1994) used the term for 75 times, Barney and Hansen (1994) used 44 times, while Black and Boal (1994), Markides and Williamson (1994), and Ginsberg (1994) used 37, 35 and 29 times respectively. The records for 1999 show that Rindova and Fombrun (1999), Yeoh and Roth (1999), Lengnick-Hall and Woff (1999), Brush and Artz (1999) and Rouse and Daellenbach (1999) used the term for between 29 and 71 times. In 2001, Powell (2001) used the term for as much as 152 times, followed by King and Zeithaml (2001) for 82 times. The peak in 2010 is mainly due to Tang and Liou (2010), who used the term for 130 times, while Pacheco-de-Almeida (2010), Sirmon, Hitt, Arregle, and Campbell (2010) used the term for 79 and 74 times respectively. All these have created the fluctuation in the diagrams for the number of count per volume and average number of count per article in a volume.

6.0 Limitations of the Study

This study uses manifest coding to count the number of time the term "competitive advantage" appears in Strategic Management Journal. The use of manifest coding could expose to the problem of validity as the coding does not consider the meaning for the term used in the article (Neuman, 2006). In addition, this study analyses only the article from Strategic Management Journal. This could limit the generalisation of the findings to the area of strategic management as a whole.

7.0 Recommendation for Future Research

This study needs to be extended further to examine the definition for competitive advantage to verify the claim by Coyne (1986) and Ong et al. (2010) that the definition of competitive advantage is not clear. Through the study, a proper definition for competitive advantage could be developed. Besides, it is also advisable to use latent coding for similar study to avoid the problem of validity to the analysis as the use of the term for different meaning could also be included in the analysis. This would provide a better picture on the use of "competitive advantage" in strategic management study. Furthermore, this study can be extended to understand the theories and argument for competitive advantage in strategic management

research. This could probably be useful to have a comprehensive view on firm competitive advantage.

8.0 Conclusion

This study reveals the use of the term 'competitive advantage' has growth significantly from 1980 to 2010. It shows that the study on competitive advantage has established as the mainstream study in strategic management field of research. Nonetheless, since early 2000s, the stagnation in the development can be observed in the average number of article that uses the term. On the other hand, this study suffers from the limitation of lack of generalisation in the sample selection and validity in the method used. The future development of the study can be through identifying the definition of competitive advantage and the main theories and arguments used in explaining competitive advantage. The use of latent coding instead of manifest coding in this study could also be desirable.

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Consumption Behaviour of International Tourists in Thailand

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Abstract

International tourism contributes to the Thai economy. Significant revenues as well as employment are generated by the tourism industry. Revenue from the tourism industry has grown continually. Moreover, international tourism contributes more to the economy than domestic tourism. Theoretically, tourist expenditure, or revenue of the tourism industry depends on price and income. The purpose of this study is to estimate the effect of price and the income of international tourists on the total tourism revenue of Thailand. In this study, the population is grouped into eight categories, including East Asia, ASEAN, Europe, the Americas, South Asia, Oceania, the Middle East and South Africa. Tourists from Malaysia, Japan, the United Kingdom, the United States of America, India, Australia, Israel and South Africa represent tourists from East Asia, ASEAN, Europe, the Americas, South Asia, Oceania, the Middle East and South Africa. According to the Tourism Authority of Thailand, revenues from these tourists are at the top of each category. Using econometric fixed and random effects models, panel data from 1998 to 2009 were obtained in order to estimate price elasticity and income elasticity. Results show that only income affects the consumption of international tourists significantly. A positive change in income has a positive effect on the consumption of international tourists. The demand for tourism of these tourists is considered as a luxury good. In terms of the estimation of price elasticity, tourism demand for Thailand is significantly influenced by a change of price of tourism goods.The relationship of the two variables is negative.

Keywords: Consumption behavior, income elasticity, price elasticity

1.0 Introduction

The tourism industry has generated significant revenues for Thailand (see Table 1). From 1998 to 2009, tourism contributed revenue increased from 242,177 million baht in 1998 to 510,255 million baht in 2009. Tourism revenue is approximately 5-6 percent of GDP but it slightly decreased in 2003, 2005, 2008 and 2009 because of SARS, the Iraq War, the tsunami, political incidents and worldwide recession (McDowall and Wang, 2009). Tourism receipts are about 10 percent of all export receipts and also fluctuated with these conditions.

The tourism sector is a main source of income in the Thai economy. Among the major exports in Thailand between 2001 and 2009, revenues from tourism were ranked at 1st or 2nd (see Table 2). A comparison between tourism revenues and other major exports reveals that the growth rate of tourism has also fluctuated.

Table 1: Gross Domestic Product, Export, Tourism Revenues, Tourism-GDP ratio, and
Tourism-Export ratio in Thailand 1998-2009

Year	Gross Domestic Product (Million Baht)	Export (Million Baht)	Tourism Revenues (Million Baht)	Tourism-GDP ratio (%)	Tourism-Export ratio (%)
1998	4,626,400	2,248,321	242,177	5.23	10.77
1999	4,637,000	2,215,179	253,018	5.46	11.42
2000	4,922,700	2,773,827	285,272	5.79	10.28
2001	5,133,502	2,884,703	299,047	5.83	10.37
2002	5,450,643	2,923,941	323,484	5.93	11.06
2003	5,917,369	3,325,630	309,269	5.23	9.30
2004	6,489,476	3,873,689	384,360	5.92	9.93
2005	7,092,893	4,438,691	367,380	5.18	8.28
2006	7,850,193	4,937,372	482,319	6.14	9.77
2007	8,529,836	5,302,119	547,782	6.42	10.84
2008	9,080,466	5,851,371	574,520	6.33	9.82
2009	9,041,551	5,194,596	510,255	5.64	9.82

Source: Bank of Thailand and Tourism Authority of Thailand, 2010

Table 2: Comparisons between Tourism Revenues and Other Major Exports in Thailand
2001– 2009

Year	Computer and Parts	Jewel and decorations	Major Exports Integrated Circuits and Parts	Car and Parts	Tourism
2001	351,798	81,312	154,880	117,614	299,047
2002	319,129	93,082	141,912	125,244	323,484
2003	339,944	104,526	191,540	164,706	309,269
2004	368,867	106,278	196,444	220,788	384,360
2005	474,445	129,339	238,455	310,307	367,380
2006	565,807	139,865	267,598	362,374	482,319
2007	597,060	185,150	290,350	447,108	547,782
2008	605,314	274,093	237,972	513,154	574,520
2009	545,469	333,701	219,509	378,349	510,255

Source: Ministry of Commerce, 2012

Moreover, the tourism industry has generated significant employment throughout both
directly and indirectly related businesses (see Table 3). The data of the World Travel and
Tourism Council show that direct tourism industries include hotel and catering, retail,
transportation services and business services, and employ more than 40 percent of the total
employment in travel and tourism. Employment in the tourism industry in Thailand increased
between 2001 and 2009. SARS, the Iraq War, the tsunami and political incidents had a
negative impact on employment in the tourism industry between 2003 and 2005.

Table 3: Employment in the Tourism Industry in Thailand 2001-2007

Year	Employment of Travel and Tourism (Persons)	Employment of Travel and Tourism Direct Industry (Persons)
2001	4,372,300	1,900,200
2002	4,699,600	1,955,600
2003	4,507,100	1,811,800
2004	4,957,800	1,996,800
2005	4,503,300	1,752,600
2006	4,920,900	1,959,500
2007	4,933,100	1,952,900
2008	5,105,200	2,051,500
2009	4,873,600	1,948,800

Source: World Travel and Tourism Council, 2012

International tourism contributes more than domestic tourism to the Thai economy. International tourism has grown continuously from 1998 to 2007 (see Table 4) compared to domestic tourism. In terms of average expenditure, the expenditure of international tourists is around twice that of Thai tourists, and this trend has been increasing. In terms of the length of stay, the length of stay of international tourists is longer than that of Thai tourists. In particular, the change of revenue from international tourism is increasing more than the change of revenue from domestic tourism.

Because of the significance of international tourism, this paper will emphasize the behaviours of international tourists. The purpose of this study is to estimate the effect of price and the income of international tourists on the total tourism revenue of Thailand.

Table 4: Tourism Arrivals Statistics in Thailand 1998-2007

| Year | Domestic | | | | | | International | | | | | |
| | Thai | Average | Average Expenditure | | Revenue | | Tourist | Average | Average Expenditure | | Revenue | |
	Trip (Million)	Length of stay (Days)	/person /day (Baht)	Change (%)	Million (Baht)	Change (%)	Number (Million)	Length of stay (Days)	/person /day (Baht)	Change (%)	Million (Baht)	Change (%)
1998	51.68	2.37	1,512.70	+ 3.19	187,898	+ 4.16	7.76	8.40	3,712.93	+ 1.12	242,177	+ 9.70
1999	53.62	2.43	1,523.55	+ 2.29	203,179	+ 7.42	8.58	7.96	3,704.54	- 0.23	253,018	+ 4.48
2000	54.74	2.48	1,717.77	+ 12.75	210,516	+ 3.61	9.51	7.77	3,861.19	+ 4.23	285,272	+ 12.75
2001	58.62	2.51	1,702.70	- 0.88	223,732	+ 6.28	10.06	7.93	3,748.00	- 2.93	299,047	+ 4.83
2002	61.82	2.55	1,689.52	- 0.77	235,337	+ 5.19	10.80	7.98	3,753.74	+ 0.15	323,484	+ 8.17
2003	69.36	2.61	1,824.38	+ 7.98	289,987	+23.22	10.00	8.19	3,774.50	+ 0.55	309,269	- 4.39
2004	74.80	2.60	1,852.33	+ 1.53	317,225	+ 9.39	11.65	8.13	4,057.85	+ 7.51	384,360	+ 24.28
2005	79.53	2.73	1,768.87	- 4.51	334,717	+5.51	11.52	8.20	3,890.13	- 4.13	367,380	- 4.42
2006	81.49	2.65	1,795.09	+ 1.48	365,276	+ 9.13	13.82	8.62	4,048.22	+ 4.06	482,319	+ 31.29
2007	83.23	2.63	1,767.35	- 1.55	380,417	+ 4.15	14.46	9.19	4,120.95	+ 1.80	547,782	+ 13.57

Source: Bank of Thailand and Tourism Authority of Thailand, 2010

2.0 International Tourism

International tourist arrivals to Thailand vary from different regions. There are eight groups of international tourists which travel to Thailand consisting of East Asia, ASEAN, Europe, the Americas, South Asia, Oceania, the Middle East, and Africa. The classification of tourist groups depends on geography, ethnicity, and culture (Tourism Authority of Thailand 2010). The majority of international tourist arrivals to Thailand are from East Asia. Europe is ranked as second in the world. Other regions are the Americas, South Asia, Oceania, the Middle East, and Africa, respectively.

Between 2000 and 2009, the major market of international tourist arrivals to Thailand included the same countries. Malaysia was the first rank of total international tourist arrivals in Thailand and has increased constantly. Japan contributed the second highest number of arrivals but the number has fluctuated somewhat. The next highest rank is the United Kingdom which has risen continuously.

Groups of international tourists which generate high tourism income tourists include Malaysia, Japan, the United Kingdom, the United States of America, India, Australia, Israel and South Africa. Each nation represents the top contributor of tourists from the regional groups: East Asia, ASEAN, Europe, the Americas, South Asia, Oceania, the Middle East and South Africa, respectively.

Tourists from the United Kingdom, the United States of America, Israel and Malaysia spend more nights in Thailand (see Table 5). British tourists stay in Thailand the longest. The length of stay of this group was around eleven days in 2000 and rose to fifteen days in 2009. The latter ranks are American and Israeli tourists who, on average, stayed in Thailand for nearly fourteen days in 2009. Malaysians have the shortest stay. The purpose of visits for these groups of people is mainly for vacation. In contrast, Indians have stayed decreasingly in Thailand. The average length of day of this group was around eight days in 2000 and then slightly dropped to about two days in 2009. The main purpose of Indian tourist trips is business.

Table 5: Average Length of Stay by International Tourists during 2000-2009
(Unit: Days)

	Malaysia	UK	USA	India	Australia	Israel	South Africa
2000	3.447	11.395	8.829	8.500	9.108	11.730	7.225
2001	3.441	11.805	9.501	7.932	9.272	12.474	7.348
2002	3.554	12.400	9.792	7.206	9.680	13.377	7.964
2003	3.753	12.352	10.295	8.043	9.653	13.310	8.027
2004	4.069	12.755	9.888	7.151	9.483	13.281	8.415
2005	4.192	12.452	9.894	7.040	9.448	12.278	8.152
2006	3.987	12.677	10.125	6.944	9.651	13.437	8.359
2007	5.15	16.7	14.02	6.91	12.03	11.94	10.15
2008	4.870	17.270	13.130	6.850	12.280	13.830	10.310
2009	4.49	15.1	13.42	6.07	11.28	13.43	9.24

Source: Tourism Authority of Thailand

The expenditure of international tourists in Thailand is classified into seven groups: shopping, entertainment, sightseeing, accommodation, food and beverage, local transport and miscellaneous. The expenditure of these tourists is mainly for accommodation and shopping.

Tourists from Malaysia, the United Kingdom, the United States of America, Australia and Israel generally spent a significant proportion of their spending on accommodation in 2009 (see Table 6). The percentage of accommodation expenditure of these tourists is around thirty percent or one-third of total per capita spending. The second largest spending of this group is for shopping. It accounts for about twenty-five percent or one-fourth of total per capita spending. Indian and South African tourists focus on shopping items. The expenditure of these two groups accounts for more than thirty-five percent. The second rank of spending is accommodation. In contrast, sightseeing and miscellaneous are the second least spending items for every country.

Table 6: Share of Average Expenditures of Tourists for Each Commodity to Thailand in 2009 (Unit: Percent)

Items	Malaysia	UK	USA	India	Australia	Israel	South Africa
Shopping	29.5	18.6	22.3	37	23.3	26.4	35.5
Entertainment	9.5	12.1	13.7	8.6	13.1	10.6	6.9
Sightseeing	3.2	4.9	3.7	3.8	4.1	3.1	3
Accommodation	31.8	31.5	31	23.5	31.5	29.9	28.5
Food and Beverage	15.5	20.2	17.2	15.5	17	18.1	15.3
Local Transport	8.2	11.2	10.9	9.5	9.7	10.9	9.7
Miscellaneous	2.3	1.5	1.2	2.1	1.3	1	1.1

Source: Tourism Authority of Thailand, 2007

3.0 Literature Review

3.1 Demand Model for Tourism

There are many models to analyze tourism demand from previous studies. These models can be classified as follows: single equation model, system of equations, and panel data model (Lim 2006; Garin-Munoz and Montero-Martin, 2007; Kadir, 2008; Stabler et al., 2010).

A single equation model considers the relationship between dependent and independent variables. Log- linear is a functional form that is mostly used in earlier studies (Witt and Martin, 1987; Lee et al., 1996; Tan et al., 2002; Stabler et al., 2010; Schiff and Becken 2011). The advantage of this form is that it is easy to implement (Kadir 2008; Stabler et al., 2010). On the other hand, the system of equations is a more compelete model that is based on consumer theory. The Almost Ideal Demand System (AIDS) model is a model used in tourism demand analysis. It considers both the consumer choice and the budget constraint for the decisions of individuals or tourists (Pyo et al., 1991; Stabler et al., 2010; Divisekera, 2003; 2010). Finally, panel data are employed in the analysis of tourism demand to reduce multi-collinearity problems and increase the degrees of freedom (Garin-Munoz and Montero-Martin, 2007; Kadir, 2008; Stabler et al., 2010; Sookmark, 2011).

3.2 Determinants of Consumption of Tourists

Income and price have significantly affected the demand for international tourism (Lim, 2006). Firstly, there are lot representatives of income from previous studies. Income is represented by Gross National Product (GNP), Gross Domestic Product (GDP) and Real Per Capita (RPC). Secondly, the variable is generally measured by the consumer price index

between destination country and origin country and is adjusted by exchange rate (Lim, 2006) or is represented by exchange rate (Zhang et al., 2009; Jintranun et al., 2011).

The relationship between income and the consumption of tourists is positive (Adrian, 1991). An increase in income influences tourism consumption growth. If the value of the correlation is more than one (or elastic), the tourism goods consumed by tourists are luxury items (Sookmark, 2011). Inversely, if the value of the correlation is less than one (or inelastic), tourism goods are indicated as necessary or basic goods.

The relationship between price and tourism consumption can be negative or positive (Bull, 1991). Firstly, the rising prices of tourism products at a destination downwardly affects the consumption of tourists at that destination. The value of the relationship is more than one which indicates elasticity, or is less than one, which indicates inelasticity (Lee et al., 1996, Vogt andWittayakorn, 1998; Tan et al., 2002; Kadir, 2008). Secondly is the price of substitute destinations with respect to that of a destination. The effect of increasing prices at a substitute destination positively affects the consumption of tourists at the primary destination. For instance, Malaysia and the Philippines are substitute countries for international tourism in Thailand (Kadir, 2008).

4.0 Data and Model

4.1 Data

In this study, the population is grouped into eight categories. Tourists from Malaysia, Japan, the United Kingdom, the United States of America, India, Australia, Israel and South Africa represent tourists from East Asia, ASEAN, Europe, the Americas, South Asia, Oceania, the Middle East and South Africa, respectively. Revenues from these tourists are at the top of each category.

Total tourism revenues, the consumer price index, the exchange rate and the spending per tourist per day are obtained from the International Monetary Fund, the Tourism Authority of Thailand and the Department of Tourism. The type of data is panel data between 1998 and 2009.

4.2 Model

The behaviour of tourists from several countries in Thailand is influenced by price and income. The function of demand for tourism is as follows:

DT = f (Price, Income) (1)

Where DT is the total tourism revenue of international tourism to Thailand in baht. The price of tourism is measured in terms of relative prices. Relative prices are the consumer price index multiplied by the nominal exchange rate in baht per unit of origin country currency. The consumer price index is the consumer price index in Thailand divided by the consumer price index in the origin country. Income is represented by expenditure per tourist per day in baht.

The demand for tourism is estimated in double-logarithmic form. The model employed is:

$\ln DT = \beta_0 + \beta_1 \ln P + \beta_2 \ln Income + \varepsilon$ (2)

Where, P is the price of tourism that is measured in terms of relative prices. The variables β_0, β_1 and β_2 are the coefficients. ε is the error term.

The analysis of international tourism demand for Thailand uses panel data, econometric fixed and random effects models. The fixed effects model is expressed as follows:

$$\ln DT_{it} = \alpha + \beta_1 \ln P_{it} + \beta_2 \ln Income_{it} + a_i + u_{it} \qquad (3)$$

Where the variables α, β_1 and β_2 are the coefficients. DT_{it} is tourism demand from the origin countries i to Thailand at time t. P_{it} is the price of tourism of original countries i at time t. $Income_{it}$ is income in original countries i at time t. The variable a_i is the unobserved fixed effect and u_{it} is the error term.

The random effects model is expressed as follows:

$$\ln DT_{it} = \mu + \beta_1 \ln P_{it} + \beta_2 \ln Income_{it} + v_{it} \qquad (4)$$

Where, the variables μ, β_1 and β_2 are the coefficients. DT_{it} is tourism demand from the origin countries i to Thailand at time t. P_{it} is the price of tourism of original countries i at time t. $Income_{it}$ is income in original countries i at time t. The variable v_{it} is composite error term or $\alpha_0 + \varepsilon$.

5.0 Results

The result of Panel Least Squares shows that the price variable has a positive effect on the total tourism revenue of international tourism to Thailand with significance in all six countries (see Table 7). The value of R-squared 0.28.

The result of the estimation by the fixed effects model shows that the consumption of Malaysian, Japanese, British ,American, Australian, Indian, Israeli and South African tourists in Thailand is related with income and price at a five percent level. Firstly, if the income of tourists increases one percent, the consumption of the tourists increases 1.83 percent. Secondly, if the price of tourism goods increases one percent, the consumption of tourists decreases 0.80 percent.

The result of the estimation by the random effects model shows that the consumption of Malaysian, Japanese, British, American, Australian, Indian, Israeli and South African tourists in Thailand is related with income. Income elasticity accounts for 1.61, which is significant at a five percent level. The income elasticity of demand in these countries for Thailand is more than one. Theoretically, a one percent rise in income appears as more than a one percent rise in demand. The item is a luxury good or elastic. Thus, in this case, tourism demand of these groups for Thailand is regarded as a luxury item.

The Breusch and Pagan Lagrangian multiplier (LM) and the Hausman Test are used by selecting the most reliable model among ordinary lead squares (OLS), the Fixed Effects Model and the Random Effects Model. Panel Least Square or the Random Effets Model are appropriate and can be examined by using a Breusch and Pagan Lagrangian multiplier (LM) test. The selection of the estimation of the Fixed Effects Model or the Random Effects Model depends on the Hausman Test.

The Breusch and Pagan Lagrangian multiplier (LM) test shows that the Chi-Sq statistic is 127.34 and the P-value is 0.0000 (see Table 7). The null hypothesis is that the random effects model is a suitable model and its efficiency is accepted at a 95% confidence interval. It means that the estimation of the random effects model is the most suitable method in this study.

The result of the Hausman Test shows that the Hausman Test Chi-Sq statistic is 15.02 and the P-value is 0.0005 (see Table 7). The null hypothesis that the Random Effects Model is a suitable model and is efficient is rejected at a 95% confidence interval. The estimation of the Fixed Effects Model is the most suitable method in this study.

Table 7: Estimation Results of tourism demand by tourists from Malaysia, Japan, UK, USA, India, Australia, Israel and South Africa

Variable	Panel Least Square	Fixed Effects	Random Effects
Constant	10.22	-3.78	-3.20
	(1.54)	(-1.44)	(-1.21)
Income	-0.22	1.83*	1.61*
	(-0.29)	(5.69)	(5.07)
Price	0.43*	-0.80*	-0.30
	(5.71)	(-3.74)	(-1.79)
R-squared	0.28	0.93	0.20
LM test			127.34*
Hausman Test			15.02*

*Indicates significance at 95% confidence interval

6.0 Conclusion

The major market of international tourist arrivals and tourism revenues of each region to Thailand is Malaysia, Japan, the United Kingdom, the United States of America, India, Australia, Israel and South Africa. The expenditure of tourists from these eight countries is mainly on accommodation and shopping.

The result of the international tourism demand analysis in Thailand by using the Fixed Effects Model is that the consumption behaviour of Malaysian, Japanese, British, American, Australian, Israeli and South African tourists in Thailand significantly depends on price and their income. A positive change in income has a positive effect on the consumption of tourists from Malaysia, Japan, UK, USA, India, Australia, Israel and South Africa. The income elasticity of these countries is greater than one or is elastic. Tourism demand for Thailand is considered as a luxury good. An upward change of price has a negative effect on the consumption of tourists from these countries. Price elasticity of these countries is less than one.

Acknowledgement

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Challenges of Non-Rational Issues in 21st Century Asia

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Abstract

Issues dealing with security are perhaps the most profound issues since the end of the cold war in 1990s. The idea that is the security of the state is no longer can only be challenge by war but also other factors and issues that can still threaten the wellbeing of the citizen and state. The realism paradigm in international politics deems issues on securities in a traditional ways that wars and arm conflicts are the only threat to the state. This viewpoints fall under the notion of traditional security. The other notion that dictates the security of the state can be more than just arm conflicts and wars, fall under the idea and paradigm of idealism. This paper will tend to highlight a few issues that concern the paradigm of Non-Traditional Security. In the end the objective of this concept paper is to stimulate the awareness that the states especially emerging nations such as in South East Asia are vulnerable to the non-traditional security. It is imperative that the challenges be understood in order to make proper preparation.

Keywords: Security, challenges and threaten

1.0 Introduction

Non-Traditional Security issues are challenges to the survival and well-being of peoples and states that arise primarily out of non-military sources. These dangers are often transnational in scope, and requiring comprehensive political, economic, social responses, as well as humanitarian use of military force. It is with this in mind that the Non-Traditional Security project combines theoretical innovation, and empirical research program and policy-relevant analysis and findings. Major themes of Non-Traditional Security in Asia have been identified such as climate change, resource scarcity, infectious diseases, natural disasters, irregular migration, food shortages, people smuggling, drug trafficking and transnational crime.

Food security is one of the serious problems faced by ASEAN member countries. Food security can be define as all people at all times have physical and economic access to enough safe and nutritious food in order to cover their dietary needs and food preferences for an active and healthy life (Rome Declaration, 1996) which is food security involves the regulation and control of food supply chains in order to monitor food hygiene, toxicity and traceability. The definition introduced in the 1974 World Food Summit, of which food security was the "availability at all times of adequate world food supplies of basic foodstuffs to sustain a steady expansion of food consumption and to offset fluctuations in production and prices" Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life (FAO, 2006).

Food security has three dimensions which include availability, accessibility and affordability. Availability means the availability of sufficient quantities of food in appropriate quality, and

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supplied through domestic production or imports. Accessibility means the accessibility of households and individuals to appropriate foods for a nutritious diet. Lastly is affordability which means the affordability of individuals to consume food according to their respective socioeconomic conditions, cultural backgrounds, and preferences (Achmad Suryana, 2008).

2.0 Literature Review

The term "new" or "non-traditional" security threats and challenges have become the source of increasing concern around the word after the end of cold war. Many intellectuals even believe that these concerned become dominant after 9/11 (Tariq Rahim Soomro, 2009). Major themes of Non-Traditional Security in Asia have been identified by Consortium members such as climate change, resource scarcity, infectious diseases, natural disasters, irregular migration, food shortages, people smuggling, drug trafficking and transnational crime. Brief descriptions of some of these concerns are as follows:-

2.1 Economic Security

Primarily concerned with material well-being, it should not be taken lightly as it overlaps with other Non-Traditional Security issues and a lack of it could result in grave repercussions. In Asia, economic insecurity is characterized by widespread poverty, irregular migration patterns, human and drug trafficking and corruption, just to name a few. Such economic insecurity can potentially lead to instability and conflict and thus threaten state and human security.

First, it is necessary to define what constitutes a security issue today. Scholars have found that classical frameworks are not easily adapted to the contemporary security landscape. They instead turn to novel approaches to security studies, including 'securitisation theory' (Eddie Walsh, 2011). Traditionally, adherents of securitisation theory recognise specific categories of security issues these include five general categories: military, environmental, economic, societal and political issues. It is from broad categories such as these that Asian security analysts can distill individual risks and threats.

2.2 Water Security

Through the centuries, the mighty rivers have sustained the lives and livelihood of people in Asia. Mighty rivers like the Yangtze, Tigris, Euphrates, Indus, Ganges, Brahmaputra, Irrawady, Salween, Mekong, Amu Darya and Syr Darya flow through different countries making riparian relations equally conflicting and converging. The combined effects of global warming and weather patterns are expected to lead to set of global warming and weather patters are expected to lead to a set of interconnected calamities. Asia will be particularly vulnerable due to the "exponential function" of rapidly increasing population, growing food demand and dependency on water for irrigation and energy. With the increasing importance of transboundary rivers, hydro-diplomacy can be seen as a new framework for regional cooperation, with opportunities for dialogue, consultation and data-sharing both between and within states. On the other hand, control of water can also lead to hydro-hegemony and dominance (www.idsa.in).

2.3 Food Security

In the face of climate change, rapid increasing populations, water scarcity, soil erosion and the search for energy independence which is converting land hitherto used for the production of food grains to growing fuels are increasing the stresses on the global food system. Though there have been some rather exceptional success stories in Asia and the Asian experience is held up as an example of food security progress from which other regions can gain lessons, some pervasive conditions of under-nourishment continue to plague individuals and communities in pockets throughout the region (www.idsa.in). Unless governments urgently shift expenditures from military uses to tackling climate change, increasing water efficiency and soil conservation, and population stabilization measures; the world will in all likelihood be facing a future with greater food instability and price volatility.

2.4 Climate Change

Climate change is the one global concern that has yet to be securitised in the official Chinese discourse. Contrary to the logic of interdependency, while water, food, energy, and natural disasters are all perceived as security issues, climate change is classified solely as a development issue. This is largely a result of the Chinese concern over maintaining leverage in global climate change negotiations (Katherine Morton, 2011). The principle of common but differentiated responsibility relies upon China's claim to developing country status rather than responsible stakeholder status.

3.0 Challenges

The rise of Non-Traditional Security issues presents new challenges for developing regional security. There are several challenges for the ASEAN countries in solving this issue. The issues that will be focused is regarding on climate changes, poverty, health, gender equity, and lack of technology.

3.1 Poverty

Poverty has been one of the challenges faced by ASEAN in order to solve the food security problem. It can be seen that poor people lack access to sufficient resources to produce or buy quality food. Furthermore, poor farmers may have very small farms, use less effective farming techniques, thus unable to afford fertilizers and labour-saving equipment, all of which lead to limit food production. Apart from that, they cannot grow enough food for themselves, let alone generate income by selling excess to others. Without economic resources and a political voice, poor farmers may be forced on to less productive land possibly causing further environmental deterioration. Addressing poverty is critical to ensuring that all people have sufficient food. Several wars have contributed to poverty in East Asia.

World War II (1939-1945) and Vietnam (1959-1975) had faced damaged land, crops, and forests; prevented many people from making a living; and killed and dislocated millions. As for ASEAN, although the Kingdom of Cambodia is rich in natural resources, decades of war and internal conflict have left it one of the world's poorest countries. The legacy of strife includes social and economic scars. Many millions of land mines were sowed throughout the countryside, where millions of them still lie, hidden and unexploded. Mines are an enduring menace to the eight out of ten Cambodians who live in rural areas, and they are an obstacle to

agricultural development. Cambodia's poor people number almost 4.8 million and 90 per cent of them are in rural areas.

Most of them depend on agriculture for their livelihood, but at least 12 per cent of poor people are landless. Small-scale farmers practice agriculture at the subsistence level, using traditional methods thus productivity is low. Two thirds of the country's 1.6 million rural households face seasonal food shortages each year. Rice alone accounts for as much as 30 per cent of household expenditures.

Rural people are constantly looking for work or other income-generating activities, which are mainly temporary and poorly paid. Landlessness is one of the causes of a strong trend of internal migration that is also driven by the pressures of rapid population growth and the desire to evade from recurring flood and drought in lowland areas. People are moving from the more densely populated provinces in the south and west to the more sparsely populated provinces in the north-east, which include some of the country's poorest districts.

3.2 Food Prices

Most significant is the fact that food insecurity threatens individuals' survival, especially the poor and marginalized. Soaring food prices has a significant weakening impact to their purchasing power. According to Robert Zoellick, President of the World Bank, there is no margin for survival in regions where food comprises from half to three quarters of household purchasing power. Asia is home to two thirds of the world's poor, for whom food takes up 30% to 50% of their household budget (Irene Kuntjoro, 2011). The rise of food prices in global and local market had force people to buy cheaper food which as we know contain low nutrition. Many of the Southeast Asian people who lived in the rural area work as a farmer and use the production of their food for themselves and not sale their production.

The rise of the food process did not affect their lives or gain benefits from it. When food prices rises, poor people are not affordable to buy a food. Increase the hunger problems among people in that area. Farmer will refuse to sell their food in the market and rather keep their farm's production for internal users. In other words, they will use the food for their family. Food will become insecurity and the demand will increase from time to time.

The lack of food would give rise to increased incidents of malnutrition, which could exacerbate the spread of infectious diseases such as diarrhea diseases and acute respiratory diseases – especially in developing countries (Gross et al., 2000). Although the Indonesian economy is growing at about 6 percent a year, some 100 million Indonesians live on less than US$1 a day. UNICEF data show that child malnutrition is rising. Dozens of kids under five died of malnutrition in the first six months of 2008. In the same period, the cost of fastener soybean-based products such as tofu and 'tempe', a source of vital protein, rose by about 50 percent owing to soaring commodity prices on the global markets.

3.3 Health

Health also becomes one of the challenges in food security that facing by ASEAN. Health is important to us to life with peacefully in this world. The first reason why health is important is to remain as free of disease and illness. It makes life more enjoyable. If we have more energy and feel much better outlook on life, we do not have to worry about health problem. Your body becomes free from various forms of disorder and thus, you will get a longer life.

You can life without any pain. In your life, you will be able to perform to the best of your ability. You can also doing excellence in your work. With the meaning of food security itself, it exists when people have physical and economic access to enough safe and nutritious food to meet dietary need and food preferences for an active and healthy lifestyle. If we do not have enough nutrients and calories, the body slows down and it makes difficult for us to do a job or work. A hungry mother also will give a birth to an underweight baby who then will suffer to several illness and others. Health becomes one of the challenges of food security because in this era, it still has the people who do not have enough food or still live in poor family.

A series study concern about the number of people dying from chronic non-communicable disease in the group of ten countries forming the Association of Southeast Asian Nations (ASEAN). The Southeast Asian Nations include the studies were Cambodia, Malaysia, Vietnam, Laos, Philippines, Singapore, Thailand, Myanmar, Indonesia and Brunei.

They want to protect population and minimize the number of death especially among the poor people or society. In the ASEAN countries, the chronic illness disease such as cancer and heart disease, caused the death of 2.6 million people over 60 percents off all death in the region. This is expecting to be increase to 4.2 million deaths per year by 2030, if action is not taken to reduce it. The study also covered the impact of infectious disease in the region, including the risk from diseases such as SARS, dengue and cholera. Calls are made to Southeast Asia government to take more effective action or approach in settling this problem. Philippines in 2005, the prevalence of underweight children further decrease to 25 percent, while under height children declined to 26 percents. The Millennium Development Goal (MDG) target is to reduce malnutrition to 17 percent by 2015. To achieve the MDG target, the government of Philippines launched the Accelerated Hunger-Mitigation Programmed (AHMP). The program is being implemented in at least at 40 of the poorest people or society.

The Food-for-School Programs (FSP) also one of the food subsidy program that provides one kilo of rice to the poor people or hungry families through children. There also have Tindahan Natin project which provide low priced but a good quality of rice and instant noodles to family who get a low income through an accredited store.

Indonesia also faces food security problems. In 2003, Indonesia is the first largest importer country for rice, the second largest importer county for sugar and the fifth largest importer county for wheat. But it also faces the food security problem after the climate that happened on that country. The shock from Asia Economic Crisis was strongly related with food availability and people accessibility for food. The numbers of malnutrition people also have been increase sharply. In settling this problem, Indonesia has developed food security at household level and also implements various changes in the strategies of food security. It includes the changes of from rice to food as whole, from government domination to community participation and others.

3.4 Gender Equity

Women play an important role in produce food and provide food for their family through their role as the provider of food, processors, and traders. But with the position of women in social and economic who is lower than man, limits their access to education, training, land ownership, decision making and other ability to improve their access. The use of food can be increase with the increasing of women's knowledge about nutrition, food safety and the prevention of illness. In developing countries, rural man and women play the different role in

ensuring or guaranteeing food security for the households and communities. Man responsible and grow up mainly field crops while women responsible for the most of the food consumed in the home. The different of gender limits the women's production. Women's access to the knowledge is also will determine the factor in level of nutrition and the health of child. Having an enough food will not automatically define as having an enough nutrition's. In many societies, women and girls eat the food remaining after the male family members have eaten. Women and girls becomes the main victim of food discrimination which results in chronic under nutrition and ill-health. For example is like in Cambodia.

In Cambodia, women outnumber men. According to the statistics of the Ministry of Women's Affairs, seventy percents of women are functionally illiterate compared to fifty percents of men. There also have several reasons of the differences between women and men in term of access to education. The first reason is it is the traditionally which based on parental notion towards son and daughter. Parents consider boys more important to go to school and get the education than the girls. It is because of boys will go out and find work while girls will stay at home and take charge of the household chores. Girls also after getting married will be fed by their husband so that they do not need to do any job. They believe that if the children get high education, they will become more stubborn. Moreover they will know how to write the love letters to men. In order to prevent disgrace in the family, the girls should not be sending in to the school to get the education. As a result, in poor families, if they can afford only for one child to go to school, then it will be the boy who get that opportunity.

3.5 Lack of Technology

Technology is the other challenges faced by ASEAN members in solving food security problem. Nowadays, in order to make works become efficient, people need to be expert in using the technology. It is suit with current situation where everyone compete each other in develop their own self. On the other side, this situation also can be compare with the high level which is among the countries. For instance like ASEAN countries. They compete each other to develop their own country and at the same time they also help each other based on win-win situation. Malaysia is part of ASEAN country which also the founding of it. Therefore, Malaysia can be said as developing country now and due to the process of development they had stressed out the important of technology to achieve the vision. Malaysian had been exposed by the technology so does Singapore, Brunei and others members of ASEAN. Even though the technology had develop in this ASEAN countries there are still lack of resources and yet still have a group of nation that did not familiar with technology.

In some research done by Malaysian Agricultural Research and Development Institute Horticulture Research Centre, Postharvest losses can be attributed to several factors, however, improper handling and packaging low-level technology, lack of basic equipment and facilities at the collection centres or packing houses and lack of trained personnel are prevalent in most ASEAN countries (Shukor, n.d). This statement clearly showed the lack of technology in term of agriculture that can led to the food security issues in the ASEAN countries. This issue is being discussed on the Development of Appropriate Technologies for Major Vegetables Crops of ASEAN.

The vegetable producers need to achieve the target in securing the food reserve by keeping their vegetables fresher for longer. To do this, not only must a vegetable be well grown but it also must be harvested at the right stage of maturity, carefully handled and packed where

these process deal with technology. It means that technology is an important mechanism in securing the food to avoid people from starving.

In Burma or now know as Myanmar there are also lack of technology and it strengthen the statement which stated in the newspaper that 'the reality is that Burmese mobile phone users remain hampered by a lack of technology and an insufficient network' (Nayee Lin Latt, 2011). This show that the Myanmar still lack of technology and this rise the issue by the Myanmar in solving the food security problem. It is hard for the nation to contact each other. This also affect the work process happened between the country and outside of the country. How could they communicate with each other if the mobile network also still be the issue in their country? The important of mobile phone network is to communicate among them for specific purposes. For example, in term of agricultural as the Myanmar main economy contribution is agriculture. The producers need to communicate with the other buyer perhaps in term of buying the seeds. They need to communicate and discuss what is the price given if buy some weight of seeds.

What times the producer did takes to deliver the seeds to them. What will be the guarantee that the seeds will not damage in particular time? It is all involve the relation with technology. In addition, according to a telecommunications engineer at the Ministry of Communications, Posts and Telegraphs (MCPT), the engineer said there are main areas of weakness. It is that if you want to import equipment from abroad, you need to go through all these mechanisms until you reach the minister. It is really a time consuming problem (Nayee Lin Latt, 2011). It is clearly said that in Myanmar, if they deal with the outside country it is hard to deal with because of lack in technology and furthermore they also take a lot of time to settle down the problem. It is prove that lack in technology became a challenge in solving the food security problem where they find that it is hard to communicate with each other inside and outside of the country.

Apart from that not only Myanmar having the problem in technology, but Laos also faces the same situation and it is much worse compared to Myanmar. It is because Laos classified as one of the world's poorest countries. The country's recent history and political structure further compound problems of poverty and underdevelopment (Paula, n.d). This situation proves that Laos still lack in technology resources. It can be a great challenge for their country to settle down the issue on food security. They might find it difficult to maintain the amount of food. It is due to the lack of technology. They still did not have a modern machine that can help them to secure the food. For instance like tractor, rice harvesting machine and others. With such facilities it actually help works done faster compared in using the traditional mechanism such as buffalo to harvest. Other than that, Laos still lack in technology because of their government had controlled the internet movement in their country. It is again became a barriers for the traders to communicate and deal with the country and food security issue is increasingly at risk. In order to solve this, the new technology can only have significant impact if the people especially farmers know how to use it and have the incentive to adapt it.

Therefore, training should be given to them to ensure they know how to handle with machine and internet. The farmer is the important people as they are the one who produce the food. Moreover, to secure the amount of food in the country the country need to have a machine that can avoid from waste of time. In other words, the machine needs to be less time consuming so that the process of food production can become faster and at the same time can avoid from food security issue to be rise up.

Not only Myanmar and Laos faces with food security issue but Indonesia also felt the same situation too. ASEAN country is focuses on agricultural sector compared to western countries which is more focus on industrial sector. That is why ASEAN countries need to adapt and being expose with technology to ensure that food security issue is not again become an issue in the ASEAN countries. The agricultural sector is the starting point for finding sustainable solutions to overcome the current food crisis. In Indonesia the problems in technology had lead to the food security issue in this country. Inappropriate production technologies utilization, especially for small holder farming is the major problem here. The crisis will directly hit the poorest and neediest of the Indonesian and in turn decrease their already low quality of life. To deal with this situation, Indonesia is in progress of improving food distribution system to guarantee a stable food supply and public access to food. As we know, distribution system is related to technology. In certain place mostly in a rural area there is still lack of technology. Compared to urban area the gap is a huge gap which leads to this issue rise in Indonesia country. In some area in Java they still using water buffalo to plough rice field. This show there is still lack of technology in certain areas in Indonesia. Thus, it makes the process slower in producing the rice. At the same time become an issue of food security in their country.

The situation claimed same with Cambodia which the telecommunication infrastructure is not conducive to implementation due to the lack of an extensive phone system and of knowledge about new telecommunications technologies (Michaela, 2002). According to Linda, she said that today Cambodia struggles with a lack of government and physical infrastructure, poor education, unsafe drinking water, deficient healthcare, scarce electricity, and virtually no means of outward communication. This proved that the lack of technology is the major problem in the issue of food security. Their country is even hard to find a safe drinking water and in Cambodia also the electricity is still not develop well in certain area.

How did their people want to produce a food if the basic resources also are still not complete? Thus, again lack of technology became a major issue in arisen the food security problem. The Cambodian also lack in education which added the problem to become worse. In education system there is also the implementation of technology. For instance in using the computer and searching the internet to gain information and idea. People of Cambodia need to be exposed in this area of technology so that they can learn how to increase their production of food. Perhaps they can also find out what is the mechanism use in develop their food sector. For example they can buy a machine to replace with traditional system that using buffalo as the main tools in the plough of paddy.

4.0 Conclusion

Conclusion, food security had become major issue in Southeast Asia community or in other words among ASEAN community itself. There are many challenges faces by ASEAN members in order to solve the food security issue. First of all, food security problems happen when certain area in the country are still not fully develop with basic utilities. Poverty had become a main problem among ASEAN country such as Laos, Cambodia, Myanmar, Vietnam and also rural area in Thailand and Indonesia. Southeast Asian country faces with a lot of problem since the colonial era. A country likes Cambodia, Myanmar and Vietnam suffer a civil war. The war had ruin the development of the country for many years. Food become insecure and certain rural area suffer a hunger problems. The rise of the food prices also is one of the challenges among ASEAN members to solve the food security issue. The food prices burden the poor people to get a nutritious food. They had to buy a cheaper food

than contain lower nutrition. The other challengers faced by ASEAN members are in terms of health and gender equity.

Lack of technology also in one of the problem that arise in order to solve food security issue. Lack of technologies in certain country slower the production of food for domestic user. Food also cannot be distributed to certain rural area because of lack of technologies and transport. Government faced a problem to go to the rural areas which are not fully developed. No road and any telecommunication utilities to stay connect with the area or province. ASEAN members must take an alternative ways in order to settle this problem. A lot of integration and meeting should have being done to overcome this issue. Food security is one of the important thing nowadays. Leaders of the country must play an important role to make sure their people gain basic needs which is food.

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The Relationship between Corporate Sustainability and Corporate Financial Performance: A Conceptual Review

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Abstract

Corporate sustainability is emerging as a separate body of knowledge influenced by wider application in firms and industries, supported by global initiatives. So far studies have focused on the linear relationship between sustainability performance and corporate financial performance. However the results of such studies are mixed and only few studies examined the non-linear relationship between sustainability performance and corporate financial performance. Further most studies adopted sustainability performance either as a predictor variable or as an outcome variable. Understanding the direct relationship between corporate sustainability and corporate financial performance is becoming important as firms are identifying corporate sustainability as a strategic goal and is increasingly being embedded into firm operations. Further it's of importance to understand whether the relationship between corporate sustainability and corporate financial performance is influenced by other factors and whether the relationship can be explained better through such interacting factors. Hence this paper focuses on whether a firms integration capability, drawn from dynamic capability theory can explain whether firms with higher level of integration capability can demonstrate a direct relationship between corporate sustainability and corporate financial performance. Thus a conceptual framework incorporating corporate sustainability adoption as a predictor variable, corporate financial performance as a criterion variable, sustainability performance as a mediator between corporate sustainability adoption and corporate financial performance and integration capability as a moderator between corporate sustainability adoption and corporate financial performance is proposed. The conceptual framework proposed in this study provides the opportunity to test the model in different contexts using primary data and should promote further discussion on investigating the non-linear relationship between corporate sustainability adoption and corporate financial performance and to propose theoretical frameworks incorporating constructs from other organizational theories.

Keywords: Corporate sustainability, corporate sustainability adoption, corporate financial performance, sustainability performance, integration capability

1.0 Introduction

Businesses have been experiencing growing environmental and social pressures for some 30 years (Sherwin, 2004) and stakeholders are becoming more vocal in their demands for

information on business activities aside from financial performance (Keeble, Topiol and Berkeley 2002). Therefore incorporating sustainability into firms is an increasingly important strategic goal (Siegel 2009; Closs, Speier and Meacham 2010) and White (2005) states that 81% of senior executives in large U.S. firms had identified that corporate sustainability are essential to the firm's strategic mission.

Companies in U.S. and in many other countries are increasingly reporting their environmental, social and sustainability performance (Cooper and Owen, 2007). Esrock and Leichty (1998) found that 82% of the web sites in a sample of Fortune 500 companies revealed at least one corporate social responsibility issue. The KPMG International Survey of Corporate Responsibility Reporting found that 95% of the 250 largest companies in the world (G250) report on their corporate responsibility activities and the survey also reveals that only a half of firms from Asia – Pacific reports their corporate responsibility activities while firms in Europe have the highest reporting rates (KPMG, 2011). Further social responsibility and sustainability reporting are continued to be supported by developments in corporate social responsibility guidelines and Global Reporting Initiative (Global Reporting Initiative 2011; Lee, Faff and Smith, 2009) and initiatives taken by international accounting firms such as Global Centre of Excellence for Climate Change & Sustainability of KPMG and Sustainable Business Solutions Practice of PWCs.

Despite of increasing incorporation of sustainability at firm level, studies published are relatively lower compared to other areas of research. For example Dunlap and Catton (1993) found that there weren't articles on environmental problems in the two mainstream sociological journals between 1970 and 1990 (cited in Purser, Park and Montuori, 1995). Montiel (2008) examined journal articles on corporate social responsibility, environmental management and corporate sustainability published between 1970 and 2005 and identified only 91 articles out of 733 publications and among them only 11 was related to corporate sustainability and the publications began in the 90s. Similarly Christofi, Christofi and Sisaye (2012) and Montiel (2008) identified that research interest on corporate sustainability emerged in 1990s and Montiel (2008) further states that research articles on corporate sustainability and environmental management has surpassed corporate social responsibility publications post 2000. Thus it can be concluded that corporate sustainability as a body of knowledge is relatively new and expanding, requiring further research investigation to the concept. Though limited attempt have been made to explore the concept of corporate sustainability, scholars support the idea that it leads to competitive advantage.

Thus the discussion should lead to whether embedding economic, social and environmental dimensions of corporate sustainability leads to positive impact on firm performance. According to Hahn and Figge (2011) corporate sustainability should guide corporate decision makers towards more sustainable business practices. Scholars also support the idea that corporate sustainability shall have direct and indirect impact on corporate financial performance. For example engaging in sustainability initiatives enhances transparency of a firm and this positively affects the reputation, which leads to a positive impact on firm performance. Therefore to remain competitive firms need to incorporate sustainability into their corporate strategy (Christman, 2000) requiring firms to reform, redesign and restructure (Shrivastava, 1995).

Hence, this paper proposes to explore the relationship between corporate sustainability and corporate financial performance and develops a conceptual framework demostrating the relationships between identified concepts. Hull and Rothenberg (2008) argues that the

relationship between corporate sustainability and corporate financial performance is complex. McWilliams and Siegel (2011) calls for exploring complex possibilities between corporate sustainability and corporate financial performance and only few studies have investiagted the impact of factors that influence and interacts between corporate sustainability and corporate financial performance. Above suggestions by researches are considered in exploring the relationship between corporate sustainabilty and corporate financial performance by introducing factors that can influence the nature and direction of the relationship.

2.0 Literature Review

Firms' incorporating social and environmental goals is in contradiction to neo classical economics. Maximization of shareholders wealth is considered the primary goal of corporations in neo classical economics and initial views on sustainability were based on this doctrine. Further early strategic management literature paid little regard to incorporating sustainability into firm strategy (Fowler and Hope, 2007). For example Porter (1985) considered sustainability as actions that improve growth and long-term profitability of a firm. Thus social and environmental goals were considered subordinate to the goal of wealth maximization and researches debate whether firms need to transform beyond its economic goals.

Hart (1995) states that firms should have responsibilities towards its environment beyond their economic obligations and considers that neoliberal and liberal attitude represents a weak version of sustainability (Davidson, 2010). Therefore firms in the 21st century are required to integrate social and environmental obligations and expect such initiatives to transcend into enhancing a firm's value in the long term (Steurer and Konrad, 2009). Thus social and environmental initiatives in firms create a unique identity for firms', widening the belief that managing triple bottom line improves efficiency and profitability over the long term and leads to competitive advantage (Livesey and Kearins 2002; Closs, Speier and Meacham, 2011)

In spite of evidences from studies that corporate sustainability enhances firm performance and competitive advantage; managers are concerned whether such initiatives really pay off (Chang and Kuo, 2008). The concept of sustainability which stems from sustainable development is considered to be a broad or to have a macro view (Baumgartner and Ebner, 2010) and its understanding and applicability from a business perspective is ambiguous (Bansal, 2005). According to Baumgartner and Ebner (2010) when a firm incorporates sustainable development it's called corporate sustainability. Different terms are being proposed and adopted in studies pertaining to the application of sustainable development at firm level. Van Kleef and Roome (2007, p. 43) defined Sustainable Business Management as 'management of business that recognizes its embeddedness in social, environmental, and economic systems and focuses on management and relationships to meet the environmental, social and economic requirements of many different stakeholders in its networks'. Chow and Chen (2012, p.520) defined Corporate Sustainability Development as 'the degree to which firms adopt social, economic and environmental development in their operations'. Salzmann, Ionescu-Somers and Steger (2005, p.27) defined corporate sustainability management as 'a strategic and profit driven corporate response to environmental and social issues caused through the organizations primary and secondary activities'. The above definition of authors identifies economic, social and environment as dimensions of corporate sustainability and requires firms to implement a multi dimensional sustainability framework.

Dyllick and Hockerts (2002) and Mueller et al. (2007) provided definitions different from the above. Dyllick and Hockerts (2002) defined corporate sustainability as meeting the needs of a firm's stakeholder without compromising its ability to meet the needs of future stakeholders and Mueller et al. (2007) defined sustainability as a mode of managerial decision-making and action, which aids enterprises in long-term value creation. The latter definitions don't specifically identify set of dimensions of corporate sustainability but they emphasis on creating long-term value. Therefore it can be said that corporate sustainability is a strategic initiative to develop abilities to create long-term value by meeting current and future economic, social, environmental needs of stakeholders. However there is no consensus on the definition (Bansal, 2005) and the debate on the exact meaning of 'sustainability' is continuing.

Managers and researches are interested on whether corporate social responsibility, environmental management or sustainability practices and investment on such practices leads to improvement in economic performance of the firm. Thus studies have continued to examine the causal relationship between corporate social performance, environmental performance, sustainability performance and financial performance. As corporate sustainability is considered an emerging area of research, the relationship between corporate sustainability and corporate financial performance is explored drawing on studies from related fields such as corporate social responsibility and environmental management.

According to Peloza (2009) majority of studies examining the causal relationship between corporate social responsibility and corporate financial performances found a positive relationship and other studies found a negative or a mixed relationship. Further Griffin and Mahon (1997) and Orlitzky, Schmidt and Rynes (2003) identified that most studies in the management literature found a positive relationship and only few studies found a negative or neutral relationship between corporate social performance and financial performance and in finance literature Derwall, Guenster, Bauer and Koedijk (2005) had found a positive relationship whilst Brammer, Brooks and Pavelin (2006) found a negative relationship.

Internal dynamics of a firm determines the effective adoption of new practices. Resource based theory proposed by Barney (1991) and dynamic capability theory proposed by Teece, Pisano and Shuen (1997) gives a broader understanding of a firm's internal dynamics. Resource based view of the firm is one of the widely adopted theoretical frameworks in strategy literature. The idea of "firms as a distinctive bundle of resources" began to gain wider acceptance in 1980s and literature and research on resource based view has continued to grow exponentially. According to Zahra and Das (1993) a resource constituted tangible and intangible capabilities of a firm.

Whilst resource based theory attempted to explain how firms achieve and sustain competitive advantage based on a firm's internal characteristics (Barney, 1991), it also became the nucleus to construct the dynamic capability theory. Dynamic capability theory is considered as an alternative approach or an extension of resource based theory and has continued to grow as a distinctive body of knowledge attempting to explain the competitive advantage paradox of firms. Dynamic capability theory identifies integration, configuration and reconfiguration (Eisenhardt and Martin, 2000) as capabilities. This concept paper proposes integration capability as "a firm's capability to integrate new developments effectively". Although integration capability is important for effective adoption of firm initiatives (Woiceshyn and Daellenbach, 2005) studies show that the concept of integration is vaguely defined and operationalized as a multidimensional construct.

Critical examination of the literature shows that there is need to investigate the relationship between corporate sustainability and corporate financial performance. Literature also supports the idea of exploring whether the relationship can be explained through factors interacting between corporate sustainability and corporate financial performance. Although studies on corporate sustainability are new and expanding it's also important to draw on concepts like integration to determine how effective are firms in adopting emerging practices.

3.0 Conceptual Schema and Propositions

Studies examining the relationship between corporate sustainability performance and corporate financial performance such as Lee, Pati and Roh (2011) and Wagner (2010) support a positive relationship between corporate sustainability and corporate financial performance and sustainability performance and corporate financial performance. Wagner (2010) identifies sustainability performance as an emerging term and the corporate sustainability model proposed by Epstein, Buhovac and Yuthas (2010) which is based on input, process and output structure identifies sustainability performance as an output that leads to long-term financial performance. However most of these studies adopt either corporate social performance, environmental performance or sustainability performance as the predictor variable directly substituting them for firm level practices assuming corporate social performance, environmental performance or sustainability performance as an outcome of firm level practices. Therefore the study proposes corporate sustainability adoption as the predictor variable, corporate financial performance as the criterion variable and sustainability performance as the mediator variable. Based on the relationships between the variables the following propositions are derived.

Proposition 1: there is a positive relationship between corporate sustainability adoption and corporate financial performance
Proposition 2: there is a positive relationship between corporate sustainability adoption and sustainability performance
Proposition 3: there is a positive relationship between sustainability performance and corporate financial performance
Proposition 4: sustainability performance mediates the relationship between corporate sustainability adoption and corporate financial performance

Bruhl, Horch and Osann (2010) exemplify integration as a capacity of a firm to coordinate different processes. Studies have identified external and internal integration as dimensions of integration capability. Iansiti and Clark (1994, p.569) defines internal integration as 'the capacity for extensive coordination between different specialized sub units within an organization, and explicitly targets the implementation of a given project concept'. Furthermore, cross-functional coordination as an important construct of integration capability was also identified by Zahra and Nielson (2002). Managerial factors has been identified as one of the internal factors favouring corporate sustainability adoption and a firm's structure, incentives, culture, commitment are considered important components of integration capability (Szekely and Knirsch, 2005). Thus the study proposes integration capability as a moderator between corporate sustainability adoption and corporate financial performance and corporate sustainability adoption and sustainability performance. Based on the above the following propositions are derived.

Proposition 5: integration capability moderates the relationship between corporate sustainability adoption and corporate financial performance

Proposition 6: integration capability moderates the relationship between corporate sustainability adoption and sustainability performance

Based on the relationships identified the proposed conceptual framework is shown in figure 1. As mentioned previously, the framework comprises of corporate sustainability adoption as a predictor variable, corporate financial performance as the criterion variable, sustainability performance as the mediator variable and integration capability as the moderator variable. Further each proposition demonstrating the relationship identified is shown in the conceptual framework.

Figure 1: Conceptual Framework
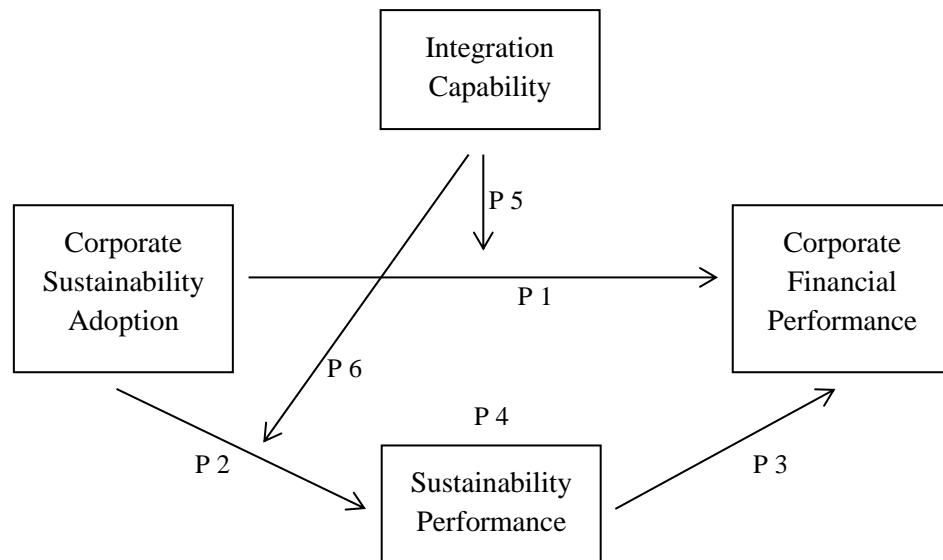
4.0 Conclusion

The Rio+20 summit has provided a wider platform for dialogue on corporate sustainability and firms worldwide have come to acknowledge the various programs on Sustainable Development initiated by United Nations. Despite such developments and initiatives research on corporate sustainability at firm level is considered relatively new. Thus undertaking research on corporate sustainability enhances the understanding of the concept and application and contributes to the existing literature.

Most studies have focused on establishing a linear relationship between corporate social performance and environmental performance on financial performance and studies exploring the relationship between sustainability performance and corporate financial performance is emerging and continuing to grow. In general managers of firms are concerned whether firm practices lead to improvement in financial performance and are identifying corporate sustainability as a strategic initiative, requiring them to adopt short term and long-term actions. Thus how can firms benefit from such initiatives is of significance. Hence the study proposes a conceptual framework to examine the relationship between corporate sustainability adoption and corporate financial performance and contribute to the discussion on whether such firm practices improve financial performance of the firm.

Whether adopting corporate sustainability directly influence financial performance is not straightforward. Studies suggest that there are many factors that can intervene and influence

the relationship. Thus the proposed a conceptual framework incorporates sustainability performance as a mediator and integration capability as a moderator between corporate sustainability adoption and corporate financial performance. Only few studies have investigated the non-linear relationship in these areas of research. Further the concept of integration capability is limitedly explored in relation to adopting new firm practices and this study is concerned whether firms with higher level of integration capability can be identified as effective adopters and how does it affect the relationship between corporate sustainability adoption and corporate financial performance. Hence the study focuses on contributing whether the relationship between corporate sustainability adoption and corporate financial performance can be adequately explained through mediating and moderating factors.

Finally, the proposed framework also provides the opportunity to integrate constructs from other organizational theories and develop and test new frameworks to explain the relationships examined in this paper and to contribute towards future understanding and development of the concepts.

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An Analysis of Islamic Credit Card Adoption: Perspectives of Malaysian Bank Customers

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Abstract

The aim of this study is to investigate the factors determining the Malaysian bank customers' behavioral intention to use Islamic credit card. Drawing from the Theory of Reasoned Action (TRA), this study proposes a modified and simplified model to examine the acceptance factors of attitude, subjective norm and perceived financial cost within the Islamic credit card context. The model is tested using survey data from 257 respondents. The results reveal that attitude, subjective norm and perceived financial cost significantly influence the Islamic credit card intention to use. The study is an eye opener on the need to establish the link between TRA and Islamic credit card behavioral intention, which previously is limited to investigate.

Keywords: Islamic credit card, TRA, bank, Malaysia.

1.0 Introduction

Prior to the introduction of the Islamic credit card (ICC), many debatable issues rose pertaining to its application, permissibility, its legal impacts, and acceptance. Furthermore, the ambiguity of Islamic practice of *(Halal)* and *(Haram)* has further made the penetration of ICC becoming more challenging.

The empirical studies on ICC have produced mixed results. For instance, Mansor and Che-Mat (2009) indicate that income has greater influence on ICC among the existing users. Another studies show that other contributing factors such as shopping, bulk purchase, employment, and concept understanding as determinant of behavioural intention on the ICC (Mohd-Dali et al., 2008; Choo et al., 2007). It is of paramount importance to justify that the research on ICC adoption is still remained inconclusive and further examination is required to contribute to the body of ICC knowledge.

The main objective of this study is to investigate the factors influencing consumer adoption of ICC. More specifically, we intend to develop a theoretical model to examine the relationships among perceived financial cost, subjective norms, and attitudinal behavior on consumer behavioral intention. We believe that the study will offer useful insights for both marketing scholars and executives to understand the intricacies of ICC and to assist marketers in devising better approaches to increase the effectiveness of ICC.

We organized the remainder of this article into four sections. The first section explains the theoretical background of this study. The second section describes the research design and methodology. The results and analysis are presented in the third section. The final section presents a discussion, the implications and limitations of this study, and suggestions for future research.

2.0 Literature Review

2.1 Islamic Credit Card

The ICC supports the *maslahah al-mursalih* concept. It has been used as a means to avoid those affordable Muslims to continuously used conventional credit card, which is prohibited by the teaching of Islam. The credit card is an essential mode of payments in today's society, and it has become one of the important pillars of consumerism. According to Billah (2003), the credit card provides consumers with instant access of financial benefits that helps them to attain credit facility, cash advance, easy payment, charge card and prestige. Indeed, the credit card has symbolized the status of wealth of a person in order to make her/him special than others. Over the years, credit card industries are getting popular among the Malaysian societies (Mansor, 2005). The credit cards that circulated in Malaysia could be clustered into two categories, which are conventional and Islamic-based credit cards (Yee et al., 2007). Although in nature, these cards are the same, but they are differences in terms of principles, fees and operations. For instance, conventional credit card allows interest in its programme whereby Islamic credit card allows fees instead of interest in its programme.

As far as the discrepancy between conventional and Islamic credit cards is concerned, the need to differentiate is thus of considerable interest. Particularly, there are three generic differences which could be shared. "A", Islamic credit card is free from compounding interest whilst conventional has. "B" Islamic credit card is of value to fix the profit margin for whole contract period whilst the profit margin for conventional credit card is not predetermined. "C" Islamic credit card is guided by *Shariah* principles whilst conventional is not. In line with the "C", the doctrine of *Bay al-Inah* is recognized and used to validate the credit card transaction (Kazi, 2002). The *Bay al-Inah* contract works based on two (2) separate agreements, notably *Bay al-Mutlak* (cash sale) and *Bay Bithaman Ajil* (deferred sale) (Darwish, 2003). The former is the bank's agreement to sell an item to the customer at an agreed price, while the latter agreement covers the customer selling back to the bank at a lower price. The difference is the bank's profit on the transaction and is a predetermined amount. But the doctrine of *Bay al-Inah* is not recognized by some scholars from Middle-East. They decided that the solution to *riba* avoidance was to exercise the acceptable right of charging for the provision of a financial guarantee called the guarantee system (Darwish, 2003).

There is paucity of studies that have adequately addressed the effects of attitude, subjective norm and perceived financial cost on the Islamic credit card adoption context. Particularly in

Malaysia, there have been studies in the literature about credit cards (Mansor and Che-Mat, 2009; Mohd-Dali et al., 2008; Choo et al., 2007). In these studies, Islamic credit card is addressed differently in terms of purpose, statistical analyses and findings.

Mansor and Che-Mat (2009) investigated the impact of demographic factors on the Islamic credit card use. The study was conducted by involving a total of 305 respondents as a sample of study and frequency and chi-square analyse were used to analyse the data. The study reported that income was an influential predictor for the use of Islamic credit card among the existing users. Theoretically, consumers tend to increase their spending pattern when their income increases. It was reported that there were no statistical differences between males and females in the use of credit card. However when considered the variables pertaining to levels of education and income, there was a sign of certain degree of differences appeared to exist when observing the three levels of education and the four levels of income. The authors also noted that among those with lower and middle income were prone to use credit cards as it was able to provide safety and convenience features.

Mohd-Dali et al. (2008) developed a study to identify the credit card holders' satisfaction factors in Malaysia using a self-administered survey. The study is first of its kind in Malaysia in using web-based self administered questionnaire for Islamic credit card study. A total of 127 respondents were participated. Using exploratory factor analysis (EFA) and logistic regression, the study satisfied the research objective. The study found out that shopping, bulk purchase, concept understanding were considered as the key factors determining one's satisfaction on the Islamic credit card use. As what we can learn from this study, the context of the study is particularly varied when it is compared with the current research, in which the latter will employ one endogenous variable and several exogenous variables, which are not examined in a study by Mohd-Dali et al. (2008). The current study is expected to add the literature on the Islamic credit card along with the presence of findings by Mansor and Che-Mat (2009) and Mohd-Dali et al. (2008).

Another interesting study by Choo et al. (2007), examined the consumer choice of Islamic-based credit card using a bivariate probit model. The study contributes to the literature in terms of model used and in terms of the model specific constructs. The study used a survey-questionnaire approach on the basis of convenience sampling, in order to meet the research objective. The study found out that the employment section was the only one that found to have significant influence on probability of choosing Islamic-based credit card. Not surprisingly, those from private sector of the opinion to have less preference on the Islamic credit card use. On the other hand, the authors noted that the government staffs had higher tendency to choose Islamic-based credit card, which is perhaps most of the government staffs were Islam. Interestingly, the study also noted that the perceived or actual frequent of using credit card online purchase was significantly related to the probability of choosing Islamic-based credit card. An increase in the frequency increases the probability of choosing and using the card. The card had a positive impact, in which this tells us that Islamic credit card is more secure, and cheaper (Choo et al., 2007).

2.2 Theory of Reasoned Action (TRA)

Many studies have employed the Theory of Reasoned Action (TRA) into their model of studies. The reasons behind the wide empirical supports of the theory are particular because of three fundamental reasons. "A" the theory is well suited for the purpose of examining and predicting a particular behavior. As stated by Taib et al. (2008), the fundamental constructs of

the theory are essential in order to explain why people using *Musharakah Mutanaqisah*. "B" the theory has been praised for its flexibility to be applied into a different context of research. The TRA has been applied in online stock trading (Gopi and Ramayah; Ramayah et al., 2009), knowledge sharing (Ryu et al., 2003) and_HA the marketing area. "C" the TRA can be used to measure behavioral intention and actual of a particular situations, systems or even products. Previous researches have supported the importance of the TRA in predicting the behavioral intention and actual use (Ramayah et al, 2009). The present study used to measure behavioural intention to use Islamic credit card amongst Malaysian bank customers, thus using the TRA is of considerable relevant in the current study.

The TRA was introduced by Fishbein and Ajzen (1975) in order to establish links between beliefs, attitudes, intentions and behaviors (Taib et al., 2008). Recently, the theory has been applied in Islamic finance contexts. For instance, the study by Taib et al. (2008) used TRA in order to examine bank customers' perception over *Musharakah Mutanaqisah* home financing in the Malaysian context. *Musharakah Mutanaqisah* is also known as *"Musharakah* diminishing to ownership"* where capital is not permanent and every repayment of capital by the bank customer will diminish the total capital ratio for the bank. This will increase the total capital ratio for the customer until the customer becomes the sole proprietor for the bought house (Abdul Rahman, 2007). In a similar vein, Amin et al. (2009) used TRA to examine undergraduate students' acceptance of Islamic accounting.

3.0 Methodology

3.1 The Research Model

Figure 1: Research Model
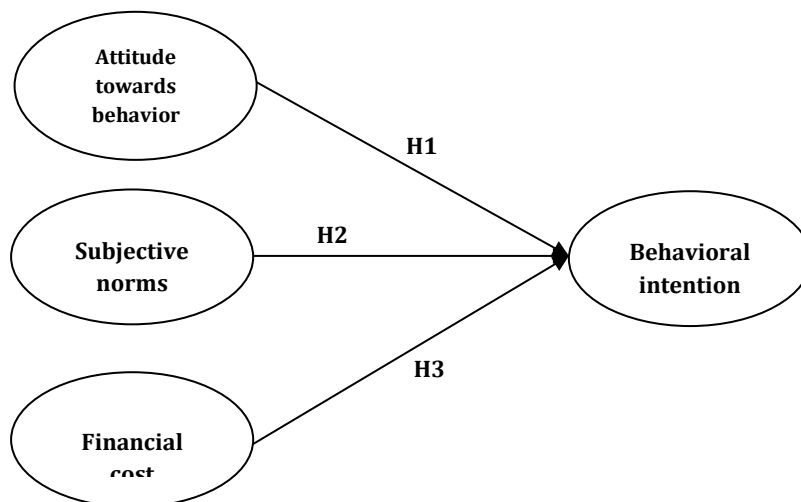
In line with the research model, the following hypotheses are of value to be tested:

H₁: Attitude will have a positive effect on intention to use Islamic credit card
H₂: Subjective norm will have a positive effect on intention to use Islamic credit card
H₃: Perceived financial cost will have a negative effect on intention to use Islamic credit card

Our model includes attitude toward behavior, subjective norm and perceived financial cost as the independent variables. Behavioral intention conversely acts as the dependent variable. Figure 1 depicts the said model.

The present study extends TRA to an Islamic credit card financing context. Two unique determinants of TRA, namely attitude and subjective norm are applied in the present study since previous studies indicated that acceptance of Islamic financing could be explained by the determinants of TRA (Amin et al., 2009; Taib et al., 2008). As such, the determinants are included to help explain the reasons bank customers use Islamic credit card.

Further, the TRA is modified to better explain the intention to use Islamic credit card. Previously, the model has also been modified to better explain behavioral studies in the areas of management, psychology, and marketing. Taib et al. (2008) and Ramayah and Suki (2005) have modified the TRA and to reconcile the applicability of the TRA into a new context of research. The model is modified only by including the behavioral intention, attitude and subjective norm, whilst other branches of the TRA are skipped.

To measure the intention to use Islamic credit card by Malaysian bank customers, the current research includes perceived financial cost into the research framework. However, despite its paramount importance in the consumer banking research, only a handful of empirical studies have examined the significance of perceived financial cost in the Islamic banking context. Perceived financial cost describes the extent to which a person believes that using Islamic credit card will cost financial burden. Studies by Luarn and Lin (2005) and Mathieson et al. (2001) show that perceived financial cost significantly influences consumer behavioral intention. Ramayah et al. (2006) also provides a groundwork pertaining to the inclusion of perceived financial cost in explaining behavioral intention. Ramayah et al. (2006) found that price was not significantly related to the Internet banking acceptance. The result by Ramayah et al. (2006) is not in consonance to that of Luarn and Lin (2005) and Mathieson et al. (2001). To overcome such debates, it is worth noting that our research for perceived financial cost is of considerable interest to be further examined. It is also anticipated the outcomes could also be generalized into the Islamic credit card context.

3.2 Measurement

The questionnaire items were extracted from selected studies. Questionnaire items were adapted from prior studies which can be described as follows: attitude (Ramayah et al., 2008), subjective norm (Yuserrie et al., 2004), and behavioral intention (Taib et al., 2008). The questionnaire items for added variable "perceived financial cost" are derived and adjusted from Luarn and Lin (2005). Here, adjustments were made in order to ensure all employed items were better reflecting Islamic credit card context. In the questionnaire, the respondents were required to rate their level of agreement with statements using five-point scales ranging from "strongly disagree" (1) to "strongly agree" (5). This scale has been used in previous survey related research (e.g. Pikkarainen et al., 2004).

Prior to the actual survey four-questionnaires were provided in order to facilitate a pilot study to be conducted among lecturers majoring Islamic finance and marketing. The pilot study is important in order to digest any problems relevant to the instrument used for the study. Fortunately, all respondents to the test commented that the questions were easily understood. Only formatting and some editing work were done to the questionnaire prior to the actual survey. A total of 300 questionnaires were printed.

4.0 Results

4.1 Subjects

The sample size of the study was 257 of Malaysians who were serving Islamic banking products and services at the time during the survey conducted. Non-probability sampling was applied owing to the fact that Bank and Financial Institutions Act (BAFIA) 1989 did not allow the disclosure of such information (Ramayah et al., 2006; Ramayah et al., 2003). In addition, commercial banks did not disclose such information since it has confidentiality value for the purpose of competitive advantage of any bank (Amin and Ramayah, 2010). The study results are rooted in bank customers' intention to Islamic credit card intention to use which is derived from previous Theory of Reasoned Action (TRA) (Amin and Ramayah, 2010). Out of these respondents, a total of 92 respondents were males while the remainder 165 respondents were females. In terms of marital status, a total of 202 respondents were unmarried whilst the rest of 21.4 percent were married. With respect to ethnicity, most of the respondents were Malays with 129 (50.2 percent).

Table 1: Profile of Respondents

	Frequency	Percentile
Gender		
Male	92	35.8
Female	165	64.2
Marital status		
Single	202	78.6
Married	55	21.4
Ethnicity		
Malay	129	50.2
Bajau	25	9.7
Kadazandusun	28	10.9
Murut	15	5.4
Suluk	10	3.9
Other	51	19.8
Age		
Less 20	11	4.3
20-30	190	73.9
31-40	30	11.7
More 40	26	10.1

Explained in more detail, Malay accounted the majority of respondents (50.2 percent) followed by others (19.8 percent), Kadazan-Dusun (10.9 percent), Bajau (9.7 percent), Murut (5.4 percent) and Suluk (3.9 percent). In terms of age, most of the respondents were aged 20-30 years old (73.9 percent) as this group of age was considered appropriate for being Islamic credit card users in the future.

4.2 Reliability Analysis

This section provides the analysis and discussion of findings in order to meet the objectives of the study. Importantly, factor analysis was conducted prior to the regression analysis in order to identify the appropriate items for the analysis. Factor analysis is a data reduction technique that uses correlations between data variables. The underlying assumption of factor analysis is

that a number of factors exist to explain the correlations or inter-relationships among observed variables (Chatfield and Collins, 1992). The study performed factor analysis using a Principal Component Analysis (PCA) alongside with Varimax with Kaiser Normalization rotation method until the eigenvalue of each factor was equal to 1 or more. According to Tabachnick and Fidell (1996), there are several methods of rotation used in a research-based study such as Quartimax, Direct Oblimin and Varimax rotation. Varimax rotation is most commonly used and it aims to maximize the variance of factor loadings by making a high loading higher and low ones lower for each factor.

Table 2: Factor Analysis

Items	Factor loadings		
	1	2	3
A2	.900		
A3	.892		
A1	.879		
A4	.839		
A5	.750		
SN2		.851	
SN1		.842	
SN4		.842	
SN3		.842	
SN5		.793	
P3			.902
P2			.898
P1			.863
P5			.822
P4			.714
Variance explained	49.330	23.744	8.491
Eigenvalue	7.399	3.562	1.274
KMO	89.1%		
Bartlett's Test	X^2=4672.27 df=105, p-value=.000		
Cronbach alpha	.969	.946	.894

The tested items refer to the independent variables' items were remained the same as reported in Table 2. It was due to the fact that the each item had a value of 0.60 and higher. It was also reported that factor 1 could be labeled as "attitude", factor 2 could be labeled as "subjective norm" whilst the last factor could be labeled as "perceived financial cost".

The results for reliability test are presented in Table 2. According to Black (1999) "reliability is an indication of consistency between two measures of the same thing". To understand the relationship between the two groups of data, it is necessary to quantify the reliability of the data. The reliability of the factors needs to be determined in order to support any measures of validity that may be employed (Nunnally, 1978). The employed items in this research were found to be reliable. All values ranged from .894 to .969. Explained in more detail, the results

for the tested items were as follows: attitude .969 (5), subjective norm 0.946 (5), perceived financial cost .894 (5) and intention to use Islamic credit card is .946 (5). Thus, all items were deemed reliable (Ramayah et al., 2003).

With respect to the Kaiser-Meyer-Olkin (KMO) measure, the combined items of the independent variables had a value of 0.891, indicating that the sampling adequacy was greater than 0.5 and therefore satisfactory. Barletts Test showed a χ^2 of 4672.27 with a significance level of 1 percent, where the total variance explained was 81.565 out of 3 components. KMO for the dependent variable, on the other angle, depicts a value of .875 which implied that the sampling was satisfactory. Barletts Test also found to be significant at 1 per cent significance level.

Table 3: Factor Analysis

Items	Factor loadings 1
B2	.953
B4	.951
B3	.917
B1	.893
B5	.827
Variance explained	82.663
Eigenvalue	4.133
KMO	87.5%
Bartlett's Test	X^2=1472.93 df=10, p-value=.000
Cronbach alpha	.946

Pertaining to the outcome from the factor analysis, the items for independent variables and the dependent variable were aggregated in which factor loadings exceeded .60 were selected. Once the data were aggregated, the multiple regression was conducted to reveal how different factors affect intention to use Islamic credit card. This approach has been widely employed in the survey – based studies (Luarn and Lin, 2005; Ramayah et al., 2003). Aggregation of the research results allows combining of all items under one particular heading or label, which thus is easy to analyze using regression analyses.

4.3 Hypotheses Testing

In order to test the three proposed hypotheses, the authors employed a multiple regression. Table 3 presents the regression results of "attitude", "subjective norm", "perceived financial cost" and "intention to use Islamic credit card". The R^2 was 0.654 indicating that 65.4% of the variation in intention to use Islamic credit card could be explained by the two named variables and the F-value of 159.29 was significant at the 0.01 level. Attitude was positively related to intention to use Islamic credit card and so was subjective norm. On the other angle, perceived financial cost was negatively related to intention to use Islamic credit card. Consequently, *H1*, *H2* and *H3* were supported. These outcomes are consistent with previous studies (Taib et al., 2008; Yuserrie et al., 2004 and Luarn and Lin, 2005). Thus, the more positive the attitude, the more likely that Islamic credit card is selected by the customers. Yet, the more positive the

subjective norm, the more likely that Islamic credit card is selected by the customers. In sum, the results show the appropriateness of the fundamental elements of TRA in Islamic credit card context. It is confirmed that attitude and subjective norm had strong influence over the behavioral intention to use Islamic credit card. In addition, the study also showed that the greater the perceived financial cost, the likelihood that Islamic credit card is selected will be lower. This result corroborates with the findings of Luarn and Lin (2005), where the financial cost is of value to explaining the motivation of use for Islamic credit card.

Table 4: Result of Multiple Regression

Constructs	Standardized β	t-value	p-value
Attitude (ATT)	.575	10.750	.000**
Subjective norm (SN)	.283	5.288	.000**
Perceived financial cost (PFC)	-.088	-2.383	.018*
F-value		159.29 (.000)	
R square		.654	
Adjusted R square		.650	

Note: *p <0.05; ** p<0.01

Table 5: Collinearity Statistics

Constructs	Tolerance	VIF
Attitude	.478	2.092
Subjective norm	.478	2.094
Perceived financial cost	.997	1.003

The study also employed tolerance and variance inflation factor (VIF) values to clarify the multicollinearity problem. Results of the study revealed no multicollinearity problem for attitude, subjective norm, and perceived financial cost since these variables were significant. The tolerance values for the variables are greater than 0.1, which means the results raise no multicollinearity problem (Hair et al, 2006; Pallant, 2005). On the other hand, the VIF values are greater than 10 shows collinearity existed (Hair et al, 2006; Pallant, 2005). The VIF values for the present study were all below 10 and the tolerance values were all above 0.1, which could be concluded that there was no collinearity with the data of the study.

5.0 Conclusion, Practical Implication and Future Research

This research examined the intention to use Islamic credit card by exploring three possible key factors namely attitude, subjective norm and perceived financial cost. Drawing upon the TRA, the effects of the three key factors were uncovered, explaining that attitude, subjective norm and perceived financial cost were pivotal to addressing the usage intentions. These results have managerial implications for bank managers and for researchers. To be specific, banks may opt to strengthen attitude and subjective norm roles. Pertaining to the attitude, publishing cogent information for Islamic credit cards could be better market the cards to the users, thus impacting positive attitude, which in turn is leading to the acceptance. Regarding the subjective norm, building up a database for existing users and encouraging the users to attract newest customers will be appropriate to be carried out. Financial incentives and fee waiver are of interest to be rewarded to the existing users who perform such task. In terms of financial cost, it is of paramount importance to offer the services of Islamic credit cards at the

discriminated cost associated with the level of usage rather than fixed it as normally conducted.

The research contributed to the literature from several aspects. Firstly, to the best of our knowledge this study is a pioneering effort in applying the TRA to the newly context of Islamic credit card, which has been available in Malaysia since 2000s. Secondly, the study adds perceived financial cost to the existing TRA in order to better justify the context of Islamic credit card.

Concerned with limitations, the study acknowledges two main shortcomings. Firstly, our sample involved only a specific user group in a particular geography as the study was conducted in Eastern Malaysia whilst the sample from Western Malaysia was not studied. The findings may generalize to users in Eastern Malaysia but not in Western Malaysia. Secondly, the model of factors of the current research is limited to three exogenous variables which are in nature limit our possible research implications. For the sake of further studies, the first limitation can be overcome by calling other friends in Peninsula to re-investigate Islamic credit card usage, which in turn may offer generalization of findings to the users in Peninsula. Lastly, future researches may use a richer set of variables, including not only up to the three factors here but also including prior experience and personal factors, as predictors to provide better explanatory power for Islamic credit card adoption.

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A Study of Attitude, Subjective Norms, Perceived Behavioral Control and the Intention to Return to Work as SOCSO's Insured Person

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Abstract

Intention to return to work is based on employees' perception of the likelihood or the probability to return to work after a prolonged illness caused by work-related injuries or other kind of illnesses. Based on the Theory Planned Behavior, this study proposed that employees' attitude, subjective norms and perceived behavioral control will influence their intention to return to work. Data were gathered through questionnaire of 160 SOCSO's insured persons who are located all over Malaysia. Regression analysis revealed that attitude and subjective norms have significantly influenced the respondents' intention to return to work. The findings of this study will potentially provide ideas to the Social Security Organization (SOCSO), so that they can make more efforts to improve the effectiveness of their rehabilitation plan. The theoretical and practical implications of these findings were also discussed.

Keywords: Intention to return to work, attitude, subjective norms, perceived behavioral control

1.0 Introduction

The most significant problem among the employees is the absence due to sickness and work-related injuries or other kind of illnesses. Although long-term sickness absence is a major economic problem for organization, but this problem also bring severe consequences for the employees. For employees who are involved in long-term sickness absence will be faced with the risk of social isolation, job insecurity, instability of income, and ineffectiveness of skill competencies (Vlasveld et al., 2011). From the perspective of the organization, the high probability of employees engaging in long-term sickness absence increases the operational cost which has to be borne by the organization. If employees are unable to resume their work after the long-term absence owing to sickness, the organization needs to continuously search for other people who will replace them to do their jobs and this can create the additional human capital costs for the organization. Therefore, long-term sickness absence may have a huge negative implication on the effectiveness of organizational human capital costs in the long-term period. In addition, the long-term sickness absence also has a correlation with decreasing employees' intention to return to work. Prolonged duration of absence due to sickness will affect the employees' work efficiency and diminish the work skills, which might cause the injured employees failure to return to work effectively as expected. Since injured or ill employees need time to be hospitalized or stay at home to recover from injuries or illnesses, they are potentially confronted with negative emotions such as loss of interest in meaningful activities and 'empty' moods. All these can reduce their intention to return to work. Besides, due to the injury and illness, employees have to take prolonged medical leave to seek for medical treatment. However, after prolonged period of absence the possibility of them returning to work become less due to their low commitment level, health status, and

pressure from family. With these issues, the aim of this study was to examine the influences of the three behavioral determinants (i.e. attitude, subjective norms and perceived behavioral control) of the model of Theory Planned Behavior on employees' intention to return to work.

2.0 Study Variables

2.1 Intention to Return to Work

A behavior that indicates to what extend an individual is willing to try or prepare for performing particular actions are assumed to be the behavioral intention of the individual. It is important to note that behavioral intention can be expressed in the behavior itself if the individual has the willingness to perform or not to perform the behaviors or actions. Thus, the basic understanding of intention is the more probability of the behaviors to be performed, the more probability of the individual intention to engage in certain behaviors or actions. Vermeulen et al. (2011) stated that behavioral intention has been widely used in predicting the actual action such as intention to return to work. According to De Rijk et al. (2009), intention to return to work can be conceptualized as return to work motivation which can be influenced by attitude towards return to work, work commitment, and individual's ability to return to work i.e. the seriousness of injury and illness. This means that higher intention to return to work will lead the individual to have high motivation to continue employment after suffering from an injury or illness. Accordingly, intention to return to work is defined as employees' perception of their likelihood to return to work after prolonged period of absence due to sickness or other work-related injury or illness.

2.2 Attitude

Attitude is the individual's overall judgment and assessment of behavior (Ajzen, 1991). This means that attitude towards behavior can be reflected by the evaluation of behavior together with its expected outcome. Individual attitude has been known to be an important component in facilitating human perception and influences the individual behavioral intention. Thus, the intention to perform the behavior is dependent on the perceived attitude. Individuals tend to have intention to perform particular actions when attitude is formed based on the outcomes of evaluation. However, in work inability, attitude has been defined as an individual's evaluation of their health status regarding their continued inability or capability to continue their employment, which may lengthen/reduce the period of work inability (Brouwer et al., 2009). De Rijk et al. (2009) study found that employees' attitude will influence their behavioral intention by participating in particular action such as return to work after long-term sickness absence. For instance, employees who suffered injury or illness may feel that they do not want to resume work as soon as possible since their salaries are still being paid even though they are still in hospitalization period. However, if they run out of money or paid hospitalization leave, they may want to consider a return to work as soon as possible since they will be faced with personal financial loss, which will decrease their ability to support their family expenses. Hence, the employees' attitude will influence their intention to return to work after prolonged sickness absence. Following the above discussion, it is hypothesized that:

Hypothesis 1: There is relationship between attitude and intention to return to work.

2.3 Subjective Norms

Subjective norms are individual's perception of the social pressure to perform or not to perform the target behavior (Ajzen, 1991; Francis et al., 2004). It can also be defined as the individual's perception of other people's views and thoughts on the suggested behavior. Those perceptions can play influential role and put pressure on an individual to perform certain behavior such as intention to return to work. This means that subjective norms of an individual depend on their perception about the thoughts of significant people (i.e. family members, friends, colleague, and immediate supervisor) on their performed behavior (Brouwer et al., 2009; Vermeulen et al., 2011). Individuals tend to act and perform the recommended behavior as expected by their family, friends and immediate supervisor. For instance, an injured employee may lengthen the period of work disability because his/her family wants him/her to rest at home. On the other hand, an employee who has been pressured by the immediate supervisor on the security of his/her job may have the intention to return to work immediately after long-term sickness absence. Therefore, subjective norms can be one of the important factors in influencing individual's intention. Thus, the following hypothesis is proposed:

Hypothesis 2: There is relationship between subjective norms and intention to return to work.

2.4 Perceived Behavioral Control

Perceived behavioral control is an individual's belief about their capabilities of exhibiting certain behavior (Brouwer et al., 2009). According to Francis et al. (2004), perceived behavioral control is conceptualized into two aspects: the degree of individuals' ability to have control over their behavior and their level of confidence in their ability to perform or not to perform the behavior. Therefore, an individual's control belief will influence the individual's behavioral intention and stimulate him/her to perform the target behavior such as return to work. This means that perceived behavioral control has a correlation with employees' intention such as intention to return to work. Individuals' behavioral intention is strongly influenced by their level of confidence in performing the actual behavior. For example, if the employee feels that he/she is still weak to resume his/her work, he/she might continue his/her medical leave and stay away from work. However, if the employee is confident about returning to work, even though he/she may not have recovered fully from injury or illness, he/she might go back to the workplace and do his/her job in high spirit. Therefore, the next hypothesis is proposed thus:

Hypothesis 3: There is relationship between perceived behavioral control and intention to return to work.

3.0 Research Framework

Figure 1 depicts the proposed research framework that is to be examined in this study. The framework contains four constructs, namely attitude, subjective norms, perceived behavioral control, and intention to return to work. The proposed framework is an adaptation of the model of Theory Planned Behavior (Brouwer et al., 2009). While part of the model of Theory Planned Behavior posits that behavioral determinants such as attitude, subjective norms and perceived behavioral control have direct influence on individual's intention. Therefore, the current research framework predicts that employees' attitudes, subjective norms, and perceived behavioral control will influence their intention to return to work.

Figure 1: Research Framework of the Relationship Between Attitudes, Subjective Norms,
Perceived Behavioural Control, and Intention to Return to Work
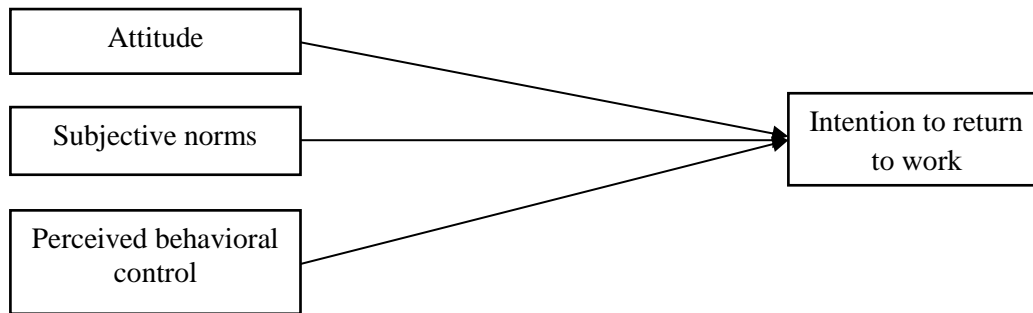
4.0 Methodology

4.1 Samples

The sample of this study is SOCSO's insured persons who participated in the Return to Work Program, which consisted of those who claimed for either Employment Injury Scheme or Invalidity Pension Scheme, and who suffered from injuries or illnesses which lasted for a minimum of four (4) weeks of absence due to sickness. The disproportionate sampling was utilized by dividing equally the number of questionnaire, that is, six (6) sets for each of the 35 participating case managers (i.e. representative for the SOCSO's branches). Thus, the total number of questionnaires distributed is 210 sets (total population is 350). Out of 210 sets of questionnaires, 160 sets were returned and usable for analysis. The response rate was 76.2%.

The respondents consisted of 121 male and 39 women. Most of the respondents were aged between 31 – 40 years old (35%), and majority of the respondents received income between RM500 – RM1000 (29.4%). Most of the respondents are married (60.6%) and have SPM education level (50%). Besides that, 68 of the respondents (42.5%) indicated that they are still on medical leave. Meanwhile, 42 of the respondents are on treatment or rehabilitation.

4.2 Measurements

Attitude was measured with an adaptation of four (4) items from Jalalian et al. (2010), reflecting employees' judgment of their behavior, that is, return to work. Subjective norms also measured with the items developed by Jalalian et al. (2010), assessing employees' perception of the social pressure to perform or not perform the target behavior. This questionnaire consists of four (4) items. Meanwhile, perceived behavioral control was also measured by the four (4) items that was adapted from Jalalian et al. (2010) to assess the degree of employees' belief in their capabilities to enact the behavior. To measure intention to return to work, three (3) items were adapted from Jalalian et al. (2010) to reflect the employees' perception of their likelihood to return to work after long-term sickness absence. All the study variable scales were measured on a seven-point scale which ranged from strongly disagree (1) to strongly agree (7).

4.3 Data Analysis

Reliability tests for each of the study variables were conducted. Subsequently, regression analysis was performed to examine the relationship between attitudes, subjective norms, perceived behavioral control, and intention to return to work.

5.0 Findings

Means, standard deviations, and Pearson correlations results of the variables are shown in Table 1. There was a positive relationship between attitude, subjective norms, perceived behavioral control and intention to return to work. Besides, the reliability results indicated the overall Cronbach's alpha value for attitude and perceived behavioral control was 0.77. Meanwhile, the Cronbach's alpha for subjective norms is 0.71, and intention to return to work had a good reliability coefficient of 0.94.

Table 1: Means, Standard Deviations and Correlations of the Study Variables

Variables	α	M	SD	1	2	3	4
1. Attitude	0.77	5.30	1.19	-			
2. Subjective norms	0.71	5.05	1.21	0.574**	-		
3. Perceived behavioral control	0.77	4.48	1.33	0.602**	0.592**	-	
4. Intention to return to work	0.94	5.63	1.37	0.676**	0.580**	0.463**	-

Note: n=160; **$p<0.01$; α = reliability; M = mean; SD = standard deviation

The research framework (Figure 1) proposed that attitude, subjective norms and perceived behavioral control have direct relationship with intention to return to work. To determine such relationships, a regression analysis was performed. The results depicted in Table 2 indicated that hypothesis 1 and 2 was supported since the attitude (β = 0.52, $p < 0.01$) and subjective norms (β = 0.30, $p < 0.01$) was positively associated with intention to return to work. However, perceived behavioral control (β = -0.03, $p > 0.05$) failed to show any relationship with intention to return to work. Thus, hypothesis 3 was not supported. The results also indicated that attitude was the important factor in explaining intention to return to work compared to subjective norms because of its high beta value. The regression results further indicated that attitude, subjective norms, and perceived behavioral control were able to explain 51.2% of the variance in intention to return to work.

Table 2: Regression Results of Attitude, Subjective Norms, Perceived Behavioral Control and Intention to Return to Work

Predictors	Std. β X→Y
X1 = Attitude	0.52**
X2 = Subjective norms	0.30**
X3 = Perceived behavioral control	-0.03
R^2	0.51
F-statistic	54.6**

Note: **$p < 0.01$; Y = Intention to return to work

6.0 Discussion

Consistent with the model of Theory Planned Behavior, the research framework predicted the assumption that individual attitude, subjective norms and perceived behavioral control were related to their intention to return to work. The results of this study provide a modest support for the model. The statistical results showed that of the three predictors, only attitude and subjective norms were correlated to intention to return to work (Table 2). In this study, attitude is found to be the most important factor that engaged with the intention to return to

work. This finding was consistent with the study of Brouwer et al. (2009), who found that employees' attitude is related to their intention to return to work. This suggested that SOCSO's insured persons (or respondents) tend to have high level of intention to return to work after long-term sickness absence, if they have positive judgment towards the behavioral outcomes. This means that insured persons will assess their health status to realize whether it was suitable or not to return to work after long-term sickness absence. If they found that the results (health status) are pleasant, then, this positive attitude will able them to promote their intention to return to work, and encourage them to resume job responsibilities as soon as possible once the medical leave ended.

Furthermore, the individual attitude, subjective norms are also one of the predictors of intention to return to work. In this study, the injured or ill respondents also took into account the social pressure surrounding their decision to return to work. The pressure from family, friends, colleagues, and immediate supervisor potentially influence employees' behavioral intention, that is, return to work immediately after the long-term sickness absence. The results indicated that respondents are very concerned about the opinion and thoughts of their significant people regarding their intended behavior. Therefore, they tend to perform the behavior in accordance with the expectation of significant people. For instance, immediate supervisor may desire that employees should return to work as soon as possible when they have recovered from injury or illness by means of helping the organization to save the human capital costs and ensure the employees' job security. These thoughts may be supported by the employees' colleagues, friends and family, which will indirectly serve as the pressure to urge employees to have high intention to return to work after long-term sickness absence. This point of view has been supported by the study of Vermeulen et al. (2011), who reported that injured or ill employees tend to have high intention to return to work, if they continued to experience pressure or encouragement from their significant peoples. Hence, it is shown that the social pressure has successfully influenced the injured and ill employees' intention to return to work.

On the other hand, the results of this study revealed that perceived behavioral control has no influence on the intention to return to work. Even though among the respondents, their attitude and subjective norms have significantly influenced their intention to return to work, however, their perceived behavioral control is not strong enough to influence their behavioral intention (i.e. return to work). The lack of significant relationship between perceived behavioral control and intention to return to work may be explained by the respondents' present health status. Since the data was collected during the periods that respondents were still undergoing medical treatment or in the process of recovering from injury and illness, they might feel that their health and physical status right now are not suitable to return to work. This belief indirectly influences their behavioral intention, that is, no intention to return to work after long-term sickness absence. This result was supported by Brouwer et al. (2009) and Smith et al. (2008), who stated that perceived behavioral control has no significant relationship with employees' behavioral intention. The regression result (Table 2) suggested that most of the respondents have no sufficient confidence on their ability to return to work after long-term sickness absence. Therefore, if injured or ill employees have no confidence on their capabilities to enact the intended behavior, they usually tend to not perform the target behavior (i.e. return to work).

The findings of this study have important implication for the improvement of SOCSO's rehabilitation plan and Return to Work Program. Findings showed that employees' attitude and subjective norms will influence their intention to return to work after long-term sickness

absence. By identifying the predictors of the behavioral intention of the injured or ill employees, the doctor, therapist, counselor, and service provider could easily co-operate with the management of SOCSO's Return to Work Program to develop a more comprehensive rehabilitation plan. For instance, in addition to providing treatment facilities and medical treatments for injured or ill employees, the management of Return to Work Program must also get help from doctors, therapist, especially counselor and service providers to provide continuous psychological treatment such as social and emotional support to injured or ill employees. In addition to that, the family members of injured or ill employees also need to be involved in such treatment in order to ensure injured or ill employees have high attitude and social pressure to perform the target behavior i.e. return to work once the medical leave ends. The successful of SOCSO's Return to Work Program and rehabilitation plan will be beneficial to the organizational human capital costs. Through the Return to Work Program, most of the injured and ill employees tend to have high level of confidence that they have the capabilities needed to resume their job responsibilities once they end their medical leave. Therefore, this program is able to facilitate and assist the injured or ill employees to be committed and productive after suffering an injury or illness. Once these employees return to work, organization can save a lot of human capital costs such as training and replacement of employees.

In conclusion, this study showed that attitude towards behavior and social pressure in determining the target behavior is significantly associated with injured or ill employees' intention to return to work. This provides suggestive evidence for the present injured or ill employees' perception in the prediction of their behavioral intention. This might assist responsible organization to develop varieties of interventions in encouraging employees on long-term absence due to sickness to return to work. Future research might focus on the longitudinal study to evaluate injured or ill employees' behavioral determinants, i.e. before and after they returned to work. This future research might also focus on the type of injuries or illnesses, which will serve as moderator on the relationship between behavioral determinants and the actions of return to work.

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Inclination towards Entrepreneurship among University Students: Evidence from Malaysia

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Abstract

This paper aims to explore the factors that influence the students' intention to be entrepreneurs at Malaysian universities. Among others, the influences of entrepreneurship education, university's role, family and peer, and demographic characteristics on the students' inclination towards entrepreneurs are investigated. Self-administered questionnaires were distributed to accounting students at three public universities in Klang Valley. About 180 questionnaires were completed and usable for the purpose of the study. Regression analysis was employed to analyse the data. The results indicate that there is a moderate inclination towards entrepreneurship among the accounting students. Entrepreneurship curriculum and course content, the role of university, perceived skills and ability, image of entrepreneurs, and peers and family significantly influence the students' intention to be entrepreneurs. However, gender is not an important factor in influencing the students to choose entrepreneurship as their future career choice. The results appear to suggest that gender of a Malaysian student is not an important factor to determine whether he or she would venture into a business.

Keywords: Accounting students, entrepreneur, entrepreneurship course.

1.0 Introduction

Entrepreneurship has become a global agenda due to its significant contribution to the economic performance of the country (Ariff et al., 2010). Entrepreneurship encourages enhancement of skills to serve the consumers and act as a process of innovation which creates new venture (Kuratko and Hodges, 1992). Entrepreneurship is also claimed as the main driver of economic growth in most countries (Muhammad et al., 2011) as it creates jobs for others (Kulasagaran, 2010) and helps to reduce the employment rate.

As a developing country, Malaysia is also concern about the development of entrepreneurship in the country. In fact, entrepreneurship has been identified as one of the long term strategies to address the unemployment issue in the country (Mansor and Othman, 2011). More emphasis was given to entrepreneurship courses and programs in 2009 and early 2010, when statistics showed that fresh graduates in Malaysia were still unable to find jobs although they had the necessary qualification (Puspadevi, 2011). Thus, serious attention was given to entrepreneurial programs in the ninth Malaysian plan (2006-2010). It is also reported that the unemployment rate and number of jobless graduates in the country has increased. In 2009, Ministry of Higher Education statistics showed that 30% of 170,000 graduates from the last three years were still unemployed (Fewer Unemployed Graduates Expected, 2009). Later, this fact was supported by Puspadevi (2011) who asserted that there was an increase of jobless graduates from 65,500 to 71,600 in the first quarter of 2011.

Various measures are introduced to encourage the citizen to get involved in entrepreneurship. In the recent budget, (Budget 2012), Malaysian government make a provision of RM100 millions for soft loans, which among others will help the entrepreneurs to finance their machines, purchase raw materials and other basic materials to start the business. Entrepreneurship programs are also organized by the Ministry of Higher Education to expose the youth and graduates to the concept of entrepreneurship, to nurture their awareness and interests and to help them to discover the business opportunities in the business world. In addition, various initiatives have also been taken by the Ministry of Education to encourage Malaysian youth / graduates to get involve in entrepreneurship activities, with the hope that this can lead to reduction in the unemployment rate in the country. Among others, entrepreneurship subjects / courses related to entrepreneurship are introduced at primary and secondary schools, as well as at university level. At the university, undergraduates are exposed to entrepreneurship activities, such as planning and preparing the budget, organizing the business activities, managing real problems during the execution of the business activities and revising the plan if necessary. This course is introduced in all public universities in Malaysia, and most of the universities make it compulsory for the students to enroll for the course before they graduate.

Despite all the initiatives by the government (as mentioned above), it is claimed that the level of entrepreneurship among Malaysian youth is still very low and needs to be improved. The statistics show that only 2.4% of the graduates become entrepreneurs upon graduation and this number is small compared to those in developed countries (Bakar, 2009). The number of graduates attending the entrepreneurship programs organized by various ministries is also not very encouraging. It was reported that, out of 170,000 graduates produced yearly, only 10,000 graduates attended these related programs organized by Ministry of Higher Education each year (Fewer unemployed graduates expected, 2009). This indicates that there is a gap between the governments' expectation and the actual level of graduates' involvement in entrepreneurship. Hence, this study is conducted to get the feedbacks on entrepreneurship from the graduates. Specifically, this study explores the students' intention to become entrepreneur, and examine the factors that influence their intention to be entrepreneurs. This is due to the claim that the entrepreneurship intention can be used to predict their future involvement to venture into business, and the factors may provide the explanation for further action by the government.

The remainder of the paper is structured as follows. Section 2 gives a review of the relevant literature and Section 3 describes the sample and methodology used for the study. Section 4 presents and discusses the empirical results and, finally section 5 provides the conclusions of the study.

2.0 Literature Review

Previous literature examining the students' intention to be entrepreneurs mainly focus on demographic factors such as age, gender, education level and family background (Shay and Terjensen, 2005). Other literature examined the students' intention to become entrepreneur in relation to perceived behavior control, perceived support and perceived barriers (Yasin et al., 2011), theory of planned behavior and entrepreneurship (Gelderen et al., 2008; Ariff et al, 2010), importance of entrepreneurship education (Mansor and Othman, 2011; Kirby, 2004), and entrepreneurship barriers and entrepreneurship inclination (Sandhu et al., 2010).

Prior study claims that entrepreneurship education may help graduates to be successful entrepreneurs (Pickernell, Packham, Jones, Miller and Thomas, 2011). Entrepreneurship education is about encouraging students to set up their own business (Kirby, 2004), and it is more than just business management, it also involves learning to integrate experience, skills and knowledge to start a new venture (Mansor and Othman, 2011). The program/course allows the student to learn from real life practical experience, while gaining skills to understand and manage the different roles assumed by the manager in developing the business (Hynes, Costin and Birdthistle 2011). The course can inspire the students, change their mind sets and provide theoretical and practical experience (Hamidi et. al., 2008). The courses can stimulate the students to assess the possibilities of starting a new business (Delmar and Davidsson, 2000). The focus of entrepreneurship education is to provide the basic knowledge of entrepreneurship (Greene and Saridaksi, 2007). Students gain new and much-needed skills to interact with dynamic marketplace by integrating creativity approaches and skills into entrepreneurship education (Hamidi et. al., 2008). It is claimed that this program should increase their interest to be an entrepreneur after going through the program (Mansor and Othman, 2011). This is supported by Love et al., (2006), who claim that entrepreneurship course can increase the business knowledge, including human resource management, business failure signs and causes, general management, advantage on business planning and innovation problem solving. In addition, it also encourages understanding and skills development such as strategy development and implementation, and managerial decision making (Hynes et. al., 2011).

It is further claimed that schools and universities should play active role in promoting entrepreneurship education since it is an ideal place in shaping entrepreneurial cultures and aspirations among students (Mahlberg, 1996). Universities should take the lead in promoting entrepreneurship when students are taught the way to think and behave like entrepreneurs (Bygrave, 2004). It is claimed that universities must create an entrepreneurially supportive environment, which could encourage entrepreneurial activities and culture to be carried out among university students, who later will be the future entrepreneurs (Roffe, 1999).

This is supported by Autio et al. (1997) who claim that university teaching environments are the most influential factors that affect students' perceptions towards entrepreneurial career. University must present a positive image of entrepreneurship career option to draw students' attention to entrepreneurship course (Keat et. al., 2011). Although individual have the relevant entrepreneurial knowledge and skills, but when university do not promote the positive image of entrepreneurship to students, they might not venture into the field (Alberti and Sciasci, 2004). Therefore, university must play an important role in influencing the students to get involve in entrepreneurship (Keat et. al., 2011).

Normally family business always starts from an entrepreneur, who developed the business and later manages to get the involvement of the family members in the business (Davis, 1996). It is claimed that family influence is one of the important factors that form the student's attitude towards entrepreneurship and provide the experience and motivation for the students to lead entrepreneurial activities (Bagheri and Pihie, 2010). This is supported by another study who claimed that social relation and network such as family members play an important role to develop good entrepreneurs (Anderson, Jack and Drakopoulou, 2005). Robson and Bennet (2000) find that families and friends act as a preferred source of advice for small-medium enterprise owner, especially relates to sensitive issues. This is because the advice and guidance sources for graduate entrepreneurs are informal sources which involve family, colleagues and social network as well as university (Greene and Saridakis, 2007).

Furthermore, family or peer business are claimed to be able to inspire the graduates and provide supportive environment which give them information and resources to start a business after graduating (Bagheri and Pihie, 2010). It is also claimed that parents play an important role in developing students' entrepreneurial self efficacy and inspire them, encourage them to involve in business and consequently their entrepreneurial intention are developed (Bagheri and Pihie, 2010).

In addition, friends and peers are also role models to students to be good entrepreneurs (Keat et al., 2011). It is claimed that students believe that friends are the best sources and places to seek advice, and can even be the source of capital to start a business (Schaper and Volery, 2004). Therefore, the influence from peers may affect the graduates' decision to become entrepreneurs (Nanda and Sorensen, 2006).

Image of an entrepreneurship is one of the factors that would influence the students' inclination towards entrepreneurship (Bergh, Thorgren and Wincent, 2011). A success story of an entrepreneur would be able to motivate and increase the intention of a student to be an entrepreneur (Love et al., 2006). The successful stories will encourage a student to have positive views about entrepreneurship and hope to be a role model to others in the future (Sriram, Mesha and Herron, 2007).

It is claimed that gender may affect the graduates' intention to be entrepreneurs. A study by Ismail et al. (2010) indicates that there is a significant difference between a male and female undergraduates' perception towards various aspects of entrepreneurship and they find that the mean value of female's perception is higher than their male counterpart. A study by Wilson et. al. (2007) states that the difference between male and female involvement in entrepreneurship is entrepreneurial self-efficacy and managerial skills (Ismail et al., 2010). They claim that females show more interest in the entrepreneurship education to enhance their skills, to face challenges in their career and to build network with local businessmen compared to males (Ismail et. al., 2010). It is claimed that the number of women owned business in Africa, Asia, Eastern Europe and Latin America are increasing rapidly (Jalbert, 2000). And it is claimed that majority of the 6.7 million privately held companies in the USA are women owned businesses (Wilson et.al., 2007). However, men are said to have more self confident in business than women (Wilson et.al., 2007; Ismail, 1996). In Malaysia, there is an increase of women entrepreneurs in the past two decades due to the economic recession and increase rate of unemployment in the mid 1980s (Ismail, 1996).

Personal skills, attributes and behavior of a student may influence and determine whether he/she can be a successful entrepreneur in the future (Kirby, 2004). High self-confident and good personal skills are among the important factors to be successful entrepreneur (Hamidi et. al., 2008). Self-esteem and self-confident is important to develop the entrepreneurship intention (Ismail, et al., 2009). It is claimed that high self confident is positively related to high intention to become self-employed (Kolveried, 1996). In addition, the students would be able to know their abilities to exploit business opportunities after participating in learning network (Bergh et. al., 2011). The fundamental skills of business management such as management skills and technology skills which can be learnt in entrepreneurship course would increase student intention to choose entrepreneur as future career (Love et. al., 2006).

3.0 Research Method

Data used in this study was collected using primary source (questionnaire). The questionnaire used in this research was adapted from earlier studies, by Keat et.al. (2011), Ariff et. al. (2010), Ismail et. al. (2010) and Sandhu et al. (2011).

Questionnaires were distributed to accounting students in three public universities in Klang Valley. The accounting students answering the questionnaires must be those who have taken the entrepreneurship course. About 600 questionnaires (200 to each university) were distributed to the respondents in all the three universities. However, only 180 questionnaires were returned and usable for the study. The questionnaire consists of three parts. Part A attempts to solicit the respondent's intention to be an entrepreneur, Part B tries to obtain information about the factors that influence the respondent's intention to be an entrepreneur, and Part C seeks information about the respondents' socio-demographic.

Proposed model for the study

The data is checked for reliability, validity, normality, and multicollinearity. Multiple regression analysis is used to analyse the data.

The proposed model for the study is shown below:
$$ISTE = \beta_0 + \beta_1\,PFI + \beta_2\,GEN + \beta_3\,UNIR + \beta_4\,IOE + \beta_5\,PSA + \beta_6\,ECC + \varepsilon \qquad (1)$$

Where:
ISTE   = Student's intention to be an entrepreneur
PFI   = Peer and family influence
GEN   = Gender (Male = 1, Female = 0)
UNIR = University's role
ECC   = Entrepreneurial curriculum and content
IOE   = Image of entrepreneur
PSA   = Perceived skill and ability
ε = Error

4.0 Results and Discussion

4.1 Profile of respondents

The data in Table 1 indicates that about 32% of the respondents are male and 68% are female. As most of the students enroll for the entrepreneurship course at the later stage of their accounting program, more than majority of the respondents (76%) are between the age of 23-25 years old. Row three of the table indicates that about 44% of the respondents are Malays, 52% are Chinese and 4% are Indians. About 44% of the respondents are accounting students from Universiti Putra Malaysia (UPM), 27% from Universiti Kebangsaan Malaysia (UKM) and 28% from Universiti Malaya (UM). All of them have taken entrepreneurship course and about 64% of them got A+, 26% obtained A-, 6% scored B+ and the balance got B. Close to majority (47%) of the respondents' family have their own businesses.

Table 1: Demographic Characteristics

			N	Percentage %
Gender:	Male		57	31.7
	Female		123	68.3
	Total		180	100
Age:	21 – 22		39	21.7
	23 – 25		137	76.1
	Above 26		4	2.2
	Total		180	100
Race:	Malay		80	44.4
	Chinese		93	51.7
	Indian		7	3.9
	Total		180	100
University:	UPM		80	44.5
	UKM		49	27.2
	UM		51	28.3
	Total		180	100
Grade for Entrepreneurship course:	A+		115	63.9
	A-		47	26.1
	B+		10	5.6
	B		8	4.4
	Total		180	100
Your family has a business?	Yes		85	47.2
	No		95	52.8
	Total		180	100
Do you have an intention to start/involve in business after graduation?	Yes		108	60
	No		72	40
	Total		180	100

About 60% of these respondents also admit that they have an intention to get involved in business after graduation. They reveal the following reasons for wanting to start a business:
"More income rather than working with others".
"Motivated by my family members and want to be self-employed".
"I have to inherit the family's business".
"I want to be an independent person and not rely on others"
"I want to improve my income and have huge profit"
"I am expected to take over the family's business".
"I am not interested to work for others".
"To increase my income in the future"
"If I have enough financial assistance, then I would like to have my own business as I want to work for myself rather than work for others"
"Because business is very challenging and able to get high return."
"One day, I want to be a successful business woman"
"Because I want to get money with my own effort"
"Because my dream is to develop a new self owned business"
"My ambition is to be the richest man and entrepreneur"

Another 40% of these respondents who do not want to be involved in business give the following reasons:
"I am not interested to open a business".

"Not interested and income is not certain".
"I do not like to take risk and I do not have the capital".
"I do not have the capital and skills".
"I may only consider starting a business if there is no job available for me".
"I am not confident to open a business as it is very challenging".
"I am a risk avoider, I do not have the skills".
"Opening a business involve high risk. I don't like risk. I like to be in comfort zone".

4.2 Reliability and validity tests.

The reliability checked of the data indicates that the Cronbach's alpha is 0.75, and acceptable as it is more than the threshold value of 0.70 (Pallant, 2001, p.85). The value of Kaiser-Meyer-Olkin for the data is 0.739 which indicates that factor analysis model is appropriate as the value is greater than 0.5 (Field, 2005). Table 2 presents the various dimensions of the factor analysis.

Table 2: Factor Analysis

	Component					
	Intention to be an entrepreneur	Image of entrepreneur	Entrepreneurial curriculum and content	Peer and family	Skill and ability	University's role
Seriously considered entrepreneurship as highly desirable career option	0.712					
Have the planning for opening a new venture	0.769					
Would like someday to start own business.	0.776					
Could easily pursue a career involving self-employment	0.604					
Want to start a business after graduation	0.586					
Do not interest to be an entrepreneur	-0.547					
My vision is to become an entrepreneur.	0.596					
Entrepreneurship is an honourable profession.		0.632				
I respect people who are entrepreneur.		0.598				
Admire those succeed in running their own business		0.524				
Interest towards entrepreneurship has been raised after taking the course.			0.558			
The course provided a new and different experience.			0.634			
The course taught to deal will ambiguity in the real world.			0.538			
The course provided an opportunity to learn by doing.			0.460			
The course guides me to prepare a business plan			0.592			
The presentations of the business plan increase my confident.			0.595			
The presentations of the business plan increase my communication skills			0.655			

	Factor 1	Factor 2	Factor 3	Factor 4
Activities in entrepreneurship course help to visualize how real business environment are.	0.611			
Entrepreneurship course also give exposure on how entrepreneurship seminar should be conducted.	0.587			
The entrepreneurship course improves my understanding of ethic of entrepreneurship.	0.691			
Entrepreneurship course develops my creativity and innovation in business.	0.557			
Entrepreneurship course provides opportunity to plan and run the business.	0.78			
Entrepreneurship course exposes me on how to manage a business.	0.728			
Friends are main source of business related information.		0.475		
Family business influence in student career.		0.601		
Family business helped students skills in entrepreneur		0.68		
Believe that closest friend think I should become self-employed		0.504		
Parents occupation influence student career		0.538		
Friend is role model to student to choose career		0.493		
Family is role model to student choose career.		0.694		
Communication skill especially persuasion influence me to start a business.			0.488	
Creativity skill influence me to start a business			0.626	
Problem solving skill influences me to start a business			0.626	
Social networking skills influence me to start a business.			0,573	
University is an ideal place to learn about starting a business				0.576
More entrepreneurship and business educational programmes on campus would help me to start a businesses				0.557
University infrastructure in place to support the start-up of new business				0.576
Entrepreneurship course should be compulsory in order to stimulate entrepreneurial spirit in campus.				0.638
The university provides resources to assist student entrepreneurs.				0.49

4.3 Normality and Multicollinearity

Table 3 reports the descriptive statistics of the variables used in the study. Overall, the data appears to be normally distributed as the skewness and kurtosis values are between ±3.00 (Kline, 2005, p.50). The mean score of the respondents indicate a moderate inclination towards entrepreneurship among the accounting students.

Table 3: Descriptive Statistics

Variables	Mean	Minimum	Maximum	Standard deviation	Skewness	Kurtosis
Intention to be an entrepreneur	3.7040	1.57	5.00	0.65457	0.553	0.824
Peer and family	3.4852	1.78	4.67	0.54089	-0.490	0.416
University's role	3.5546	1.50	5.00	0.54892	-0.560	1.371
Skill and ability	3.8472	1.75	5.00	0.61259	-0.620	0.836
Image of entrepreneur	3.8310	2.43	5.00	0.45888	-0.174	0.900
Entrepreneurial course and content	3.8719	2.17	4.94	0.45109	-0.262	-0.240
Gender	0.68	0	1	0.466	-0.795	-1.384

Table 4 presents the pairwise correlation coefficient of all the variables used in the study. The results indicate that there is no multicollinearity problem, as the correlations are below the threshold value of 0.8 (Gujarati, 2003, p. 359)

Table 4: Correlation of the Variables

	Intention to be an entrepreneur	Entrepreneurial curriculum and content	University's role	Skill and ability	Peer and family	Image of entrepreneur	Gender
Intention to be an entrepreneur	1						
Entrepreneurial curriculum and content	0.379 ***	1					
University's role	.322***	.328***	1				
Skill and ability	.356***	.333***	.450***	1			
Peer and family	.221	.156*	.314***	.261***	1		
Image of entrepreneur	.345***	.454***	.314***	.242*	.234*	1	
Gender	.000	-.089	-.12	.40	-.005	-.028	1

*** significant at 1% ** significant at 5% * significant at 10%

4.4 Regression Analysis

Table 5 presents the regression results of the study. The value of the adjusted R- Squared is 0.238 with the F value of 10.309 ($p < 0.000$). This adjusted R-squared is similar to a study conducted by Keat et al. (2011) which examines the factors that influence the university students' intention to be entrepreneurs in northern region of Peninsular Malaysia. Their study generates adjusted R-squared of 0.201.

Table 5: Regression Analysis

		Coefficients	T-stat (p value)
Constant		0.671	0.383
Entrepreneurial curriculum and content		0.284	2.544***
University's role		0.178	1.929**
Skill and ability		0.232	2.870***
Peer and family		0.192	2.263**
Image of entrepreneur		0.278	2.581***
Gender		0.021	0.226
R²	0.263		
Adjusted R²	0.238		
F statistics	10.309		
P value	0.0000		

*   Significant at the 10% level
**   Significant at the 5% level
*** Significant at the 1% level

The results in Table 5 indicate that five of the independent variables are significant in influencing the students' intention to be entrepreneurs. The significant variables are entrepreneurial curriculum and content, university's role, skill and ability, peer and family and image of entrepreneur.

The result in Table 5 indicates that entrepreneurial curriculum and content is positively significant in influencing the students' intention to be entrepreneurs at 1% level of confidence. This finding is consistent with an earlier study by Hamidi et al. (2008), and Keat et al. (2011). This result is also reflected in their responses to the questions in the questionnaires. Close to 78% of the respondents agree and strongly agree that the entrepreneurship course offered by the university expose and develop their entrepreneurship knowledge and skills. They agree and strongly agree that their interest towards entrepreneurship is increased after attending the course (65%) as the course provides a new and different experience for them (75%). Most of them (87%) like the opportunities to plan and run the businesses, as they are given the opportunities to learn by doing and learn to deal with ambiguity in the real world. Apart from that, the activities conducted also help them to improve their presentation and communication skills (75% agree and strongly agree) when they prepare for the entrepreneurship seminar.

The role of the university is also important to motivate the students to choose entrepreneurship as their career choice as indicated in the result in Table 5. The role of the university is positively significant in influencing students' intention to be entrepreneurs at 5% level of confidence. This finding is consistent with an earlier study by Keat et al. (2011). Close to 70% of the respondents agree and strongly agree that the university is an ideal place to learn about starting a business. However, only 52% of the respondents think that their universities' infrastructure are in place to support the entrepreneurship activities and more than majority of them (70%) think that more entrepreneurship and educational program should be in place to help them to start a business. This indicates that universities must further enhance the infrastructure and the resources that can help the students to run their entrepreneurship activities in the campus, as well as organizing more entrepreneurship talks and programs.

The result in Table 5 also indicates that image of entrepreneur is positively significant in influencing the students' intention to be entrepreneurs at 1% level of confidence. An earlier study by Keat et al. (2011) also finds a positive relationship between the variables but it is not significant. Close to 80% of the respondents agree and strongly agree that entrepreneurship is an honorable profession and help to create jobs to stimulate the economy of the country. Most of them (83%) respect people who are involved in entrepreneurship and 94% of them admire those who succeed in their businesses.

Peer and family influence is also positively significant in its relationship with the students' intention to be entrepreneurs at 5% level of confidence. This finding support an earlier study by Keat et al. (2011) who finds that mothers' occupation as self-employed significantly influence the students' inclination towards entrepreneurship. Detail investigation of the data indicates that 82% of the respondents whose family owned a business want to start a business too. In order to confirm that, independent t-tests are run to test the influence of peer and family on the students' intention to be entrepreneurs. The results indicate that those students whose family has a business hold high perception of entrepreneurship image and they have a significantly higher mean score for inclination towards entrepreneurship compared to those without family business.

In addition, personal skills and ability of a student also plays a role in determining his/her success in business, and may influence him/her to start a business. The result in Table 4 indicates that the perceived skills and ability of the respondents is positively significant in influencing students' intention to be entrepreneurs at 1% level of confidence. This finding is consistent with an earlier study by Ariff et al. (2010). Detail investigation of the data indicates that 82% of the respondents who want to start a business after graduating perceived that they have creativity skills to help them to attract their customers. And 72% of these students believe that they have the necessary social networking skills to help them to start the business. Other important criteria that the respondents think are important are communication and problem solving skills. About 77% and 66% of those who want to start business after graduating think that their ability to solve the problem and persuasion skills will help them in their business operations.

However, gender is not a significant factor in its relationship with students' intention to be entrepreneurs. The independent t-tests run to examine the relationship between gender and all the variables also indicate insignificant relationship. The results appear to suggest that gender of a Malaysian student is not an important factor to determine whether he or she would venture into a business.

5.0 Conclusion

The main purpose of this study is to examine the factors that influence the accounting students' intention to be an entrepreneur. The results of the study indicate that entrepreneurial curriculum and content, university's role, skill and ability, peer and family and image of entrepreneur significantly influence the students' intention to be entrepreneur. In addition, the findings also indicate that there is a moderate inclination towards entrepreneurship among the accounting students. This may be due to their perceived lack of skills and confident to start a business as reflected in their answers in the questionnaires. This is where the university should play their roles to motivate the students and provide the necessary training and courses to instill more positive attitude of the students towards entrepreneurship. Furthermore, the

entrepreneurship course offered by the universities can be an appropriate avenue to expose and develop the students' intention to be entrepreneurs.

The findings from this study should be interpreted in the light of several limitations. Firstly, the data was collected from three universities in Klang Valley only, thus this limit the generalisation of the result. Further study may include other public as well as private universities in Malaysia. Secondly, the study examines the entrepreneurship intention among accounting students only, future study can be extended to include students from other disciplines as well. Despite these limitations, the findings of this study would provide information to the universities and the related ministries on the factors that influence the students' intention to become entrepreneurs. In addition, it will contribute to the current entrepreneurship literature particularly in Malaysia settings.

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Management Views and Perspectives towards Workplace and Human Capital Disclosure in Annual Report

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Abstract

This research explores management views and awareness of corporate social responsibility towards workplace and the importance to disclose and report workplace and human capital information in corporate annual report. It has been reported from previous study in CSR literatures that company disclosed more information related to employees as compared to other CSR dimensions; marketplace, community and environment. This research used qualitative approach in data collection by interviewing 13 senior managers from 10 public listed companies on their understanding and awareness of CSR towards workplace. The results show that managers' awareness and understanding of CSR are more on the involvement of company in community and environmental activities. Even though workplace is categorized as one of the components of CSR Framework, it is not perceived as one of the 'social' obligation of the company. However, company discloses and reports information of workplace and human capital because of its value human capital as the most valuable assets. As such it is an obligation to company to really take care of its employees and provide them with the best treatments as it can. The results also report that company discloses workplace and human capital information to attract potential and talented job seekers and enhancing it image in the eyes of society.

Keywords: Workplace; human resource information; management awareness; corporate social responsibility

1.0 Introduction

Corporate social responsibility (CSR) reporting is a process to put into words the social and environmental activities of organisation that might give impact to particular interest group within the society and to society at large (Gray et al., 1987). CSR reporting is the extension of traditional financial disclosure of the organisation. It is seen as a way to promote and acknowledge corporate accountability and corporate transparency towards their multiple stakeholders (Janggu et al., 2007; Johansen, 2008). CSR is a concept which comes from the simple premise that corporations have obligations to society that go beyond only profit-making activities (Godfrey and Hatch, 2007) and to report such activities to relevant stakeholders.

The concept of CSR and CSR reporting was formally emphasised by Malaysian government in the Malaysian Ninth Plan in 2006. In this plan, the government requires that all public listed companies (PLCs) to disclose about their CSR activities in their business report (Abdullah, 2006). In addition, Bursa Malaysia has come out with CSR framework in 2006 for PLC as a guideline which focusing on four dimensions: marketplace, workplace, environment and community. Even though the requirement to disclose CSR activities starts in 2007, the practice of CSR by Malaysian companies exists long way before that. However, before 2007,

there were no standard and specific guidelines for companies to follow in terms of types of activities and format for disclosure. The reporting of CSR practices is basically voluntary in nature. The involvement of businesses in CSR activities is based on the suitability of the activities with the main business activity.

The early stage of CSR disclosure in Malaysia focus was given on the responsibility towards employees and responsibility to deliver good product and services (Teoh and Thong, 1984). It was reported that the extent of CSR information disclosed in annual report was mostly about employees' related information (Teoh and Thong, 1984; Andrew et al., 1989; Mohamed-Zain, 1999; Thompson and Zarina, 2004). However, the disclosure practices and the understanding of CSR concepts among managers and expert were not consistent. According to Lu & Castka, (2009) corporation is only practicing certain aspects of CSR especially on the philanthropy and public relation activities. In reality CSR concept covers more than those issues.

Furthermore, previous studies report that CSR awareness among of management was very minimal (Zarina, 2002,) and disclosure by of the information still at minimum level (Thompson and Zarina; 2004, KPMG; 2008). Thus, the purpose of this study is to explore management understanding on the concepts of Corporate Social Responsibility and their perceptions on the importance to disclose employee related information in annual report. More specifically, the focus of this study is on management perception on CSR towards workplace and the important to disclose workplace and human resource information in annual report.

2.0 Literature Reviews

2.1 Perception toward CSR

There are limited studies done in Malaysian environment on the users and management perceptions towards CSR reporting. The only published studies in Malaysia are done by Norhayah and Amran (2006) and more recently by Lu and Castka (2009) and Ousama (2009). Norhayah and Amran (2006) explore the level of awareness and perceptions of accounting profession in Malaysia on their understanding of the concepts, and element and function of CSR. Through in-depth interview with 14 accounting professionals they found that in general the level of perception and awareness is not consistent. Although they have positive attitude towards CSR, their level of awareness and level of understanding on the concept is low. Few of the respondents interviewed are aware about CSR but their perception is that it was not their roles to promote CSR activities and reporting.

Meanwhile, Lu and Castka (2009) in their study on the experts' views and perspectives towards CSR in Malaysia state that the concept and the involvement of organisations in CSR activities is not new, however it is still in the early state. Their basic conclusion reveals that organisation practice only certain aspects of CSR. Focuses were given on philanthropy and public relation activities. They conducted different interview session with thirteen Malaysian leading experts from different industry groups mainly from government agency, consumer, labour, NGOs and others including environmental consultant, researcher and academia. Their interview revealed several issues pertaining to CSR. The experts' interviewed also raised their concern towards confusion among nation on to what is actually CSR. Most of them refer to CSR as only related to philanthropy activities. Furthermore, they assert that there are differences in CSR practices between big, small and medium organisations.

Most recently, Ousama (2009) study focuses on the intellectual capital (IC) disclosure in annual report of Malaysian PLCs. One of the items classified under intellectual capital is human capital information beside external capital and internal capital. Besides looking at determinants of IC disclosure, Ousama examines the perception of users on the usefulness of IC disclosure. He identifies four groups of users; companies, analysts, banks and academics. The study indicates that generally, all the user groups perceive the IC information disclosed in annual reports to be useful for their decision making purposes. The perception of the usefulness of each category of IC information, however, is not parallel with the trend of disclosure by Malaysian PLCs which reported that human capital information is the most reported items by companies in their annual reports. The study also reports that among the three users group; companies, analysts and bank officers, there were no significant differences in the perception of the usefulness of the IC information except for the users from academics group. He argues that academics tend to have a more normative view thus they perceived usefulness from a different perspective from the practitioners.

2.2 CSR towards Workplace

CSR Framework for Malaysian PLCs established by Bursa Malaysia covers four main dimensions of business responsibility; responsibility towards the marketplace, responsibility towards environment, responsibility towards community and responsibility towards workplace. This framework served as a guideline for companies in their CSR activities. According to a survey conducted by KPMG (2008), Malaysian PLCs still fall far behind the International Best Practice and Disclosures[1] in terms of CSR activities even though the number of companies involved in CSR reporting increased. The survey reports that on a randomly selected sample of 200 companies, nearly two-thirds of PLCs is either average, below average or poor in CSR disclosures. Based on the findings, across all the four dimensions, workplace dimension scored the highest followed by marketplace, community and environment. This is supported from previous studies (for example: Teoh and Thong, 1984; Andrew, Gul, Guthrie and Teoh, 1989; Mohamed-Zain, 1999; Thompson and Zarina, 2004) that record high disclosure of human capital or human capitals related information in company's annual report (Table 1). The incidence of high disclosure on human capital information is perhaps due to the recognition of human capital as the most valuable asset by most companies. Bursa Malaysia survey 2007 also reported that even though workplace dimension received the best score, it is largely attributed to greater attention and provision of information on workplace health and safety, staff development and provision for employee welfare. Still, there are very little disclosure about information on diversity and equal opportunity in the workplace.

Table 1: Malaysian Corporate Social Disclosure by Theme

	Teoh & Thong (1984)	Andrew et al., (1989)	Mohamed-Zain, (1999)	Thompson & Zarina (2004)
Sample	100	119	100	257
Disclosure companies	29%	36%	72%	81.3%
Theme: %				
Human resource	45%	71%	93.1%	93%
Product	21%	14%	52.8%	45%
Community	16%	10%	51.4%	32%
Environment	18%	5%	30.6%	16%

[1] International Best Practice and Disclosures refers to the Global Reporting Initiatives (GRI), SA 800 Social Accountability, International Labor Organization (ILO) and United Nation Global Compact.

Zubaidah and Huang (2002) examine the extent of voluntary human resource reporting practice of top 100 listed companies at Bursa Malaysia using content analysis of annual report. Their findings reveal that the disclosure of human resource information is mainly qualitative except for the staff cost. The most disclosed items are information on training and development, employee skill, knowledge and competence. They note that very little reference is found on employee education, qualification and expertise. They also indicate that the concept of human resource costing and accounting is still far away from human resource managers in Malaysia. The disclosure is very low, which is not extensive and just on surface without any elaboration.

Marimuthu and Kolandaisamy (2009) on the other hand study the relationship between diversity (gender and ethnicity) in top management level and in board members in Malaysian and organisational performance. Their result shows diversity has no significant impact on firm performance. Nevertheless, they found that ethnic diversity among the board of directors (BOD) create significant impact on firm's financial performance. With regards to gender diversity, they found that though women's involvement at corporate level is significant, but women's involvement was unable to create impact on firms' financial performance state. However, some empirical findings indicate that diversity results in greater knowledge, creativity and innovation which increase organisation competitive advantage (Watson et al., 1993; Cox et al., 1991) and thus, diversity in organisational workforce especially in the board structure will have positive relationship to organisational performance (Siciliano, 1996).

3.0 Research Method

In understanding management perceptions towards social responsibility disclosure (SRD) especially disclosure on workplace and human resource information, semi-structured interviews were conducted with 13 seniors managers and management from 10 Public Listed Companies (PLC) (table 2 -respondent demographic profile). Interviews were deemed to be the best way to obtain information about their perception and reasons behind workplace and HR disclosure. Interviews were conducted with six general managers and seven senior managers from ten PLCs. The participants come from Corporate Communication Department, Corporate Affairs Department and from Human Resource or Human Capital Department. The participants from management are deemed to be the most appropriate persons for the interview as they are knowledgeable, experienced and involved in preparing reports or disclosure on workplace and human capital information.

Table 2: Managers' Demographic Profile

Gender	Male	7
	Female	6
Ethnics	Malay	6
	Chinese	7
Position	General Manager/Director	6
	Senior Manager/Manager	7
Age	30-40	7
	41-55	5
	>50	1

All interviews, except 2 were tape recorded. Consent from interviewees was put forward at beginning of each interview. All the tape-recorded interviews were transcribed verbatim. In

the context of the unrecorded interviews, interviewer applies an intensive note-taking method to capture and grab information from the interviewees. All interviews were conducted in person except interview with three managers from C9 which is conducted simultaneously. The interviews ranged in duration from thirty minutes to one and half-hours.

The issues addressed as part of the interviews was centred on the tow research aims that are 1) managers understanding on the concepts of CSR and disclosure of workplace and human resource information and 2) the importance of workplace and human resource disclosure. The researcher follows interview protocol and interview guide to increase the validity and reliability of the interview data. Furthermore, the interview questions were open-ended and supported with a list of probing questions to enable the researcher to take active control of the interview. The researcher takes notes during the interviews process when request to tape the interview was deny.

The analysis of empirical data from the interviews was carried out according to grounded theory approach. The transcribe interviews data were coded to generate categories, themes and patterns. Initial or open coding is a process to break down qualitative data into separate parts, examine the data and compare them to find similarities and differences (Strauss & Corbin, 1988). The study employs In Vivo Coding which used terms and phrases that the interviewees have used as codes. The next stage after initial coding is giving a theme to the coded data. Theme is an outcome of coding that is a 'phrase or sentence that identifies what a unit of data is about or/and what it means' (Saldana, 2009, p.139).

4.0 Results from the Interviews

4.1 Management Perspective and Understanding of CSR and Workplace Disclosure

The interview evidence reported in this paper relates to the managers' understanding and perception towards CSR and workplace and HR disclosures. Throughout the interviews, it was apparent that managers perceived CSR is a responsibility of the company towards community, environment and philanthropy. However, they have limited awareness on the concept of CSR towards workplace and employees.

All managers interviewed give positive responses when they were asked about their understanding on the concept of CSR. One interviewee namely the General Manager of Corporate Communication from Plantation Company (C1) gave a good argument on the CSR concept. She is highly aware of the concepts and stressed that CSR is an in-thing for most company nowadays. The company tag-line for CSR is 'Continuous Development for the Muslim Community (*ummah*) which focusing on company responsibility towards four main aspects; environment, community, employees and shareholders. She mentioned that the company (C1) has dropped the word 'social' in CSR because according to her, the word *'social'* has a stigma of a 'charity activities' which is not applicable in business environment. With the dropped of the word 'social', the activities with regards to the four dimensions should be embedded in and be part of the business activity to their stakeholders as she mentioned in the quote below:

When we take away the word 'social', it (corporate responsibility) is supposed to be embedded as part and parcel of our business activity. (M1)

Most of the respondents refer CSR as responsibilities toward the outsiders and how organisation involved and take part in CSR activities or programmes. Examples of the responses from the managers are in quotes below:

Actually, there are a lot of CSR activities that we do but most of them we do for outsider like our big initiative for firefly program at Kuala Selangor... which our company known and famous for (M2a)

What I understand about CSR at the moment is more outside CSR, means that we are helping other organisation like charitable home, under privilege kids. We support two main one I think; 'Desa Amal Jariah' (Charitable Organisation) and also 'God Sharpered Home''. So that is, that is CSR towards external. Internally wise, we don't really consider it as CSR but we have done... like family days, go out for movies... so that is what we do. (M10)

CSR, well I means it is not just about making money, it is about whatever that we can help, I mean generally to community at large. I think this is just a social obligation, which is very much encouraged and promoted by the government (M8).

Based on exploratory finding above, it shows that the understanding of CSR among the managers focused more on the company's responsibility towards the outsider, the community and the society. The involvement and contribution of company towards society and community is seen as an important aspect to be highlighted in their CSR activities. It is also reflected in their reporting practices; in the annual report, newsletter or in any other available company's bulletin. Based on the analysis on the content of annual report of all the companies in this study, they have a disclosure of corporate social responsibility section which mainly discussing about the community and environmental issues.

Further questions asked about company's awareness on the four components the CSR Framework issued by Bursa Malaysia in 2006. After five years of the published of the framework, all the managers interviewed state their awareness about the four components. The different is basically on the disclosure practices. Different company will stressed and give emphasised on different component for their CSR report. M1 clearly stated how the company deals with the four dimensions of Bursa Malaysia CSR Framework which are marketplace, environment, workplace and community. The following quote demonstrate these points:

Technically Corporate Responsibility is divided into four. We got our responsibility towards the environment; we got our responsibility towards community; we got our responsibility towards our employee, and as well as our shareholders. We are not saying that this segment is better than this segment ...but you have to be able to appreciate our responsibility in totality. (M1)

On the other hand, M4 the Directors of Human Resource Department (HRD) of Insurance Company mentioned that CSR is something that all company must do and she stressed that the profit maximisation can no longer ensure corporate success and sustainability. As she said:

We focus on all the 4 components of CSR; community, employees, environment and marketplace. Our CSR value is strengthened by our corporate mission: i.e. to provide customers with excellent product and services. (M4)

Previous studies on CSR disclosure has reported that employee's related information is the most disclosed information by many companies in Malaysia (Mohamed-Zain,1999; Thompson and Zarina, 2004; Amran and Susila Devi, 2008). Employees related information fall under the workplace component of CSR Framework. In the context of CSR towards workplace, corporation has responsibility to provide a pleasant and conducive working environment for their employees and offer good and reasonable salary system and attractive career development programmes. Therefore, participants were subsequently asked whether they aware and understand about CSR towards workplace. Most of them are slightly aware of workplace concept and a few managers have not even heard about this term before. This situation clearly evidence from one of the respondents. The following excerpts demonstrate the point:

What is CSR towards workplace? What do you mean by that? (M5)

Are there any company that do CSR for workplace, can you give me some examples? (M2a)

When the researcher explained about CSR towards workplace which includes providing a safe working environment, fair benefits and remuneration to employees, responsibility towards employees training and development programme, their reactions were overwhelming. M2a reaction is illustrated in the following quote:

Ooo... that is count as CSR...to develop the people, then it is easy, we do have it. (M2a)

Nevertheless, other respondents showed high awareness on the concept of CSR towards workplace. M1 explained the concepts clearly by focusing on company responsibility toward their most valuable assets; employees. The company has a consistent system for human resource which applies the same rules and policies at the head quarters and also adopted at subsidiaries and other company that they managed. As she stated in the following quote:

As for employees, whatever we do at head quarter (HQ) is also being duplicated at other company that we managed....at HQ what we try and do is to provide employee with a career path vis a vis a job, in the sense that the allocation that we have for training is quite big (M1.)

From analysis of interviews with managers, it is revealed that a few managers were aware that responsibility towards employees and providing good workplace environment is part of CSR. However, there are managers who not see that as part of CSR even though activities that involve employees are there in the company. It is not seen as something that needs to be reported and disclosed formally. The following section reports managers' perceptions on the importance of workplace and human resource disclosure.

4.2 Importance of Workplace Reporting and Disclosure

All respondents expressed their positive opinion on the importance to disclose workplace and human resource information in annual report. They stressed that it is (very) important to disclose information exceeding the minimal mandatory required information as it can enhances the understanding about the company as well as increase transparency and openness. Disclosure of workplace information for internal and external stakeholders is basically done for different purposes. All respondents stated that employees are their most important stakeholders and valuable asset in organisation. Companies are trying their very best to satisfy employees as possible as they can. Director of human resource (M4) from

insurance company said that her company main business activity is totally depends on human capital thus it is very much important for the company to ensure that the staffs are kept inform with companies activities and policies. As she demonstrates in the quote below:

Employees are our great resources. Without employees there will be no organisation. We are proud on what we have done for our people. Responsibility towards staffs is important because we need to build good relationship with our people, take care of their wellness and benefits and make sure they are happy. If we have good relationship with our people then we can succeed. (M4)

As the director and head of human resource, concerned is given on management of staffs and ensures that staffs are working and getting the best from company. She also mentioned that for insurance industry, it is hard to get people to join the business. People need to be trained to develop their skill thus the most important for the company is to highlight the training and development activities for staffs in order to attract people to join the company.

Both managers from C2 also stressed on information about employees training and development and workplace safety and health environment. C2 was represented by senior managers from human resources department and risk management department. M2b from Risk Management department mentioned about health and safety issues as part of company CSR. She stressed the importance to disclose information about any accident occur inside business premises that involve employees. Such information is important for employees to know for precautionary measure to avoid the same incidence happen in the future. Thus, the safety issues are the most important issues that company should prioritize. As demonstrated in the following comments:

Yes, it is important, when people know about their training status, and all that about safety, of course they will appreciate that kind of information. Because at least they know that the company is spending money, and if there are too many accident happened, there must be something wrong somewhere. If they know, it is good. (M2a).

When there is accident happened in your premise, you need to notify employee because they must be in the know. Because if they knew, they will take that as a precaution measures to avoid the same incidences from happen again. (M2b)

M8 expressed the issue of transparency that make disclosure of workplace and human capital information important. According to him, company's disclosure practices show company's transparency policy to its stakeholders. Transparency can create a sense of trust between employer and employees. He revealed that in Property Development industry, the market is far and most saturated for skilled employee thus disclosure of workplace and human resource information is important as a selling point for the company to get talented and experienced people to join the company. His point was also supported by other managers.
M4 validates the view:

By disclosing how we treat our staffs and provide a pleasant working environment, we can build good reputation of our company to people outside. People will not join insurance industry as their profession, but when it happens they will move on with their career in this line. It is not like banking industry that they want to join. So it is one of the ways to attract people to join us. (M4)

A few managers interviewed however, when asked about the important of workplace and human resource disclosures, their answers basically focused and referred to the important of disclosing voluntary information i.e CSR in general. Their answers are illustrated in the following extracts:

For me, is to attract of course our shareholders. Besides annual report which mostly the financial information, CSR is a supportive document. CSR report is basically for our branding on how to portray the company in the community, and build image. Most people can easily understand the report (CSR). It is simple, discuss about environment. If we produced separate report especially when the report is attractively printed, people can easily read and interested to read. (M6)

It is important in a way especially I think PLCs is a company owned by shareholders, therefore in the perspective of all the stakeholders this only fair and transparent for organisation to disclose relevant information for people to be aware. This is how the company has been doing and how the company has been taking that level of responsibility and care besides making money towards the employees, the environment and the society at large . So I think that is really important. (M7)

In addition, general manager of Corporate Affair (M5) expressed that disclosure of CSR activity is for the purposes to be at par with the industry practice and it is seen as a communication strategy for the company to inform its stakeholders about activities that being done by the company. The following quotes demonstrate these points:

As part of our comprehensive communication strategy to keep our stakeholders informed on the company's various initiatives and activities and in line with industry best practices as well as in accordance with our Corporate Sustainability Framework. It is indeed important to disclose relevant workplace information via the appropriate channels. For example, we have been regularly publishing our Sustainability Report since 2007 that is accessible to the public through our website (M5).

The above findings show that all managers agreed that disclosure of voluntary CSR information which includes workplace and human resource information is important in building the company reputation and image. At the same time, company use it for branding purposes and competitive attraction to get talented people joins the company. This finding supported the link between social responsibility disclosures (which includes the attention the company dedicates to its employees) and company reputation and image that has been addressed in the literature. As for an example, Branco and Rodrigues (2009) maintain that disclosure of information on a company's behaviour and outcome regarding social responsibility may help build a positive image with employees. Furthermore, Castelo and Lima (2006) uphold that fulfilling social responsibility can generate internal benefits as well as external benefits by improving company's relationship with employees and external stakeholders and therefore increase corporate reputation. Table 3 summarized the advantages for having voluntary workplace disclosure.

Table 3: Benefits and Advantages to have Workplace and Human Capital Disclosure

i.	Good image and good brand
ii.	Showing public that company's cares / demonstrating that the company is socially responsible
iii.	Good recruitment policy and strategy
	o Attract new talents/employees
	o Retain existing talents/employees
iv.	Motivation for employees
v.	Promoting a reputation for transparent reporting
vi.	Mutual trust / create trustworthiness with stakeholders
vii.	Increase employees awareness / create trustworthiness with employees
viii.	Keeping up / comparable with other companies operating in same industry

5.0 Discussion and Conclusion

The aim of this paper is to explore management perception on the concept of CSR towards workplace. The findings from the interview analysis show that there were less significant differences among managers on their understanding with regards to CSR and workplace disclosure. Most of the managers perceived CSR as company responsibility towards society and community group. Discussions about CSR were cantered on the involvement and programmes that the organisations have towards community and how it can contribute to the benefits of society and community. CSR towards workplace was not seen as social responsibility; rather it is an obligation of the company towards the wealth-being of the employees.

The interviews analysis also suggests that disclosure of workplace and human capital information was mainly driven by managers' perception on the importance of reporting that it can enhance their corporate reputation. Disclosure of workplace and human capital information is seen as a method for corporation to promote and initiate the company as a good corporate citizen in the eyes of public. An image as good and responsible corporate citizen helps corporations in strategizing ways to attract potential employees and investors to join and invest in the company. This is consistent with the finding from previous studies (Nik Ahmad and Sulaiman, 2004; Amran, 2006) that disclosure will enhance corporate image. Eight managers from ten companies emphasised on the image as they are currently going global and international. As mentioned by M9c, international investors are really concerned with governance and transparency in the business operations.

Management also perceived that company can get more benefits and advantages through disclosure then disadvantages. Disclosure of workplace and human capital information can create value to the organisation. It is already proven in many CSR research (Albinger and Freeman, 2000; Backhaus, Stoner and Heiner, 2002; Ballou, Godwin and Shortridge, 2003; Greening and Turban, 2000; Rimmel, 2004; Dominguez, 2011) that disclosure has an impact on corporate reputation and image, motivate employees thus increase job quality and increase loyalty towards the firm.   Knowledge sharing policy and caring attitude towards employees increased employees' confidence and loyalty towards company. Aware of this fact, top management always committed with CSR programmes and support government initiative in protecting and ensuring the continuity of employees' welfare.

The management also stressed the importance of being transparent to the stakeholders. Not only corporations made a periodic report (i.e corporate annual report) to the shareholders who provide financial support for the company, it is also important to be transparent to the community and public about how they treat their employees. This will give positive impact to

the public. As stated by Turban and Greening (1997) corporate social policies and programs serve as a signal of working condition that may attract potential employees to join the corporation.

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The Impacts of Proximity and Privacy in Workplace Layout on Organizational Productivity

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Abstract

Since the 1930s, researchers have studied how spatial proximity affects friendship, romantic relationships and other variables such as the amount of communications between the space users. It is believed that when the spatial distance between employees increases, their frequency of communications decreased drastically. Furthermore, some studies found that people liked to interact more in private individual workspaces than in semi-public and public areas of any office setting. The possibility of working as a teamwork could increase by rising in the possibility of interacting with other employees. Teamwork can also improve the exchange of information, retention of data and in turn lead to higher productivity. The aim of this paper is the investigation of two important variables of workplace layout and their impacts on productivity based on the level of "face to face" interaction in the workplace. In this paper, the variables used to improve the possibility of communication and ease of interaction within the work area categorize are proximity and privacy. This study was conducted on relatively two large companies in Iran. The engineering and technical staffs of the two companies were given a self-report survey that measured each of the study variables. They received the questionnaire that includes the measures of each of the key variables. Some of these measures were taken from a survey created for a large corporation, and others were established measures from the organizational literature. SPSS statistic and space syntax were used to analyze the data. The results indicate that the proximity between the two staffs is highly positively correlated with productivity. However this study found no significant correlation between the variable privacy and productivity.The study highlights the importance of workplace productivity and manipulating interaction as a measurement for productivity in the office space and helps designers, scholars and managers to better understanding the role of these factors in through workplace setting design.

Keyword: Proximity, privacy, workplace layout, productivity and "face to face" interaction

1.0 Introduction

Experts from diverse fields of knowledge such as sociology, psychology, management and organization studies, architecture and design have studied work area situations and have mostly agreed on their offering to create advanced and improved organizational life. This topic takes more credit when researchers realized that physical workplace set up the social organization of everyday life by using their spatial layouts of space that people move, live and work through them (Sundstorm, 1990).

Increased productivity is considered as a primary goal of business. Modern management all over the world believes that a better working environment relates to better productivity. Without a satisfactory level of productivity, a profit-oriented organization cannot survive; and most if all nonprofit organizations are interested in doing more work without a proportionate increase in money, equipment and employee hours (Becker, 1983).

For achieving more productivity, this research will use interaction as the mediator between the layout plan variables and productivity. Privacy and proximity have been cited in some literature and were selected in this survey as layout variables that can affect the amount of interaction in the work area.

2.0 Literature Review

If the evolution of the factories and offices as workplaces has a central theme, it is the continued emphasis on the workplace as a resource for efficiency and productivity. The present organizations have become aware of the importance of informal interaction and look at it as a service and notable channel that contribute to individual satisfaction and organization effectiveness. Unofficial communication considered to relate to multitasking performance (Sundstorm, 1990).

Productivity is a key to a company's success, therefore knowing how smoothly and quickly your product line is running is very important. It is defined as the overall general output measured against a given number of inputs. Rolloos (1997) defined the productivity as, "productivity is that which people can produce with the least effort". Productivity is also defined by Sutermeister (1976) as, "output per employee hour, quality considered". Dorgan (1994) defines productivity as, "the increased functional and organizational performance, including quality". Productivity is a ratio to measure how well an organization (or individual, industry, country) converts input resources (labor, materials, machines etc.) into goods and services.

One of the biggest problems that managers face is how to measure productivity throughout the company. Some companies come up with measuring systems or formulas to measure it, but identifying a reliable metric system for a company can prove to be a bit difficult. Brynjolfsson and Hitt (1998) summarize the key measure for the productivity with the following passage:

Productivity is a simple concept. It is the amount of output produced per unit of input. Productivity is notoriously difficult to measure. In particular, there are two aspects of productivity that have increasingly defied precise measurement: output and input.

However, in most of the times, input and output are too difficult to measure and researchers are searching and trying other new methods.

2.1 Communication in Workplace and its Importance in Team Work

French and Bell (1999) believed groups wield the power in organizations. They stated this belief in several instances. For example they said, "We think teams are the basic building blocks of organizations" (p. 27). And in another passage, they reiterated that thought more strongly, "The basic building blocks of an organization are groups (teams), Therefore, the basic units of change are groups, not individuals" (p. 66). In relation to group performances,

interaction is seen as the most import part of working in a team. The ways and the quality of communication between team members, can improve productivity in the workplace.

Recent studies including landmark research McKinsey conducted in 1997 show that specialization, globalization, and technology are making interactions far more pervasive in developed economies. As Adam Smith predicted, specialization tends to atomize work and to increase the need to interact. Outsourcing, like the boom in global operations and marketing, has dramatically increased the need to interact with vendors and partners. And communications technologies such as e-mail and instant messaging have made interaction easier and far less expensive.

Communication is defined in the Oxford English dictionary (2008) as the "act of importing or exchange of information, letter, message or social dealings; connections or means of access. It is a science and the practice of transmitting information between at least two people". It has been defined also as the transmission and exchange of information, whether spoken or written. Information is conveyed through formal organizational channels of downward, upward, and lateral communication. It is also passed along an informal channel-the grapevine. Individuals, who interact frequently, often develop identification with each other over time. Communication tends to be much faster in the informal group than formal group communication.

Smither (1988) indicates that the socialization procedure is a significant part of every worker's experience. Studying the ropes usually means more than learning how to perform job duties. Similarly, Housel and Davis (1977) found that employees valued face-to-face communication with their supervisors more than through either telephone or written communication.

2.2 Face to Face Interaction and Its Importance

Face-to-face interaction is especially important in a work context when employees must work collaboratively on job tasks. Research on group work and teamwork provides especially strong support for this idea. The increasing specialization of work and complexity of products and services requires coordination, and the importance of interactions is growing. Interaction is a process that takes diverse forms on different levels of analysis that is the individual, small group, large group, the physical environment with its diversity and complexity has a great potential to shape the pattern of informal interaction.

Based on the broad survey on interactions, the general concept of interactions can be defined as "the searching, coordinating, and monitoring required exchanging goods and services" (Butler et. al., 1997; Johnson et. al., 2005). As an important dimension of work, collaboration seems to be getting more attention both from researchers and industrial practitioners. In a 2006 study of C-level executives, IBM (IBM, 2006) found that interaction and partnering is considered very important for innovation by over 75 percent of the 765 executives participating in the survey.

In administering learning, retention and transfer tasks to a group of 70 high school biology students, Kirschner, et al. (2009) studied the effects of group work on performance, and found that communication within these groups is essential to coordination and team success. Their theory suggests that information retention takes less mental effort for individuals learning in the presence of others than those learning alone because the cognitive load is distributed over a number of people. Strubler and York

(2007) studied teamwork among 500 university staff members and discovered that collaboration increased satisfaction and control over the participants' work, and an enhancement in productivity. Lastly, Reagans and Zuckerman (2001) found that frequent communication between employees with varying skills, information and experience increases the group's capacity for creativity and productivity.

2.3 Formal Interaction and Informal Interaction

Interaction can be divided into two parts; formal and informal. However, sometimes in the workplace, it is difficult for management and supervisors to determine them in the moment. A general description of formal interaction can be explained as "A performance or written paper that literally follows to regulations traditions and protocol and is free of conversational expressions."

Horizontal (flowing across coworkers within the organization or group, downward (flowing from upper management or supervisor down to assistants) and Upward (flowing from employees to upper-level management) are three kinds of formal interaction.

Figure 1: Interaction Aspects
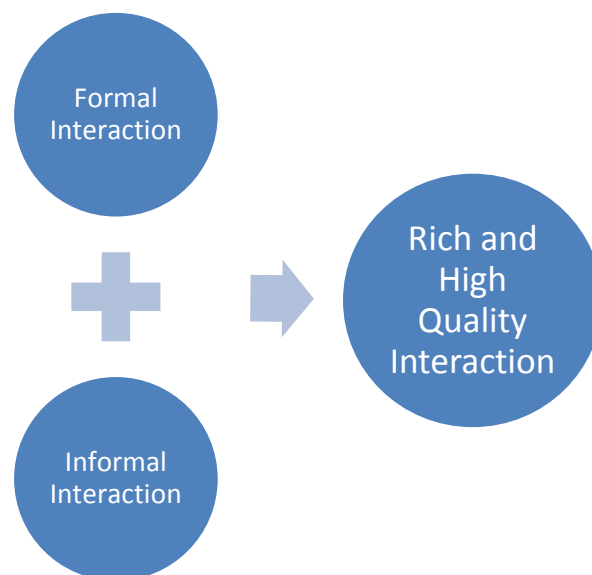
Informal interaction on the other hand can be defined as an impromptu interaction and based on new researches it is a essential element in every workplace. Organizations are trying many different strategies to increase the likelihood of informal interactions between co-workers (Kraut et al., 1989; Peponis, 2004). As shown in Figure 1 having formal and informal interaction together can lead to high quality and rich interaction and cause more knowledge sharing, creativity and productivity.

2.4 Effects of Layout on Ease of Face-to-Face Communication

Considering these expected benefits, organizations are interested in improving the chance and frequency of FTF interactions. One way to do so is by designing a physical layout helpful to frequent FTF interactions, and as noted by Penn, et al. (1999), the layout of a workplace affects how employees move into the office. On a basic level, the office layout can set up a connected, interactive space or can separate work areas. By supervising a review exploring

the frequency of connection with the employees in spatially isolated workspaces, Penn et al. (1999) found that employees are more likely to interact with their coworkers in spaces that are more accessible. They concluded that the spatial configuration of an office does have a direct impact of the frequency of reported interactions. Similarly, Peponis, et al. (2007) found that with more available locations for interaction (work-related or social), the density of interactions increased. That is, the roughly 50 employees interacted more frequently with a new workplace layout than they did in the old workplace layout.

Although density of interactions may not have a direct effect on an individual's productivity, the increase in probability of interacting with other employees also increases the probability of teamwork. With team working it can then lead to better retention of information and in turn, higher productivity ((Kirschner et al., 2009; Strubler and York, 2007).

2.5 Privacy and Proximity to Encourage Interaction

A supportive work environment has to offer the opportunity for the privacy and solitude for people to focus on solitary work as well. The need for protection from distraction and interruption is often at odds with the goal of promoting interaction and enabling the kind of environmental monitoring that allows the transfer of tacit knowledge.

The spaces should plan for a sense of perceived visual and aural privacy, which does not necessarily mean that an enclosed space is required for privacy; the spaces could have been semi-partitioning, such as planting, or be distant or acoustically secure from those by whom the meeting participants would not liked to be overheard (Oseland, 2011).

Privacy as a variable has been studied in office setting many times. Theories about 'open plan' workplace and private office are made by influence of the impact of privacy. Privacy was defined as "the claim of individuals, groups, or organizations to determine for themselves when, how, and to what extent information about them is communicated to others (Westinwas, 1967).

Proximity is generally considered the first law of geography is "nearer things are more related than those further away" and research by Brynjolfsson and Hitt (1998) found that the frequency of all forms of communication decrease with distance and importantly after 30 meters, thus the proximity of suitable spaces for interaction is the key (Oseland, 2011).

Considering productivity as the main aim of each workplace and assuming interactions in the layout plan as its measurement, privacy and proximity can be used as two elements for affecting informal interaction and total productivity.

2.6 Theoretical Framework

Proximity and privacy assumed as independent variables that can have significant impact on interactions.

Figure 2: Conceptual Model
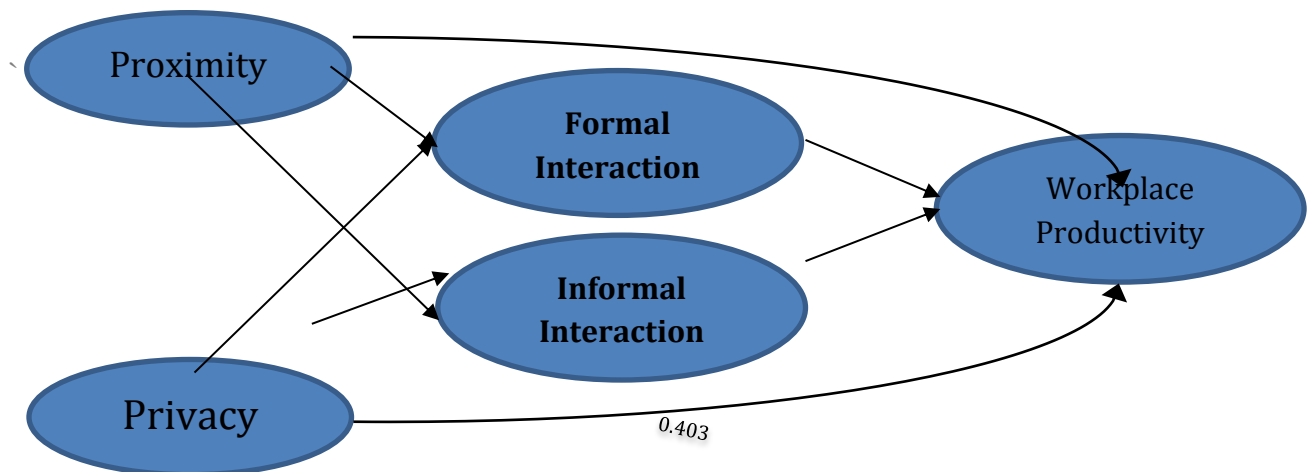
Informal and formal interactions are considered both as separate variables and a combined variable to achieve a better understanding of the model. It is based on this model relationship the hypotheses of the study were developed.

2.7 Hypotheses

Given by literature, this study is concerned two hypotheses as below:
H_1: The proximity in office setting is correlated to informal interaction
H_2: The privacy in office setting is correlated to informal interaction
H_3: The proximity in office setting is correlated to formal interaction
H_4: The privacy in office setting is correlated to formal interaction

3.0 Methodology

This study tried to determine the causal relationships between these two variables of workplace layout, face to face interaction and organizational performance. The analysis of these relationships was using Pearson Correlation technique.

As the study sought to help the mediation model in which the office layout (consisting of proximity and privacy) influences the nature and frequency of the FTF informal interaction. These interactions should then influence the productivity as seen in Figure 3.

Figure 3: Interaction Aspects
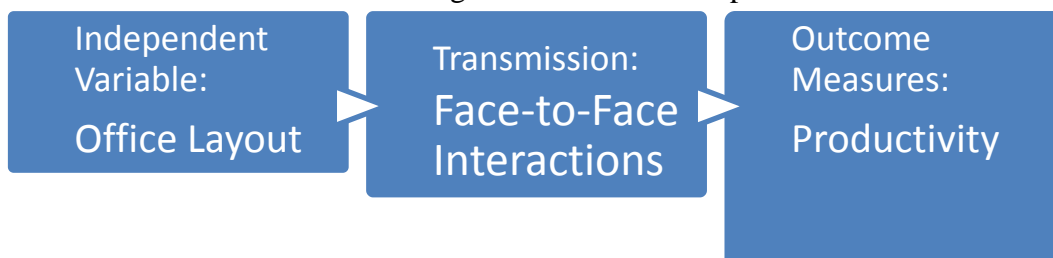
3.1 Population, Sample and Method of Sampling

In this study, two large companies of the same business with the total employees of around 400 people are selected as the case study. As the target respondents are rather small in number, the total numbers of 62 survey forms have been distributed personally to all the

consulting engineers and senior technical staffs of both companies. All the respondents work in different locations of the offices and at work spaces that have different layout at different floors of the buildings and this can give a valid presentation about the level of proximity and privacy of the workplace to be observed. The study managed to collect back 52 questionnaires (83.8%). The high number of response to the questionnaire (83.8%) is expected as the study was conducted directly with the respondents. In this study, proximity is measured by distance and frequency of employee's movement to reach other employees or facilities (based on literature e.g. Oseland, 2011) and privacy is measured by the level of visibility of employee location to other employees and supervisors, the level of openness, the level of opportunity for concentration and feeling safe. Also informal interaction can defined as the frequency of staff meet each other at a certain place without preplanned. Every face to face meeting that cannot consider as informal interaction count as formal interaction.

3.2 Analysis

The questionnaires have been analyzed statistically using Pearson correlation in SPSS to find any relationship between variables. Space syntax is being used to find out about the most common space in the workplace for interaction. Depthmap is a one of UCL university product for presenting Space syntax in Architectural and Urban plans and it is a single software platform to perform a set of spatial network analyses designed to understand social processes within the built environment.

3.3 Reliability

To evaluate the reliability of the questionnaire, Cronbach's alpha test was used. As Table 1 shows, the reliability coefficient calculated for each Index is greater than 0.7.

Table 1: Cronbach's Alpha

Total alpha	Formal Interaction	Informal Interaction	Layout Variable	Proximity	Privacy	Variables
20	5	5	10	5	5	Number of questions
0.834	0.822	0.821	0.855	0.832	0.845	Cronbach's alpha

4.0 Results

In Table 2, individual and organizational characteristics of the sample survey are presented. Percentage of the male respondents is three times more than the females and 83.8% respondent at all is a good representation to finding about a workplace situation. The higher proportion of male staffs reflects the current condition of higher male employees in many organizations in Iran especially among the technical sectors. Most of the respondents (78.8%) are those who had been working more than 4 years in the companies, and this indicates that most of the respondents are the senior employees of the companies and from this results, it is assumed that these respondents have been working in and out of the buildings for many years and well acquainted with the work place this research investigated.

Based on the plot from Space syntax this research can identify the level of privacy of each respondent and the proximity of the employees. The example of this plot can be seen in Figure 5 and Figure 6.

Table 2: Respondent General Information

per cent	Frequency	Items	Characteristics
75	39	Male	Gender
25	13	Female	
21.2	11	Under 4 years	
50	26	4 -8	Years of service
28.8	15	Over 8 years	
11.5	6	12 and higher	

The relationship between all variables is showed in table 3. The (r) shows the amount of relationship between 2 variable and it is always between (1) to (-1) and the (sig) amount must be less than 0.05 for each variable.

Table 3: Bivariate Correlations of Productivity, Layout Productivity and Proximity Measures and Interactions.

Variables	Proximity		Privacy	
	R	Sig	R	Sig
Formal interaction	**0.412****	0.001	**0.198**	0.012
Informal interaction	0.701**	0.000	-0.259**	0.002

As shown in the table 3 proximity and informal interaction have a very strong positive relationship (R=0.701) which indicates that the nearer each staff with each other and with the interaction areas the greater the interaction will take place. The findings also shows a significant inverse relationship between privacy and informal interaction (R= -0.259), which indicate that the less private a person or a place the higher the informal interaction. From here it is suggested that to increase the informal interaction some kind of privacy need to be reduced. However, privacy are positively correlated with formal interaction but not significant (R= 0.198). There is a positive relationship between proximity and formal interaction (R=0.412) but the relationship is lower than those with the informal interaction. Proximity promotes interaction in both formal and informal interactions and makes the employees ready to start interact to each other.

Figure 4: Final Model with Linear Structure
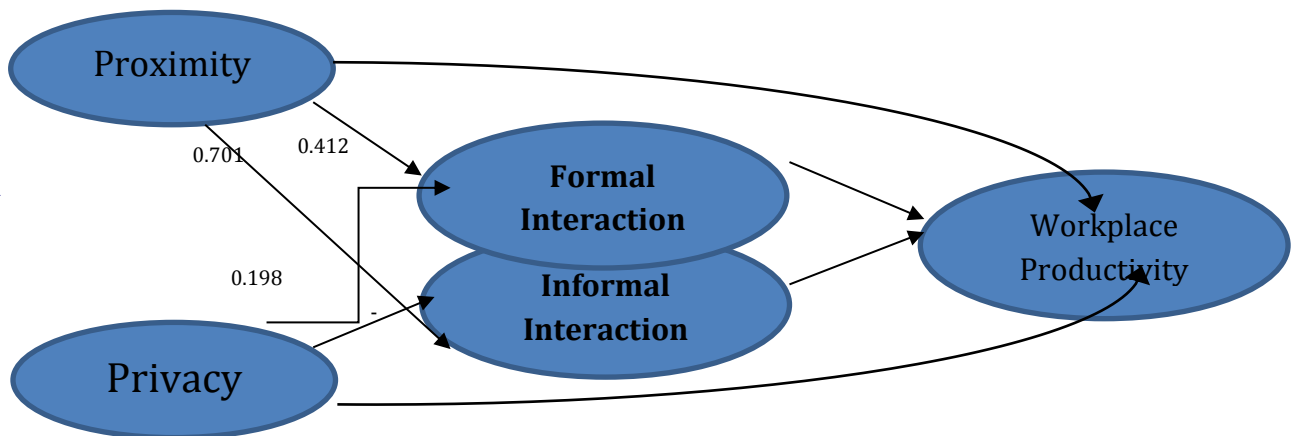
The theoretical framework of this study mixed with amount of correlations between variables in figure 4 to better understanding these relationships.

Hypotheses that was tested are summarized in table 4 and it shows us 3 of the hypotheses are acceptable in this study and one assumed relationship is rejected.

Table 4: Hypotheses Conditions

Condition	Hypothesis	R	Sig	Variable	Variable
Accepted	H1	0.701**	0.000	**Informal interaction**	Proximity
Accepted	H2	-0.259**	0.032	**Informal interaction**	Privacy
Accepted	H3	0.412**	0.001	**Formal interaction**	Proximity
Rejected	H4	0.198	0.012	**Formal interaction**	Privacy

As it explained before proximity and privacy have strong effect on formal and informal interaction in the work space, with proximity encourages both types of interactions especially for informal interaction while privacy only encourages formal interaction.

Figure 5: Space Syntax Analyzes

The above figure is an example of depthmap for space syntax analysis. This research only show on example of the Space syntax plot at one floor of the studied workplace and the above figure also show the frequency of interaction take in the work space. In this graph the darker tone represents the higher interaction while the lighter tone represents the lower interaction. As shown from this example, more interaction occurred in the open spaces and corridors and if this result is to be taken into consideration, this interactive spaces should not be neglected as merely corridors but should be developed accordingly to encourage more interactions between employees.

Figure 6: Major Questions of the Survey
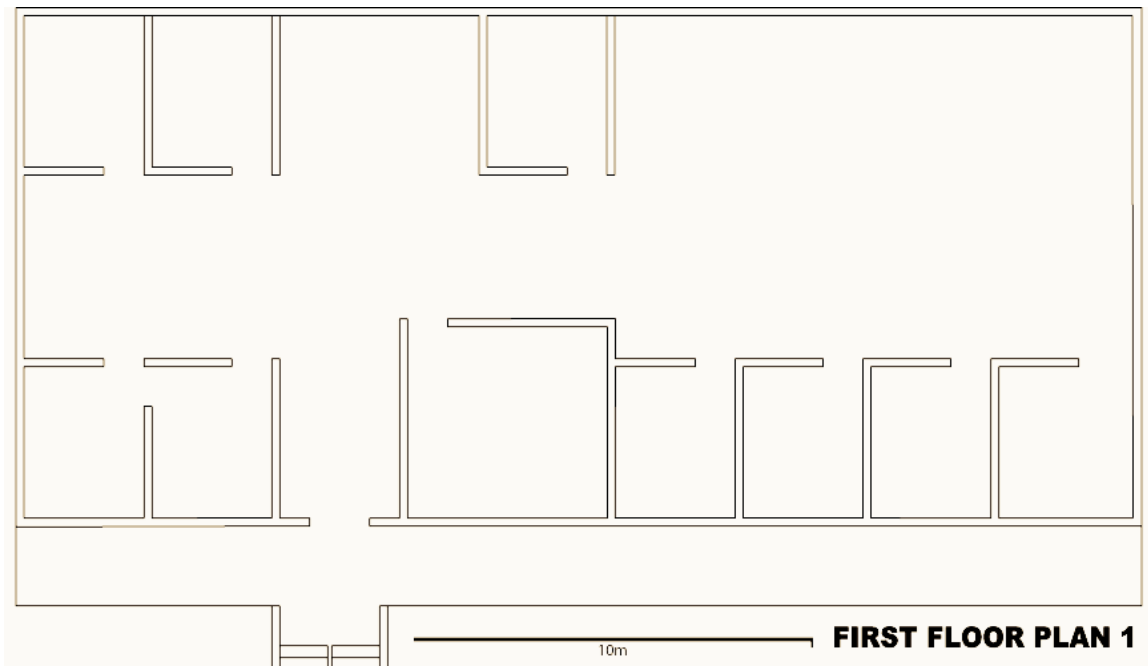
1- Please mark "X" on the floor plan layout, the location of your station in the workplace.

2- Please mark "Y" on the floor plan layout, the location of your immediate boss in workplace.

3- How frequent do you informally interact with your coworkers/ boss in the workplace?
   1)   Less than 3 time in a day
   2)   between 4 till 8 time in a day
   3)   between 9 till 12 time in a day
   4)   between 13 till 16 time in day
   5)   more than 16 time in a day

4- Please mark "W" on the floor plan layout, the location of most frequent place for informal interaction in the workplace.

5- How frequent do you formally interact with your coworkers/ boss in the workplace?
   1) Less than 3 time in a day
   2) Between 4 till 8 time in a day
   3) Between 9 till 12 time in a day
   4) Between 13 till 16 time in day
   5) More than 16 time in a day

6- Please mark "Z" on the floor plan layout, the location of most frequent place for formal interaction in the workplace.

5.0 Conclusion

This research had contended that the importance of users' interaction and that the greater interaction increased the teamwork and organizational productivity. As had been discussed earlier, the physical workplace contributes to users' productivity through informal interaction. As we have seen through the results there are significant correlation between physical environment variables, proximity & privacy with both kinds of interactions especially the informal interaction. Physical proximity had been proved to increasing productivity by making the chance of both formal and informal face to face interaction. However, the higher privacy discourages interaction except for formal interaction. Considering the results of proximity and privacy as two important variables for promoting interaction, workplace designer should take into consideration of these two variables when designing workplace that can lead to more productivity.

This study of architectural space may also contribute to the organizational study aspect in human resource management. The work of this two disciplines may contribute and beneficial to both fields and may expand the horizon of field of knowledge for both field of studies. Particularly, human resource management should consider the role of physical workplace that may contribute to organizational success. Workplace designer should also require the understanding of human resource management when designing, and as researches in this kind of knowledge is still lacking, further researches to explore this kind of research should be encouraged.

It is important to note that privacy and proximity are not the only variables of physical workplace that can affect interactions. Therefore other physical workplace variables that can affect interaction and productivity should also be explored.

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Linking Intellectual Capital and Organizational Performance through the Mediating Role of Entrepreneurial Orientation

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Abstract

In the knowledge-based economy, the most successful organizations will be those who use their intellectual capital in the effective way to improve performance. On the other hand, achieving high levels of organizational performance requires the creation and development of entrepreneurial orientation. The main objective of this study is to evaluate the effect of intellectual capital on entrepreneurial orientation and performance. Hence, one of the factors that could play an important role in enhancing the capabilities of human resources and tendency of organizations to be entrepreneurial is the evaluation and use of Intellectual capital in an appropriate way. Overall, we can say that increase in intellectual capital will result to improvement of knowledge resources, Organization's readiness to take an appropriate decision under uncertainty, increase in production of new products and development of entrepreneurial activity and firms with higher entrepreneurial orientation can shape their internal resources better to improve their work performance. This study is based on methodology of the structural equation model. Regarding the data collection; it is a descriptive-correlation study. The approach adopted in this study focuses on managers of manufacturing business as a fundamental source of potential future entrepreneurs. The results show that all dimensions of intellectual capital positively affect entrepreneurial orientation. Based on the results human capital makes the greatest impact on organizational performance and also entrepreneurial orientation significantly has an impact on organizational performance. This study focuses on testing the mediating effect of entrepreneurial orientation on the relationship between intellectual capital and organizational performance in Malaysia.

Keywords: Intellectual capital, entrepreneurial orientation, organizational performance

1.0 Introduction

With the transformation of societies from industrial age to information age, today we can see the emersion of an economy that physical and financial capital has been replaced by knowledge as the most important capital (Chen et a.l, 2004). (Michalski and Javier Vazquez, 2008, p.23). In the knowledge economy, businesses need to use an approach to better utilization of tangible assets such as physical and financial assets and intangible assets such as organizational knowledge and competencies of human resources (Bontis, 1999). Intellectual Capital is considered valuable resource for organizations in the development of entrepreneurship and innovation (Michalski and Javier Vazquez, 2008).

In the other side, a firm entrepreneurial orientation refers to the entrepreneurial activities, how the entrepreneur undertakes the methods, practices, and decision-making styles to act entrepreneurially. According to Mintzberg (1973) specifically, entrepreneurial orientation refers to the entrepreneur's disposition to autonomy, encourages experimentation, takes risk, takes initiatives, and aggressively competes within its market, so entrepreneurial orientation is an important factor to play active and effective role in the domestic and international competition. Companies with higher entrepreneurial orientation will make the best of their resources to improve work performance (Hughes and Morgan, 2007).

2.0 Literature Review

Twenty-first century, is the century of knowledge economy. In the knowledge economy, intellectual capital is considered as the most important organizational intangible assets and as the primary principle of value creation; intellectual capital is become more important than physical capital. Hsu and Fang define intellectual capital as a set of knowledge, culture, strategy, process, intellectual property and communication networks of companies, that created competitive advantage for organizations and help to achieve their goals .(Hsu and Fang, 2009).

Many of scholars and researchers mentioned today's world as age of discontinuity. Ages of discontinuity, means that past experiences and solutions are not suitable for current and future issues of organizations. Researchers should think and look for the other ways and new organizational approaches to present goods and services with minimal cost and high quality fit to the customer needs and tastes (Nikoomaram, 2006).

In this atmosphere considering the environmental uncertainty, complexity, increased competition and rapid technological progress, large and small companies must be innovative and react quickly to maintain their competitive ability (Ireland, et al., 2001). Companies must continually identify new opportunities and convert them to income; in other words, they should behave entrepreneurial; because only in such circumstances companies can provide the necessary resources for growth and development of production and human resources, create new business and employment, and with industrial innovation and development increase the range of products and services (Shane and Venkataraman, 2000).

Institutional entrepreneurship is the set of activities that has resource and support of organization in order to reach innovative results (Aghaee, 1998). Based on the study of Lumpkin and Dess (1996), companies that want to have a successful corporate entrepreneurship should have an entrepreneurial tendency. Entrepreneurial orientation is the new branch of entrepreneurship and refers to the all the actions, processes, procedures and decision making activity that caused to enter new business and support entrepreneurial activities (Mintzberg, 1973).

Entrepreneurial orientation describes the ability to recognize or create an opportunity and take action aimed at realizing the innovative knowledge practice or product. Entrepreneurial orientation is different from 'traditional' economic entrepreneurship in that it does not aim at the realization of monetary profit, but focuses on opportunities with the goal to improve the production (research) and throughput of knowledge (as in personal transformation (Harvey and Knight, 1996)), rather than to maximize monetary profit. Entrepreneurial orientation includes five dimensions: innovation, risk taking, Pro activeness, autonomy and competitive aggressiveness (Lumpkin and Dess, 1996):

Innovation, reflecting the company's willingness to support creativity and New ideas, experiments to produce new products and services, technological leadership and research and development In order to create new processes.

Risk taking is tend to perform activities such as investment in unknown new markets, involving a large part of resources for investment projects with uncertain outcomes and heavy borrowing.

Pro activeness is having a futuristic vision, in order to identify opportunities for new products and services and anticipate future market needs ahead of competitors.

Autonomy refers to the independent activities of a person or group to create an idea or insight and guidance until they are completed. With Creating Independence, managers show their faith to the ability of employees to. Employing such policies, encourage employees to participate in entrepreneurial activities.

Competitive aggressiveness is the company's tendency for strong and direct challenging of competitor to enter new areas and improvement of the its position which forces the organization to makes its activity practical in market ahead of the competitors (Lumpkin and Dess, 1996, p.140).

In an era when changes occur rapidly in various fields, a community that can use entrepreneurship to a knowledge-based economy will be pioneer (Wu et al, 2008). Entrepreneurs should create value creation chain with the conversion of knowledge to innovation that leads to wealth accumulation and employment of manpower, Hence, evaluation and use of intellectual capital in appropriate way could play an important role in enhancing the capabilities of Human resources and organizations tend to be entrepreneurial. Studies conducted show that having workers with top ability and high experience will help the organizations to create internal knowledge and gain external knowledge and leads to improve learning and innovation in organizations (Hsu and Fang, 2009).

Davenport and Prusak, suggested that investment in information technology field, promote organizations to gain external knowledge and helps organizations to increase their knowledge resources (Davenport and Prusak, 1998).

Thus, with the development of structural capital, companies can improve their entrepreneurial activities. The past research results also indicate that, capability of receiving market information and being awareness of customer needs make the company to be pioneer. With identifying the needs and demands of customers and competitors products can offer superior products to their customers (Hughes and Morgan, 2007).

Focusing on customers and competitors, as one of the main components of entrepreneurial orientation is the main key to be pioneer in leadership. Market orientation is one of the signs related to relational capital that indicates market intelligence in organizational level pertaining to the existing and future needs of customers, obtained data from customers and competitors with focusing on them and disseminated within the organization (Kohli and Jaworski, 1990).

This will lead to the promotion of entrepreneurial. On the whole it could be said that increase in the intellectual capital led to increase in knowledge resources, organization's readiness to

take appropriate decision under uncertainty, production of new products and development of entrepreneurial activities. Assumptions are presented below:

H_1: *human capital is correlated to entrepreneurship orientation.*
H_2: *structure capital is correlated to entrepreneurship orientation*.
H_3: *rathional capital is correlated to entrepreneurship orientation.*

Bullen and Hua (2002) quoted from Drucker (1985) explained that the world is entering to a knowledge society that the most important source of its economy is knowledge. In this economy, intellectual capital is the most important organization's assets and the potential success of the organization is rooted in their intellectual abilities. Intellectual capital significantly effects on success and value creation in organizations with identifying, developing and managing the intangible assets. In fact, companies in order to have a better understanding of the process of creating value and also have better performance, should go into the intellectual capital measurement and management (Ismail, 2005).

Since, these organizational capitals not reflected in the balance sheet and also have significant effects on the performance, profitability and innovation; they require attention and resources allocation (khavanadkar, 2008).

The long-term improvement of performance depends on how the real organizations' capital that is the combination of physical and intellectual capital be applied to meet the interests of stakeholders. Assumptions are presented below:

H_4: *Human capital is correlated to organizational performance*
H_5: *Structural capital is correlated to organizational performance*
H_6: *Rational capital is correlated to organizational performance*

Research conducted indicates that in today's business challenges, Entrepreneurship orientation is considered as an important organizational process that helps organizations to survive and function. Rapidly changing technologies and short cycle life products has forced companies to be innovative and develop new ideas, products and processes and take risks to cope with rapid changes. Increasing global and local competition has raised the needs of companies to have aggressive competition and being pioneer (Tajeddini, 2010)

In a competitive business environment, a more successful organizations are those that could identify opportunities and take advantage of them. Companies that have higher entrepreneurial orientation can shape their internal resources to improve their work performance. The last assumption is presented below:

H_7: *Entrepreneurial orientation is correlated to organizational performance.*

Based on what was discussed, the conceptual model that shows the relationship between dimensions of intellectual capital including human capital, structural capital and relational capital with entrepreneurial orientation and organizational performance is shown in Fig 1 is shown. In this figure, both direct and indirect effects of intellectual capital on organizational performance with the mediating effect of entrepreneurial orientation have been shown.

Finally, to assess organizational performance according to the sensitivity of corporate to share financial information and archives, and also considering widespread use of subjective

indicators of performance in similar studies, Hughes and Morgan model (2007) has been used. Organizational performance, including two dimensions: customer performance yield and Product yield. Customer performance includes: the rate of new customer acquisition, customer satisfaction of products and the company's efforts to preserve and maintain existing customers. Product yield also including the company's sales, market share and ability to participate in the new era.

Figure 1: Conceptual Model
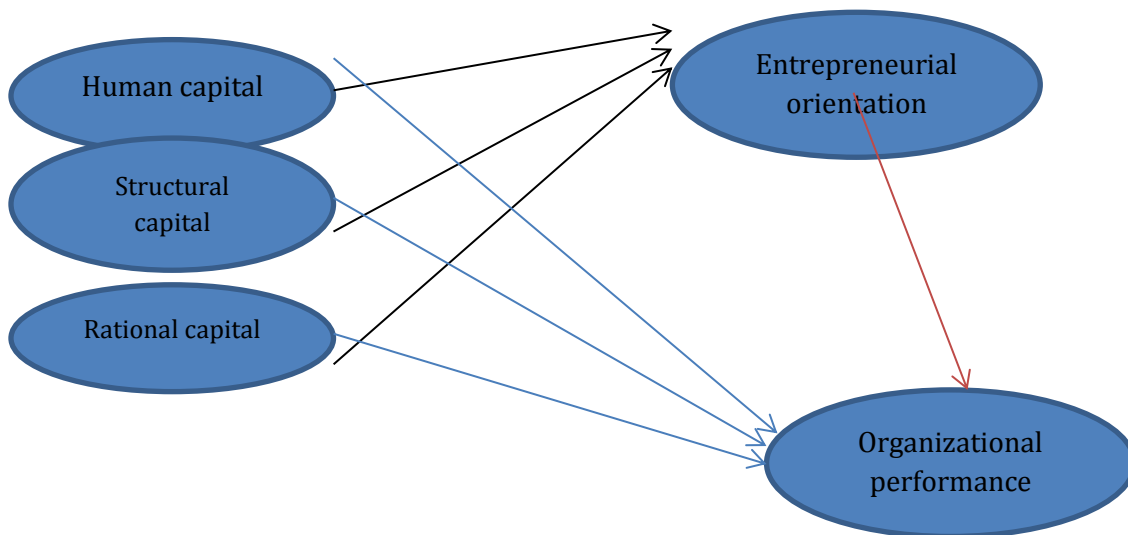
Many researchers in their research separately investigated the relationship between Intellectual capital, entrepreneurial orientation and organizational performance, but the research that is exactly the same to this study is not observed. In the table below, a summary of research conducted in Iran and other countries are mentioned.

3.0 Methodology

This study tries to determine the causal relationships between variables of intellectual capital, entrepreneurial orientation and organizational performance. Descriptive - correlational method is used to analyze the data. This research typically, is based on Structural Equation Model (SEM).

3.1 Population, Sample and Method of Sampling

In this study, 91 managers of Nanotechnology corporations (the approximate number of 422) were selected as a population. The minimum sample size for the study based on sampling from limited population formula with sampling error level of 0.05 is calculated as follows:

$$n = \frac{\frac{z^2 pq}{d^2}}{1 + \frac{1}{N}\left(\frac{z^2 pq}{d^2} - 1\right)} \qquad (1)$$

To achieve the desired number of sample, 255 questionnaires were distributed randomly and approximately 211 questionnaires were collected.

3.2 Reliability

To evaluate the reliability of the questionnaire, Cronbach's alpha test was used. As Table 2 shows, the reliability coefficient calculated for each Index is greater than 0.7.

Table 2: Cronbach's Alpha

Total alpha	Organizational performance	Entrepreneurial orientation	Intellectual capital	Rational capital	Structural capital	Human capital	Variables
53	6	20	27	9	9	9	Number of questions
0.917	0.823	0.870	0.856	0.847	0.846	0.833	Cronbach's alpha

3.3 Results

In table (3), individual and organizational characteristics of the sample survey are presented.

Table 3: Characteristics of the Sample

Percent	Frequency	Items	Characteristics
90.6	183	male	sex
9.4	19	female	
4.4	9	Diploma	
7.9	16	Degree	
34.1	69	Bachelor	Education
38.2	77	Master	
15.4	31	Ph.D.	
12.1	11	Under 4 years	
49.5	45	4 -8	
24.2	22	8 -12	History of activity
14.2	13	12 and higher	
19.8	18	Under 3	
40.6	37	3 - 5	
26.4	24	5 - 7	Number of products
13.2	12	Above 7	

With a look at the patterns of fitness indices measuring intellectual capital, organizational performance and entrepreneurial orientation in the bottom of the tables (4), (5) and (6), we find that all these patterns of fitness are acceptable. Also, the critical values of the coefficients are larger than 2, so all obtained coefficients are significant.

Table 4: Results of Intellectual Capital Measurement Model

(T-value) Critical Values	Coefficient	Observation Variables	Latent Variable
9.49	0.66	Competence of staff	
11.70	0.80	Staff innovation	Human capital
11.63	0.80	Staff satisfaction	
11.07	0.75	Organization culture	
11.68	0.78	Organizational process	Structural capital
11.22	0.76	Information technology	
12.09	0.81	Customer satisfaction and loyalty	
12.11	0.81	Relationships with business partners	Rational capital
10.16	0.69	Relationship With other groups and partners	

RMSEA=0.000. GFI=0.98. AGFI=0.96. NNFI=1.01. RMR=0.014. CFI=1.00

Table 5: Results of Organizational Performance Measurement Model

(T-value) Critical values	Coefficient	Observation Variables	Latent variable
10.78	0.70	Company's sales as compared to other businesses	
9.57	0.64	The company's share of the market for nanotechnology products in Iran.	Product performance
9.55	0.64	Company's ability to offer new products in comparison with other businesses	
9.30	0.63	Uptake of new customers per year	
8.67	0.59	Customer satisfaction of products	Customer performance
8.14	0.55	Trying to keep customers	

RMSEA=0.037, GFI=0.98, AGFI=0.96, NNFI=0.99, RMR=0.023, CFI=0.99

Path method can be considered as a tool for showing that which variables can trigger changes in other variables. Figure 2 shows the critical path method for testing the hypotheses. This diagram includes the relationships between variables that are forming the overall pattern of research and its hypotheses.

Fitting indexes of the conceptual model (RMSEA=0.036, GFI=0.93, CFI=0.98, AGFI=0.90, NNFI=0.98, RMR=0.017,) indicates a very high fitness of pattern. Table (8) shows the results obtained from test hypotheses about relationships between variables.

Table 6: Results of Entrepreneurial Orientation Measurement Model

(T-value) Critical values	Coefficient	Observation Variables	Latent Variable
5.53	0.44	Emphasis on identifying and exploring new needs of customers in the field of nanotechnology products	
7.49	0.59	Encouragement to work with new methods for tasks	
5.52	0.44	Support of employees new ideas of regardless of their job position	**Innovation**
5.28	0.42	Imitation of another corporation from the company's innovation	
9.04	0.75	Employee participation in important decision making leaders	
3.91	0.32	Freedom of employees to solve work problems	
5.64	0.45	Employees access to important information such as product information, sales	**autonomy**
5.02	0.41	Freedom of action to individuals or groups in presenting new ideas	
11.71	0.77	Investment in new markets	
8.41	0.59	managers tend to invest in venture projects	
9.75	0.67	Identify and exploit opportunities for delivering new products to reveal and conceal	**Risk taking**
8.15	0.58	Risk taking as a positive feature for the company	
9.85	0.66	Company efforts to remove competitors	**Competitive aggressiveness**
9.52	0.64	Welcoming the entry into markets with very low price to improve the competitive position	
9.48	0.64	Company's ability to compete with other businesses	
10.32	0.69	ر Efforts to improve the competitive position through the timely release of new products	
9.92	0.69	Efforts to introduce new products in the market for the first time	
7.75	0.56	Managers tend to be an excellent leader in providing ideas and new products	**Pro activeness**
6.71	0.49	Leadership in identifying new markets	
9.82	0.68	Application of new technology to be pioneer	

RMSEA=0.052, GFI=0.89, AGFI=0.86, NNFI=0.90, RMR=0.039, CFI=0.91

Figure 2: Final Model with Linear Structure - The Final Test of the Model
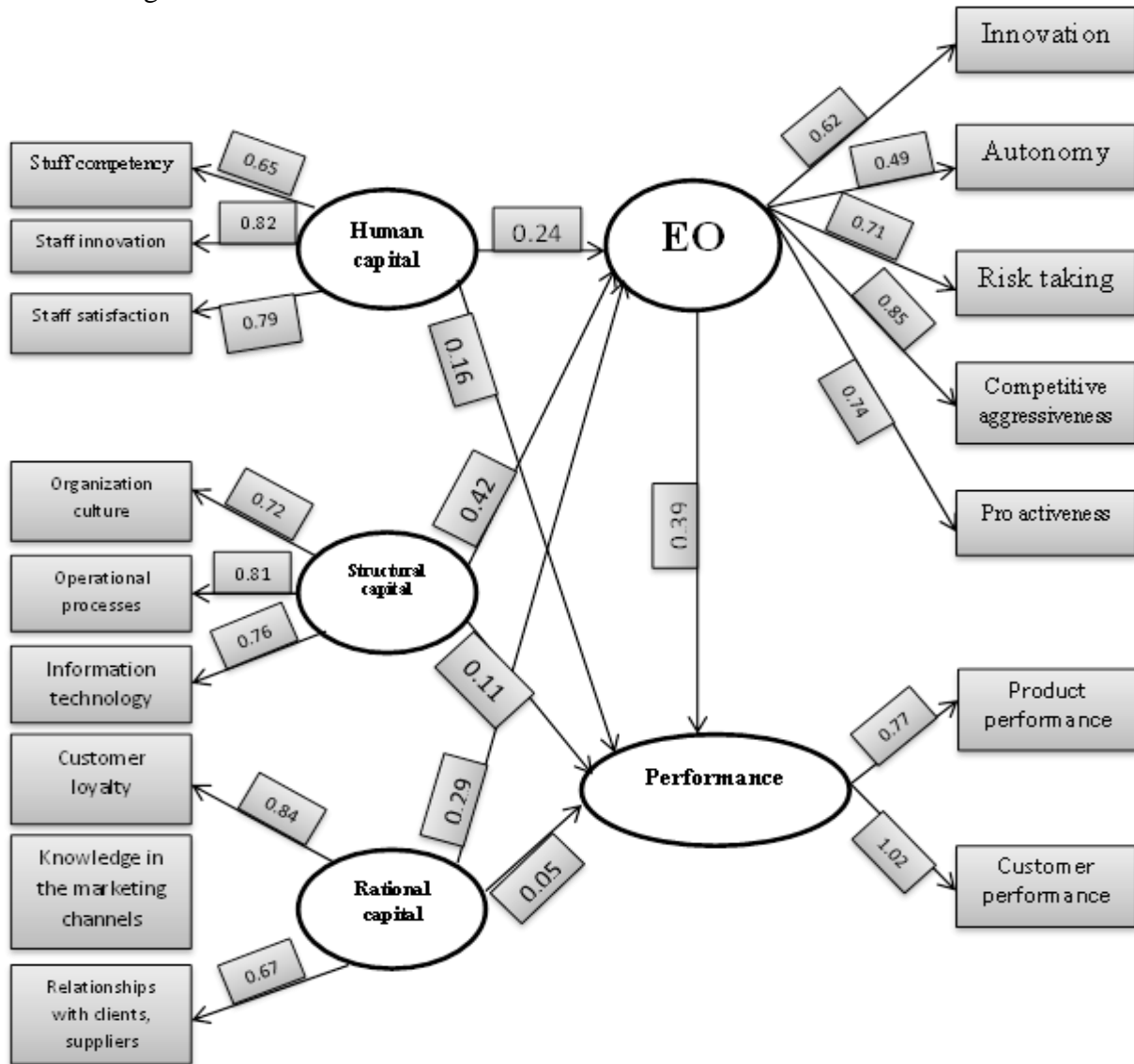
According to first, second and third hypothesizes, it was claimed that the constituent dimensions of intellectual capital affect entrepreneurial orientation. The results presented in Table 8 shows that, all aspects of intellectual capital (human capital, B=0.24، P<0.01), (structural capital, B=0.42، P<0.01), (rational capital, B=0.29، P<0.01) positively affect entrepreneurial orientation.

In the fourth to sixth hypothesis was also alleged that the constituent dimensions of intellectual capital affect organizational performance. The results presented in Table (8) shows that human capital is the strongest dimension of intellectual capital that directly and significantly affect organizational performance. So, the fourth hypothesis is confirmed. However, structural capital (B=0.11) and relation capital (B=0.05) have no significant effect on organizational performance. Thus, the fifth and sixth hypotheses are rejected. The results show that entrepreneurial orientation (B=0.39، P<0.01) significantly has an effect on organizational performance, so the seventh hypothesis was confirmed.

Table 8: The Results of Tests of Hypotheses

Condition	Hypothesis	(T-value)	Coefficient	Variable	Variable
accept	H1	3.07 **	0.24	entrepreneurial orientation	Human capital
accept	H4	2.11*	0.16	performance	
accept	H2	4.79**	0.42	entrepreneurial orientation	Structure capital
reject	H5	1.29	0.11	performance	
accept	H3	3.63**	0.29	entrepreneurial orientation	Rational capital
reject	H6	0.63	0.05	performance	
accept	H7	3.45**	0.39	performance	entrepreneurial orientation

Based on the results of the final model, the standard coefficient for the effect of human capital, structural capital and relational capital on entrepreneurial orientation respectively are (B=0.42، P<0.01), (B=0.42، P<0.01) and (B=0.29، P<0.01), also entrepreneurial orientation affects organizational performance. Therefore, it can be said that human capital, structural capital and relational capital, respectively, with path coefficients (B=0.11, 0.16, 0.09) indirectly have an effect on organizational performance. These findings show that entrepreneurial orientation between dimensions of intellectual capital and organizational performance, acts as a mediating variable.

4.0 Discussion

The results shows that each of the elements of intellectual capital includes human capital, structural capital and relational capital has positive and significant impact on entrepreneurial orientation. It means, paying attention to intellectual capital, increases Competencies and capabilities of human resources, acquiring new knowledge, learning and innovation in the organization. This in turn led to the promotion of entrepreneurial activities in organizations and in comparison with other organizations will create sustainable organizational advantage. The results showed that among the constituent dimensions of intellectual capital, human capital has the only direct significant impact on organizational performance.

Therefore, businesses in the community survey, with more investment in human capital as one of the most important sources of recreating the organization, would have staffs with high capabilities and competencies and this eventually led to the development of the organizational performance.

The results from the final linear structural model confirm relations between entrepreneurial orientation and organizational performance. In other words, with more attention to entrepreneurial orientation, organizational performance will improve considerably. The final linear structural model confirms the role of entrepreneurial orientation on moderating Relationship between intellectual capital and organizational performance.

5.0 Suggestions

According to the results of this study in order to develop intellectual capital and entrepreneurial orientation, four suggestions can be proposed:

a)   For strengthening each component of human capital (competency, innovation and employee satisfaction) the following suggestions are presented: Continuous measurement of the level of staff competence includes knowledge, skills and their abilities, handling top ideas festival for using them to participate in the operational process, creating thinking centers for development of ideas and ideational thinking about new activities.

b)   To strength each component of structural capital (organizational culture, organizational processes and information technology), The following suggestions are offered: holding the short and long term training teamwork and encourage employees and managers to perform activities as a group and working effectively with other, efforts to create a supportive culture through designing reward and incentive systems to reinforce innovation and human resources, Re-engineering processes to improve process characteristics (cost, time, quality, etc.) in order to increase value for customers, using information systems in order to simplify access to information and development of computer networks to communicate with customers and other companies.

c)   To amplify each component of rational capital (satisfaction and customer loyalty, relationship with business partners, and partners with other groups) the following suggestions are presented: Communicating with customers and continuously informed of their satisfaction, with creating the customer management system, increasing the presentation in domestic and international scientific conferences related to the activity areas in order to exchange information with experts and reputable company.

d)   For the growth of entrepreneurial orientation, the following suggestions are offered: Designing risky projects and financial support of this project and holding ideational skills training workshops, Investment on market research and marketing and research and development and identify opportunities for creating new ideas.

6.0 Recommendation for Further Studies

- Implementation of similar research projects in the area of business and service industries can play complementary role for this study.
- Since, in this study, a questionnaire was used for data collection, it is recommended to other researchers to use interviews and other data collection methods in order to achieve reliable results.
- Because data were collected in a short period of time, other researchers are recommended to study in a longer review period and compare the results.

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Organizational Culture, Socialization and Knowledge Sharing:
A Study of Public Organizations in Brunei

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Abstract

The aim of this paper is to develop a conceptual model on 'knowledge sharing' and to apply it to study the organizational culture, socialization and knowledge sharing in selected government organizations in Brunei. Several scholarsattempted to perceive knowledge as a critical component for organizations to get a competitive advantage for organizational growth as well as policy development and implementation. A review of current knowledge management literature has been carried out to search for this knowledge sharing model. The authors have also looked at a range of academic writings on organizational culture and organizational socialization vis-à-vis knowledge sharing. Based on the proposed model, currently an extensive survey amongst senior and mid-level civil servants in Brunei is underway. Following this empirical investigation, the study will analyze the relationship between knowledge sharing and the two above organizational contexts (i.e. organizational culture and socialization) in the civil service setting of Brunei. It will be interesting to see the variation between organizationson the extent of this relationship and the outcome towards policy construction and idea generation.

Keywords: Knowledge sharing, organizational culture, organizational socialization.

1.0 Introduction

Knowledge is emphasized as one of the most important drivers of the economy today. Since organizational knowledge is continuously generated throughout an organization, and the firms must ensure that knowledge is managed in the most effective manner (Sandhu, Jain and Ahmad, 2011). Nonaka (1994) described that knowledge can be defined as justified true beliefs, and can reside in individuals as well as collectively in the organization; during the process of implementing new knowledge, individuals' and the organization's beliefs systems would undergo some changes that require shifts in individuals' thinking and behavior (Rusly, Corner and Sun, 2012). The management guru Peter Drucker also acknowledged knowledge as an important economic resource in an organization (Drucker, 1995). According to the resource-based view, firms can maintain and achieve sustainable competitive advantage and earn superior profits if it owns and controls its tangible and intangible assets (Sandhu, Jain and bte Ahmad, 2011; Wernerfelt, 1984, 1995). As substantial investment in resources, e.g. technology and infrastructure does not always guarantee successful Knowledge Management (KM); rather, it is claimed that the main pillar of achievement rests on employees' willingness and commitment to participate in the initiatives (Rusly, Corner and Sun, 2012; Lin, 2011; Wasko and Faraj, 2005). Burke, (2011) claimed that one of the critical resources for organizations is the need of information, since the information is required in order to make

good quality decisions, which assist with the management of the organization and thus can increase overall productivity and profit. Kumpe and Bolwjin, (1994) suggest that this strategic reorientation with importance put on innovativeness and uniqueness, requires organizations to constantly offer new services and this task is impossible to accomplish without sharing necessary knowledge among different functions of an organization (Islam, Ahmed, Hasan and Ahmed, 2011). In this regard, organizational culture plays an influential role to facilitate sharing of knowledge in an organization; past studies of Islam, Ahmed, Hasan and Ahmed (2011); Issa and Hadda (2008); Al-Alawi et al. (2007); have also shown that cultural elements are related to successful knowledge sharing in developed, developing and underdeveloped countries. Sandhu et al. (2011) argued another consequential issue in their study that most of the literature revealed on KS behavior is focused on private organizations, e.g. Lin and Lee (2004); Yang (2007) and Ling et al. (2009) etc. with the probable fact of the non-profit nature of public sector firms and therefore, there is no motivation to examine this issue. Where Horton, (2003) found that, public sector has gone through rapid transformation from a traditional bureaucratic system to encourage greater autonomy and public sector employees are also now more empowered. Willem and Buelens, (2007) commented on this fact and found that public sector firms are known as knowledge-based organizations, since they consider knowledge is their most vital asset in the development and provision of knowledge services and should be the focal unit of analysis in KM and KS research (Sandhu, et al., 2011). Therefore, knowledge can be considered as a central resource for the government services and effective knowledge sharing between employees could be a noteworthy challenge for public service organizations in providing excellent government services. This study develops a conceptual model for Bruneian government organizations in respect of policy development and implementation, considering issues need to be addressed as a map for the development of their knowledge sharing behavior.

2.0 Literature Review

2.1 Knowledge Sharing

Davenport and Prusak, (1998) define "Knowledge is a fluid mix of framed experiences, values, contextual information, and expert insight that provide a framework for evaluating and incorporating new experiences and information" (Islam, et al., 2011). Knowledge can be classified into tacit and explicit (Nonaka, 1994). Explicit knowledge is formal, systematic and can be codified into records, databases; on the other hand tacit knowledge is defined as knowledge that is personal, intangible and embedded in the cognitive minds of people and is obtained through learning and experience (Sandhu, et al., 2011; Polanyi, 1966, 1998). Frey and Oberholzer-Gee, (1997) and Nahapiet and Ghoshal, (1998) described knowledge sharing is a key process in translating individual learning into organizational capability (Lam and Lambermont-Ford, 2010). Since the capability to learn, or the ability to create and applying new knowledge, is considered as one of the main sources of sustainable competitive advantage (Islam, Low and Hasan, 2011; Martin-de-Castro, Lo´pez-Sa´ez and Navas-Lo´pez, 2008; Nonaka, 1991). But facilitating knowledge sharing is a difficult task: the willingness of individual to share and integrate their knowledge is one of the central barriers (Lam and Lambermont-Ford, 2010). Liebowitz and Chen (2003) argued that knowledge sharing in the public sector is difficult because most people view knowledge as closely coupled with power, and related to their promotion prospects (Seba, et al., 2012). Chiem (2001) pointed out another fact that rewards for knowledge sharing between the private and public sectors and the negative effect that bureaucracy has on knowledge sharing in the public sector. Bureaucratic organizational cultures tend to mean that employees in the public sector often

see knowledge management (KM) as a management responsibility and not necessarily something for which every employee should take some responsibility (Seba, et al., 2012). Therefore, the authors of the present study are not only interested in the knowledge sharing process, but also knowledge sharing model that is facilitated by trust among the functional or departmental members, open communication between employees, reward system, learning and development and socialization; this paper considers the knowledge sharing model as the conceptual frame for public organizations in Brunei for both part of policy development and implementation.

2.2 Organizational Culture

Organizational culture can be defined as the shared, basic assumptions that an organization learnt while coping with the environment and solving problems of external adaptation and internal integration that are taught to new employees as the correct way to solve those problems (Islam, et al., 2011; Park, Ribiere and Schulte, 2004). Deshpande and Farley, 1999 defined organisational culture involves as a set of beliefs, values, and behavior patterns shaping the members' behavior and building the core identity of organizations (Tuan, 2012) and also builds a sense of identity in employees, providing unwritten guidelines on how to behave (Holbeche, 2006). The idea of organizational culture was identified as one of the main aspects of the organizational behavior, useful to understand how organizations work (Bigliardi, Dormio, Galati and Schiuma, 2012; Kristof, 1996) and how well a worker fits into a particular organization (Bigliardi, et al., 2012; O'Reilly, 1989). A positive organizational culture strengthens the fundamental beliefs and the behavior that a leader appreciates, weakening values and actions that the leader does not consider right for the company (Bigliardi*et al.,* 2012). According to De Long and Fahey, (2000) and Hofstede, (1991) culture is composed of two main components, the internal values of culture (invisible) and external components of culture (visible) or practices, which are the most direct means for transforming behaviors required to advocate knowledge creation, sharing, acquisition, and use (Tuan, 2012). Al-Alawi, et al. (2007) found that cultural elements such as trust between co-workers, communication, reward system, and organizational structure are positively related to knowledge sharing in organizations (Islam *et al*., 2011). Hurley and Hult (1998) proposed that learning and development, support and collaboration, power sharing and participative decision making affects organizational innovativeness. Although there are various characteristics of culture that affect knowledge sharing, this study focuses on four characteristics: trust, communication between employees, reward and Learning & Development.

2.3 Organizational Socialization

Nonaka(1994); Nonaka and Takeuchi (1995) defined socialization (from tacit to tacit) as a process of sharing experience (ways of thinking or technical gestures) and creating knowledge as a group. It involves sharing the tacit knowledge and experience possessed by individuals with other group members through practical exercise and physical proximity (Ramírez, Morales and Aranda, 2012). According to Brim and Wheeler, (1966), organizational socialization is the process by which a person acquires and shares the knowledge, skills and dispositions that make him or her capable member of the organization (Islam, Low and Rahman, 2012). Organizational socialization plays a vital role in the development of employee's affective and behavioral outcomes when a new employee joins a company, his or her immediate task is to understand the setting of the work environment and (s) he then comes to the terms with its demand (Islam, et al., 2012). Socialization can also enhance flexibility of

distribution of information through continuous interaction between the firm and its customers, providers and workers (Nonaka, 1994), sharing knowledge and experiences of clients, products and the market that are integrated in processes and assets of the company (Ramírez, et al., 2012; de Boer, et al., 1999). Social interaction enables the sharing of skills and the establishment of mutual understanding between the members and outsiders (Islam, et al., 2012). Since the knowledge sharing is a social exchange process between individuals to individuals, individuals to organizations, and organizations to organizations. Therefore, social exchange theory is an appropriate underlying theoretical framework for this research, as it explains the knowledge sharing process for the organization through the socialization process (Islam, Ahmad and Mahtab, 2010). Therefore, this study includes socialization as mediating variable between the organizational culture and knowledge.

3.0 Research Model

Based on the above literal construct this study aims to develop a knowledge sharing model including organizational cultural elements (Trust, Communication between employees, Reward and learning & development) and knowledge sharing with socialization as a mediator. Figure 1 shows the conceptual model of this research:

Figure 1: Research Model

Cultural Elements
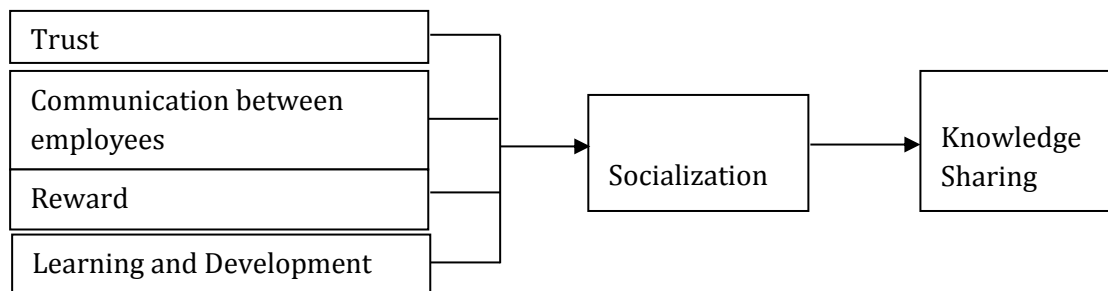
4.0 Research Methodology

The research methodology is based on literature review and questionnaire survey. The research strategy adopted in this study was deductive in nature. Literature review on orgnizational culture, socilization and knowledge sharing has been undertaken extensively. Based on this, a theoretical framework has been developed as a conceptual construct to lead to the empirical research in Brunei. The hypothesis will be deduced and will be tested through findings from the ongoing survey amongst the senior or mid-level civil servants in Brunei.

5.0 Study Context in Brunei

Brunei is a small sultanate situated on the north coast of Borneo, surrounded on its landward side by the East Malaysian state of Sarawak. Its population of 380, 000 is mainly composed of Malays (about 66%), with Chinese, indigenous groups, and a large expatriate population (in both professional and low skilled occupations) comprising the rest. The small population of Brunei enjoys a high standard of living, with a GDP per head of US$28,700 (purchasing power parity), the fourth highest in Asia and slightly below that of Singapore. This affluence is largely due to Brunei's large reserves of oil and gas relative to its population size. Brunei has a mixed economy, with the state actively promoting economic development through state-owned enterprises and public-private partnerships. In addition, the high standard of living of

the population is buttressed through an extensive system of state social provision. Due to the revenues from oil and gas, taxation remains low, the most notable feature of which is the exemption of income earners from personal income tax.

Although its population is affluent, Brunei has maintained a traditional ascriptive culture rooted in the predominant Malay society. Central to this are fine gradations of status based on customary titles and positions at the apex of which is the institution of the monarchy. Brunei has also retained a strong village culture based on close kinship ties, personal bonds and customary deference. At the heart of such traditions is a strong attachment to Islamic values and practices, with widespread observance amongst the Malay community of attendant obligations of worship, fasting, and pilgrimage.

5.1 System of Government

The system of government in Brunei is monarchal, as indicated above. Executive power resides in the Sultan who is supported by a Council of Ministers or cabinet. To reinforce his executive authority, the Sultan is Prime Minister (as well as Minister for Finance and Minister for Defense) and so has overall responsibility for the affairs of state. Day to day executive power and policy making are exercised by ministers in their different portfolios (Othman, 2002). The main institution of government administration is the civil service which consists of 13 ministries, employing just over 43, 800 people (an increase of just under 10% since 2000) (IMF, 2008a:18). Annual recruitment increased from 1,332 persons in 2002 to 3,865 in 2005, falling back slightly to 3, 137 in 2007 (Syohreni, 2008, quoted in Jones, 2009). Ministries are sub-divided into departments and directorates, which number more than 90. In a few cases, ministries are first sub-divided into divisions which are then sub-divided into departments (BR, 2008, quoted in Jones, 2009).

5.2 Knowledge Sharing in Brunei Public Organizations

The concept of knowledge sharing is somewhat new in the Brunei public organizational environment. However, in its business with private sector, the government has been promoting the value of knowledge sharing. The Sultan, in his policy speeches, highlights its significance http://www.bruneiresources.com/bruneispeeches.html. Some of the government's recent initiatives in public sector capacity building through eGovernment Innovation Centre (based in the Universiti Brunei Darussalam) and Executive Development Programme for civil servants are the credible examples of how the civil servants are exchanging knowledge with global, regional and local resources and knowledge-hubs such as KAIST in South Korea (collaborating with eGovernment Innovation Centre). Likewise, the School Leadership Programme and the Executive Development Programme for civil servants, delivered through the Universiti Brunei Darussalam-based Institute of Leadership, Innovation and Advancement (ILIA), are learning and sharing knowledge and skills from the internationally-known eminent scholars. However, the sharing of knowledge within the ministries and departments is rather low. The ongoing empirical survey will reveal more findings on this.

6.0 Conclusion and Implication

Selected public organizations in Brunei are currently being surveyed with a structured questionnaire elaborating the topical framework. The survey findings and research results will be incorporated into the paper later in its second version. This conference paper is primarily focused on the literature review and theoretical framework of the research project.

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The Influence of Culture in the Internationalization of Small Medium Enterprises in Malaysia

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Abstract

SME development plays a pivotal role in a country's economy. The dependency on SMEs for the growth of a nation is proven without doubt. Internationalization of SMEs is one of the measures to see expansion of SMEs. This paper is meant for identifying the importance of culture in internationalization of SMEs in the Malaysian context. Government and private institutions has placed many medium and support for SMEs in Malaysia in order to further their expansion internationally but the success story of these SMEs going international is rarely heard. The first part of this paper discusses the importance of SMEs in an economy and compares the internationalization of Malaysian SMEs with their Asian counterparts. The second part of the paper illustrates the factors involved for a SME s to successfully internationalize their operation. The third part of the paper highlights the influence of corporate culture on organizational management therefore suggesting the usage of culture as a lens through which we can use to view the reason on why Malaysian SMEs do not venture into foreign markets.

Keywords: Small Medium Enterprises, internationalization, culture

1.0 Small Medium Enterprises: An Introduction

Small Medium Enterprises (SMEs) are businesses that are smaller in size usually owned by individuals, friends or family members. Just like any other form of businesses, SMEs are also quantified into categories which are set by the government for clearer classification. Across the globe there are different variations on how to classify an SME. The usual method of classifying SMEs are based on the number employee and sales turnover level it possesses. Using the said classification method, SMEs in Malaysia are categorised into three levels which are micro enterprises, small enterprises and medium enterprises (SMECORP, 2010). The definition of SME is further categorised as: (1) Manufacturing, Manufacturing-Related Services and Agro-based industries and (2) Services, Primary Agriculture and Information & Communication Technology (ICT) (SMECORP, 2010).

According to SMECORP (2010), for any organisation to be qualified as an SME, principally it needs to be a profit making organisation which has sales turnover of less than RM25 million or has less than 150 full time employees for the category one (1), and sales turnover of less

than RM5 million or has less than 50 full time employees for category (2). Majority of these businesses are in form of sole proprietorship or partnership.

Based on the classification, we could see that the number of SMEs overshadows the number large corporations in the majority of countries around the world. This highlights the importance of SMEs to the economy of world countries, especially to the developing ones. SMEs' contribution to a country is not limited to reduction in its unemployment rate, growth in its gross domestic product (GDP), development of its industries and the introduction of new industries in the said country. These are the importance of SMEs in sustaining a stable economy.

It is noted that SMEs attained astonishing growth around the globe in recent years. Any advanced economies are found to have SMEs as a core contributor to its GDP. Based on SME Corp Malaysia's data, 98% of businesses in an advanced economy are SMEs which contributes a minimum of 65% of employment for its labor market as well as over 50% of the gross domestic product (SME Corporation Malaysia, 2011). Malaysia SMEs growth rate has outperformed the national GDP from the year 2004 until 2010 (National SME Development Council, 2011). This achievement is predicted to continue on to the near future. The dependency on SMEs growth is apparel to the general economy conditions in Malaysia. 59.5% of the total employment is contributed by SMEs in the economy in the year 2010 (National SME Development Council, 2011). This just concludes the SMEs importance in Malaysian government economic objectives. Therefore to increase Malaysian economy growth level a SMEs should also grow not only number but in size and operations.

The clearest indication of SMEs growth in a country would be the number of the SMEs pursuing to international operations. Internationalization of an SME indicates the business pursuing increase in sales turnover and has possibly reached market saturation and looking for further opportunities. Therefore it is safe to say that the growth of internationalization of SMEs would be acceptable measure of general SMEs growth. The first part of this research paper is looking to the general growth of SMEs across the globe.

2.0 The Growth of Internationalization of SMEs

SMEs could go international through various ways such as exporting, joint venture, licensing, franchising, acquisition or even Greenfield investments. Going international would mean the business is growing in output which leads to higher degree of profitability and growth in contribution to the national economy.

Figure 1: SMEs Going International
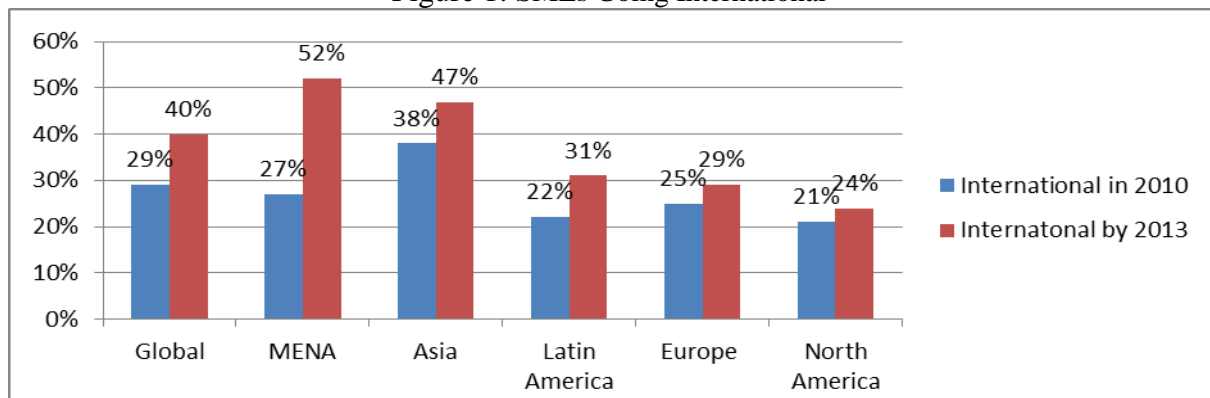
Research findings show the number of SMEs across the globe conducting international business activities is expected to expand from 29 per cent to 40 per cent by 2013 (SME & Entreprenuer Magazine, 2011). Figure 1 clearly demonstrates the 2010 data and the projected percentage of internationalization of SMEs. The highest growth is expected to be from SMEs in the Middle East and North Africa (MENA) followed by Asia and Latin America. This explains the need for Malaysia to compete along with other Asian nations to achieve the 47% of SMEs going international. An issue arises here concerning Malaysian SMEs competitiveness to with other Asian countries to achieve forecasted level. Table 2 is the summary of finding that enables us to highlight the competitiveness of SMEs.

Figure 2: Comparison of Asian and Malaysian SMEs Going International
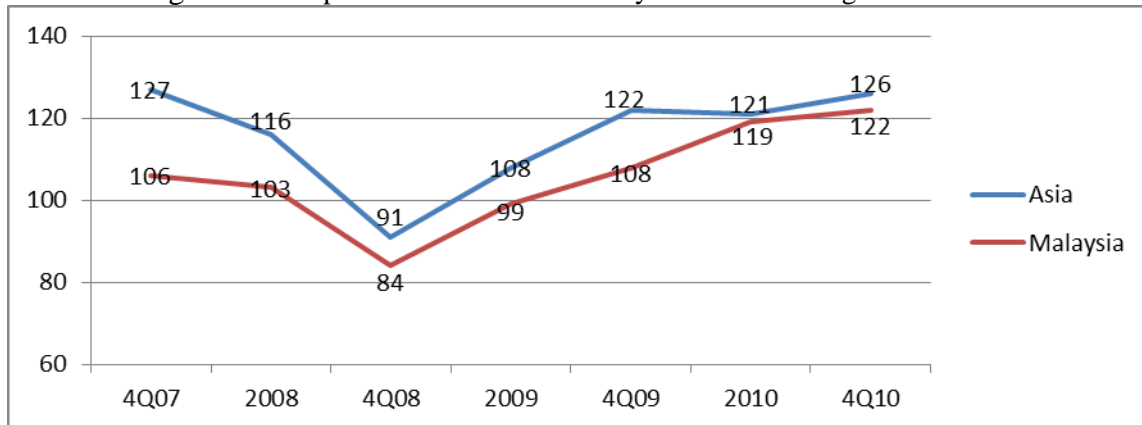
Based on Figure 2, we could highlight a fact that the Malaysian SMEs could not outperform Asian average in term of numbers of SMEs going international from the fourth quarter of 2007 till the fourth quarter of 2010. There are still millions of SMEs available in Malaysia today which are not enhancing their business model to an international capacity. Most seems stagnate after a certain period growth. Studies do also reveal that there are already 42% SMEs has involved in international business activity one way or another in the first quarter of 2011 (SME & Entreprenuer Magazine, 2011). While comparing the figures with Malaysia and the rest of Asia, Malaysian SMEs going international is consistently lower than the moving average of Asia from the year 2007 until 2010 (SME & Entreprenuer Magazine, 2011).

However, we do see some hesitation among local SMEs to explore the international arena. Therefore a question arises why the success story of millions of SMEs venturing into international market is not replicated for all SMEs. In a recent study puts Malaysia in fourth place in a comparative study with 144 countries for a government providing supporting attributes to businesses in its country (World Economic Forum, 2012).

According to Nik Abdullah and Mohd. Zain (2011), the probable reason on why Malaysian SMEs do not internationalize are lacking in experience, risk & uncertainty of foreign operations, cultural & language differences, difficulties in getting new customers & network, and difficulties & uncertainty of making profits. This brings up a question to underline reasons for many Malaysian SMEs not venturing into a foreign market has to be addressed. The next area of this paper would be a brief discussion on the qualities that is required by SMEs entrepreneur for a successful internationalizations implementation. It is critical to understand the qualities of the entrepreneur are the most important factor for the success of a business.

In a study conducted by Entrialgo, Fernandez and Vazquez (2000), the identification of the differences between an entrepreneur and common manager comes down to the ability to absorb uncertainty and risk taking attribute. This attribute would link on to other important attributes to an entrepreneurship such as the ability to have innovation to seek new opportunities followed by proactiveness on being initiative, anticipating and carrying out new opportunities, and creating or participating in emerging markets.

Other attributes such as being a visionary and flexibility to carry out an opportunist expansion of the business are also included. Influence on variables of the organisation and strategy which includes control, planning, and competitive advantage is also considered a major factor that an entrepreneur should possess. This includes understanding foreign operations, adapting to cultural & language differences, spending substantial time getting new customers & network.

The qualities that are identified above could be argued coming from the cultural value possessed by an entrepreneur. This brings is us to the underlining reasons of this paper which is to identify extend of culture playing a role in the success factor in Malaysian SMEs internationalizing.

3.0 The Relationship between Culture and Behavior

Culture is a system that is organized into a variety of components, including economic, political, religious, and social with each of these components having an organization (Sutton and Anderson, 2010). The better we understand the organizations behind such aspects, the better we can understand the aspects themselves (Sutton and Anderson, 2010). According to Haniffa and Cooke (2002), cultural factors are important because the traditions of a nation are instilled in its people and might help explain why things are as they are.

Malaysians are people from varied ethnic and cultural background. These cultural identities and beliefs can influence the corporate cultures which are employed by Malaysian organizations, including SMEs. Cultural values are one of the lens through which we can look to understand on why some local Malaysian SMEs are not venturing into international market.

In an empirical study done on FinInst, a leading financial institution in Malaysia, researchers found that there are a number of cultural variables that impact on the behaviors of individuals and influence interactions in the workplace (Singh et al., 2008). Alhabshi (1994) who supported the notion that culture and belief does influence the work said that managers in general perform the same functions but the way they do it could be different because it may be affected by 'one's own tradition, history, value, beliefs and culture (as cited in Haniffa, 2002). Likewise, according to Chowdhury, (2006), Malaysians have the tendency to resist change, and to avoid taking responsibility for learning new things (as cited in Singh et al., 2008). Similarly, in a study done to explore the cultural dimensions among Malaysian employees of a multinational organization, Dahlia (2008) found that new patterns in terms of the choices and the believed implications of these cultural values seemed to occur among community members. For example, the success for the Malays is measured not only by the acquisition of material gain or power obtained, but also takes into account relationships with other people. Therefore the researcher through her study emphasized the importance of understanding these cultural values for organizations as organizational activities conducted in accordance to these understanding would ensure success (Dahlia, 2008).These attributes may

keep Malaysian SMEs at the comfort of their homeland instead of venturing into foreign countries.

Another study called the World value survey (WVs) which was conducted in the year 2006 national-level mean score on Traditional vs. Secular-rational values in Malaysia was -0.73 and in Survival vs. Self-expression values was 0.09 in 2006. WVSs were designed to measure all major areas of human concern, from religion to politics to politics and social life. The explanation of societies near the traditional pole emphasize the importance of parent-child ties and deference to authority, along with absolute standards and traditional family values, and reject divorce, abortion, euthanasia, and suicide. These societies have high levels of national pride, and a nationalistic outlook. Societies with secular-rational values have the opposite preferences on all of these topics.

The second major dimension of cross-cultural variation is linked with the transition from industrial society to post-industrial societies, which brings a polarization between Survival and Self-¬expression values. The unprecedented wealth that has accumulated in advanced societies during the past generation means that an unprecedented share of the population has grown up taking survival for granted. Thus, priorities have shifted from an emphasis on economic and physical security above all, toward increasing emphasis on subjective well-being, self-expression and the quality of life.

From the understanding of WVs, Malaysia is a society which traditional values are more important than secular-rational values. These values are emphasize on religiosity and patriotism, respect to authority, teach obedience and emphasize on traditional familism. In addition, Malaysians values are slightly beyond the survival values. In this country civil and political freedom and public expression emphasized and practiced, nonconformity is tolerated; self-direction feeling and trust in other people are strong. The explanation of societies near the traditional pole emphasize the importance of parent-child ties and deference to authority, along with absolute standards and traditional family values, and reject divorce, abortion, euthanasia, and suicide. These societies have high levels of national pride, and a nationalistic outlook. Societies with secular-rational values have the opposite preferences on all of these topics. (See Figure 3)

Figure 3: The World Value Survey Cultural Map 2005-2008
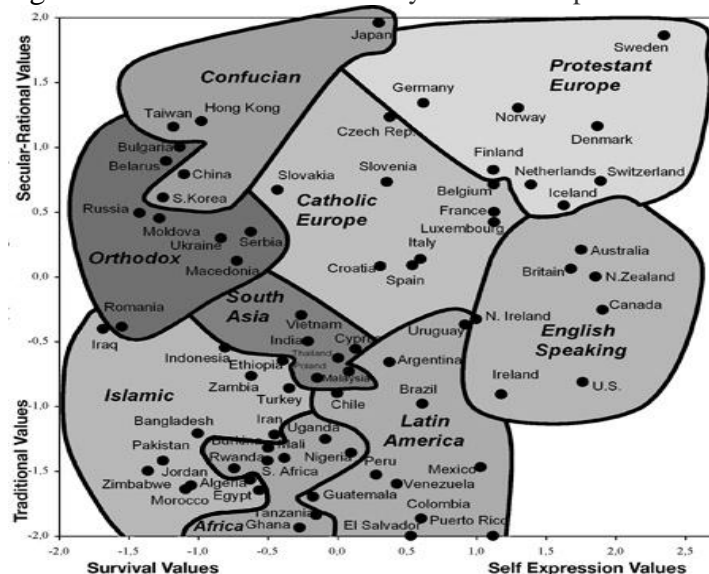
Based on the understanding gained from the research conducted on Malaysia cultural values, it is clear that culture clearly influences the entrepreneur in terms of managerial attributes and SMEs culture. These are some identification established from the understanding. Malaysian entrepreneur are prone to establish a value network before establishing an international business connection. They intend to take a longer time to make decision requires substantial disclosures from foreign counterparts before making business decisions unlike entrepreneur from self-expressive countries. As a high context culture where Malaysia meaning is often more explicit and less direct compared to other westernized culture. This means that words are less important and greater attention must be given to additional forms of communication such as voice tone, body language, eye-contact and facial expressions. Based on this understanding, entrepreneur in Malaysia require physical understanding and contact before establishing a network which explains the inability to make decisions communicated through information technology such as social media, e-mails, phone calls.

Business operation in Malaysia is very personal and based on trust, it is concentrating in developing relationships rather than exchanging facts and information is the main objective of communication. This also relates to the Malaysia's cultural values of courtesy, tolerance and harmony. This aspect would enable entrepreneurs in Malaysia to look into avoiding controversy which likely would be concentrating in preventing disagreement and preserve harmony among their international counterpart. From this understanding, Malaysian entrepreneur are likely not to act aggressively to get their SME to go internationalization because it may cause disagreement with their already established network. They are likely to walk away from internationalizing procedure when the negotiation is not in their favor instead of stressing for a better a terms. Therefore this behavior stagnates the growth of the SME. This proof there is a clear connection between the cultural values and internationalization of SMEs.

4.0 Conclusion

As discussed in the paper, an entrepreneurs' likeliness to be successful is clearly influenced by the cultural nature of the person. Since the entrepreneur would be the driving force of a business hence this proves culture has an important role to play in a successful internationalization of SMEs. Culture influences how the business operates in terms of its management, operational and negotiational methods therefore it will play a role in its success. Further studies should be conducted in this area for SME entrepreneur to recognize the importance and the attributes that is required for a successful internationalization implementation of its business. Saying that it is understood this is an idea paper which requires further substantial research on the force called culture influencing the internationalization growth of SMEs. Other areas of cultural parity internationalization also exist.

This paper is not denying the importance of other factors such as financial capabilities, managerial skills and the scarcity of resources to play a role in the success but merely highlighting the importance of culture, which is still understudied in the growth any SMEs which would set up the framework for the future of any economy.

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Psychoticism Personality of Leader and Self-Esteem of Employee through the Perspective of Understanding of Emotions in Organization

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Abstract

This paper is focused on the critical discussion of the personality traits of psychoticism among leaders and their impact on self-esteem of employees in the workplace through the perspective of one type of emotional intelligence such as understanding the emotions. It is also in the relationship between the leader personality elements with the human governance at the workplace and in organizations today. This discussion encompasses the conceptual of psychoticism personality, self-esteem and understanding emotions; background; purpose of study; challenges and outlook. Every employee in any organization is a human entity that should be the ideal capacity of human capital in order to produce the high quality of work and high of emotional stabilization. Inadequacies in the context of the leader personalities in the workplace which is more on psychoticism trait based of personality theory by Hans J. Eysenck, would be effect the existence of emotional instability which is not only for the leader but also on behalf of employees. There are needs to leaders in the workplace have a dynamic personality and excellent in governing people and better able to influence the emotional stability and self-esteem among employees to more motivate them in realizing the aspirations of the organization. The ability of leaders to have stable trait psychoticism not only provides many benefits to the self-esteem of employees, but also helps to calm their selves and employee emotions, and then they can work together with more happiness and peace.

Keywords: Psychoticism, personality, self-esteem, understanding emotions

1.0 Background

Construction of a nation would have no meaning without the function and role of men as citizens to move the process of governance, administration, management, operation and control. The statement on the meaning of a country would not be complete without the combination of the functions of the elements of society and humanity. For a developed nation, it should be in line with the development of human capital in each of its citizens. Supposedly, determining factors of human capital is the main emphasis on knowledge and expertise among the people for creating a developed nation. Clearly, here, human capital or human resources are the most important entity in the organization compared with other sources that involve equipment, materials or procedures. As human beings, too, the human capital of first class is the main driver of the organization and determines success or failure of each vision and the mission of each organization. Human capital is the main man against the backdrop of diverse attitudes and behaviours that are centred on elements of cognitive (mind), affective (feeling) and psychomotor (physical). Along it, in the process of forming the personality, attitude and mentality, people are more heavily influenced by the belief system as a result of the sustained momentum of socialization experiences during her life since childhood. But at the same time, knowledge and expertise and the value entity of the factors are relevant to the variation in the determination of human attitudes and actions in the implementation of the treatment of personal responsibility, families, organizations, communities, religions, races and countries. In a similar vein, the human capital management should be in line with emotional

and spiritual dimensions which is face of noble values and personality, nor translated into positive behaviour (Siti Sarawati, et al., 2011).

In reality, the responsibility for managing human capital and the organization is not a relatively simple matter, especially if it is a multinational organization. The question would then arise whether a manager or a leader worthy to be a model in an effort to strengthening human capital through the trait of dynamic personality. Availability of many issues today have showed the existence of bias in the attitude of a leader of an organization that causes many problems exist between the leaders and the workers which is led to conflicts with the prolonged crisis that could eventually threaten the common aspirations. Thus, in this paper, the authors will highlight the discussion of the dimensions of psychoticism personality among leaders and the impact towards self-esteem employees through several elements in the emotional intelligence aspect. Stable personality in a person who assumed the leader to give a significant impact on the level of self-esteem workers also will affect the climate and working environment for the production of quality work that is more focused and based on ethical values and practices are in line with the personal universal human and humanities. Strong personalities at the leaders will help the leaders in the governing of human capital more effectively (Siti Sarawati et al., 2011).

2.0 Purpose of Study

The purpose of this paper is to explore and discusses the influence of leader personality from the perspective of emotional intelligence (EQ) on employee self-esteem at workplace. This paper was investigates too about the personality of leader which have a significant impact on the employee self-esteem and the way we discuss it is by the element of emotional intelligence aspect.

3.0 Conceptual of the Ideas

3.1 Conceptual of Personality

Every human being has value and the pattern of her own personality. Personality, also known as general it can be construed as a symbol of the personality characteristics of individuals who bring different characteristics to other individual. Personality refers to an individual's psychological development as a whole. According to Mahmood (1992), personality traits are available on an individual, such as thinking, acting, emotional, and perceived others to enable different from other people. The discovery of psychological researchers on personality characteristics found in humans is too many, for example, Allport (1937) who discovered the human personality trait of 17,953. Some of them such as locus of control, achievement motivation, authoritarianism, mechiavellisnisme and self-esteem are the personality characteristics that affect work behaviors (Ishak, 2004). The type of personality that exists in every individual human being is the nature and diversity is shown through various studies-trait of human personality. Allport (1937) view of human personality is the result of a combination of biology and environment, while the inherited characteristics are shaped by individual experience. In short personality is an organization that has the character, temperament, intellectual, physical, thinking, feeling and behavior.

From an Islamic perspective, personality is defined as a 'personality or character in general is'. Morals are divided into two types: praiseworthy character or moral misconduct (Shahabudin & Rohizani, 2002). Both types include a two-dimensional character of this same

any outward or inward. The ostensible morality could be seen and measured from outside while the inner character is implicit in the liver, but it will eventually evolves through changes in behavior. For an ideal personality, Islam emphasizes the balance between body and soul and enhanced physical health with diet and lifestyle. Thus, Islam has stressed the importance of these two types of probation is appropriate to the nature of man's creation by God that man was created from the spiritual and physical elements, and very closely linked. This is consistent with what was spoken by the Prophet which is means:

> "In the cavity of the sons of Adam, there is a piece of meat. If the meat is good, then let all his body. If the meat is bad, then his body was evil. Know you that the meat is the heart" (Hadith narrated Bukhari & Muslim).

3.1.1 Dimension of Psychoticism Personality According the Theory of Eysenck

One of the personality trait that psychologist find in the human personality is called psychoticism. One of them is Hans Jurgen Eysenck. Eysenck was known as a leading individual in the modern psychology of personality typology in the 20th century and suggests that the human personality would be great to understand if the hierarchy that consists of behaviour and sets the overall behaviour and important personalities. Eysenck strongly believe that the whole basis of personality traits derived from the seed, in the form of types and traits. According to him, the personality is an overall pattern of actual and potential behaviour of organisms, as determined by heredity and environment. Eysenck has found three types of dimensions which are known as extraversion (E), neuroticism (N), and psychoticism (P), better known as PEN. Psychoticism can be combined together with neuroticism and extraversion, a three-dimensional shape. Like neuroticism, high psychoticism not mean that people are psychotic or natural to be like that, but it only shows part of the common characteristics found in the psychotic and the possibility of a person is more exposed to the environment that can cause it to become psychotic. However, it is possible also to those who have the personality to be exposed to the psychotic failure continues to be controlled from more chronic. Each type in the dimensions obtained by the Eysenck personality theory is a collection of nine traits, until it has a total of 27 traits.

For the individual human being has a relatively high score psychoticism found by Eysenck traits often have a fairly aggressive, cold, egocentric, not personal, impulsive, antisocial, no empathy, creative and hard-hearted. But those who score relatively low psychoticism is a trait, such as treating like, kind, warm, attentive, friendly, quiet, very social, empathic, cooperative and patient. Like in the extrovert and neuroticism, psychoticism has great genetic elements. Overall, by the analysis of Eysenck, three-dimensional character is a 75% hereditary and only 25% are caused by the environment. Once again stressed that the high level psychoticism should not be a psychotic, but they have the potential to suffer from stress and psychotic disorders. At the time of the individual human being only suffer low stress, high scores psychoticism may still be able to function normally. However, when the stress is relatively heavy, an individual who has become psychotic are difficult to return to normal. Special focus in the discussion of this paper is to trace the impact of personality traits that have psychoticism among the leaders towards employee's self-esteem in the workplace through the perspective of emotional intelligence.

3.2 Conceptual of Self-Esteem

The appreciation or self is part of the elements in the concept of self-esteem where the judge is a part of you. In simple language, self-esteem also means that the extent of an individual is

receiving, a love and respects them. Thus, self-esteem have close relationship with the extent of an individual is putting himself in a situation that feels that he is appreciated by others or not. In general, the availability of some models that is detailed in an effort to clarify questions about the aspects and causes the formation of high self-appreciation. Self-esteem has three main models of the affective model, a model of cognitive and sociological models. Self-esteem is also closely linked to elements of self-concept which exists in every individual human being when one sees himself through the subconscious mind self-concept is developed from childhood to become a significant element in the formation of self-esteem adulthood. Abraham Maslow put the needs of their own self-esteem at the fourth level in the hierarchy needs to be fulfilled human life after a level-lower level needs first obtained. The existence of some facts that show the problems arising between the leaders and employees in the workplace so that employees are not motivated and result in low self-esteem (Kenneth, 2010). The effect is also working to provide optimal cooperation in the organization and will eventually provide a better variety of problems including the problem of interpersonal and intrapersonal issues. Communication and interaction within the organization is loose because a variety of prejudices that complicates many of the jerks interfere with the main focus of the work. Its relationship to the discussion here is to explore the employee's self-esteem from the perspective of emotional intelligence that exists in the personality of the leader.

3.3 Conceptual of Understanding Emotions

Understanding emotions is one of the main elements in emotional intelligence (EQ) which is allocated at the third stage in the EQ model by Four Branch Model of Mayer & Salovey (1990). This stage is to understand the emotional process in which individuals begin to think why he and others so emotional. Individuals may also be involved in the equality of thinking to reflect the recommendations of the capacity to analyze emotions. These conditions include a dictionary to understand the emotions and attitudes on a combination of emotional, progress and the transition from self to others. At this stage also, the level of empathy plays an important role. Individuals are trying to put themselves in others to understand their emotions. In short, individuals are also able to understand complex emotions and emotional chains and how the emotion is changed at every level. Discussed below is on the basis of the Four Branch Model of Mayer & Salovey (1990) and the association which is show that the understanding emotions are one of those parts.

    i. Identifying Emotions
    ii. Using Emotions
    iii. Understanding Emotions
    iv. Managing Emotions

4.0 The Impact of Dimensions of Psychoticism Personality among Leader Towards Employee Self-Esteem

4.1 The Impact of Aggresive Personality

Aggressive personality is one of the personality traits that exist in the personality psychoticism. In line with this issue, Baron and Newman (1996) have established a three-factor model of aggression in the workplace is the leader of feelings of hostility, and aggressive policy prevents openly. While Ryan and Oestreich (1991) also provides a model category, such as rough treatment, insulted, ignored, denounce, discredit, did not appreciate, the aggressive control of other people, making threats against workers, shouting, anger,

temper and could potentially harm the physical. In fact, several studies on the existence of an aggressive personality among the leaders of the workers in the workplace also see the existence of aggressive behavior in non-verbal and verbal. In summary, the characteristics of the nature of an aggressive leader too when the leader is also very critical of the worker, very strong, brave, do not like being manipulated and very frank manner that is not appropriate for employees in the workplace. Leader shall also have such a feeling aggressive as always feel superior to him, priority rights and self-interest, vindictive, ill-tempered and likes to discourage other people or employees. Associated with the scenarios in the workplace, aggressive leader who often acts as aggression, often with the employee, tempered and does not respect the workers will lead to employee frustration and low self-esteem is easy to feel at once will affect employee motivation. It is supposed to be leaders must ensure that as leaders, they need to reflect themselves about how far their personality when dealing with employees who are not necessarily a personality that far-fetched. In exploring these issues, the authors also explore the reality that exists in relation to the scene saw several organizations in the past and present. Bruce & Adam (2007) in their book entitled '30 Reasons Employees Hate Their Manager' have written their book with a source-based view of the statistics more than 50,000 employees from 65 organizations through The Discovery Surveys, Inc.'s Normative Database (since 1993). All respondents were from manufacturing industries and service organizations, and contain a variety of sizes as small as 150 people up to 5000 workers. The study found that 46% of employees believe that management treats them with disrespect. Another study is by Abd. Ghani et al. (2008), found between the results of their qualitative research is the leader body language often shows non-verbal behaviour of rude and offensive. That caused the respondents experienced feelings of shock, disorientation and confusion at the very early stages. Most effects were encircling the emotional impact among workers who contributed to the workers in a constantly fear, anxiety and chronic embarrassment just because the face of aggressive leaders.

4.2 The Impact of Egocentric Personality

The next dimension is egocentric personality that leads to the question of the leader character is very selfish and always felt that his right until fail to become leaders who can listen to any complaints and feelings of employees. The attitude of the leader of such a situation is certainly easy to invite rejection of support among the workers on the head itself so that it can affect the working climate of harmony in the workplace. Often a leader or manager at work are forgot to put the interests of workers as employees when in fact the main organization is the human capital to realize its vision and mission. However, due to the character of leaders who would prefer to just focus on his own circle without considering the employees emotional, mental and potential in question and make a formal decision or determination of the direction task, the employee will ultimately result in less focused and less interested in the job. Certainly this situation also stems from a sense of self-esteem workers have deteriorated over the attitude of leaders who failed to put the employee as a valued employee. The scenario is consistent with the findings statistically by Bruce & Adam (2007) which showed 52% of employees felt free to voice their opinions openly. In fact, 66% of employees were told that management did not want to hear their words and about 67% of respondents also said that the management failed to act on the advice of staff. The study shows that there is a direct nature egocentric character is when the head does not leave room for employees to express their opinions and feelings about work and working environment, and do not want to take into account the views of workers in decision-making process. It is probable that the egocentric leaders also felt the staffs were too naive at the same time shows that the leader was look down the employee's capability.

4.3 The Impact of No Empathy Personality

Leader personality was not empathy is the reason to the level of self-esteem of workers could be affected so that it can provide a major impact on the loss of self-respect and lose confidence in them (Abd. Ghani, 2008). Should begin with a sense of empathy to understand the emotional process in which the leader began to think why he and others so emotional. Leader may also be involved in the equality of thinking to reflect the recommendations of the capacity to analyse emotions. These conditions include a dictionary to understand the emotions and attitudes on a combination of emotional, progress and the transition from self to others. Circumstances that indicate the level of empathy plays an important role. Leader should do the simulations he need to try to put himself in others shoes to understand their emotions. In short, leaders who have high empathy are the ability to understand complex emotions and emotional chains and how the emotion is changed at every level. It is the same scenario at work that very much need every leader to have a sense of empathy for workers to head to penetrate the heart and the circumstances of each employee and will not misunderstand, then think that one can be prejudicial to relations within the organization. In fact, empathy of leader impact will be absorbed among the workers so that workers can strengthen their self-esteem and to cultivate empathic behaviour with colleagues. The need for leaders to understand the emotions is also important for employees to communicate emotional meaning. If the leader is able to understand about the tide, ebb and flow of emotion, the leader should also be able to anticipate what might happen in the future with some reasons. Thus, no presumption would arise that bad for workers and leaders also should be able to predict whether the employee may be felt as a result of its success has a lot of emotion in his own treasury. Leader also is able to understand the emotional conflicts of employees to address the various problems that may arise in the workplace. If leaders do not have the characteristics of empathy, it is possible to arise various problems such as loss of respect for workers on the head, feel hate, anger and resentment that may affect the unstoppable so focused on work as well as providing a significant impact on self-esteem.

4.4 The Impact of Anti-Social Personality

Through anti-social personality dimensions, was found people with these personality types are more likely to comport with the regulations ignore the moral and ethical standards that exist in society and the global demand. Although on the face of an individual who has seen active and the personalities of others is often acceptable, but the fact that individuals prefer to manipulate and exploit others, and often violate the law, often took advantage and never feel guilty. Even individuals with anti-social personality traits will also be doing things without considering the feelings of others, rather impulsive and difficult to deal with failure as the feeling that everything they do will not fail. According Cleckly (1976), anti-social people with the disease is usually easy to get bored with something or the state but they have a strong feeling to find something new. They can make a good first impression. A person who anti-social personality is without consciousness looks like scary or damaging other people to satisfy his own feelings. They are smart to influence others to think that they are normal people although they do not actually have a mature mind, the establishment of a wobbly, and ignored the convenience and interests of others.

In an environment in the workplace, it is possible that there is often a problem to be the leader characteristics such as anti-social like the ability to exploit workers or often take advantage of the naivety and the acquiescence of its employees. The study by Abd Ghani et al. (2008) shows that the dysfunctional behaviour that exist among school principals as the school chief

example is when they are often given the task demands and workload rather excessive and unreasonable. It can be seen by respondent's statement in an interview like the following:

> "... There when he asked for the work until 4.00 pm. After that came the night is just to the expiration of all the work. There, he was asked to come on Saturday to finish the work. We feel depressed …" (Source: T3).
> "... The way he made the decision was autocratic. He decided him just go willingly. Select a person he will, too. No one dared to ask ..." (Source: T4).
> "... I am always afraid when the principal walk near corridors of the class I teach. I'm so stiff, new kinds of teaching out of fear for one. Sometimes the idea stuck. The voice was stuck too. I am really tension when he was last. My relationships with students are also affected. A lot of punishment than praise ..." (Source: T3).
> "... My tension is not finished until the last meal. Back home I tried to sleep but I always could not sleep for thinking of the events at the school..." (Source: T8).

Quite clearly through the examples in this interview, how the character of their leader have gave a big impact on their physical and emotional development as an employee. Therefore, it is no doubt that the leader of the anti-social personality as above is also an impact on employee self-esteem where workers also have a sense of reality and not a robot. Through the study of Bruce & Adam (2007) in various organizations industry found that a total of seven of ten employees said that there was no correlation between the wages they receive with the performance. This means they have to work hard with a lot of dumping duties would be but a little salary. In fact, 61% of respondents are not satisfied with the salaries that they have receive are not commensurate with the perceived power of sweat they have to offer. This once again implies that the head was exploiting their workers and the excessive use of labour. Leader also forget that workers are also human beings who need rewards commensurate with what is done, both in terms of the money, what more in terms of motivation and reward nor recognition of self as a gift, a certificate and recognition like 'the best employee for the month', and for that employee self-esteem can be improved in line with the increased quality of work. But the failure of leaders to appreciate the importance of the end result is too many shortcomings in terms of physical, emotional and minds among the workers and their impact in the long term.

5.0 The Influence of Emotional Intelligence Towards Self-Esteem of Employee Through The Personality of Leader

The question of the interpretation of understanding emotions is also looking by emotional intelligence has clearly shown that the existence of elements of cleansing the soul that led to the positive characteristics and values are translated to the personality and should be applied in everyday life that underlies the patterns of life. Together, the efforts to strengthen the emotional intelligence of individuals should not be considered silent because it is the main frame in order to strengthen other aspects of nature and transformed by the behavior and establish a more dominant personality with emotional intelligence. In this discussion is accounted for dimensions that can help enhance employee self-esteem through the dynamic personality of the leader in the workplace that should be more consistent, compare than psychoticism personality which is more to unstable. It is the same scenario at work that very much need every leader to have a sense of empathy for workers to be more to dive into the heart and the circumstances of each employee and will not misunderstand, and think that one can be prejudicial to relations within the organization. In fact, empathy is the impact will be

absorbed among the workers so that workers can strengthen their self-esteem and to cultivate empathic behavior with colleagues. The need for leaders to understand the emotions is also important for employees to communicate emotional meaning. If the leader is able to understand about the tide, ebb and flow of emotion, the leader should also know what might happen in the future, when able to predict and anticipate with some reasons. Thus, no presumption would arise that bad for workers and leaders also should be able to predict whether the employee may be felt as a result of its success has a lot of emotion in his own treasury. Leader also is able to understand the emotional conflicts of employees to address the various problems that may arise in the workplace. It is also to prevent the existence of too many 'red tape' which can jerk the interaction between workers and leaders. If this can be overcome by the head, then will likely reduce the percentage of 53% which reflects the assessment of workers detected the presence of 'red tape' in the organization through a study (Bruce and Adam, 2007).

6.0 Current Challenges and Outlooks

Searching questions on psychoticism personality among leaders, giving emotional impact on employees has been brought to us about the reality that there are many phenomena that affect the workers, nor the emotion and character evolution in the self-leader himself. The phenomenon that exists from time to time, so without us realizing, problems at work that involves the interaction and relationship between leaders and employees is not an issue we can look trivial and is not an isolated issue. In fact it is a string of evidence and the space to the world organization and the industry to do further research efforts in the on-going cover the emotional, mental and physical leaders and workers. Nor should the situation arise, such as 'the storks' a fun one-blame, and if the results are biased to leaders perception toward employees is different from the results of employees' perception toward leaders which is always contra. Instead it is necessary to look at the question from multi-dimensional framework of fair and transparent of thought through a comparison of data and the actual argument that can be strengthened. These issues demonstrate the continuity of the discussion of challenges and expectations that work on the positive and negative dimensions through several findings phenomenon.

Among them is the actual scenario of workers who are victims of a leader or an employer fairly brutal causing clinical depression for 41% of victims, referring to a study by Bullybusters.org the online in Benicia, Canada is seeing the reality of abuse in the workplace. The problem of bullying is indeed a sense claimed self-belief, self-confidence and respect among employees who are victims but also provides the physical symptoms of various diseases such as sleep disorders, ulcers, high blood pressure, loss of creativity and probably also suffered post-traumatic stress disorder (Kenneth, 2010). Kenneth (2010) also explained that after 20 years of research and results of 60,000 interviews conducted, then Saratoga Institute* reports that 80% acknowledged the existence of a direct correlation of dissatisfaction in the relationship between the leader of the employee or employer. Referring also review the Gallup Organization about the recent reality of the one million workers, one of the reasons most people leave work was because the employer at the workplace. In a study by Leigh (2005) with the cooperation with the Saratoga Institute found that as many as about 20,000 workers from 18 industries and from various other studies to detect as many as 80 to 90% of workers leaving the job is not for the reason of money. Then the argument was more focused on job factors, factors manager or leader, work culture and environment. The above findings clearly reflect the actual scenario which is inherent and challenges in the workplace in the past, present or future time-as long as there had been no shift in the transformation of

human governance. That is the challenge that must be addressed and the opportunity for each organization will always detect such problems than to wander. It is quite clear also that the ability of a leader is to drive the workers under its operation as a strong group of organizations is not just solely depend on the revenue sources of the highest quality labour, but they also need to ensure that emotional labour should also be in a stable condition for it is closely related to the ability to focus totally on the production of better quality work. Any problems that exist should be faced with the emotional stability and rational thinking through the ideal personality and emotional intelligence are intact.

Certainly, workers are also human as the leader that also has a limitation of emotion and energy that cannot use by the leader without any restrictions. Therefore, they should be more understanding of feelings as an employee and their strengths are quite different from the workers because they can explore and feel the feelings as leader too. There is also the leader are supposed to be more empathetic and need to easily detect the need to manage the climate in the workplace in line with the needs that are not set aside the question of humanity. If the leader fails to change its own personality and character to an acceptable, it is likely that the leader himself will continue to face various problems associated with extreme emotions such as anger; stress, frustration, suspicion and paranoid to the next stage would be detrimental to self-itself with physical ailments like heart disease, high blood pressure and stroke. There is always the element of peace of mind needs to be enhanced by cleaning the soul within every leader is necessary to help shape the work environment to a more harmonious and also make workers more motivated to work with. Self-esteem of employees would rise and can help the organization to achieve the aspirations and objectives by work together, so it will be easier to make it reality for all of the aim.

7.0 Conclusion

For the conclusions, dimensional stability of personality in psychoticism elements that must be more positive through the perspective of understanding emotions in emotional intelligence among leaders is to be the main catalysts that can help enhance employee self-esteem thereby increasing the motivation and the quality of their work. Leader also plays an important role to implement the elements of a positive character in the style of leadership to become a habit and can be appreciated by both the employee as a medium to give them a high level of motivation in the dimensions of self-possession of self-esteem. By having the robustness of the emotional and mental aspects, each employee will also have the personality and behavior that is consistent with the demands of human nature to live harmoniously in all circumstances. Obviously this will also help reduce the stress suffered as a result of the routine and work load is getting worse especially plus the coupled with commitment and responsibility at home. Emotional stability will enable employees to work with leaders to produce a better quality of work output as well as providing an ideal joy in interaction with the environment, including with the family and community. This connection makes the rhythm of psychology between employees and leaders are to become more dynamic and capable of achieving a healthy lifestyle that helps the stability of the social dimension of socialization.

Strength of the affective through the practice of moral values will enable the community has triggered not just a first class facilities, but also have the first-class personalities and competent superior in terms of communication, appearance, knowledge, soul and mind so that it is possible to re-emerge as a nation people who admired and full of social, economic, scientific expertise as well as the continuity of human civilization glorious past, present and future. Certainly also the leader should be the best model for the workers so that they can

become the main alternative in dealing with issues of interaction and communication problems in the workplace between leaders and employees. In conclusion, employee self-esteem should be more enhanced and establish the dominant function of the leader by the dynamics personality through human governance practices with more systematic and based on values that can be translated in the affective behavior.

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The Role of Physical Structure Features of Yazd City in Its Urban Identity Creation

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Abstract

According to a study in the city of Yazd, which is located in the centre of Iran, cultural heritage and monuments are fundamental factors in shaping Yazd's urban identity. Hence, preserving cultural heritage and monuments is a necessity for transferring local identity to future generations. However, the new urban texture of Yazd is forming under the effect of urban development and modernization processes, whose continuation will damage the urban identity of Yazd in the future. The historical texture of Yazd was created many years ago, based on two main factors, namely climate and religion. Therefore, there is a structural coherence between the various spaces of the historical texture of Yazd, which is imperceptible and intangible within the new texture of Yazd. Thus, urban managers should codify urban laws to organize the new texture of Yazd according to the fundamental factors that shaped the urban identity of Yazd previously. In addition, managers should put more effort into promoting Yazd's urban signs and urban furniture; particularly in old texture, because these factors can complete image-ability and legibility features in the city of Yazd and create more beautiful and powerful images in the minds of citizens and tourists.

Keywords *Urban identity, urban development, urban modernization, cultural heritage*

1.0 Introduction

"Identity is a term which is very popular and commonly used in a number of disciplines concerned with the study of human behaviour, conduct, and societal structures in general" (Baris, 2009, p.724). Lynch (1981) defines urban identity as "the extent to which a person can recognize or recall a place as being distinct from other places" (Lynch, 1981, p.131). City structure, which is based on the characteristics and cultural values of an urban society, will create a possibility to give meaning, maintain social-cultural coherence, promote cultural values, and also improve the quality of urban life; it is also able to form structural-spatial identities that are fed back from other dimensions of urban identity, including: Environmental-Ecological Identity, Social-Cultural Identity, and Economical Identity.

The beginning of the period of capitalism and urban transformations – which was a most modern lifestyle – led to increased immigration from villages and small cities to develop other regions. Its finally rise resulted in increased population in cities in comparison with villages simultaneously. This status, according to the limitations of social facilities and the expected

level of immigrants leaving their motherland to experience new life, created challenges to urban identity and cultural gap, amongst other important and controversial issues[1].

The development of cultural globalization and the tourism industry are two fundamental factors in decreasing the manifestations of native culture; especially in developing countries, and attracting non-native instances and modern western patterns. Based on Nijman (1999); "cultural globalization may be defined as an acceleration in the exchange of cultural symbols among people around the world, to such an extent that it leads to changes in local popular cultures and identities" (Nijman, 1999, p.148). In addition, according to King (1995), the process of globalization is concerned with "questions of culture, identity, and meaning, in representations of the world as a single place" (King, 1995, pp. 219-20). Therefore, the decline of demonstrations of local culture in contemporary urban spaces is a consequence of these two aforementioned processes.

It probably can be said that the most important factor that gives identity to cities, is the physical structure of the cities themselves, such as buildings (including of private and public construction), which are under the effect of cultural globalization and the tourism industry today. Therefore, this situation confronts cities with an identity crisis. For this reason, ignoring the urban identity issues, which create distinguishable cities, will have bad consequences for cultures and urban societies.

In old cities, native cultural features were the fundamental factors that made them distinct. In addition, cities were built based on their geographical conditions and regional climates, and as such, some cities ultimately had different features and distinguishable urban identities. Today, cities worldwide develop similarly through the expansion of global culture features. In other words, the construction of new places within ancient cities impose Western cultures as a global culture; thus making these cities similar to each other, without distinguishable urban identities. Therefore, urban identity crisis is a problematic issue for contemporary cities. For this reason, studying urban identity, as a concerning issue in the modern world, can help to exit from this crisis. It can be made possible by identifying the different dimensions of urban identity crisis. Taking urban identity crisis for granted will leave us with irreversible consequences in the future. For example, the decay (decomposition) of local cultural elements (signs) and the mere representation of global cultural sovereignty in urban spaces can be mentioned as some of the immediate effects.

Historical cities are being demolished and declined by urban reconstruction and modernization, under the effect of Western plans - not local and native orientations. This is more obvious in developing countries. This study will investigate the city of Yazd, on the plateau of Iran, firstly as a mud-brick city and secondly, as a historical city, which is under the threat of being demolished, like many other historical cities in the world. The growth of the modernization process, based on Western culture and ideas, will have irreparable negative effects on the position and prestige of Yazd, at both domestic and international levels. Moreover, not only is Yazd important for Yazdian people, but also for Iranians as a whole, because many Iranian cultures and Persian civilizations originate from there. In this respect, cultural globalization is a serious threat for this culturally-historical city. Ultimately, reviving and preserving the urban identity of Yazd, with its rich source of Iranian culture, is important from three dimensions, namely local, national, and international.

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[1] Retrieved from: www.rouyesh.ir/1003814.htm on September 2009

2.0 Theoretical Framework

In the urban semiotics approach, a city is defined as "a meaningful and symbolic reality." City creates a kind of time/place continuity that is crystallized through meaning. Each element of a city, including citizens, groups, relations, spaces, objects, etc., can be considered as a significant and interpretable sign, which builds a vast network of concepts" (Fakouhi, 2004, p. 33). People lead themselves in urban spaces by interpreting urban signs and symbols so that they can grasp a deep understanding of the place where they live; and eventually, the perception and understanding of their surroundings leads to a feeling of belonging and security amongst citizens. Scollons (2003) believes that place semiotics are "a loose (non-theoretical) set of semiotic systems, including code preference, inscription, and emplacement, but also anything in the built environment, or possibly even the weather or regular climate patterns, which contribute to the meaning of the place." (Scollons, 2003, p.214).

Based on Lynch (1981) "semiotics deals with the structure of meaning in symbolic communication and is developed out of studies of language and cultural anthropology, which has recently turned to the meaning of settlements" (Lynch, 198, p.141). In addition, "the semiotics of a city focuses on urban space as the projection of meaning and human values. It concerns itself, not only with uncovering underlying ideologies, but with the elaboration of new urban projects. This field of research includes an examination of representations of a city, as well as the production of methodologies for the implementation of urban policies. In recent years, emphasis has been given to the dynamic interaction between the self and the urban environment; particularly the role of the individual in the transformation of the environment and of its meanings." (Martin, 2006, p.41).

In this article, Lynch's pioneering theory of urban semiotics in the 1960s and 70s will be considered. Lynch, in his studies on the image of cities and sense of place, considers cities not just as physical structures, but as human environments that should give various services to their citizens. In such cities, residents have a proper feeling of presence in urban spaces. He believes that a good city is built based on the demands and needs of its citizens, and is well adjusted with cultural structures and values of every urban society. In his theory, Lynch emphasizes on citizens as main factors, whose needs and demands are important and should be responded to properly. In addition, he criticizes the loss of the human aspect under the effect of Modernism processes. Lynch stated that "we need an environment which is not simply well organized, but poetic and symbolic as well. It should speak of the individuals and their complex society, of their aspirations and their historical traditions of the natural setting, and of the complicated functions and movements of the city world. But clarity of structure and vividness of identity, are the first steps towards the development of strong symbols. By appearing as a remarkable, well-knit *place*, the city could provide a ground for the clustering and organization of these meanings and associations. Such a sense of place in itself enhances every human activity that occurs there, and encourages the deposit of a trace" (Lynch, 1960, p.119). Lynch believes that city image depends on five types of element, which can give legibility and image-ability qualities to urban spaces. These are: Landmarks, Nodes, Districts, Edges, and Paths. In this study, Landmarks (as the most important factor in shaping cultural landscape and urban identity) will be investigated.

Figure 1: Research Approach based on theory of Kevin Lynch (Urban semiotics approach)
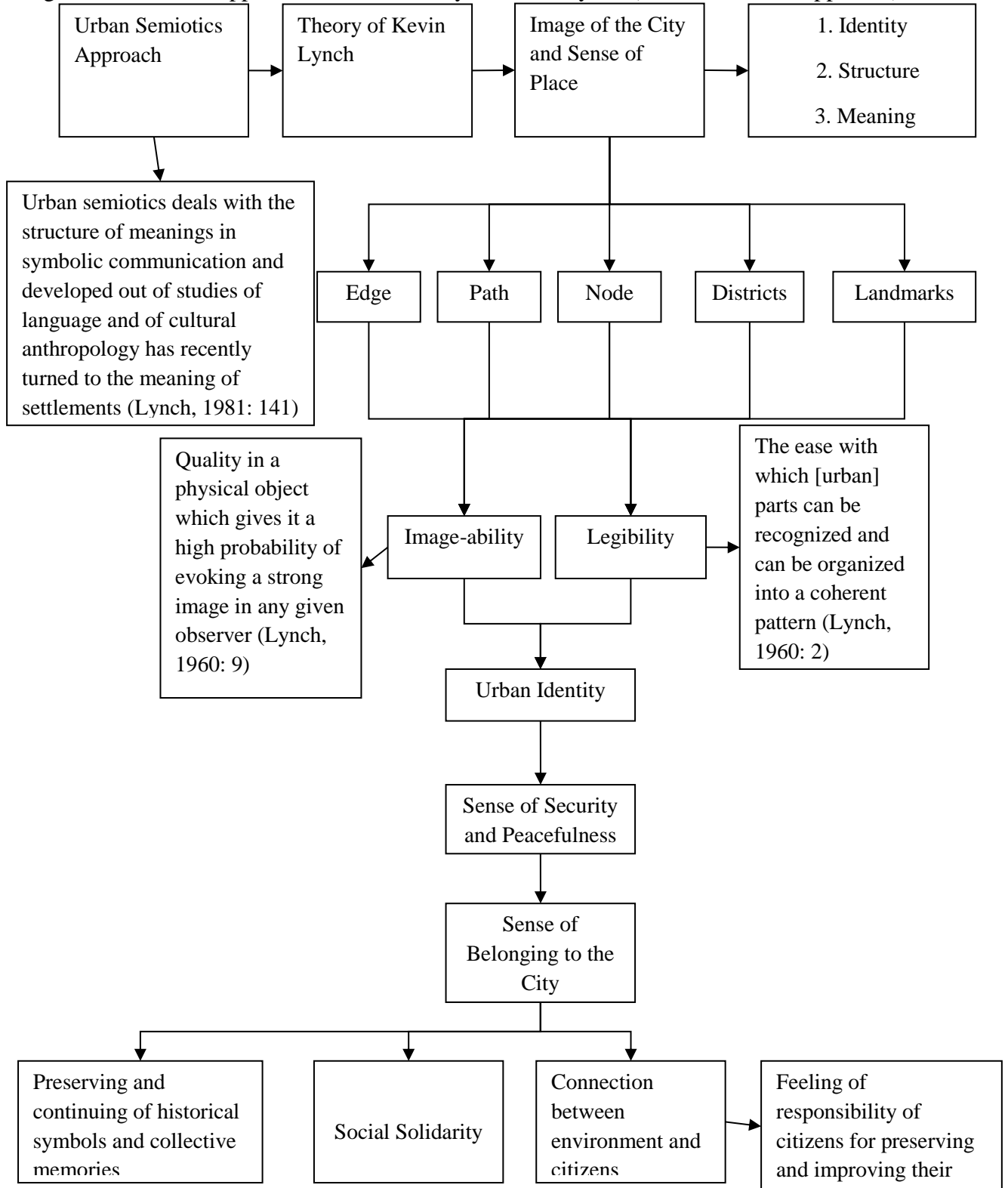
Table 1: Study of urban landmarks in city of Yazd based on content analysis with emphasis on "culture"

Symbolic Landmarks	- Changeless
	  Cultural Heritage: Monuments
	- Changeable:
	  Street Celebrations or Festivals in a Certain Periods for example Fireworks Wednesday celebration in Iran and etc.

Graphic Landmarks	- Urban Signs: Traffic Signs
	- Architecture:
	  Public Buildings: Modern Shopping Centres, Tradition Markets, Sacred Places (Mosque, Church, Temple, Shrine and etc.)
	  Private Buildings
	- Urban Advertising: Political Advertising, Cultural Advertising and Commercial
	  Board Shops and Their Names(Inscription)
	  Visual Art: Mural, Sculpture, Urban Fountain
	  Urban Light
	  Urban Furniture
	  Citizens Cover(Styles & Colours)

Natural Landmarks	Artificial: public Parks Non-Artificial: River, Sea, Mountain

3.0 Methodology

This study was based on qualitative methods that are normally used in anthropology research. First, documentary data was collected, including Yazd's historical and urban information. Second, several areas were chosen from both historical and new parts of Yazd for observation, photography, and in-depth interviews (which were used as a tool to access citizen's ideas). Areas were selected according to cultural, social and commercial conditions and importance, as well as the presence of citizens and tourists in those areas. In the other words, data was gained from those urban areas that had the most daily visitors and tourists. In this investigation, to achieve the research objectives and to compare two different parts of Yazd (i.e., Old and New) three old and three new streets were chosen in the new parts of Yazd, including Shahid Beheshti square to Clock square (the entire length of Imam Khomeini street); Seyed Rokn al-Din street, Qiam street, and Amir Chaqmaq Complex, in the old texture of Yazd; and from Abozar square to Atlasi (Janbaz) square (the length of Timsar Fallahi avenue); and Shahid Ghandi avenue in new texture of Yazd. According to the ethnography method, note and photos were taken during the observation of the cultural landscape, and identical elements were selected in areas simultaneously. Then, the collected data was described in an ethnography writing style and ultimately, the results were drawn according to the urban semiotic approach; with inscriptions of people's ideas about the fundamental factors in the urban identity of Yazd. Therefore, this study did not use any data analysis software, because this study was designed based on an ethnography approach (i.e., describing and transcribing data).

4.0 Research Findings and Discussion

General Features of Yazd:
Yazd is located in a vast dry valley, between *Shirkooh* and the *Kharanagh* mountains. It covers 2397 Square Kilometres. The city limits run from *Ardakan* in the north, to *Bafq* in the

east, to *Taft* and *Fars* Provinces to the south and southwest respectively, and to *Isfahan* Province in the west (Kalantari, 2006:10). Yazd is over 1200 meters above sea level. The weather is dry; with dry and warm summers, and dry and cold winters (Kalantari, 2006: 10). Rainfall in the area is low and insufficient, at an annual rate of just 60 millimetres. The dryness increases the intensity of the sun and further evaporation is caused due to the saltiness of the soil. The shortness of water and the saltiness of the soil mean a lack of plant cover, which results in drifting sand and fast, hot, dry and dusty winds (Dehghan Menshadi, 2009: 13).

Figure 1: Location of Iran in Asia [2]

Yazd people have found solutions to encounter these climatic and atmospheric conditions, to decrease the troublesome aspects of the weather and fight against the hot summers and cold winters, by making buildings close together, using high walls, mud bricks, plaster cover, and dome shaped ceilings and *Badgir*. Of all of these items, *Badgir* is the most effective at improving weather situations in the area, and it is said that these desert cities and villages breathe by these *Badgirs* (wind catchers) (Afshar, 1992: 345). *Badgir* (or wind catcher), is the part of a building in hot and dry areas of Iran that has the important role of guiding the wind to create an acceptable human temperature.

Badgirs (wind catchers) ostentatiously show off, as vertical canals in the image of old cities of this area; and after the minarets of the mosques, they are the skyline's highest point of the city (Mahmoudi, 2009: 17).

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[2] Received from: www.worldatlas.com/webimage/countrys/asia/ir.htm on January 2010

Figure 2: Landscape of Badgirs in the Old Texture of Yazd

Source: Prepared by Shamsollahi on 03/07/2012

The importance of Yazd history is based on its 'oldness', which was absolutely formed before Islam manifestation.

Yazd was known as a holy city for ancient Zoroastrians and it was known as a Persian shrine in other areas. Its name and location changed several times, and it is clear that many events sought to destroy its history, but a few stories of the last centuries still remain (i.e., before Islam) (Aayati, 1938: 16).

Available historical books attribute Yazd's formation to the *Sasanian* era, or maybe even further back to the *Iskandar Macedonia* Era (Alexander the Macedonian). Archaeological evidence proves the existence of prehistory living centres in the Yazd plain. With a height of 3500 meters of *Shirkooh,* and near to the famous shelter of the peak, stone instruments were found. The age of these instruments and their features are related to the Stone Age, but more importantly, prehistoric traces in the Yazd area are related to the inscriptions on *Arnan* Mountain, which some believe dates back to the Neolithic Age (estimated at 10 to 12 thousand years ago). Some believe that the oldest inscriptions belong to Iron Age I. However, stylized drawings of humans and animals on the stone walls of the *Arnan* Mountain show the start of human history and the existence of the Hunting Age in this area (Concept Plan of Yazd, 2007: 57). The Yazd name comes from the Zoroastrian root "Yaz," which means worshipped, and has the same root as the words *Izad*, *Yazdan*, *Yazesh*. *Izad* means worship-worthy. So, Yazd or maybe *Yazdkert* can be called the city that Yazdan (God) created or ordered, and is totally the city that belongs to Yazdan; or a holy city.

Before the arrival of Muslims to Iran, people of the Yazd area (like other places in Iran) believed in Zoroaster; and accordingly, they worshipped a single God. With their fire temples and social customs, they were under the influence of Zoroaster teachings. During the first half of the first century of Hegira (A.H), the religion of central parts of Iran, such as Yazd and its surrounded areas, changed to Islam. However, some people paid taxes to maintain their ancestor's religion of Zoroastrian. Today, most people of Yazd are Muslim, and they live happily together with the Zoroastrians (Qahramani, 1997:94).

Ultimately, the old texture of Yazd (historical texture) has the biggest mud-bricks fabric in the world, which is registered in Iran national relics[3]. Yazd has a unique urban structure that is combined with religion and gnosis. Therefore, this city has a different shape and structure to other cities in Iran. In fact, the geographical features of this region cause Yazd to have a special architecture style, which is unique and exclusively belongs to these desert areas. According to a description by UNESCO "The historical structure of Yazd is a collection of public-religious and architecture, comprising of different Islamic architectural elements of different periods in a harmonic combination with climatic conditions."[4]

Cultural Landscape of Yazd City:

In many cities, a lack of great natural elements, such as rivers, forests, waterfalls, etc., causes buildings, streets, squares, or a complex of them, to be applied as elements of identity of a place, or even of the entire city. These elements are created gradually during a city's formation (Bazregar, 2003: 81). These elements have powers that become the memories or mental pictures of the city, by the people. Not only do these elements have architectural value, they also have the ability to make communication between the citizens, and act as a sign or symbol in urban spaces.

And due to their unique combinations, architecture, and special physical contents, they remain as strong memories and give identity to the places where they are located (Bazregar, 2003:82).

The city of Yazd is located in the centre of Iran, and is in the heart of the desert, which creates its own distinguishable features. These features are the most important factors in shaping the cultural landscape (i.e., architectural style, urban design, public spaces, etc.) and urban identity of Yazd.

Climate is an important factor in the creating of different structures in city of Yazd; like *Badgirs*, *Qanats*, *Saghakhaneh*, and mud-brick houses. The people of Yazd conform to their life in the desert and regnant nature correctly. In the old textures of Yazd, houses and shops were interconnected, which displays a kind of alliance and relationship between the physical structure of Yazd and culture. Overall, in this texture, there was a structural coherence between various spaces, such as mosques, shops, traditional markets (*Bazaars*), houses, *Hosseiniehs*, and other urban elements. Conversely, there is no structural coherence in the new textures of Yazd. In fact, the new texture displays a completely different image of Yazd, because it is shaped under effect of the modernization process. Hence, residential complexes, shopping centres, and restaurants, conform to the modernization process, and not to climate, culture, public beliefs or other factors that were fundamental elements in forming the old texture of Yazd.

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[3] Retrieved from: www.chn.ir/News/?section=2&id=29352 on January 2010
[4] Retrieved from: www.whc.unesco.org/en/tentativelists/5191 on January 2010

Religion is the second factor in creating different spaces with unique architecture in the old texture of Yazd; where there were many holy spaces in the texture of the city, such as *Hosseiniehs*, *Takiyahs*, mosques, mausoleums or shrines and *Saghakhanehs* (Figure 3).

Figure 3: Saghakhaneh- Qiam Street in the Old Texture of Yazd [5]

[5] Prepared by Shamsollahi on 03/06/2012

In addition, the people believe that the most important factor that makes Yazd a good residential place is social safety, which falls under the effect of citizen's strong religious beliefs. During the observation of the old texture of Yazd, it was seen that shopkeepers did not close their shops at prayer time, when they left their shops to pray. They simply went to the nearest mosque to pray, and just placed a cloth in front of their shops; which meant that they would be absent for a short time. However, this is different in the new texture of Yazd, where religious beliefs are more intangible than the old texture of Yazd.

Signs, such as billboards and information boards in both textures of Yazd, have religious and political contents, but in different designs. Moreover, there were no advertisements for foreign products to propagate a consumerism culture, whereas in the new texture of Yazd, modern shopping centres supply foreign brand products, such as Puma, Adidas, Samsung, MANGO, Nike, and Bush. In addition, English is used to name and decorate shops instead of the Persian. Many buildings were shaped based on universal patterns, which did not conform to the climate and cultural features of Yazd (Figure 4).

Other factors that people emphasize in their description of Yazd were the two historical complexes of Amir Chaqmaq and the Jameh mosque of Yazd (Figures 5 and 6). According to Lynch's theory, signs and symbols are more powerful when there are in city nudes and they will be more effective when manifesting as a coherent complex in urban spaces.

Figure 4: Khorshid Commercial Centre- New Texture of Yazd [6]

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6   Prepared by Shamsollahi on 04/17/2012

Figure 5: Amir Chaqmaq Complex – the Old Texture of Yazd [7]

Figure 6: Jameh Mosque of Yazd – the Old Texture of Yazd [8]

Ultimately, Lynch believed that historical symbols are important factors in shaping urban identity, which was understood about Yazd's urban identity during the study. It was interesting to note that even young people in the new texture of Yazd had quite different ideas for the historical texture of Yazd as the most important factors in Yazd's urban identity.

5.0 Conclusion

The two fundamental factors that shape Yazd's urban identity are climate and religion. In the cultural landscape of Yazd, it is perceptible that shaping various urban spaces, unique architecture, and urban advertising, are all affected by religious beliefs. Nowadays, the new texture of Yazd starts to disregard the rules and principles of shaping that were followed by the old texture of the city for too many years. In fact, buildings are now shaping on universal patterns not local patterns; and as a consequence, this will damage the urban identity of Yazd in the future, if urban managers do not control it. Contrary to other cities in Iran, modernization is a new process in Yazd. Thus, urban managers should codify urban laws for organizing the new texture of Yazd according to fundamental factors that shaped the urban identity of Yazd; namely climate and local culture. People living in the two different textures of the city emphasized cultural heritage and monuments with their unique structures. In conclusion, the new texture of Yazd cannot be a part of the urban identity of Yazd in future, because it will not manifest Yazdian's local culture in its physical structure.

Ultimately, according to Lynch's theory, the urban identity of Yazd is shaped on meaningful places as historical places that connect citizens to old times and their ancestors. Moreover, Yazd's unique architecture, which consorts with climate and local culture, has a fundamental role in shaping the image of the city in the minds of Yazdians. Therefore, it can be argued that

historical landmarks as symbolic landmarks are more important than other kinds of landmarks, such as graphical and natural landmarks, in shaping Yazd's urban identity. In addition, historical landmarks have a fundamental role in the image-ability and legibility of Yazd city.

In Lynch's theory, safety is mentioned as an important factor in shaping a good city and the feeling of belonging to the city by the citizens, who understand the city according to the citizen's ideas. In short, social safety, social coherence, and peacefulness, are sociological factors that make the city of Yazd distinguishable to other Iranian cities.

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Does Environmental Degradation Influence Migration? The Case of Malaysia and Asia-Pacific Countries

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Abstract

The purpose of this study is to determine the significant linkages between migration (both emigration and immigration) and environmental degradation. We employed cross-sectional analysis to investigate the relationship by employing data on immigration and emigration and as for economic condition we employed macro-variables such as environmental degradation (CO2 emission), real income (real Gross Domestic per capita), price level (consumer price index) and distance among the countries. Two different points of time were regressed cross-sectionally, with White standard being employed to remove traces of heterogeneity, albeit, 1990 and 2000. Results clearly indicate that as forecasted, the chosen variables indeed have significant relationship with migration. The results provide some evidence on the important role played by these variables in influencing migration.

Keywords: Malaysia; immigration; emigration; environmental degradation ,income level; price level, distance

1.0 Introduction

Since time immemorial, people migrate to other countries in search of employment, whether on a permanent or temporary basis. It is not by all means a new global phenomenon. Nevertheless, in today's increasingly globalized world, new technologies of communication and transport allow frequent and multi-directional flows of people, ideas and cultural symbols (Castles, 2002). As a consequence, it is not uncommon for countries in the world to experience an upsurge in emigration and immigration. Migration does not only influence the labour supply between two countries or regions. It is also a source of alleviating economic disparities as skilled migration can alter the pool of human capital in both the home and the destination countries (Borjas, 1994). Given its importance, a thorough understanding of migration is essential for the policymakers to assist them to strategically devise immigration policies to benefit their respective countries. The literature on the topics of migration is quite extensive. They can be narrowed and divided into two distinct areas of the antecedents and the impacts of migration. In this study, we attempt to investigate whether environmental degradation influences the migration of Malaysia. Interaction with other factors such as the income, price and distance are included as per Clark, et al. (2008) and Karemera, et al. (2000). Most of the studies were carried out to analyse migration from developing to developed countries (Lewer and Van den Berg, 2008) with varying results. We shall estimate the migration flows between one country (Malaysia) and many countries (Asia-Pacific countries). This paper also sets out to investigate the significance of the impact of various factors such as income per capita, price levels and distance on emigration and immigration. This paper is

organized as below, whereby the following section will be discussing on past literatures, followed by some discussion on methodology, section 4 discusses on results and analysis and the last section covers the conclusion and suggestions for future studies.

2.0 Literature Review

2.1 Environmental Degradation

Due to deteriorating environmental conditions, livelihood of a population can be affected severely. It is natural for people to choose emigration in search for a 'cleaner' environment for better quality of life and to escape from worsening conditions which may compromise their states of health.   Studies suggest that environmental decline plays a statistically significant role in out-migration (Reuveny and Moore, 2009). Environmental migrants may leave out of desperation because they are unable find an alternative for protection anywhere else as escaping to new places would be risky (Myers, 1997). However, Castles (2002) claimed that migration of this nature may take place when their livelihoods worsen, but only within the same region. Environmental hazards contribute to the migration by exploring the mechanisms through which vulnerability and migration are linked—via livelihoods, relocation policies, and other factors (Warner, et al., 2010). Hence, the decision to emigrate could not be induced by the environmental factor alone, but it goes along with the multivariate process of political, social and economic factors Some studies suggest that migration may lead to environmental degradation. Alscher (2011) in his study on Hispaniola Islands indicated that the impact of environmental degradation is greater if the country is underdeveloped and this provides a motivation to migrate. Not being able to adapt to the changing environmental situation, people choose to survive by migrating to safer countries. Migration and displacement are part of a spectrum of possible responses to environmental change. Some forms of environmentally induced migration may be adaptive, while other forms of forced migration and displacement may indicate a failure of the social–ecological system to adapt (Warner, 2010).

2.2 Income level

The migration-development nexus had been extensively discussed in the literature. Many studies have used gravity model to analyze the relationship including Egger (2000), Carillo and Li (2002), and Lewer and Van den Berg (2008). The results conclude that international migration is in concurrence with the gravitational-like forces explained in the model. Migration theory states that higher level of immigration will take place from a country with lower GDP per capita to a higher one. Potential migrants are driven to emigrate due to the lure of higher income that could have been earned and a higher standard of living in the destination country. Keenan and Walker (2011) suggests that the link between income and migration decisions is driven by geographic differences in mean wages especially the importance of the role of expected income in making the decision to migrate. This is known as the 'pull' factor. Mayda (2008) and Ortega and Peri (2009) indicate that the differentials in the level of income per person between destination and origin country have a positive and significant effect on bilateral migration flows.   Felbermayr, et al. (2008) found that there is a positive and significant relationship between higher number of migrants and per capita income. However, the motivation for labour migration to 'richer' or 'poorer' countries is subject to the labour's skill level. The higher the skill of a worker, the greater the incentive to move to a richer region but a lower-skilled worker tends to relocate to a poorer region (Giannetti 2004).

In a different perspective, migration may result in higher economic growth through the medium of remittances. Catrinescu, et al. (2008) found that, with the assumptions of proper institutions, migration of labour via remittance could be a determinant to long-term economic growth to the countries of origin. Also, as a result of the diversity of skills the migrants have, immigration contributes positively to the national income of the host country. (Ottaviano and Peri, 2006). So the question asked is does GDP per capita growth drive migration or is there a reverse link from migration to growth? Due to the two-way causality between GDP per capita and migration flows, there are concerns about problems of endogeneity.

2.3 Price Level

Emigration could take place due to the differential in price level leading to differentials in real income. As rising prices affects the purchasing power or real income adversely, people tend to migrate to seek a better standard of living, thus closing the real income gap. Standard migration theories advocated by Todaro (1969), and Harris and Todaro (1970) indicated that rural-urban migration will be induced by the expected urban real income. Evidence from China (Zhang and Song, 2003; Zhu, 2002) confirmed the argument.

Indicating a two-way relationship between price level and migration, increased migration had also led to a decrease in prices in certain sectors of the economy. Cortes (2008) found that an increase in the number of immigrants actually decrease the price of services such as housekeeping and gardening. As house price plays a significant role in determining the level of Consumer Price Index (CPI), significant increase in house prices could lead to rapidly rising CPI. When there is influx of immigration into a concentrated area especially into a city, it will not only result in a rise in economic activity but also an upsurge in housing prices due to the sudden increase in the demand for houses within a particular time period. There is a robust relationship between CPI and immigration in Toronto and Vancouver as a result of rising real estate prices between 1971 and 1996 (Ley and Tutchener, 2001).

2.4 Distance

Determinants of migration could be attributed to the geographical factors such as distance and transportation cost. The geographical factor plays a role in migratory tendencies because it involves lower cost of travelling from the origin to the destination. To justify that the argument that closer distance increases migration and vice versa, Schwartz (1973) attributes that there is a negative distance elasticity on migration flows due to increasing cost and diminishing information. Transportation cost is considered an opportunity cost of migration which increases with distance (Levy and Wadycki, 1974). This constitutes an important barrier to migrate. More recently, Lemistre and Moreau (2009) found that the distance travelled in migration between cities significantly affect the mobility of youths in France. To demonstrate the role of transportation costs in affecting migration in a different perspective, lower transportation costs also encourage urban dispersion in the rural-urban context (Tabuchi 1998). In addition, Heliwell (1997) found that border sharing between countries led to greater incidence of migration than that of trade.

3.0 Methodology

This section uses the instrument to investigate the relationship between Malaysia's bilateral migration flows and its determinants in which we employ the environmental degradation proxied by carbon emissions, nations' income level (GDP per capita) and the price levels

(CPI) and the geographical distance (kilometres), all four (4) variables are conducted vis a vis Malaysia. The data was taken from World Bank Global Bilateral Migration and World Databank: World Development Indicators database.

Karemera et al. (2000) used a modified gravity model and panel data of 70 countries over a time period from 1976 to 1986. Similarly, Mayda (2010) investigates the determinants of bilateral immigration flows using annual data on immigrant inflows into 14 OECD countries from a country of origin between 1980 and 1995. Earlier studies have focused either on country cross-section (Borjas, 1987; Yang, 1995) or have concentrated on a single destination country over time (Brucker et al. 2003). Most of the studies are conducted on migration flows to OECD and other developed countries. Less research has been done on the flows to and from a developing country. This study attempts to use a developing country like Malaysia, both as a single origin and a single destination country, vis a vis countries in the Asia-Pacific region. We attempt to investigate the antecedents using emigration and immigration as dependent variables. We estimated a cross sectional analysis due to the limitation of the availability of time series data. Data are taken from the years 1990 and 2000 from 24 countries from the Asia-Pacific region including Malaysia. Results obtained from 1990 are compared to that of 2000. To cater for heteroscedasticity, which is common in a cross sectional analysis, we used White Standard Error.

The following equations are estimated for their respective effects.
Model 1

$$LEMI_{(m\ to\ f)} = \beta_0 + \beta_1 logCOE_f + \beta_2 logGDPPC_f + \beta_3 logCPI_f + \beta_4 logDIST + \varepsilon$$

Model 2

$$LIMMI_{(f\ to\ m)} = \delta_0 + \delta_1 logCOE_f + \delta_2 logGDPPC_f + \delta_3 logCPI_f + \delta_4 logDIST + \mu$$

Abbreviations

$LIMMI_{(f\ to\ m)}$- logarithm of number of foreign citizen from the respective country migrating to Malaysia

$LEMI_{(m\ to\ f)}$ - logarithm of number of Malaysian citizen migrating to the respective foreign country

$logCOE_f$ - logarithm of foreign carbon dioxide emission level (proxied by carbon dioxide emission per capita(in USD))

$logGDPPC_f$- logarithm of foreign income level (proxied by the respective countries Real Gross Domestic Product per capita (in USD))

$logCPI_f$ - logarithm of foreign price level (proxied by the respective countries Consumer Price Index)

$logDIST$ - distance from Malaysia to foreign country, in kilometer.

4.0 Results and Analysis

For Model 1, the estimations and results for the years of 1990 and 2000 are shown and summarized in Table 1 below. The results for 1990 revealed that the signs are consistent with theory that there are positive relationships between (i) emigration and degradation level ; (ii) emigration and price level differential. However, inverse relationships are found between (iii) emigration and degradation differential and (iv) emigration and geographical distance. Comparison between the results in 1990 with 2000 shows some changes. The sign for GDP per capita have changed from negative to positive but the signs of degradation differential, the price level differential and distance remain unchanged.

The results yield positive results for the emigration and environmental degradation. They suggests that higher foreign environmental degradation contribute to higher emigration, vice-versa. The coefficients however are insignificant, showing that potential migrants do not take environmental degradation as an essential component in their decision to migrate. It could also appear that the environmental degradation is not sufficiently critical for them to make the decision to leave. The situation does not change much using the year data. The empirical findings do not support the earlier studies.

The estimations using 1990 data appear to be in contrary with previous findings linking the relationship between emigration and foreign income. Though insignificant at 5% level, the negative relationship indicates that emigration decreases when the foreign GDP per capita increases and vice-versa. This phenomenon is more evident in developed countries indicating the downward sloping portion of the migration hump. As the sample countries chosen consist of both developing and developed countries, there could be some further explanations attributing to this development. Future exploratory studies can be conducted to shed more light into the nature of the relationship. Even with year 2000 data, the relationship still yield insignificant estimates, despite the change in sign of coefficient. The GDP per capita variable is shown not to be a significant factor to determine the level of emigration. Foreign GDP per capita does not seem to attract or repel potential migrants as the financial motivation to emigrate is not supported by the empirical findings.

Given the significant results for both the years, price level and distance appear to play important roles in the decision to emigrate. Higher price levels are associated with rising cost of living. The resulting fall in the purchasing power and the pursuit for a better quality of life could possibly lead to higher level of emigration. Negative relationship between emigration and distance supports the postulation that higher cost of travelling (due to the distance) discourages emigration and vice versa. Neighbouring countries that share borders shall expect that emigration to rise accordingly as financial cost and time spent on travelling are considerably lower.

The results imply emigration is not mainly driven by environmental degradation (CO_2 emissions) and financial reasons (GDP per capita). Instead, other factors such as price level, distance and a host of other factors, respectively have an equal if not a more significant role to play as an antecedent of emigration.

Table 2 shows the results derived from estimating Model 2 using 1990 data which indicate that immigration is only positively related to price. Immigration is negatively related to environmental degradation, income and distance. Of the coefficients obtained, only distance coefficient is significant at 5% level. Implying that shorter distance suggests higher immigration and vice-versa, Malaysia shall expect more immigrants from neighbouring countries or from countries which are geographically closer. Given the insignificant estimates, immigration is not driven by environmental degradation.

As the same model is estimated using year 2000 data, the outcome is unexpectedly similar. The signs are positive for the price and distance variables. However, none of the coefficients are significant even at 10% level. Over a time period of a decade, it is noted that the variable of distance lose their 'importance' as the antecedents of immigration. The development could have been attributed to factors such as diminishing cost of travel and communication between different regions.

The results suggest that the variables chosen do not motivate immigration. Other factors such as immigration laws, international trade, similarity of culture and language and others could be used as possible antecedents for immigration.

One of the limitations of the present study includes the lack of the data on the recent migration flows. The analysis carried out is based on the data stretching back to 2000. This may have some effects with regards to the accuracy of the estimations and its subsequent implications in today's policy-making process. The other drawback is that the migration data do not differentiate between skilled and unskilled labour. As skilled labour migration is vital for the long run economic growth of a nation, it is imperative for the relevant authorities to have the necessary knowledge to formulate strategic immigration laws to attract the right kind of labour. The limitations can also be econometric in nature. The analysis assumes that the relationship between the variables is uni-directional but the causality between migration (emigration and immigration) and the explanatory factors of GDP per capita and price levels can be bi-directional. The possibility of endogeneity problems, as a result could lead biased estimates. There is always room for further investigation of other unexplored factors to migration. Due to data availability, we could only employed cross-sectional analysis. However, for future studies in the event of availability of continuous time series data, a more rigourous econometric analysis can be conducted. Probably future studies should be carried out in other regions using larger sample sizes and qualitative variables such as immigration policies and migrants' perception and other quantitative variables like income-inequality, exchange rates and real interest rates.

Table 1: Result for Determinants for Emigration (Model 1)

Variables	1990	2000
Constant	18.6083*	-21.0255
	(2.407)	(-1.5975)
	0.5982	0.4647
Degradation	(0.9)	(0.5712)
	-0.2214	0.0539
Income	(-0.2399)	(0.0635)
	1.5453*	8.8617*
Price	(2.6905)	(2.9599)
Distance	-2.0331*	-1.4491*
	(-3.4626)	(-2.2716)

Note:-*Significant at 5% level ; **Significant at 10% level; ( ) denotes t-statistics. Figures above have been corrected for heteroscedasticity by using the White Standard Errors.

Table 2: Result for Determinants for Immigration (Model 2)

Variables	1990	2000
Constant	-1.1454	-18.6889
	(-0.0782)	(-0.6187)
Degradation	-0.4421	-0.0675
	(-0.6478)	(-0.0516)
Income	-0.5217	-0.0063
	(-0.4527)	(-0.0054)
Price	2.702	4.1283
	(3.8981)	(0.6798)
Distance	-0.5306*	0.6749
	(-2.6366)	(0.4587)

Note:- *Significant at 5% level ; **Significant at 10% level; ( ) denotes t-statistics. Figures above have been corrected for heteroscedasticity by using the White Standard Errors.

5.0 Conclusion

Despite the various limitations encountered, the results are helpful to authorities when formulating their immigration policies. The results suggest that people may not emigrate due to environmental or economic factors but only due to geographic proximity and price levels. Environmental factors may not take centre stage in migration yet as long as the domestic level of degradation is still 'manageable' as of now. Therefore, it is not regarded as a pertinent 'push' factor. The situation however may not remain status quo forever. Addressing these findings, policies to reduce price level in order should be implemented to keep emigration lower. As immigration is not significantly attributed due to economic factors, policymakers should explore other qualitative avenues to attract productive workers from abroad. Though the findings of this study are considered modest contributions to vast sea of knowledge in the area of migration, it is still an essential move forward to greater and deeper understanding of why people emigrate and immigrate.

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Placing Sustainability at The Heart of Accounting Analysis

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Abstract

The purpose of this study is to explore issues of sustainable development agenda in the context of accounting analysis. Sustainable development requires the involvement of all people/parties in the agenda, and accounting profession cannot be exempted. Accounting takes place in the center of business information system. Since sustainable development agenda requires significance involvement of business entities, accounting profession should response to the movement seriously. This study is utilizing qualitative content analysis as the method to examine ideological mind-sets and themes in the sources studied. The results indicated that, viewed from sustainable development spirit, theoretisation of conventional accounting was deficient. It stays away from the spirit of seeing the world as a system, since it is not including social and environmental aspects from its conception of the world. To support and convince the movement of business venture toward sustainability agenda, accounting profession should be able to overcome the deficiencies in conventional accounting. Reconstruction of accounting reports, intended to overcome the deficiencies, should be based on efforts directed to incorporate the spirit of sustainable development into the conceptual framework underlying accounting standards and practices.

Keywords: Accounting practice, business practice, sustainable development

1.0 Introduction

Since declared by the World Commission on Environment and Development (WCED) in 1987, sustainable development has become an issue attracting attention of many disciplines. For accounting discipline, the discussions on the topic could be traced back to the work of Elkington (1999), the Triple Bottom Line Accounting. Another author that makes major contribution on the topic is Gray. In a paper published by British Accounting Review around ten years ago, Gray (2002) discussed efforts that should be taken to make accounting (and finance) put more concern on sustainability agenda. He reminds accounting profession to get involved with the agenda, since sustainable development is an important issue. Brundtland Report considered the issue as the life-and-death issue (1987) to mention its important. When discussing the involvement of accounting discipline in sustainability agenda, Gray (2002) arrived at an interesting conclusion as shown in the title of this article, placing sustainability at the heart of accounting analysis. This conclusion can be interpreted as having three important aspects. *First*, sustainable development is an important agenda. For that reason, all people should pay serious attention on it. Of course, accounting profession cannot be

exempted. *Second*, current practices in accounting and business generally have not yet adopting the spirit of sustainable development properly. Gray's conclusion implied that sustainability agenda is still somewhere, in a distance from the center of accounting analysis. *Third*, accounting, as a body of knowledge, and accounting profession can, and should, play important role in the sustainability agenda. This paper is intended to further explore Gray's thought on the importance of sustainable development agenda. The discussion is mainly framed by the three aspects mentioned above.

Sustainability is a direct challenge to the existing economic model of the world that runs through conventional accounting system. From the standpoint of sustainable development spirit, the theoretisation of conventional accounting was deficient (Gray, 2002). The deficiencies can be seen as not including social and environmental aspects from its conception of the world. By focusing attention mainly on the economic side, current economic and conventional accounting models give the impression that they were lack of the appropriate way of seeing the world. Gray argued that the living system should be conceived as a system. The essence of system thinking is to conceive of everything as a system and to recognize that each system is both a part of larger systems and contains subsystems of its own (Capra, 1997, p. 16; Gray, 2002; Naess and Jickling, 2000). This conception has a close meaning with the idea mentioned in Gaia theory (Aras and Crowther, 2008; Lovelock, 2007, p.iii). WCED interprets the way of seeing by considering that the living system should be conducted in terms of environment, social, and economic considerations (Brundtland, 1987; WCED, 1987). Thus, by focusing only on one of the three aspects, current economic and conventional accounting models can be thought as containing serious deficiencies.

The agenda of sustainable development can be seen as an avenue to overcome the deficiencies in the current models. For accounting discipline, the involvement in the agenda becomes an avenue to recover moral and productive accounting that places the survival of the species at its very heart (Gray 2002). This paper is intended to elaborate the involvement of accounting in sustainability agenda. The discussion is presented in five parts and organized as follows. After this introduction section, the literature review discusses three important issues mentioned in the first paragraph, followed by research design and method, and research findings and discussion. Conclusions and implications are presented in the last section of the paper.

2.0 Literature Review

2.1 The Importance of Sustainable Development Agenda

The term sustainability currently has a high profile within the lexicon of corporate endeavor (Aras and Crowther, 2008). However, it seems that there is no specific definition of corporate sustainability that has been adopted by business society. As each corporate has its own way to define sustainability, the term might become a controversial topic because it means different things to different people. This condition could be the underlying reasons why there is a serious gap between the spirit of sustainable development as coined by WCED and the way business society understands it. Proper definition is required if business organization trying to adopt the spirit appropriately. Following guidance established by WCED, Global Reporting Initiatives (GRI) in its reporting guidelines explicitly stated that:

The goal of sustainable development is to meet the needs of the present without compromising the ability of future generations to meet their own needs (Brundtland, 1987; GRI, 2006, p.2).

The statement of the goal was based upon careful investigations by WCED, an independent commission constituted by the United Nations General Assembly in 1984. WCED concluded that the development made all over the world turned out the community of nations move away from sustainability endeavors.

The publication of Tokyo Declaration (Brundtland, 1987) and report of the WCED entitled "Our Common Future" (WCED, 1987) become a solid foundation for initiatives toward sustainable development. Address made by Brundtland, the WCED Chairman at the final meeting in Tokyo, emphasized that interventions are needed to achieve sustainable development. The interventions should be conceived and executed by processes that integrate environmental, social, and economic considerations (Brundtland, 1987; WCED, 1987). The Commission perceived the urgent of structural changes in the exiting development model. It stressed:

Those structures must be remodeled so that development policies are policies for sustainable human progress far into the next century. Remodeling in the development policies require radical changes in human attitudes by adopting the spirit of sustainable development. For that reason, WCED asked for involvement of all nations in the world to integrate the spirit of sustainable development into their goals. The integration should be made by adopting principles of sustainable development as the guidance for policy actions (Brundtland, 1987). The importance of sustainable development principles could also be seen in reaffirmation made by World Summit on Sustainable Development (WSSD). The Summit declared Johannesburg Declaration on Sustainable Development and committed to assume collective responsibility at all levels (WSSD, 2002).

Accordingly, we assume a collective responsibility to advance and strengthen the interdependent and mutually reinforcing pillars of sustainable development, economic development, social development and environmental protection, at the local, national, regional and global levels. The Summit noticed that our reach diversity is not a weakness, but our collective strength instead. For that, we have to utilize that diversity for constructive partnership for change and for the achievement of our common goal of sustainable development.

2.2 Business Practices around Sustainability Issues

The main objective of a business organization is to make profit. This kind of statement might be the most frequent concept taught to business students. It is not strange then if profit notion and other financial indicators become paramount for business society. Sherman and DiGuilio (2010) obviously recognized that tendency. However, they were not agreed if the financial success is considered as the only responsibility of business organizations. They clearly stated that:

Financial success has long been accepted as the primary objective of corporate existence. However, many social critics have questioned whether financial success is enough. There are increasing demands that companies be good corporate citizens as well.

When required to act as good corporate citizens[1], many companies found themselves in struggle to tell their stories, to communicate the good and the bad things that they do in marketplace, in society, and in environment. This implies that between the financial success and good corporate citizenship is a different story.

It is clear enough to say that the challenge of telling the company's story is not being met by current practices in corporate reporting (Sherman and DiGuilio, 2010). It can be asserted that current reporting practices have not adopted the spirit that promote corporation to become good corporate citizens. Criticism has been particularly directed at the inability of annual reports or other regulatory requirement to disclose company's performance in the area of environmental and social fields. Probably feeling disturbed by these practices, Elkington promoted an avenue for new reporting strategy called triple bottom-line (TBL) reporting (Elkington, 1999; Sherman & DiGuilio, 2010). For Elkington (1999, p. 20):

Sustainability is the principle of ensuring that our actions today do not limit the range of economic, social, and environmental options open to future generations.

By TBL reporting, Elkington aims to remedy deficiencies in current reporting practices by explicitly considering not only the economic performance of a firm but also its environmental and social performance as well (Lamberton, 2005; Sherman and DiGuilio, 2010).

The reasons of requirements for business involvement in sustainable development agenda can be traced, at least, in three sources. *Firstly,* WCED argued that business organizations are the frontline players in development activities and also the major parties in damaging the resource base. Accordingly, WCED asked for their involvement.

Institutions whose policies and actions damage the resource base must be made responsible for that damage (WCED, 1987).

Second, WSSD noticed the role played by private sector corporations in the economic development of the world. As key players in development, these organizations should be made accountable for the existing and potential damage made to the environment.

We agree that there is a need for private sector corporations to enforce corporate accountability, which should take place within a transparent and stable regulatory environment (WSSD, 2002).

Third, GRI spotted the important role that should be taken by business organization dealing with sustainable development agenda. According to GRI (2006, p. 2):

As key forces in society, organizations of all kinds have an important role to play in achieving this goal.

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[1] Corporate citizenship can be defined as extending the relationship between business and society to include an understanding of the social, environmental and political responsibilities of business. The notion of corporate citizenship sees the company as having rights, duties and responsibilities in society in the same way that citizens also have rights, duties and responsibilities (Visser, Matten, Pohl, & Tolhurst, 2010, p. 85).

To answer the pressure asserted by these parties, business society required to redefine the purpose of their activities. For business people, the concept of doing business should be started by redefining the concept of corporate sustainability. Elkington (Visser et al., 2010) proposed that:

Corporate sustainability, then, is probably better understood not so much as the discipline by which companies ensure their own long-term survival—though that is clearly part of the equation—but as the field of thinking and practice by means of which companies and other business organizations work to extend the life expectancy of: ecosystems (and the natural resources they provide); societies (and the cultures and communities that underpin commercial activity); and economies (that provide the governance, financial and other market context for corporate competition and survival).

Business organizations cannot avoid the quest made by WCED, WSSD, GRI, and other similar organizations. They made their pressures based on facts showing that our society is in danger. By spotting many occurrences that have contributed to the spreading sense of alarm (Brundtland, 1987), they call for involvement of all of us in the agenda of sustainable development. Some empirical studies, conducted after Tokyo Declaration, supported the arguments raised by these organizations on the importance of sustainable development endeavors to be enforced to business organizations. This is not to say that the agenda has not been considered by business society at all, but their involvement is not yet enough.

The emergence of Corporate Social Responsibility (CSR) reporting and Global Reporting Initiative (GRI) poster the response made by business organizations to the quest of their involvement in sustainable development agenda. Wiedmann and Lenzen saw this practices as a tendency that the concept of sustainability has been applied at practical level, in term corporate citizenship (2006). However, evidence from practice seems to show different reality. Moneva, Archel, and Correa (2006) clearly mentioned that:

Some organizations that label themselves as GRI reporters do not behave in a responsible way concerning sustainability question, like gas emissions, social equity, or human rights.

Almost similar conclusions can also be found in studies conducted by Cho and Roberts (2010), Gray (2002, 2010), and Hughes, Anderson, and Golden (2001). Other studies found that social responsibility disclosure published by business organizations seem to be intended as legitimate tools to improve company's reputation (Branco & Rodrigues, 2008; Cho and Patten, 2007). Many corporations were also identified as using political avenues in their efforts to reduce obligations on requirements to disclose sustainable development practices (Cho, Chen, and Roberts, 2008; Gray, 2002).

The results of those empirical studies implied that the spirit of sustainable development did not yet accepted truthfully by business organizations. For that reasons, strong efforts are still required to promote the importance of sustainable development spirit to the organizations. Gray (2002) presumed that inappropriate practices conducted by business organizations stem from capitalist mentality.

The benefits of capitalism are bought at an unacceptably high price if not least in terms of environmental degradation, social injustice, soft imperialism, alienation and so forth.

As concluded by Jinnai (2005), despite the recent changes in the conceptual framework and standards of accounting, that transform business accounting from traditional cost based accounting to advanced value based accounting, the general concept of capitalist accounting still remains.

2.3 Accounting Discipline and Sustainable Development Agenda

Accounting has become an essential part of the current economic hegemony (Bebbington and Gray, 2001). For a long time, accounting has been considered as an important financial information system supplying information for business decisions. When business organizations behave inappropriately to the surrounding society and environment, the accounting discipline should also be held responsible accordingly. Gray and Bebbington (1996) posited that:

Indeed, despite the importance of accounting as a vehicle for the spread, imposition and acceptance of western capitalist values, we still see relatively little exploration in the literature of accounting's role on the global stage. One such stage is that relating to the battle for the meaning and soul of sustainability.

Most people might agree to the importance of sustainable development. However, there are spreading opinions on how to exert the spirit. In accounting discipline the picture is not much differ. Opinions and thoughts on the involvement of accounting discipline in the sustainability agenda are so proliferated. Gray and Bebington (2001) noted that these thoughts can be classified into four camps:

1) The first camp argues that accounting should stay well away from nature, ecology and sustainability.
2) The second camp assumes that sustainability, ecology and nature can be reduced to contingent liabilities, provisions and impaired assets.
3) The third camp believes that environmental management and environmental accounting will deliver holy grails.
4) The fourth camp suggests that accountants and accounting may be able to support the pursuit of sustainable development but that how this could be done is problematic.

Gray (2002) seemed in agreement with the third or fourth camps. It can be implied from his suggestion on the importance of placing sustainability spirit in the center of accounting analysis. Gray and Bebbington believed that the creation of an accounting with the potential to change the spirit of the organization is possible (Bebbington and Gray, 2001). This believe is based upon the central argument that accounting is pivotal to the capture and recapture of the sustainability agenda (Gray and Bebbington, 1996). According to Gray and Bebbington:

We thus talk of more than intellectual curiosity and professional standards but, rather, of whether peoples will have water to drink and other species any prospect of life. The emergence of GRI and TBL reporting could also be seen as the thoughts that are in line with Gray and Bebbington. Accounting society had noticed the important role that could be played by accounting discipline. However, serious and significant efforts are required to make accounting more involved in sustainability agenda. Gray reminded us that at the core of accounting and finance, there is a truly fundamental conflict between the spirit of sustainability and the concept of modern international financial capitalism (2002). The choice between these conflicting concepts is likely to be a great deal. It is probably more than matters of methodological debate and intellectual commitment. For accounting academics:

Sustainable development therefore necessitates a confluence of scientific awareness with life and world-affirming moral and religious values (Gray, 2010).

Scientific efforts conducted by accounting academics should flow together with moral and religious values on the importance of considering life expectancy in the ecosystem.

3.0 Design and Method

This study is a library research, adopting qualitative content analysis as the method to examine ideological mind-sets and themes in the sources studied. As stated by Berg:

Content analysis is not a reductionistic, positivistic approach. Rather, it is a passport to listening to the words of the text and understanding better the perspective(s) of the producers of these words. Qualitative content analysis show how researchers can examine ideological mind-sets, themes, topics, symbols, and similar phenomena, while grounding such examinations to the data (Berg, 2004, pp.267-269).

Main sources of documents explored in this study are United Nations publications on the area of sustainable development, consists of: Stockholm Declaration (UNCHE, 1972), Brundtland Report (Brundtland, 1987), Our Common Future (WCED, 1987), Rio Declaration (UNCED, 1992), Report By UN Secretary General (Annan, 2000), United Nations Millennium Declaration (*United Nations Millennium Declaration*, 2000), and Johannesburg Declaration (WSSD, 2002). Another source is Sustainability Reporting Guidelines, 3.0 (GRI, 2006) that provides an operational perspectives of sustainable development. This study adopts the system thinking as the main perspective, by conceiving that everything is a system and recognizing that each system is both a part of larger systems and contains subsystems of its own. The perspective is adopted as guidance in interpreting themes contained in publications explored.

4.0 Finding and Discussion

Adopting system thinking perspective as the guidance in exploring and interpreting the themes contained in the source publications, this study identify four integrated themes as the results, i .e.: (1) human beings are at the center of sustainable development; (2) holistic or system thinking is the philosophical foundation that should be employed in guiding the agenda of sustainable development; (3) problems faced by human beings should be viewed not separately, but as an interlocking crises; and (4) the integration of economic development, social development and environmental protection should be adopted as practical guidance in achieving the goals of sustainable development.

The centre of concerns for sustainable development is human beings. They are entitled to a healthy and productive life in harmony with nature. It is a clear message that the life of human beings cannot be considered in isolation from natural environment. The spirit of sustainable development is directed towards people, whose well being is the ultimate goal of all environment and development policies. Man's transformative capacity can bring benefit as well as deficiency for human life. The capability of man to transform natural environment, if used wisely, can bring benefit of development and the opportunity to enhance the quality of life to all peoples. However, if wrongly applied, the same power can do massive destruction harming to human beings and natural environment. This can be further explained by the system thinking.

System thinking is a philosophical foundation that is appropriate to be used as guidance in the agenda of sustainable development. System thinking requires that the living system should be conceived as a system. Everything is a system and each system should be recognized as both a part of larger systems and contains subsystems of its own. The philosophy of system thinking can be found as implied in the following statements from WCED and UNCED:

From space, we can see and study *the Earth as an organism* whose health depends on the health of all its parts (WCED, 1987, p. 18).

Recognizing *the integral and interdependent nature of the Earth*, our home (UNCED, 1992).

The most important lesson that can be learned from this philosophy is that the life and the activity of people cannot be considered in isolation from its surroundings. The same concept can be used to explain the crises faced human beings.

The lesson learned from system thinking tells us that the crises cannot be considered in isolation. Each crisis must be considered in its relation to other crises, because the crises are basically interlocks with each other. Statement made by WCED can be used as guidance:

The world is facing the interlocking crises. These are not separate crises: an environmental crisis, a development crisis, an energy crisis. They are all one (WCED, 1987, p. 20).

For that reason, an appropriate solution for each crisis cannot be conducted without considering its potentiality to other crises. The best way to solve the crises is by taking a holistic approach, looking for the very root causing the crises. According to United Nations Millennium Declaration, the precepts of sustainable development are believed to be the best solution to overcome the problems:

Prudence must be shown in the management of all living species and natural resources, in accordance with the precepts of sustainable development. Only in this way can the immeasurable riches provided to us by nature be preserved and passed on to our descendants. The current unsustainable patterns of production and consumption must be changed in the interest of our future welfare and that of our descendants (United Nations Millennium Declaration, 2000, paragraph 6). Solutions intended to overcome the interlocking crises faced by human being require an integrated approach unifying all aspects of development program.

To achieve sustainability, development programs should take into account not only the economic aspect, but also the social and environmental considerations of development activities. An approach to development programs adopting a narrow attention only on the economic consideration cannot be furthered. The economic factors must be integrated with social and ecological processes as practical guidance in achieving the goals of sustainable development. As mentioned in 'Our Common Future':

What is needed now is a new era of economic growth; growth that is forceful and at the same time socially and environmentally sustainable (WCED, 1987, p.14).

Since the achievement of sustainable development goals is the responsibility of all people, everyone should involve in the endeavors directed to inject the spirit into the development programs.

Accordingly, we assume a *collective responsibility* to advance and strengthen the *interdependent and mutually reinforcing pillars of sustainable development*—economic development, social development and environmental protection—at the local, national and global level development (Art. 5 in WSSD, 2002, p. 1). Interventions are required if the goals of sustainable development are to be achieved. The intervention can be conceived and executed by processes that integrate environmental, social, and economic considerations.

The achievement of sustainable development goals is the responsibility of all people. Surely, accounting profession cannot be exempted. Sine accounting takes place in the center of business information system, accounting profession should response to the movement seriously. And, since sustainable development agenda requires significance involvement of business entities, business accounting practices should be built based on the appropriate spirit.

5.0 Conclusion and Implication

Sustainable development is an important issue. It asked for the involvement of all people all over the world in the agenda, individually and collectively. Considering the substance of the agenda, Gray asserted crucial role that can be taken by accounting society. He encouraged the accounting profession to put the spirit of sustainability in the center of accounting analysis. His request could be interpreted as implying three things: (1) sustainability agenda is an important agenda requiring serious attention from all; (2) the spirit of sustainable development, in general, have not yet been adopted properly by current practices in business and accounting; and (3) there is a believe that accounting can, and should, play important role in the agenda of sustainable development.

From the perspective of sustainable development as imposed by WCED, WSSD, GRI and other similar organizations, the theoretisation of conventional accounting is deficient. For that reason, the concept of sustainability can be stated as a direct challenge to the dominant existing economic model that runs through conventional accounting system. Gray (2002) presumed that the deficiencies were rooted in capitalist mentality. Conventional accounting stays away from the spirit of viewing the world as a system, since it is not including social and environmental aspects from its conception of the world. By focusing attention mainly on the economic side, current economic and conventional accounting models give impression that they were lack of the appropriate way of seeing the world.

Sincere adoption of the agenda of sustainable development can be seen as efforts to find an avenue to overcome the deficiencies in the current models. For accounting society, the involvement becomes an imperative avenue to recover moral and productive accounting. A qualitative content analysis employed in this study identifies four integrated themes that can be considered as the spirit of sustainable development, i .e.: (1) human beings are at the center of sustainable development; (2) system thinking is the philosophical foundation guiding the agenda of sustainable development; (3) problems faced by human beings should be viewed as interlocking crises; and (4) the integration of economic, social and environmental considerations must be employed as practical guidance in efforts intended to achieve the goals of sustainable development. For accounting discipline, the themes should be conceived as the new spirit that should be adopted as a philosophical guidance in revising and redeveloping the conceptual framework of accounting. As the result, accounting practices will be based on a conceptual framework that places the survival of the species at its very heart. To pursue this goal, the spirit of sustainable development should be able to be embedded in each accounting

thoughts and activities. In another words, as expressed by Gray (2002), the concept of sustainability should be placed in the very heart of accounting analysis.

For accounting researchers, the task of incorporating sustainability concept to the accounting field is never an easy venture. However, as an important part of accounting society, the researchers should bear the responsibility seriously. If accounting practices do not comply with requirements dictated by the community of the world, the existence of accounting profession might be in jeopardy. It should be remembered that accounting practices, thus accounting profession, is defined by parties served by the profession. For that reason, accounting researchers cannot close their eyes to the world's movement toward sustainable development. No matter how hard the task is, it should be taken seriously since the involvement is directly influencing the existence of accounting profession. Aware on the burden of the task that should be taken, it should be wise if controversies in research methodologies or paradigms can be set aside. Diversity in research programs is not a weakness, but strength and richness instead. Creswell suggested that:

Given the significance of the task there is a need for diversity of research methods to be encouraged in direction of sustainability accounting, whatever the philosophical stance being taken—empirical, qualitative and research based on mixed methods (Schaltegger & Burritt, 2010).

The future of accounting profession depends, in part, on the ability of accounting researchers to incorporate the principles of sustainable development into the conceptual framework underlying accounting practices. The spirit of sustainable development should be able to be presented in the frontline statements of business reporting. For that reason, current reporting statements need to be reconstructed based on the new conceptual framework. This is surely not an easy task. Significant efforts by accounting profession, and accounting researchers especially, is required to make accounting practice in the area of business reporting comply with the new spirit. Observing the movement made by other disciplines, the task of incorporating the principles of sustainable development into the accounting practices should be conducted immediately. The existence of accounting profession as the main supporter of business society depends on its ability to supply information that is coincide with the duty hold by the party served. That duty is to contribute to the evolution of equitable and sustainable communities and societies (WSSD, 2002).

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Measuring Impact of Firm's Knowledge Capabilities and KM Performance

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Abstract

To achieve a high performing knowledge management in an organization, the firm requires knowledge capabilities that contribute to dynamic capabilities in creating, accumulating, sharing, utilizing and internalizing of knowledge; and there are many ways to review these capabilities. This paper studied firms' knowledge capabilities, firms' possession of knowledge capabilities and to what extend these knowledge capabilities affect firms' knowledge management performance.

Keywords: Culture capabilities, functional capabilities, infrastructure capabilities, knowledge capabilities, KM performance, regulatory capabilities

1.0 Introduction

Knowledge has become to be considered as sources of sustainable competitive advantage (Choi and Lee, 2002; Allard and Holsapple, 2002; Johannessen, et al, 1999). Recognizing the importance of knowledge, many firms have invested enormously in improving its knowledge capabilities and finding way to manage knowledge effectively. In academic perspective, many knowledge management scholars are actively study knowledge management and try to enhance the value, systems and models to effectively and efficiently managing knowledge. Literally, knowledge management can be grouped into two different perspectives. The first one is technical perspective where it comprises of the firms' knowledge management infrastructure, e.g. information technology and information system. The second one is social perspective where it comprises of the knowledge context of firms, firms' strategic knowledge management, knowledge leader, knowledge culture, knowledge enablers, knowledge sharing, knowledge acquisition, generation, and internalization and externalization efforts. Successful knowledge management implementation requires a strategic hybrid of the both perspectives. The objective of this paper is to conduct an in-depth study the social perspective of knowledge management and to produce a holistic and integrated knowledge management model of achieving sustainable competitive advantage. This paper start with the discussion of sources of sustainable competitive advantage in the 21st century, continue with an in-depth study of social perspective of knowledge management, and finally provide a knowledge management model of sustainable competitive advantage.

The capability-based theory of sustained competitive advantage has gained prominence in strategy research over the last decade (Weerawaredena and O'Cass, 2003) and suggests that a firm can achieve competitive advantage through its distinctive or core capabilities (Grant, 1991; Hayes, et al, 1996; Prahalad and Hammel, 1990). In the context of knowledge management capabilities, practices and performance, the firm's knowledge capabilities has also be emphazied (Gold et al, 2011; Ho, 2009). To achieve a high performing knowledge management in an organization, the firm requires knowledge capabilities where contribute to a dynamic capabilities in creating, accumulating, sharing, utilizating and internalizing of knowledge. There are many ways to review these capabilities. Hence the objectives of the study are to identify firms' knowledge capabilities, measure its possession of knowledge capabilities and its impact on knowledge management performance.

As knowledge has become an important resource for organizations to compete in the competitive business landscape and knowledge-based economy, firm's performance should not be measured merely based on financial dimensions or the perspectives measured in the Balanced-Scored Card (BSC). The reason is these factors are significantly relied on KM Performance (Ho, 2009). As knowledge has been recognized as strategic asset for firms to gain sustainable competitive advantage, their performance are generally substantially affected by how well the knowledge management implementation is. Scholars have proven that firms' KM performance is significantly affecting all the four perspective of BSC performance measurement (Financial, Customer, Internal Business Processes, and Learning and Growth). For instance, Ho (2009) reported that a firm's financial performance is significantly affected by its KM performance. Gold et al (2001) explained that firms' knowledge capabilities and KM performance determines an organization effectiveness. It is also proven that firm's KM performance impact customer satisfaction and customer retention (McKeen, et al., 2006) and innovation (Nonaka and Takeuchi, 1995). Hence this study also intends to measure to what extend firm's knowledge capabilities affecting its knowledge management performance and explore the correlation between the importance of a firm's knowledge capabilities and its knowledge management performance.

2.0 Knowledge Capabilities

Knowledge capabilities refer to firm's endowment of resources in both human and system forms, in creating knowledge, which develop distinctive and core capabilities to firms. It includes the ability of acquiring know-how knowledge of employees which may results in distinctive competencies and assists firm set it apart from its competitors. According to the resource-based view, sustainable competitive advantage can be achieved by continuously developing existing and creating new resources and capabilities in response to rapidly changing market condition. Coyne (1986) develops the concept of a capability gap to determine whether a firm's competitive advantage actually exists. Day (1994) and Day and Wensley (1988) then categorize capabilities into four categories, which are "inside-out" process, "outside-in" process, marketing, and information technology. "Inside-out" allows a firm to improve operation systems, production efficiency, reduce costs and increase competitiveness. "Outside-in" allows a firm in new market development, customer relationship and networking. Marketing capabilities allow a firm's strategic marketing planning; and information technology capabilities allow firm to diffuse market information effectively across all relevant functional areas and create market knowledge and innovation. Hall (1992) has categorized the concepts of capabilities differentials into two groups. The first group of capabilities differentials is focused on competencies and the second group is capabilities differentials based on assets. The former group emphasizes a firm's functional differentials and cultural differentials; while the later group emphasizes a firm's positional differentials and regulatory differentials. As the knowledge-based competition has become the new paradigm in the 21st century, knowledge capabilities have become a necessity to firm's sustainable competitive advantage. Strategic knowledge management is the art and the science of creating, distributing, storing and leveraging knowledge underpinning firms' corporate strategy via the support from the technological (information systems and information technology) and social (firm's structure, culture and people) systems of knowledge management, hence the ability of firm knowledge management in achieving sustainable competitive advantage relied on its knowledge capabilities.

In order to achieve a performing knowledge management, firm may develop its knowledge capacities from the aspects of functional, culture, regulatory for knowledge protection and

infrastruture. A firm's functional capabilities include firm's learning curve effects, innovation, strategic management, corporate entrepreneurship, and new organizational forms. Firm which possesses these capabilities would be able to perform individual functions more effectively compared to its competitors and also from the inability of existing or potential competitors to imitable or easily follow suit. Important intangible resources for those of functional capabilities differentials are innovative capabilities, tacit knowledge, skills, experience of employees, suppliers, distributors, and other specific capabilities in a company, e.g. ability to communicate with customer and establish strong customer relationships, ability to involve people, flexibility in managing change and diversity, and intuition (creativity and ability to innovate). Knowledge acquisition-oriented firm obtains, creates and accumulates new knowledge. The concept of learning curve effects requires an aggressive attempt at leveraging knowledge and knowledge accumulation. Development of knowledge databases which store best practices, expert directories and market intelligence, and sharing of best practices from one part of the firm to another, through databases, but also through personal interaction and sharing events are crucial (Civi, 2000). Innovation is a subset of knowledge acquisition where new knowledge is developed from the existing knowledge. Innovation requires a dynamic style of knowledge management (Choi and Lee, 2003) to create superior knowledge. Strategic management is a firm's agility in a turbulent business environment and ability to make appropriate adjustments to the resource base. A firm may acquire, develop and reconfigure its knowledge to exploit new opportunities and avoid threats. Corporate entrepreneurship is about firm's capability to develop new products or services through continuous innovation to meet demands. A knowledge-based firm may go through the three phrases of innovation, knowledge development, knowledge utilization and knowledge capitalization (Kalling, 2003). Knowledge development requires a combination of people, processes and technology resources to explore and test new ideas. Knowledge utilization is the testing of feasibility and viability of the ideas; it requires a positive knowledge culture which encourages innovative behaviors. Knowledge capitalization helps firm to achieve competitive advantage from the innovation. Practice of learning organization, effective change management, careful assessment of implementation costs and benefits are crucial in ensuring the innovation is successfully implemented. Practice of learning organization helps firms to develop higher levels of knowledge and skill, and effective change management helps firm to control and monitor changes in this turbulent business environment. New forms of firms are such as the learning organization, knowledge-based firm, network or virtual organization, which emphasize on appropriate knowledge structure for effective implementation of knowledge management. The knowledge structure that promotes collective behavior and flexibility will encourage sharing and collaboration across boundaries with a functional area, firm and across the supply chain. According to Gold, et al (2001) the optimization of knowledge sharing within a functional department can many times suboptimize the sharing of knowledge across the firm; and the optimization of knowledge sharing within the firm can suboptimize sharing across a supply chain. The creation of firm knowledge requires the sharing and dissemination of ideas, information, and experiences of a person, a group or a functional department of the firm. It is believe that individuals interaction in positive knowledge culture firm promotes learning and collaboration between individuals is the basis for the socialization of knowledge (Nonaka and Konno, 1998).

The most crucial element to achieve sustainable competitive advantage is instilling knowledge culture in the firm. Culture is the basic building block to a firm's knowledge capabilities. It is believe that firms which achieve sustainable competitive advantage build a knowledge friendly environment that foster a desire for knowledge among their employees and that ensures its continual creating, sharing, applying and leveraging of knowledge. The

characteristics of knowledge friendly culture are such as employees appreciate teamwork, minimal knowledge hoarding is minimal, perceive the mind set of knowledge is power is not right, active and positive knowledge sharing, employees accept new ideas and like new exposure, employees perceive learning as part of their job descriptions, high team spirit, effective communication across departments, bottom-to-top and top-to-bottom, trust and belief in others' good intentions, openness and honesty, knowledge sharing organizational structure which encourage participative decision making (Griffen and Moorhead, 2001), ease of information flow (Syed-Ikhsan and Rowland, 2004).

Building an effective knowledge culture requires a range of strategies to ensure the values inherent in knowledge management are enacted by each employee (Debowski, 2006). Debowski (2006) identifies four elements of knowledge enablers which influence and contribute to the creation of an effective and positive knowledge community. According to Debowski (2006), these knowledge enablers are operate over several levels of the organization and is grouped in the four elements, namely core values, structural support, enacted values and interaction with colleagues as follows. Debowski (2006) defines core values as those values which are believe to be essential to the organization's growth and achievement of its goals. In the case of knowledge community, these might include collaboration, communication, interaction, innovation, adaptation, learning orientation, trust, and positive perception on knowledge. Debowski (2006) argues that knowledge communities need to nurture innovative and creative thinking, encourage flexible, adaptable behavior and a strong communal focus to enhance collaboration and sharing across organizational boundaries, as well as instilling strong learning orientation and affirm the value place on knowledge workers by providing opportunities of attending training, conferences, collaborating with others, share ideas, communicate and work across organizational boundaries.

A firm's knowledge infrastructure capabilities are developed based on its technology and structure. It is a supportive framework for resourcing, decision making and innovative practices, so that knowledge activities can be successfully pursued (Debowski, 2006) Technology dimensions in knowledge management include business intelligence, collaboration, distributed learning, knowledge discovery, knowledge mapping, opportunity generation as well as security (Leornard, 1995). These knowledge management technologies enable a firm to generate knowledge according to its competitive advantage, business strategies, competition as well as the economic condition. Knowledge management technologies also allow individuals in firms to share and collaborate knowledge and encourage new knowledge creation. Knowledge discovery technologies allow the firm to find new knowledge internally and externally; knowledge mapping technologies allow the firm to effectively track sources of knowledge, creating a catalog of internal organizational knowledge (Gold et al, 2001). Knowledge application technologies allow the firm to utilize and practice its existing knowledge. Opportunity generation technologies allow the firm to develop its business intelligence system and marketing intelligence systems by tracking knowledge from its stakeholders. Appendix A provides a summary of various tools and technologies available for knowledge management. To sustain the competitive advantage achieved from these technologies infrastructure, firm must ensure the security and appropriate use of the knowledge generated.

A firm's structure is important in encouraging knowledge creation, knowledge sharing and leveraging across internal firm's boundaries. Few knowledge management firm structures have been developed. Sanchez and Mahoney (1996) and Nonaka and Takeuchi (1995) suggest

knowledge management friendly organizational structure, namely modular organizational structure and hypertext organization structure respectively. The modular organizational structure suggests a combination with a modular product design which may reduce the costs of coordination and adaptation, and hence increasing strategic flexibility. The five stages hypertext organization, which combines two traditional structures – the hierarchy (use the strength of bureaucratic efficiency and standardization) and the task force structure (flexibility and dynamism) catalogs, categories and synthesize knowledge and information according to firm's priorities for the future. Along with the structure, a firm's system of rewards and incentives can determine the capacity of knowledge creation, application and sharing. According to O'Dell and Grayson (1998), a firm's incentive systems should be structure so that workers are motivated and rewarded, for taking the time to create new knowledge (learn and attend training), share their knowledge, and help others outside their own departments. Gold et al (2001) claim that the overall knowledge management structure is made up of the combination of a firm's formal organizational structure plus knowledge management structural dimensions and incentive systems.

3.0 Knowledge Management Performance (KM Performance)

Knowledge Management Performance refers to what extend knowledge is effectively and efficiently manage and implement in an organization. The effectiveness and efficiency of the knowledge management covers scope of how knowledge is created, disseminated, storing, sharing, leveraging, utilizing, and capitalizing. Lee et al (2005) explained that a firm's knowledge management performance is relied on the 5 components process in the knowledge circulation process, namely knowledge creation, knowledge accumulation, knowledge sharing, knowledge utilization and knowledge internationalization. Ho (2001) described knowledge creation as firm's capability in dealing with variety of knowledge and promoting knowledge creation by encouraging individuals from different background to work together for synergistic output. A firm's knowledge creation performance can be measured via its innovation intensity such as new product development and patent rights. A firm's knowledge accumulation performance can be accessed via its database built, database management, and database utilization. Ho (2001) argued that all employees in an organization must have access to a database which provide relevant information or knowledge that may assist them in their daily work routine and decision making. Knowledge sharing encourages knowledge diffusion in an organization and intensity of knowledge sharing among employees in an organization can be evaluated to measure KM performance of the organization. Knowledge utilization refers adoption of the best practices form other leading organizations, discovering relevant knowledge and applying it and it can be evaluated by determining number of successful implementations or the amount of knowledge applied in decision-making or problem solving. Finally knowledge internalization refers to situation that when an individual employee discovers relevant knowledge, obtains it and then applies it. It is evaluated through the level that employees apply knowledge to improve process or strengthen customer service.

4.0 Research Methods

Firms' knowledge capabilities and KM performance was investigated through an empirical survey. 50 MNCs were selected from the directory of Federation of Malaysian Manufacturers based on the approachability of the senior administrators of the companies and their willingness to respond to the questionnaires. In order to get a thorough response from each of the selected MNCs, 5 feedback were expected from each MNC. Hence a total of 250 questionnaires have been emailed to these organizations, 117 replied but only 93 were usable.

A Statistical Package for Social Science (SPSS) version 18.0 was used to analyze the data gathered.

4.1 Measurement

The research questionnaire had three sections. First section contains respondent's background profile questions, second section measures firm's knowledge capabilities. 25 items of firm's knowledge capabilities as shown in Table 1 have been identified. These items were generated from the literature review and modification from Gold et al (2001). The third section measures MNE's KM performance. KM performance was measured using a 5 KM process performance measurement developed by Lee et al (2005). The 5 measurements are knowledge creation, knowledge accumulation, knowledge sharing, knowledge utilization and knowledge internalization. All of these items were measured using a 5-item scale ranging from Strongly Agree (1) to Strongly Disagree (5).

Table 1: 25 items of firm's Knowledge Capabilities

Factors	Items
Knowledge functional capabilities	My organization has ability to……
	transfer new knowledge into practice.
	process knowledge acquired into new services/product.
	process business intelligence into competitive strategies
	acquire effective corporate entrepreneurship
	meets learning curve experience efficiently and effectively
	develops and identifies our competitive advantage
	implement knowledge management strategies effectively
Knowledge culture capabilities	In my organization, employees are……
	encourage to acquire new knowledge
	encourage to share knowledge
	encourage to accept new ideas and like new exposures
	encourage to interact and discuss their work.
	My organization has ….
	knowledge-friendly working culture
	reward system for new knowledge creation
	reward system knowledge sharing
	My colleagues …..
	keep knowledge hoarding to minimal
	believe that 'knowledge is power' is not right
	recognizes learning as part of their job descriptions
Knowledge regulatory capabilities	My organization has ability to ……
	Protect its trademark well
	protect its intellectual property right
	manage contracts and agreement competently
	provide incentive that encourage the protection of knowledge
	protect knowledge by having extensive policies and procedures
Knowledge infrastructure capabilities	My organization possesses ……
	software and hardware for knowledge management
	knowledge friendly organization structure
	technology that is important for searching new knowledge

5.0 Data analysis and Findings

A factor analysis was first done for all the variables. Twenty-five (25) items which measure MNEs knowledge capabilities were tested to confirm their validity and reliability. The value for all the items was 0.5 and more, indicating that the items met the acceptable standard of validity analysis (Nunally and Bernstein, 1994). To ensure the validity of the three factors identified, we look at the Total Variance Explained table as shown in Table 3. It shows that the three factors accounted for 94.672 percent of the variance in the original 25 variables. This is substantial amount of information to account for, and we have reduced the number of original variables by 85 percent from 25 to four. We name component 1 as Functional capabilities, component 2 as Cultural capabilities, component 3 as Knowledge regulatory capabilities and component 4 as infrastructure capabilities.

Table 2: Rotated Component Matrix[a]

	Component			
	1	**2**	**3**	**4**
transfer new knowledge into practice	.933			
process knowledge acquired into new services/product	.905			
process business intelligence into competitive strategies	.823			
acquire effective corporate entrepreneurship	.701			
meets learning curve experience efficiently and effectively	.923			
develops and identifies our competitive advantage	.965			
implement knowledge management strategies effectively	.821			
encourages workers to acquire new knowledge	.944			
encourages workers to share knowledge		.955		
knowledge-friendly working culture		.858		
Knowledge hoarding is minimal		.742		
'knowledge is power' is not right		.923		
accept new ideas and like new exposures		.817		
recognizes learning as part of their job descriptions		.722		
encouraged to interact and discuss their work.		.912		
reward system for new knowledge creation		9.35		
reward system knowledge sharing		.864		
trademark is well protected		.777		
protecting its intellectual property right			.916	
manage contracts and agreement competently			.860	
provide incentive that encourage the protection of			.669	
knowledge			.871	
protect knowledge by having extensive policies and				.651
procedures				.705
software and hardware for knowledge management				.633
knowledge friendly structure				
use technology for search new knowledge				

Extraction Method: Principal Component Analysis.
 Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

Table 3: Total Variance Explained

Rotation Sums of Squared Loadings

Component	Total	% of Variance	Cumulative %
1	2.937	29.375	29.375
2	2.724	27.243	56.618
3	2.379	23.793	80.411
4	1.426	14.261	94.672

Extraction Method: Principal Component Analysis.

5.1 Validity and Reliability Test for Knowledge Management Performance (KM Performance) Measurement

To ensure the validity and reliability of the 5 items used in measuring KM Performance, factor analysis was conducted. Kaiser-Mayer-Olkin Test (KMO) which is used to measure adequacy of sampling was conducted for the variable and the result indicated that it was acceptable. Supported by Hair, et al. (1998) and Nunally and Bernstein (1994), these statistical analyses revealed that the value of factor analysis for all items represent the dependent variable (in this research KM Performance variable) was 0.5 and more, indicating that the items met the acceptable standard of validity analysis. The variable also exceeded the acceptable standard of Kaiser-Mayer-Olkin Test value of 0.6 and it is significant in Bartlett's test of sphericity. The variable also has eigenvalues larger than 1, and all the 6 items exceeded factor loadings of 0.40 (Hair, et al, 1998). Besides that, the Cronbach Alpha value exceeded the acceptable standard of reliability analysis of 0.70 (Nunally & Bernstein, 1994). These statistical analyses confirmed that measurement scales used in this study have met the acceptable standard of validity and reliability analyses.

Table 4: Validity and Reliability Analyses for KM Performance Measurement

Measures	Items	Factor loadings	KMO	Bartlett's Test of sphericity	Eigen value	Total Variance Explained	Cronbach Alpha
KM Performance	5	.63-.81	.60	655.05 P=0.000	2.23	79.80	.76

5.2 Multiple Regression Analysis

In order to measure MNEs knowledge capabilities are related to firm's knowledge management performance, factor scores were calculated to run regression test. Factor scores are composite scores estimated for each respondent on each of the derived factors.

Table 5: Correlations Analysis for KM Performance and 4 Factors of Knowledge Capabilities

		KM Performance	REGR factor score 1 for analysis 1	REGR factor score 2 for analysis 1	REGR factor score 3 for analysis 1	REGR factor score 4 for analysis 1
Pearson Correlation	KM Performance	1.000	.878	.838	.537	.776
	REGR factor score 1 for analysis 1	.878	1.000	.000	.000	.000
	REGR factor score 2 for analysis 1	.838	.000	1.000	.000	.000
	REGR factor score 3 for analysis 1	.537	.000	.000	1.000	.000
	REGR factor score 4 for analysis 1	.776	.000	.000	.000	1.000
Sig. (1-tailed)	KM Performance	.	.000	.000	.000	.000
	REGR factor score 1 for analysis 1	.000	.	.500	.500	.500
	REGR factor score 2 for analysis 1	.000	.500	.	.500	.500
	REGR factor score 3 for analysis 1	.000	.500	.500	.	.500
	REGR factor score 4 for analysis 1	.000	.500	.500	.500	.

The Model Summary table below reveals that the R-square is 0.640 and the ANOVA table indicates it is statistically significant at the 0.000 level. This means that 64 percent of the variation in MNEs' KM performance (dependent variable) can be explained from the four independent variables – namely knowledge functional capabilities, culture capabilities, regulatory capability and infrastructure capabilities.

Table 6: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.800[a]	.640	.685	.712

a. Predictors: (Constant), REGR factor score 4 for analysis 1, REGR factor score 3 for analysis 1, REGR factor score 2 for analysis 1, REGR factor score 1 for analysis 1

Table 7: ANOVA Analysis on the Significance of Knowledge Capabilities Influencing MNEs' KM Performance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	247.799	4	61.950	96.253	.000[a]
	Residual	257.445	88	.644		
	Total	505.244	92			

a. Predictors: (Constant), REGR factor score 4 for analysis 1, REGR factor score 3 for analysis 1, REGR factor score 2 for analysis 1, REGR factor score 1 for analysis 1

b. Dependent Variable: KM Performance

To determine if which knowledge capabilities variables are significant predictors of MNEs KM Performance, we examine the Coefficients table below. Looking at the Standardized Coefficients Beta column reveals that Factor 1 (Knowledge Functional capabilities) is 0.878, Factor 2 (Knowledge Cultural capabilities) is 0.838, Factor 3 (Knowledge Regulatory capabilities) is 0.537 and Factor 4 (Knowledge Infrastructure capabilities) is 0.776. The statistical significance is .000 for all four factors. Thus we know from this regression analysis that knowledge capabilities factors of all MNEs studied are predictors of MNEs' KM Performance with Factor 1 (knowledge functional capabilities) being somewhat better than the other three factors since the size of the Factor 1 Beta is the largest.

Table 8: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	4.150	.040		90.047	.000
	REGR factor score 1 for analysis 1	.894	.040	.878	11.443	.000
	REGR factor score 2 for analysis 1	.851	.040	.838	10.962	.000
	REGR factor score 3 for analysis 1	.513	.040	.537	4.433	.000
	REGR factor score 4 for analysis 1	.732	.040	.776	6.664	.000

a. Dependent Variable: KM Performance

6.0 Conclusion

Knowledge capabilities play an important role in determining MNEs KM Performance. Developing knowledge capabilities will enable firms to create, accumulate, share, utlize, internalized knowledge effectively. The objective of this paper is to determining the factors that forming firm's knowledge capabilities and to what extent these factors affecting firm's KM Performance. Understanding the importance of these knowledge capabilities factors help firms to determine what should the firm do and what effort should they focus in order to manage their knowledge successfully. As the competitive landscape of 21st century is mainly driven by the knowledge-based competition, which is also the factor affecting the effectiveness of firm's the resource-based and competitive-based competition, firms have to build its knowledge capabilities to create the knowledge where may place the firm in blue ocean and competitive advantage. Four factors of knowledge capabilities, namely knowledge functional capabilities, knowledge culture capabilities, knowledge regulatory capabilities and knowledge infrastruture have been discussed and tested in this paper. Knowledge functional capabilities which include capability of transferring new knowledge into practice, capability of process knowledge acquired into new services/product, capability of process business intelligence into competitive strategies, capability of acquiring effective corporate entrepreneurship, capability of meeting learning curve experience efficiently and effectively, capability of developing and identifying firm's knowledge competitive advantage and capability of implementing knowledge management strategies effectively, is the most important factor that affecting MNEs' KM performance; followed by Knowledge culture capabilities, Knowledge infrastructure and lastly knowledge regulatory capabilities. These four broad aspects have been perceived as the most critical factors that determining firm's

ability in creating, accumulating, sharing, utilizing, internalizing of knowledge that contribute to firm's KM Performance.

7.0 Directions For Future Research

This study sets a foundation for research on firm's knowledge capabilities and its impact on KM performance. It has raised many questions as well as confirming the initial propositions. The limitation of this paper is the knowledge capabilities it is focus only on the hard aspect of knowledge management strategic and the soft aspect e.g. the knowledge processes capabilities has not been taking into considerations. Clearly more literature on the soft aspect of knowledge capabilities is needed to address a holistic framework on firm's knowledge capabilities in promoting sustainable competitive advantage. It is also hoped that this paper will stimulate this debate and trigger further research.

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Poverty and Ready-Made Garment (RMG) Workers in Bangladesh

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Abstract

Various trade reform measures in Bangladesh considered from 1970s have been the most beneficial to Ready-made garments (RMG) industry in generating employment, and income. RMG industry has provided enormous opportunities to Bangladeshi women to work outside the home for wages. It is opined in the literature that this change has contributed and increased emphasis on women's employment, income, consumption, and campaigns to improve their health, right, equality, and empowerment. This paper investigates how different monetary and non-monetary indicators effect on the poverty among RMG workers in Bangladesh and compares between Export Processing Zone (EPZ) and non-EPZ areas. The methodology is based on 495 primary samples from five different industrial zones in Bangladesh. Using structural equation modeling (SEM) this study developed a new method for measuring poverty. Various dimensions of poverty are found as income, consumption, better working facilities, career prospect and housing condition. This study also finds that monthly salary is the most influential indicators of income while safe drinking water and daily meat intake have significant influence on consumption. Another dimension of poverty, better working facilities, is determined by the availability of medical facilities and maternity leave. Career Prospect is emerged as a new determining factor of poverty. As a policy prescription the paper suggests that stakeholders including government and, owners of the RMG industry should focus attention on making the industry a more worker friendly and sustainable platform for worker's equal well-being.

Keywords: Poverty, SEM, Bangladesh

1.0 Introduction

Increasing per-capita gross domestic product (GDP), favourable balance of payment position, export earnings, competitiveness and poverty reduction through creation of employment opportunities are the prime objectives of trade liberalisation in Bangladesh (Raihan, 2007). RMG industry is the number one beneficiary of trade reforms and has been expanding rapidly since the late 1970s. This study primarily finds out how monetary and non-monetary indicators have been affecting on RMG workers and their poverty. For defining poverty, this paper considers Sen's (1985) the Capability Approach and Alkire and Santos (2007; 2009) multidimensional poverty measurement approach [1]. This paper is organised as follows: Section 2 describes literature of multidimensional poverty and RMG workers' poverty, Section 3 reviews literature on poverty in Bangladesh, Section 4 discusses methodologies and model development, Section 5 makes comparisons between EPZ and non-EPZ areas, Section 6 policy recommendation and Section 7 summary and conclusion.

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[1]Alkire and Santos (2007) identified three dimensions of poverty is health, education and standard of living.

2.0 Literature Review

Poverty is a multidimensional social phenomenon and can be studied as income and human poverty[2]. Different yardsticks have been used to define and measure poverty. Poverty may be considered as a function of income, education and or health; life expectancy, child mortality, etc. (Singer, 1975). Inability to meet basic needs is poverty (Blackwood and Lynch, 1994). Basic needs refer to the physical (food, health care, education, shelter, etc.) and non-physical (participation, identity, etc.) requirements for a meaningful life.

Sen (1985) rejects monetary income as the sole measure of wellbeing, which he defines as the freedom of individuals to live a life that allows them to fulfil their capacities. Well-being comes from a capability to functioning in the society[3]. A person's capabilities are to be and to do things of intrinsic worth, i.e. resources adequate to achieve a specified set of functionings (Sen, 1983). The absolute set of capabilities translates into a set of goods requirements which are relative to a particular society and its standard of living.

After Sen's work multidimensional measure of poverty draws attention of researchers. Alkire and Santos (2010) use multidimensional poverty index (MPI) theory and describe income, health, child mortality, nutrition, education (year of schooling, child enrolment), security, empowerment and standard of living (electricity, drinking water, sanitation, flooring, cooking fuel & assets) as poverty measuring indicators. Poverty is now more frequently defined as a type of 'social exclusion' (Narayan, et. al., 2000). According to Wagle (2008) poverty is not only covers lack of income or other economic resources need to maintain decent quality of life; it also covers lack of capability and social exclusion[4].

The social and economic dimension of the RMG sectors have been explored in several studies (Paul-Majumder 1996; 2003; Paul-Majumder and Begum 1997, Kabeer and Mahmud 2004, Paul-Majumder and Begum, 2002). All these studies address the socio-economic conditions for workers, wages, working hours, work environment, social security and social status. These studies find that the export-oriented RMG industry has provided unprecedented wage employment opportunities for young Bangladeshi women. Paul-Majumder and Begun (2000) find that only 6% of males in comparison with 32% of females are receiving wages below the legal minimum. Male are more often promoted ahead of females and males earnings increase at much higher rate than women's, even after controlling for age, education, experience and skill level (Zohir and Paul-Majumder, 1996).

Regarding matrimonial issues Hewett and Amin (2000) find that female garment workers have a higher age at marriage and at first birth than women of similar socio-economic background who do not work in the garment sector. Some of the garment workers can even take decisions on whom to marry and have fewer children. They are more likely to have better quality housing conditions and access to modern infrastructure. Women working in the garment sector have a higher propensity than other women to spend their money on jewellery, entertainment, cosmetics and gifts (controlling for income level). The nutritional intake of

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[2] UNDP (2003) describes income poverty is the lack of income necessary to satisfy basic needs; and human poverty is the lack of human capabilities for example poor life expectancy, maternal health etc.

[3] According to Sen (1987) poverty arises when people lack of key capabilities, and so has inadequate income or education, or poor health, or insecurity, or low self-confidence, or a sense of powerlessness, or the absence of rights such as freedom of speech.

[4] The social exclusion approach studies the structural characteristics of society, which engender processes and dynamics that exclude individuals or groups from full social participation.

garment workers appears to be comparatively higher, but they are more likely than other women to suffer from a range of minor health problems.

Many studies, such as (Kabeer, 2000; Hewett and Amin, 2000) appear to agree that women working in the RMG industries feel that their status has improved. Garments workers had positively affected self-esteem and decision-making with benefits extended to other family members. As the above mentioned studies do not cover multidimensional poverty of RMG workers in Bangladesh, this paper will cover up that literature gap.

3.0 Poverty in Bangladesh

The history of poverty in Bangladesh goes back to the British colonial period[5], the actual surge of interests on poverty among academics and researchers began after the independence in 1971. Bangladesh has long been considered poverty dominated region and it is the major and fundamental issue of development in Bangladesh. Poverty has manifold expressions, many dimensions and indeed many roots. Government, NGOs, researchers and the policy makers are now involved in devising more effective poverty reduction strategies and those lead to decrease poverty level in Bangladesh. Table-1 reports poverty trend of Bangladesh during the last three decades.

Table 1: Poverty Trends in Bangladesh (%).

Year	National	Urban	Rural	PG[6]	SPG
1983/84	52.3	40.9	53.8	15.0	5.9
1988/89	47.8	35.9	49.7	13.1	4.8
1991/92	49.7	33.6	52.9	14.6	5.6
1995/96	53.1	35.0	56.7	15.5	5.7
2000	49.8	36.6	53.1	13.8	4.8
2005	40.0	28.4	43.8	9.8	3.1
2010	31.5	21.3	35.2	6.0	2.0

Source: BBS, 2000, 2005, and 2011

The official figure for the estimated level of poverty of the country immediately after independence stood as high as 82.90% in 1973-74. The latter half of the 1970s marked the beginning of a rapid decline of poverty followed by a hiatus during the 1980s, poverty continued to decline during the 1990s and the pace of reduction got even faster during 2000s[7].

Poverty still remains at a very high level and the number of people living below poverty line remains almost the same as it was in 1991-92. The most startling consequence of widespread poverty is that one third of the country's population (56 million people) are below the poverty line, though poverty declined from 57.00% of the population in 1990 to 31.50% in 2010 (WB, 2010). Faster poverty reduction during the 1990s was also accompanied by rising inequality and this inequality has the potential to dampen the pace of economic growth as well as the poverty reduction outcomes (Sen, 2003).

Poverty varies significantly between regions and is the highest in the north-western region of the country[8]. Poverty also varies between education levels and is the highest that has no education. Only 4.30% graduate or higher educated people are poor while it is 63.20% of no

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[5] See Akhter H. Siddiqui, (1982).

[6] Poverty gap and squared poverty gap.

[7] Azam and Imai (2009) also find that poverty has declined from over 80% in the early 1970s to around 40% in 2005. People living below the poverty line have declined almost 1.5% a year since 1990s which is quite impressive.

[8] See Sen (2003).

education person (HIES, 2000, 2005). Poverty is more pronounced in some areas and regions of the country, which suffer from unemployment, various discrimination, flooding, river erosion, mono cropping and similar disadvantages.

4.0 Methodology and Model Development

This paper used quantitative method and cross-section data from five representative industrial zones in Bangladesh and survey was done between April and May 2011. This study covers in-depth analysis of monetary and non-monetary indicators of RMG workers poverty in Bangladesh. Considering industrial location, export performance, number of industries, commencement of production this study interviewed 164 respondents from Dhaka, 41 from Dhaka EPZ, 96 from Narayangonj, 138 from Chittagong and 56 respondents from Chittagong EPZ.

A questionnaire is used for this study has nine sections dealing with different dimensions to collect data from key informants of RMG industries. As a multidimensional approach the questionnaire includes RMG workers income and consumption (Alkire and Santos, 2010), working conditions and facilities (UNDP, 2003), new employment opportunities, house condition (Spiker, 1999) and access to different services. The questionnaire was of mixed mode; it contained questions with multiple options on a five point Likert-scale and few were dichotomous. Respondents were chosen randomly from different industries and living nearby the selected industrial zones. The questionnaire had 41 variables and enables to examine and explain relationships between different constructs, in particular cause-and-effect relationships. The study followed six steps procedure which represents the whole process of data generation and analysis[9]. The various stages of sample selection and model building process are reported in the Figure-1

4.1 Stage 1: Conceptualizing the Model

This paper hypothesises a multidimensional poverty model and identifies poverty as lack of income, consumption, proper housing, working facility and access to different services and presented in the Figure-2. This paper estimated some latent factors of poverty and used structuaral equation modeling (SEM) as a statistical tool for analysis as it can be used simultaneously to determining dependent and independent variables. As a four interlinked process of SEM, first exploratory factor analysis (EFA), then confirmatory factor analysis (CFA), in the third stage measurement model analysis and finally SEM was developed and tested.

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[9]These six steps are literature review, conceptual framework, and content analysis, generation of questionnaire including ethical approval, translation and pretesting of questionnaires, data collection and data analysis.

Figure 1: Sample Selection, Data Collection and Model Development Process

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┌──────────────────┐      ┌──────────────────┐      ┌──────────────────┐
│ Deciding about   │      │ 5 Industrial     │      │ Random selection │
│ respondents and  │ ───▶ │ Zones selected.  │ ───▶ │ of workers from  │
│ place based no.  │      │ These are Dhaka, │      │ nearby           │
│ nature of        │      │ DEPZ,            │      │ residential      │
│ industry, and    │      │ Narayangonj,     │      │ areas.           │
│ location.        │      │ Chittagong and   │      │                  │
│                  │      │ CEPZ.            │      │                  │
└──────────────────┘      └──────────────────┘      └──────────────────┘
                                                              │
                                                              ▼
┌──────────────────┐      ┌──────────────────┐      ┌──────────────────┐
│ EFA is performed;│      │ Data cleaned,    │      │ Face to face     │
│ 5 factors and 29 │ ◀─── │ test of          │ ◀─── │ surveyed and 495 │
│ items were       │      │ normality and    │      │ questionnaires   │
│ selected.        │      │ reliability of   │      │ were filled up   │
│                  │      │ data set.        │      │ at respondent's  │
│                  │      │                  │      │ resident         │
└──────────────────┘      └──────────────────┘      └──────────────────┘
         │
         ▼
┌──────────────────┐      ┌──────────────────┐      ┌──────────────────┐
│ CFA performed    │      │ Measurement      │      │ Finalized        │
│ and 5 factors    │ ───▶ │ models           │ ───▶ │ structural model │
│ and 22 items     │      │ preparation and  │      │ with 5 factors   │
│ were identified. │      │ validation       │      │ and 18 items.    │
│                  │      │ tested.          │      │                  │
└──────────────────┘      └──────────────────┘      └──────────────────┘
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4.2 Stage 2: Reliability Test

Before EFA, reliability of data set was tested with Cronbach's α. The value of Cronbach's α is 0.829 and it means that the results extracted from the questionnaire is highly reliable and suitable for analysis (Field, 2005).

4.3 Stage 3: Exploratory Factor Analysis

Through EFA analysis this paper identies nine latent factors of poverty. In the EFA procedure out of 36 items 11 were excluded from the analysis due to non-normality, low communality and facor loadings[10]. In the EFA we did the measure of sample adequacy (MSA) by Kaizer-Meyer-Olkin (KMO) test. The KMO value of this dataset is 0.833, which falls into the range of being meritorious[11]. In addition, an individual MSA for the items were caluculated and found from 0.563 to 0.894 and this is an another positive indication of data adequacy. Following the exploratory procedure, a CFA was done to test the theory. Based on the *eigen value* rule 24 items belong to 9 individual factors.

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[10] Variables such as annual increment, want to work overtime, overtime, days off in a week, number of rooms, separate toilet facilities at work place and ownerships of dwelling place were highly skewed and removed from the analysis for normality reason.
[11] See Kaiser H. (1970).

Figure 2: Conceptual Poverty Model
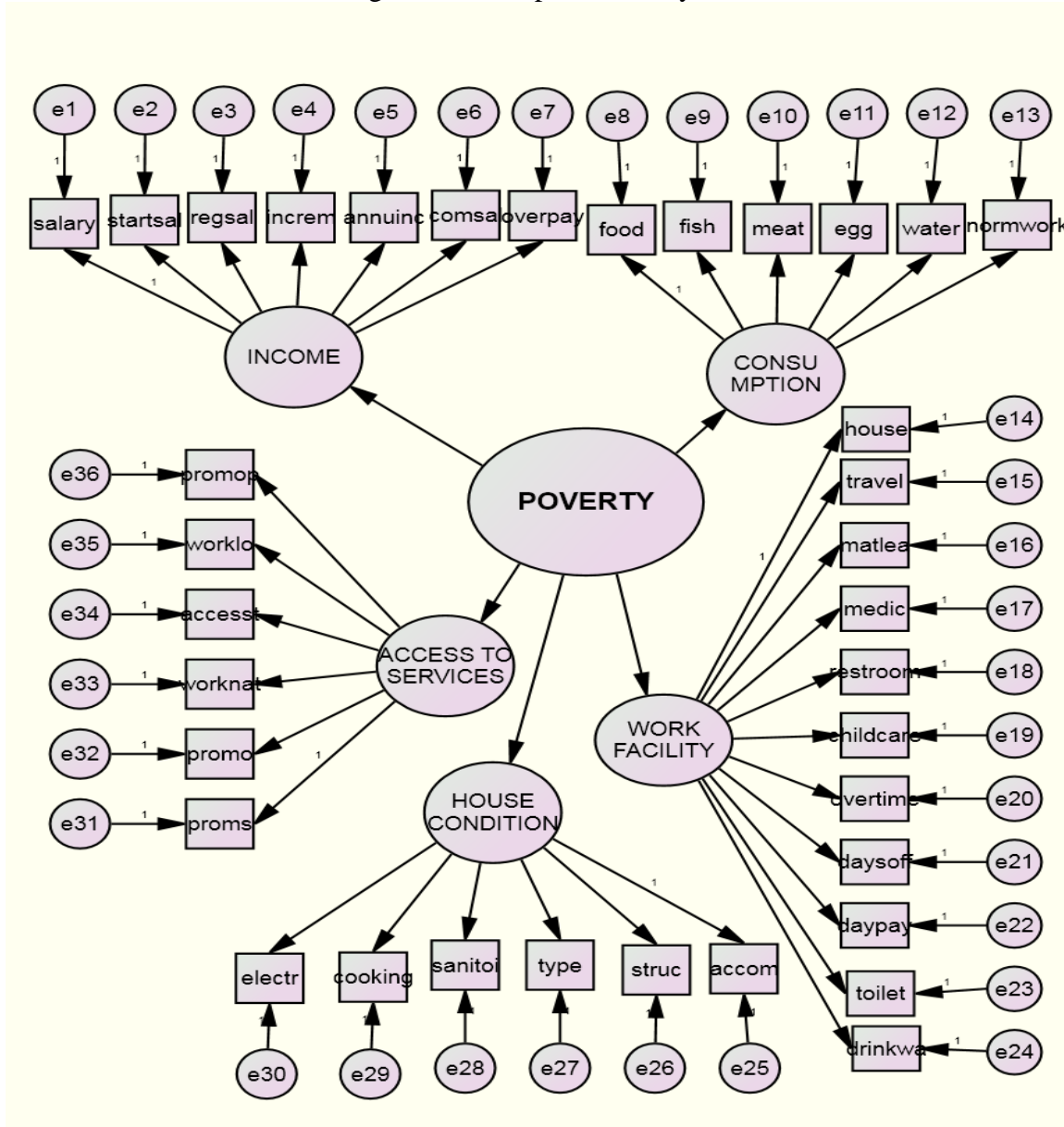
These nine factors are reduced to five considering existing literature and socio-economic conditions [12] of the RMG workers, and poverty level. These five factors are income, consumption, housing conditions, work facility and the new one is named as Career prospect.

4.4 Stage 4: CFA Analysis

CFA was done to confirm the latent variables that make up poverty dimensions identified through the EFA. To proceed with measuring the fit, some interrelated statistical techniques were used to analyse the data as an appropriate stream. The fit statistics presented in the Table-2 examine the internal consistency of the item in a measure to determine whether each observed variable should be retained or any exclusion should be done.

The individual measurement models created through the CFA and analysed in tandem with indicators of poverty to determine a measure of goodness of fit for the model presented in the

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[12] Socio-economic condition includes income, occupation, family status, psychological condition etc.

this section. In the SEM procedure[13], demographic information were excluded to control for its outside effects on the model. In the CFA procedure five measurement models were tested following SEM fit statistics (Table-2). In measurement model, 5 variables were ommited due to low factor loadings, high correlations and for better fit of the model. This paper used *chi-square*, normed *chi-square*, Root Mean-Square Residual (RMR), Goodnes of fit index (GFI), Adjusted goodness of fit indices (AGFI), Tucker-Lewis Index (TLI), Comparative Fit Index (CFI) and Root Mean Square Error of Approximation (RMSEA) as fit statistics[14]. Through the process of estimation, fit statistics were evaluated to check whether the proposed model is a good fit to the data or not, or whether any modification is required to better fit. In the next paragraphs diferent measurement models and their fit ststistics are reported.

Table 2. Model Fit Statistics

Statistics Name	Recommended Value	Model Value
Normed Chi-square[15]	≤ 2.000	1.415
RMR	≤ 0.050	0.030
GFI	≥ 0.900	0.968
AGFI	≥ 0.900	0.948
TLI	≥ 0.900	0.973
CFI	≥ 0.900	0.981
RMSEA	≤ 0.060	0.029

4.4.1 Work Facility

Among the five factors[16] of povety, work facility emerged as the largest one. EFA finds traveling allowance is the most influential item to determine work facility, after CFA medical allowance became the most influential item as shown in the Figure-3. The intial fit statistics were *chi-square* 51.6, degree of freedom 9 and normed *chi-square* 5.734, RMSEA 0.098, GFI 0.965, AGFI 0.918, CFI 0.951, and TLI 0.918. With modification and addition of error variances overall model fit statistics have been improved. Among the fit statistics critical ratio[17] (CR) reached between 9.961 to 14.792, factor loadings from 0.494 to 0.772, TLI 0.978, CFI 0.991 and RMSEA 0.051.

We followed the same procedure for the remaining 19 items and four factors with a restricted rule requiring the deletion of items with a loading less than 0.400 and accepting the individual CFA models with goodness of fit statistics. In addition social values, norms amd socio-economic factors, existing literature, observation from the field survey were taken into consideration to determine the significance of droppable items. The above method has been used to the other latent factors. Detailed methodology ommitted to avoid repetition.

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[13]SEM can be used to test 'complex' relationships between observed (measured) and unobserved (latent) variables and also relationships between two or more latent variables.

[14]McQuitty (2004) synthesised goodness of fit indices less sensitive to sample size. These indices are TLI suggested by Marsh et al. (2004), IFI, TLI, CFI suggested by Bentler (1990), and RMSEA, CFI and TLI suggested by Fan et. al. (1999).

[15] Normed chi-square is chi-square divided by degrees of freedom.

[16] A variable that is not directly measured is a latent variable. The "factors" in a factor analysis are latent variables.

[17] According to Holmes-Smith and Cunningham (2004) CR value > 1.96 indicates model fit.

Figure 3: Work Facility and its Indicators
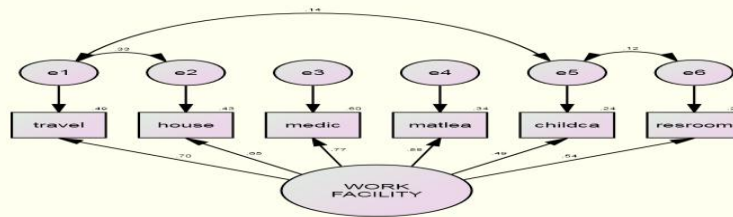
4.4.2 Income

The analysis finds income is a comprehensive factor, and rendering the task of identifying appropriate indicators bit more difficult. From EFA six variables were identified as determinant of income. After CFA regular salary payment, annual increment and salary paytime emerged as infulential variables. Salary and staring salary[18] are important to measure income and also theoretically important, so these variables were kept in the analysis.

4.4.3 Consumption

Consumption depends on individual's income, food habit, socio-economic background and health consciousness. Most of the RMG workers are from lower section of the population (BGMEA, 2011) and they consume food specially rice, egg, meat, fish and water. Regular food intake especially rice as a major part of consumption in Bangladesh and safe drinking water is still influential in determing consumption and added as indicator[19]. EFA finds daily consumption of fish is the most influential variable for consumption but after CFA meat has become the most influential one.

4.4. 4 House Condition

RMG workers housing facilities are different from neighbours and other people. Existing literatures find number of rooms, ownership, house structure, electric connection, sanitary toilet facilities, drinking water facilities, cooking stuffs and overall condition of the house are indicators of housing.
Most of garment workers live in a single room[20], with shared electric connection and are not satisfied with the present house condition. So, these variables are highly skewed and deleted from the analysis. EFA finds cooking stuff as the most influential item but afetr CFA it has become less important and factor loading reduced to 0.162. After deleting cooking stuff from the analysis CR improved and reached between 2.883 to 3.087. In CFA accommodation emerged as the most influential determinant with factor loading 0.730.

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[18] During survey most of the workers reported that monthly salary and starting salary are the determining factor for a job and attract them to work.
[19] Bangladesh government has undertaken safe drinking water and minimum salary policy with the help of UNICEF, BGMEA and ILO. Still safe drinking water is not adequately and evenly available in everywhere. Due to minimum salary policy workers can buy minimum food and they have normal workable ability.
[20] During survey it had seen that 95% workers live in a single or shared room.

4.4.5 Career Prospect

Career prospect emerged as a new factor that influences on poverty workers income, consumption and house condition. This factor is consisted of career improvement opportunity and prospects, number of promotions, promotion scope, equal promotion opportunities, and other work related facilities such as access to traning and facilities. This study finds access to training, equal promotion opportunities and promotion as the indicators of career prospect.

4.5 Stage 5: Validity of the Measurement Model

For the construct validity of the model, we checked convergent and discriminant validity and also the composite reliabilty. Average variance extracted values of all the factors are more 42%, which guaratees the evidence of convergent valididty. Result of the construct or composite reliability shows all values are greater than 0.500 and suitable for the analysis.

4.6 Stage 6: Constructing Structural Model

After testing individual EFA, CFA and measurement model, we test structural model. In the structural model we found 5 items with low factor loadings and those were deleted from the analysis. After deleting these items from the analysis overall fit statistics have been improved. The fit statistics justify the deletion of eleven items from different constructs measures. This reduces chi-square value by 35.599 and degrees of freedom 22. The application of suggested modifications in the individual's measurement model also substantially improved the other fit indices in the overall structural model. In the proposed theoretical model the factor loading of travel allowances was 0.671 after EFA it was improved to 0.708; in the measurement model it reached 0.723 and SEM 0.718. The retained 18 items in different construct measures also suggest reasonable congruity between data and measurement models. Different statistical processes have been done to reach reliable conclusion and precision of the analysis. Table-3 compares fit statistics between different model development stages.

Table 3: Comparison of Fit Statistics between Different Stages

Fit Indices	Overall Measurement Model			
	Theoritical	CFA	Measuremnt	Structural
Chi-square	981.009	130.233	94.634	149.985
(DF)	(533)	(98)	(76)	(106)
CMIN/DF	1.841	1.329	1.245	1.415
RMR	0.035	0.029	0.025	0.030
RMSEA	0.041	0.026	0.022	0.029
GFI	0.900	0.970	0.977	0.968
AGFI	0.875	0.954	0.960	0.948
NFI	0.789	0.922	0.958	0.940
TLI	0.868	0.971	0.986	0.973
CFI	0.888	0.979	0.991	0.981

In the measurement model overtime payment and regular salary has very low factor loading (0.320 and 0.313). From the intial statistical analysis (mean, standard deviation) it was found that most of the workers are getting their salary regularly and overtime payment, so these two variables became less significant in the overall model[21] and dropped from the analysis. In

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[21] BGMEA and Bangladesh government ensure regular salary and overtime payment.

consumption component egg and fish[22] has very low factor loadings (0.283 and 0.307) and dropped from the analysis. After deleting these variables all CRs improved and reached between 6.112 to 15.653, factor loadings above 0.500 except house type 0.376 and access to training 0.381[23]. Other items were deleted following the same criteria and procedure. House type and access to training[24] were kept though factor loading are less than 0.400 considering their social and economic importance. House type is very important items in Bangladesh to determine tradition, values, the culture, house condition and status of the people (Rashid, 2007).

From the above mentioned four interlinked procedure this paper indenties a new model of poverty with five factors and eightteen items. All items are statistically significant and measures a multidimensional poverty model. The five dimensional model with different indicators presented in the Figure-4. Among the the five dimension poverty is determined by working facility and career prospect. Career prospect influences on income, consumption and housing condition.

5.0 Analysis and Comparison Between EPZ and Non-EPZ Area

This paper compares between EPZ and non-EPZ area worker's indicators of poverty. From comparison it is seen that EPZ workers are more priviledged and factor loadings (regression weights) of different items are smaller than non-EPZ workers. Table-4 reports factor loadings and their ratios between two separate economic zones.

From the above table it is obvious that access to trainig is the most diguishing item. EPZ workers have 102.750 (factor loading for EPZ: 0.004 and for non EPZ: 0.411) times more access to training facilities than non-EPZ workers. It is also seen from simple statistics[25] that 42.20% non-EPZ workers do not have access to training while this is only 24.70% for EPZ workers. Most of the garments industries in the EPZ area are owned by foreign investors and they employ trained people and also create trainig opportunities for their employee.

The second highest distinguishing item between the two economic regions is house type (factor loading for EPZ: -0.093 and for non-EPZ: -0.386). The negative factor loading for house type in the factor house condition because the RMG workers spent most of the times at workplace and they are not so much aware of their living statndard and social status[26]. The reason for very low factor loading in the EPZ area is Bangladesh Export Processing Zone Authority (BEPZA) ensures basic infrastructure including dormitory for the workers and that makes house type lees attarctive to them.

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[22] Bangladesh Fisheries Development Corporation has taken many programmes for fish production and that makes fish available for consumption. Similarly there is enormous development of poultry industry in Bangladesh.

[23] According to Hair et. al (2009) when sample size is $\geq$ 300 factor loading 0.300 is significant.

[24] During survey most of the respondents expressed the importance about training facilities and that helps for better career prospect.

[25] Simple statistics means mean, median and percentage value of different indicators/items.

[26] During survey it was seen that workers used to go work place at 8.00 am and comeback after 8.00 pm or 9.00 pm.

Figure 4: Poverty Model with Latent Factors and Indicators
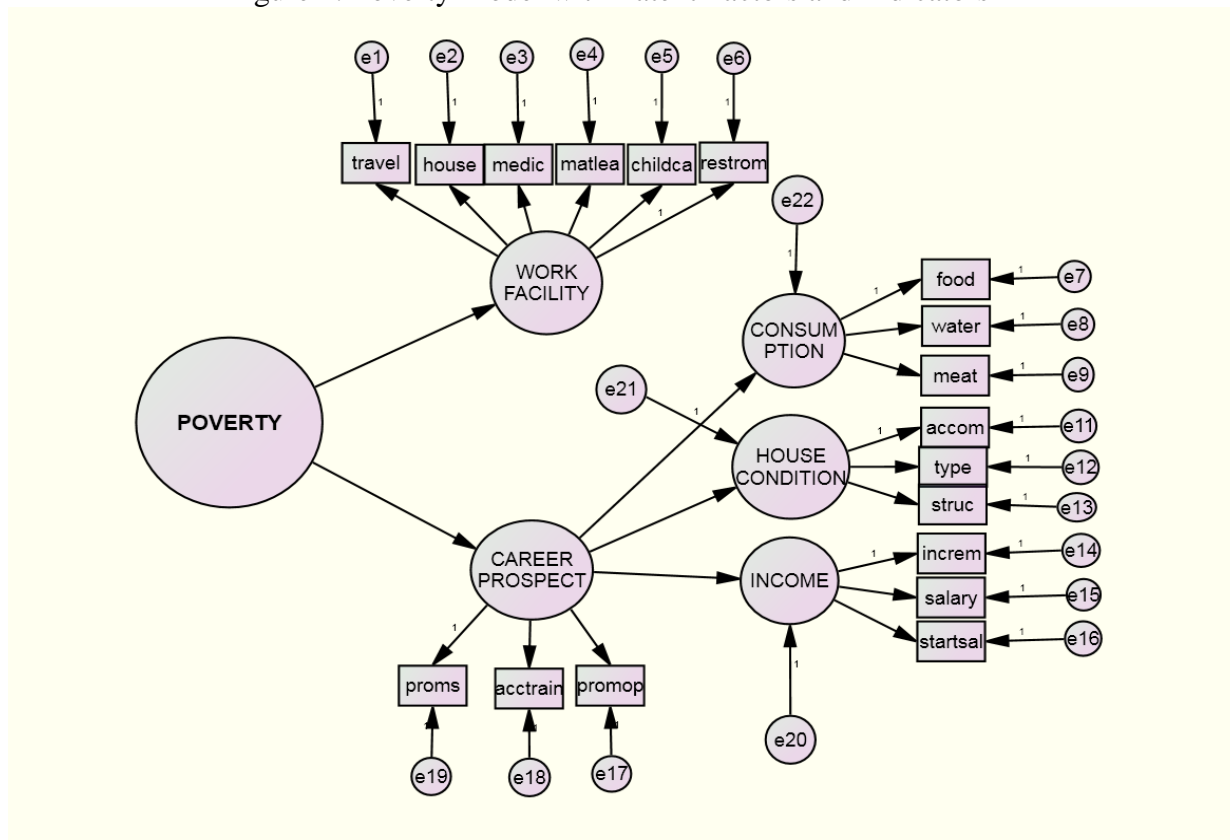
Table 4: Comparison Between EPZ and Non-EPZ Area

Variables/Items	Factors/Latent Variables	EPZ	Non-EPZ	Non-EPZ /EPZ
Travel allowance	WORK FACILITY	0.334	0.670	2.006
House allowance	WORK FACILITY	0.542	0.624	1.151
Medical allowance	WORK FACILITY	0.556	0.716	1.288
Maternity leave	WORK FACILITY	0.383	0.539	1.407
Childcare facility	WORK FACILITY	0.254	0.449	1.768
Restrom facility	WORK FACILITY	0.479	0.568	1.186
Food	CONSUMPTION	0.284	0.631	2.222
Water	CONSUMPTION	0.515	0.634	1.231
Meat	CONSUMPTION	0.297	0.539	1.815
Accommodation	HOUSE CONDITION	0.684	0.684	1.000
House type	HOUSE CONDITION	-0.093	-0.386	4.151
House structure	HOUSE CONDITION	0.836	0.722	0.864
Increment	INCOME	0.454	0.428	0.943
Salary	INCOME	0.274	0.530	1.934
Starting salary	INCOME	-0.295	0.448	-1.519
Promotion	CAREER PROSPECT	0.328	0.432	1.317
Access to training	CAREER PROSPECT	0.004	0.411	102.750
Promotion scope	CAREER PROSPECT	0.828	0.477	0.576

The third distinguishing item is food (factor loading for EPZ: 0.284 and for non-EPZ: 0.631). It is seen from the simple statistics that EPZ workers get higher salary than non-EPZ workers

which is 10.10% of non-EPZ and 32.10%[27] of EPZ are workers get a monthly salary of BDT 5000.00 and above. BEPZA ensures minimum monthly salary for unskilled workers US$ 39.00-48.00, semi-skilled US$55.00 and skilled US$61.00-109.00 (EPZ Workers Association and Industrial Relations Act 2004 (ammended on October 2010)) but non-EPZ workers are still struggling minimum salary (Reuters, 2010). With this minimum salary EPZ workers can esure their basic foods and its factor loading is less than non-EPZ workers.

One interesting observation made in the Table 4 is that the non-EPZ workers live in better house structure (factor loading for EPZ: 0.836 and for non-EPZ: 0.722) and have scope of promotion (factor loading for EPZ: 0.828 and for non-EPZ: 0.477). The EPZ areas are developed specially for foreign investors and that makes those areas comparatively expensive than non-EPZ areas. Though employee and workers get higher salary they need to pay higher rent for their accommodation. Most of the RMG workers are from poor family and remit financial support to their family who live in the village. Thus these RMG workers can not afford to live in a better (and costly) accomodation near by their workplace in the EPZ area. Though in 2010 Bangladesh governmet amended EPZ Workers Association and Industrial Relations Act 2004, still they cannot enjoy the benefits and join trade union for bargaining their work benefits like non-EPZ workers. So their promotion scopes are likely limited than non-EPZ workers.

6.0 Policy Recommendation

RMG industry has opened a new era of formal employment for unskilled women workers in Bangladesh. As the impotant elements of trade reform programmes removal of import duty, allowing various export incentives, and availability of cheap labour both in EPZ and non-EPZ areas RMG manufacturers and exporters are now exposed to less difficult and competitive local working environment.

There are some especial laws and rules for EPZ industies. According to the law the average monthly salary has been fixed for unskilled, semi-skilled and skilled workers mentioned it in section 5. EPZ industries ensure other benefits to workers such as conveyance allowance, house rent, medical allowance, maternity leave and benefit, festival bonus, provident fund and overtime (BEPZA, 2011). Except these labour intencives programmes BEPZA ensures basic infrastructure for owners and workers such as electricity, water & gas, fully serviced plots, rental factory building, enclave for workers dormitory & day care centre and warehouse and godowns. BEPZA also provides supportive, administrative and other service for investors and workers. Support service includes bank, courier, post office, clearing & forwarding agent, shipping agent, etc. Among the administrative services customs office, police station, in-house security, fire station, public transport, medical facilities are prominents. Other services are mainly for the owner and investors which include restaurant, health club, investors club, recreation centre, school and college, sports complex, exclusive telephone exchange, electricity sub station, business centre, anglers club etc.

There are also some allied laws and rules such as Foreign Private Investment (Promotion and Protection) Act, 1980, membership of OPIC's (Overseas Private Investment Corporation, Multilateral Investment Guarantee Agency (MIGA) and Arbitration facility of the International Center for the Settlement of Investment Dispute (ICSID) makes investment in

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[27] These two percentage figures are also calculated on the basis of simple statistics.

EPZ industries more attractive. Non-EPZ areas are not under the perview of those laws, rules, policies and membership. These supportive, administrative, and legal provisons reduce cost of doing business in the EPZ areas, make more competitive and workers and investors friendly. Due to the above policies EPZ area workers have less factors loadings in most of the items than non-EPZ workers presented in the Table-4. Among the 15 favourable items for EPZ workers necessary steps should be taken for the highest four such as create equal training opportunity, minimum monthly salary for buying food, housing facility or allowance and traveling allowance to reduce regional disparity. Ensuring better and equal working environment, standard of living between different industrial zones can ensure the country's international competitiveness, and trade-led poverty alleviation in Bangladesh.

7.0 Summary and Conclusion

Different trade reform programmes in Bangladesh considered the most beneficial to RMG industry in generating employment, income, better housing condition, consumption and access to different services. This paper concentrates on the MPI and the capability approach and measures impact of different monetary and non-monetary indicators on the RMG workers poverty and also compares between different industrial zones. The methodology is based on 495 primary samples collected in April and May 2011 from five different industrial zones in Bangladesh. This paper developed a new model of poverty with five dimensions using SEM. Among five dimensions career prospect is emerged as a new determining factor of poverty and EPZ workers are more priviledged than non-EPZ workers.

From the above analysis and discussion it is important to explore every possible means including new rules and policies to promote competitiveness of the sector. Bangladesh government should introduce and implement rules with the help of RMG owners those can ensure non-EPZ workers training facilities, better housing condition, minimum salary for buying food and some work related benefits as these are the four highest distinguishing items. Certainly, addressing the issues related to workers well-being explained above and issues related to investors such as supportive and administrative services will greatly open up the possibilities for further improvement in workers' welfare and human development and also reduce poverty and disparity between different regions.

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Demographic Analysis of Poverty in Pakistan

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Abstract

Poverty is a multidimensional commencement and usually it is defined by focusing narrowly on income poverty or broadly by including lack of access to opportunities for raising standards of living. Strategies aimed at poverty reduction need to identify factors that are strongly associated with poverty and agreeable to modification by policy. This study uses integrated Household Survey (2009-10) data collected by Federal Bureau of Statistics Pakistan to examine probable determinants of poverty status, employing Polychotomous discrete choice model for poverty modeling. In general, this study tries to seek the factors like demographic and human capital variables that account for poverty differentials and craft a difference in rural-urban poverty concentration on unusual band of poor. The demographic variables show significant impact on poverty status of the household, especially dependency ratio, sex of the head of the household, family type and household size. These all are found to be of supreme important in defining poverty with feeble discrepancy in rural and urban region. The educational attainment of the head of the household is found to be very important factor that is associated with poverty. If policy makers target the education of head of household in order to get rid of this evil vicious circle of poverty for transitory band of poor specifically then it might be establish more effective, powerful and sustainable tool.

Keywords: Poverty status, demographic variables, human capital variables, poverty differentials

1.0 Introduction

Poverty refers to either lack of command over commodities in general or inability to obtain a specific type of consumption (food, clothing, housing etc.) deemed essential to constitute a reasonable standard of living in a society. Living standard is not determined by income and consumption alone, but non-economic aspects such as life expectancy, mortality, access to clean drinking water, education, health, sanitation, electricity and security are also important measures of well being. Critical variables that contribute to improve living standards are health facilities, drinking water, sanitation facilities, and availability of public utilities etc.

In developing countries nutrition and health is common problem which get severity in case of poverty. This situation provokes a vicious circle of low productivity, low wages, malnutrition, ill-health and low working capacity. The interaction between poor health and working conditions and poverty determines a distinctive morbidity-mortality pattern among poor community, which is due to the combination of malnutrition.

The eradication of poverty has been a subject of debate in world for decades, yet it was in recent years that seriousness of the situation was realized globally and specific efforts were taken in this direction. In the same way reducing poverty has the remained main objective of the policy makers in Pakistan. The living conditions of Pakistan's poor and poverty alleviation have gained more importance since the adoption of Millennium Development goals (MDGs). The existing work on poverty in Pakistan shows that a large number of efforts

have been made to estimate the rate of poverty in Pakistan during the last two decades. However, this study is not concerned with the measurement of poverty rather this focuses on the dynamics and determinants of poverty which categorize the entire population into different classes/bands like non-poor, transitory poor and extremely poor. It employs bivariate logit model and polychotomous discrete choice model using Pakistan Household Integrated Survey (2009-10)data conducted by Federal Bureau of Statistics Pakistan to identify the factors which strongly effect the household or individual's likelihood of entering or exiting poverty status.

Overall, this study aims to examine the impact of key factors related to demographic status and human capital that account for poverty disparity in rural and urban region of Pakistan.

2.0 Review of Literature

The review of different studies in which poverty nexus is explored with different perspectives is presented in the subsequent section. In general, these studies have used different methodologies, including ordinary least squares regression where the dependent variable is continuous, logistic regression where the dependent variable is binary and quantile regression where the dependent variable is income.

The effects of different economic and demographic variables on the probability of a household being in poverty in Costa Rica was analyzed by Rodriguez and Smith (1994)they used a logistic regression model to estimate. The authors found that the probability of being in poverty is higher, the lower the level of education and the higher the child dependency ratio, as well as for families living in rural areas.

McCulloch and Baulch (1998) have investigated poverty dynamics in rural Pakistan using a unique five-year panel data set from the second half of the 1980s. Their results confirm that while the incidence of income poverty in the panel is high, with between one-fifth and one-third of households in any year having incomes below the poverty line, turnover amongst the poor is also rapid. Conventional poverty status (Logit) regressions show that the probability of a household being in poverty is increased by its household size, the dependency ratio and district of residence but decreased by secondary education, land, the value of livestock and other assets owned. The age and sex of the household head together with basic education did not, however, alter a household's poverty status.

The Dogit Ordered Generalized Extreme Value (DOGEV)[1] is an attractive model from the class of discrete choice models for modeling determinants of poverty across poverty categories (absolute poor, moderate poor) which was applied by Fissuh and Harris (2005) for micro level data from Eritrea Household Income and Expenditure Survey 1996-97 to examine the determinants of poverty in Eritrea. Household size defined by adult equivalent units has a significant negative effect on the welfare status of a household. The size of the effect of household size on poverty is not the same across the categories. Age of household head was not found to be significant in linear terms in all poverty outcomes.

However, the coefficient of age squared was found to be negative and significant in the moderate poor category only. Even though education is negatively correlated with poverty, basic education does not suffice. This indicates that education is not sufficient condition to

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[1] DOGEV model nests in it the DOGIT and OGEV models as its variant(a class of logit discrete choice models)

escape from poverty but there are other factors, which affect poverty of a household in conjunction with education. The coefficient of schooling is higher (absolute terms) in the absolute poor category than in the other categories. The probability of a household being non-poor is a concave function of the number of employed persons per household. Besides, regional unemployment rate was found to be positively associated with poverty.

The determinants of poverty in Uganda by using logistic regression model was examined by Adebua, et al. (2002).This study shows that household with better educated heads are less likely to be poor and large households are more likely to be poor. This confirms that the larger the household size, the poorer the household is. This is because the large number of household members would likely be children who are unproductive and yet they take a big proportion of household income in terms of schooling requirement, medical attention, food and clothing.

Several other Studies concludes about poverty factors e.g Coulombe and Mckay (1996) shows poverty is depending on household specific economic and demographic explanatory variables, Lancaster, et al. (1999) depicts age and sex distribution of children in household as factors of poverty, Rodriguez (2000) explore poverty depends on size of the household, living in a rural area, working in a rural occupation and being a domestic worker, Geda, et al. (2001) explain poverty is concentrated in rural areas in general and in the agriculture sector in particular, Goaied and Ghazouani (2001) illustrates household head's education, child dependency ratio, ratio of male and female employees in household, socio professional category of the head, family residence, type of lodging and the share of food budget as variable for poverty determination, Ahmed and Haddad (2002) explain poverty variables i.e age of 60 for head of house hold, household size, living in rural area and attachment with agriculture sector. Similarly Fofack (2002) identifies the burden of age dependency, asset ownership structure, household amenities and spatial location of households as key determinants of poverty in Burkina Faso while Benson and Mukherjee (2003) use independent variables as household level, demographic, education, employment and occupation, agriculture, access to services and utilities variables for poverty, Kidder and McKay (2003) associates poverty with household composition, unemployment, lack of asset ownership, casual employment, lack of education, ethnicity, age and to a certain extent to female-headedness.

The studies reviewed above has analyzed the different determinants of poverty applying different methodologies A review of the existing work on poverty shows that a large number of attempts have been made to estimate the incidence of poverty all over the world during the last two decades. However, in this study we focused on the dynamics and determinants of poverty which categorize the entire population into different classes/bands like non-poor, transitory poor and extremely poor, we are interested to estimate the effect of demographic and human capital variables on the bands of poor for rural and urban region separately; this is novelty of this study.

3.0 Framework of Analysis

Modeling poverty is an art which changes shape having same meaning. There are basically two approaches in modeling determinants of poverty.[2] The first approach[3] is based on the

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[2] See Harris and Fissuh (2005)

[3] This approach works by regressing consumption expenditure (in log terms) on the household, community and common characteristics which are supposed to determine household welfare, for example Glewwe (1990), Muller (1999) and

regression of consumption expenditure per adult equivalent against potential explanatory variables.

The second approach is to model poverty by employing a discrete choice model. The practice of discrete choice models in the analysis of determinants of poverty has been popular approach. The discrete choice model has a number of attractive features in comparison to the regression approach. The regression approach unlike the discrete choice models does not give probabilistic estimates for the classification of the sample into different poverty categories. In a sense we cannot make probability statements about the effect of the variables on the poverty status of our economic agents. Discrete choice model tries to capture any heterogeneity between the different poverty categories but this is not possible in the regression expenditure approach.

The discrete choice analysis proceeds by employing binary logit or probit model to estimate the probability of a household being poor conditional upon some characteristics. In some cases the households are divided into more than two categories and then employ multinomial logit model or ordered logit model is used to identify the factors which affect the probability a household being poor conditional upon a set of characteristics.

In the first stage, we identify the poor and non-poor. In the second stage, we examine how the probability of being extreme poor, transitory poor, non-poor conditionally depend on being identified independent characteristics. The approach we will follow intends to investigate the determinants affecting the probability of being non-poor, transitory poor or extreme poor. In this study we will use the Bivariate logit and Polychotomous Model .In the first stage, we identify the poor and non-poor. In the second stage, we examine how the probability of being extreme poor, transitory poor, non-poor conditionally depend on being identified independent characteristics.

3.1 Bivariate Logit Model

We assumed that the probability of being in a particular poverty category is determined by an underlying response variable that captures the true economic status of an individual. In the case of a binary poverty status (i.e., being poor or non-poor), let the underlying response variable Y^* be defined by the regression relationship.

$$y_i^* = \sum X_i^{'} \beta' + u_i \tag{1}$$

Where $\beta' = [\beta_1, \beta_2, ..., \beta_k]$ and $X_i^{'} = [1, X_{i2}, X_{i3}, ..., X_{ik}]$

In equation (1) Y^* is a latent variable and defined as

Y =1 if   y* >0   and

Y=0   otherwise $\tag{2}$

From equation (1) and equation (2) we can derive the following expressions.

$\Pr ob(y_i = 1) = \Pr ob\left(u_i > -\sum x_i \beta\right)$

Canagarajah and Portner (2003). This approach rests on a heroic assumption that higher expenditure implies higher utility and vice versa.

$$= 1 - F\left(-\sum x_i \beta\right) \tag{3}$$

Where F is the cumulative distribution function for u_i and

$$\Pr ob(y_i = 0) = F\left(-\sum x_i \beta\right)$$

The likelihood function can be given by,

$$L = \prod_{y_i = 0} \left[F\left(-\sum X_i' \beta\right) \right] \prod_{y_i = 1} \left[1 - F\left(-\sum X_i' \beta\right) \right] \tag{4a}$$

This can be written as

$$L = \prod_{y_i = 1} \left[F\left(-\sum X_i' \beta\right) \right]^{1-y_i} \left[1 - F\left(-\sum X_i' \beta\right) \right]^{y_i} \tag{4b}$$

The functional form imposed on F in equation (4) depends on the assumption made about u_i in equation (1). The cumulative normal and logistic distributions are very close to each other. Thus using one or other will basically lead to some results (Maddala1983).
We have specified the logit model for this study by assuming a logistic cumulative distribution of u_i in F (in equation (4a) and (4b). The relevant logistic expressions are,

$$1 - F\left(-\sum X_i' \beta\right) = \frac{e^{\sum X_i' \beta}}{1 + e^{\sum X_i' \beta}} \tag{5a}$$

$$F\left(-\sum X_i' \beta\right) = \frac{1}{1 + e^{\sum X_i' \beta}} \tag{5b}$$

X_i are the characteristics of the households/individuals and β_i the coefficients for the respective variable in the logit regression.

Having estimated equation (4) with Maximum Likelihood (ML) technique equation (5a) basically gives us the probability of being poor (prob (Yi=1)) and equation (5b) the probability of being non-poor (prob (X_i=0))

3.2. Polychotomous Model

After modeling the process that generates the poor or non-poor status, we focus attention on the extreme poor, transitory poor and non-poor. This can be handled by Multinomial Logit model- A polychotomous model.

3.2.1 The Multinomial Logit Model:

This model is designed to estimate the impact of the different explicative variables on each of the forms of poverty. The model will predict the probability that a given household with given characteristics will experience any of the three poverty state. In order to identify the model one of the poverty sate must be taken as the base case.

The model specification is as follows.

$$y_{ij}^* = \beta_j' X_i + \varepsilon_{ij} \tag{6}$$

Where J=0,1,2 representing the three categories of poverty, X_i is the set of explanatory variables and ε_{ij} is a residual.

The probabilities in multinomial logit model are

$$\mathrm{Pr}ob(y = j) = \frac{e^{\beta_j X_i}}{1 + \sum_{j=1}^{j} e^{\beta_m' X_i}}$$

$$\mathrm{Pr}ob(y = 0) = \frac{1}{1 + \sum_{j=1}^{2} e^{\beta_m' X_i}} \tag{7}$$

The estimated coefficients from multinomial logit model are also difficult to interpret because they only provide information on the effects of independent variables on the odd ratio. The analytical expression for the marginal effects on the probability of each category of poverty is,

If X_k is continuous variable

$$\frac{\partial p\left(Y = \frac{m}{x}\right)}{\partial x_k} = P\left(Y = \frac{m}{x}\right)\left\{\beta_{mk} - \sum_{j=0}^{2} \beta_{jk} P\left(Y = \frac{j}{x}\right)\right\} \tag{8}$$

If X_k is a discrete variable

$$\frac{\Delta P\left(Y = \frac{m}{x}\right)}{\Delta x_k} = P\left(Y = \frac{m}{x}, x_k = 1\right)\left\{\beta_{mk} - \sum_{j=0}^{2} \beta_{jk} P\left(Y = \frac{j}{x}, X_k = 0\right)\right\} \tag{9}$$

Our model is based on the assumption that the alternatives available for the poverty status of a household are independent of each other.

3.3 Data Sources

The analysis in this study is based on micro data taken from the Pakistan Integrated Household Survey (PIHS 2009-10) Household Integrated Survey (HIES 2009-10). These household surveys is conducted by the Federal Bureau of Statistics provide comprehensive information about household consumption expenditure, income and different socio-economic indicators that are essential for poverty analysis. The sample size of these household surveys is substantial enough to allow representative estimates. The total sample considered here comprises of 15000 households. After deleting the missing information we get sample size for urban almost 5000 approx and 8000 approx for rural.

3.4 Construction of Variables

This study uses consumption as a welfare and poverty status indicator instead of Income because consumption measures welfare achievement and exhibit less seasonal variability moreover people willingly mention their consumption pattern rather than income. Consumption aggregate is comprehensive and consists of both actual and imputed expenditure. It includes not only actual purchases but also self-produced and consumed items

or consumption of items that were received as gift or assistance or wage and salary in kind. Thus consumption aggregate includes food items, fuel and utilities, housing (rent, imputed rent and minor repair), frequent nonfood expenses (household laundry and cleaning personal care products and services) and other nonfood expenses (clothes, footwear, education, and health related expenses). While adjusting household expenditure in order to get per adult equivalent consumption expenditure, this study uses simple equivalent scale that gives of weight 0.8 to individuals younger than 18 years and 1 to all other individuals.[4]

This study defines poor as population living on less than $1.25 a day at 2005 international prices. That is 1.25US dollar per day= Rs 3375 per capita per month is required to get out of poverty line. The headcount ratio, i.e. proportion of poor households among total households is used as a measure of poverty. We categorized dependent variable into three mutually exclusive categories. We assume that a typical household belongs to one of three mutually exclusive categories

Table 1: Definitions of dependent Variable

Variable	Definition
Dependent variable	
1-Extremely poor	1. Extremely poor households are that whose per capita per month expenditure are less than 0.5 of poverty line.
2-Transitory poor	2. 2-Transitory poor households are those who's per capita per month expenditure lies between the "0.75 of line.
3-Non-poor	3. 3-Non-poor households are that whose per capita per month expenditure is above the poverty line.

Extremely poor
Extremely poor households are that whose per capita per month expenditure are less than 1687.5Rs and is denoted by "2".

Transitory poor
Transitory poor households are those whose per capita per month expenditure lies between the "0.75 of poverty line that is 2531.25 Rs and is denoted by "1".
Non-poor
Non-poorhouse holds are that whose per capita per month expenditure is above the poverty line defined in our study 3375 Rs and is denoted by "0".

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[4] See Cheema, I, A. (2003), "Revisiting the poverty line 2000-2001" for detail of calculation.

Table 2: Definition of Explanatory Variable

VARIABLE	DEFINITION
Age of head of household	Age of head of household is measured in complete years and is treated as a continuous variable.
Female–male ratio.	To see the impact of gender composition in a household on poverty status, the total number of females to total number of males in a household is treated as female-male ratio and it is used a continuous variable in the model.
Dependency ratio.	The dependency ratio is defined as the ratio of number of members (<18 years and >64 years) to household size and treated as continuous variable.
Family type.	The family type is entered in to the model as a binary variable, representing nuclear and joint family. Nuclear family consists of parents and unmarried children.
Household size.	The sum of household members in a household is called household size and it is treated as a continuous variable.
Sex of head of household.	The sex of household head has been taken as a binary variable as, HH_SEX =1, if head of the household is male=0, otherwise
Head work or not:	To see the role of household head's work in effecting poverty status, we use the head's work as a binary variable. HH_WRK= 1, if household head does any work for wages. =0, otherwise.
Educational status of head:	EDU2 = 1, if household head has primary education. = 0, otherwise. EDU3 = 1, if household head has higher secondary education. = 0, otherwise. EDU4 = 1, if household head has college education. = 0, otherwise. EDU5 = 1, if household head has higher education. = 0, otherwise. The base category for these variables will be no formal education of the household head.

4.0 Empirical Findings

The study finds the marginal effects of variable with respect to poor residing in rural and urban region by applying Bivariate logit model. In this model the dependent variable is categorized as poor and non-poor and the model is estimated by using Maximum Likelihood technique. Result in Table 3 is for Bivariate logit model.

Table 3: Logit Model- Dependent Variable is Poverty

Variable Demographic variables	URBAN REGION Marginal Effects	RURAL REGION Marginal Effects
Sex of head of household	-.0241** (0.06)	-.1914* (0.00)
Age of head of household	-.0007* (0.00)	-.0028* (0.00)
Household size	.0347* (0.00)	.0679* (0.00)
Female-male ratio	.0012 (0.54)	.0333*** (0.09)
Family type	-.1221* (0.00)	-.1919* (0.00)
Dependency ratio	.1281* (0.00)	.2872* (0.00)
Human capital & Work Status Variables		
Education of household head; 1-5 years	-.0125* (0.00)	-.0657* (0.00)
Education of household head; 6-10 years	-.0297* (0.00)	-.1094* (0.00)
Education of household head; 11-14 years	-.0571 * (0.00)	-.1819* (0.00)
Education of household head; 16 years…….	-.0561 * (0.00)	-.2261* (0.00)
Head work for income	-.0129 (0.12)	-.0712* (0.00)
Log likelihood	-1593.68	-2129.20

*Probabilities of Critical Values at 1%, 5%, 10% are indicated significance by *, **, *** respectively*

In general, the results demonstrate that the factors strongly associated with poverty status like (level of education, household size, dependency ratio, age of head of household, sex of the head, family type are the same in both rural and urban areas. However the marginal effects associated with these regresses are larger in rural areas.

In urban region the variable "female-male ratio" has insignificant impact on poverty status of a household. While the variable "sex of the head of household " has significant impact on poverty status of household but its effect on the poverty status is minute (3% more likelihood to be non poor) as compared to rural region, this shows that in urban areas female participation in labor force is high and there is low female dependency ratio.

This means that women help their family members in earning activities and driving out from poverty status while in rural region both variables significantly impact on poverty status of a household. The results indicate that there is 1% less likelihood to be non-poor if the female-male ratio is higher as compared to those households where the female male ratio is less and there is 19% more likelihood to be non-poor if the head of household is male as compared to those households where the head of household is female in rural region.

Regarding the effect of "household size" estimates indicate that there is 3% and 7% less probability to be non-poor, if other things are kept constant in urban and rural area respectively. The variable" dependency ratio" shows that there is positively correlation between poverty status and dependency ratio. The estimated coefficients show that there is 13% and 29% less likelihood to be non- poor in urban and rural area respectively.

"Family type" indicates that nuclear families are12% and19% more probable to be non-poor as compared to those households, which have joint family system in urban and rural areas respectively. The "age of the head of household" has minor effect on poverty status in both urban and rural areas. As the result shows that there is 0.1% and 0.3% more probability to be in non-poor category in urban and rural areas.

Raising the level of head's education has a clear effect on reducing the probability of poverty in both areas. The probability of poverty drops by increasingly larger percentage as the level of Education rises from one level to next. The effect is more pronounced in rural areas. As in rural area there is 6%, 11%, 18% and 23% more likelihood to be non-poor if the head of the household has primary, higher secondary, college and higher education respectively as compared to those households in which household head has no formal education status. While in urban area there is 1%, 3%, 6% and 6% more likelihood to be non-poor, if the head of household has primary, secondary, college and higher education respectively.

The variable" head work" shows negative impact on poverty status but this variable has no significant impact on poverty status in urban area but in rural area if the household head work there is 7% more likelihood that household fall in non-poor category as compared to other households where household heads don't work for earnings.

4.1 Multinomial logit model

We have ordered the sample into three mutually exclusive categories: non-poor (category0), transitory poor (category1) and extremely poor (category2), with household in category 2 being most affected by poverty. The estimated coefficients and marginal effects are given in Table-4 for rural and urban region separately.

Almost all the demographic variables are statistically significant in rural and urban region. In rural region results show that it is 9% and 7% more likely to be non-poor as compared to transitory poor and extreme poor category respectively, if the head of the household is male. The variable female male ratio show that is has no significant impact on urban region but in rural region it is 1% and0.1% less likely to be non-poor in transitory poor and extreme poor category respectively.

The variable age of the head of household has significant impact on poverty status of the household in different categories of poverty but this effect is not important in both regions. The size of the household shows that there is 1% and .1% less likelihood to be non-poor in transitory poor and extreme poor category respectively in urban region while in rural Region it is 3% and 1% less likely to be non-poor in transitory poor and extreme poor category if the size of household increase.

The estimated coefficient of "family type" in urban region shows that nuclear families are 2% and .2% more likely to be non-poor as compared to joint families in transitory poor and extreme poor category respectively. And in rural region nuclear families are 5% and 4% more probable to be non-poor as compared to joint family system in transitory poor and extreme poor category respectively.

The results indicate that the "dependency ratio" is the strongest demographic variable in rural and urban region. The estimated coefficient shows that there is 9% and 1% less likelihood to be non poor in transitory poor and extreme poor category respectively in

Urban region and in rural region it is 22% and 13% less likely to be non poor in transitory poor and extreme poor category respectively.

The estimated coefficient of education status of head of household in both rural and urban regions are statistically significant and show strong impact on poverty status of household in transitory and extreme poor categories. Outcome also demonstrates that education variable is more crucial determinant of poverty in rural region. It is clear from results that as the level of schooling increase the probability of transforming the transitory poor and extreme poor household in to non- poor category increases in both rural and urban region.

Table 4: Multinomial logit model: Dependent variable is poverty

Variable	URBAN REGION		RURAL REGION	
Demographic variables	Transitory	Extreme	Transitory	Extreme
Sex of head of household	-.0183	-.0021	-.0969*	-.0723*
Age of head of household	-.0006*	-.0001*	-.0015*	-.0011*
Household size	.0120*	.0013*	.0317*	.0147*
Female-male ratio	.0001	.0003	.0088***	.0014***
Family type	-.0177*	-.0019*	-.0500*	-.0374*
Dependency ratio	.0927*	.0080*	.2206*	.1339*
Human Capital & Work Status Variables				
Education of household head; 1-5 years	-.0128**	-.0004***	-.0357*	-.0249*
Education of household head; 6-10 years	-.0240*	-.0027*	-.0665*	-.0371*
Education of household head; 11-14 years	-.0505 *	-.0039*	-.1298*	-.0463*
Education of household head; 16 years-AB	-.0544 *	-.0026*	-.1696*	-.0519*
Head work for income	-.0082	-.0018	-.0428*	-.0265*
Log likelihood	2028.897		-50.51.45	

Probabilities of Critical Values at 1%, 5%, 10% are indicated significance by *, **, *** respectively

The variable "head work" also shows significant impact on poverty status of household in rural region but in urban region it has no statistically significant impact. The results illustrate that in rural region it is 4% and 3% more likely to be non-poor, if the head work for income as compared to those households in which head don't work for income in transitory poor and extreme poor category respectively.

5.0 Conclusion

The objective of this study is to measure and analyze the demographic and Human Capital variables effects on poverty discrepancy in Pakistan for rural and urban region.
All the demographic variables show significant impact on poverty status of the household, especially dependency ratio, sex of the head of the household, family type and household size

are found to be of paramount importance in reducing poverty particularly in transitory poor category.

Having a large household is generally correlated with poverty status. This is because the larger the number of household member would likely to be children, who take a big proportion of household income in terms of school requirements, medical attention, food and clothing. While a high dependency ratio decreases earning potential in relation to needs and therefore increase the risk of poverty (Lipton 1983).

The educational attainment of the head of the household is found to be the most important factor that is associated with poverty in rural as well as urban region. Lack of education is a factor that accounts for a higher probability of being poor. Thus promotion of education is a central factor in addressing problems of transitory and extreme poverty. This indicate that education is vital for boosting the productivity of the human factor and making people more aware of opportunities for earning a living and there is generalized evidence in household surveys and censuses that education is positively correlated with earnings (Schult, 1988; Psacharopoulous, 1985; Blaug, 1976). Higher earnings in turn are associated to lower poverty levels .The headwork for income variable also shows significant impact on poverty status of household.

Based on our results, the following policy implications are derived from this study which is expected to contribute to the poverty reduction strategy being pursued by Pakistan:

- The educational attainment of the head of the household is found to be most important factor associated with poverty. Thus promotion of education is central in addressing problems of transitory and extreme poverty.
- Relating to the above point, the importance of female education in poverty reduction should be noted. We have found that female- headed household are more likely to be poor than household of which the head is a male and that female education plays a key role in reducing poverty. Thus promoting female education should be an important element of poverty reduction polices. Because there is evidence that female education and fertility are negatively correlated, such policies have an impact on household size and dependency ratios, which are important determinants of poverty. Thus investing in female education would indeed be productivity enhancing and poverty reducing.

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Economic Sustainability as a Social Protection for Disaster Survival Case Study: Micro Economic Programme in the Aftermath of Merapi Eruption 2010

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Abstract

In the aftermath of extreme events such as natural disaster, an affected society suffered from serious changes in the livelihood including economic loss. This condition certainly contributes to the degree of resilience and vulnerability of the society. This paper argues that in order to establish the capacity of society to bounce back from disaster, government and humanitarian actors should engage economic sustainability on the rehabilitation programme. There are six indicators which can be used to measure the integration of sustainable development in the rehabilitation programme: (1) Empowerment of local economy to raise society income (2) Capacity building for society in order to achieve efficiency of economic activity (3) Active participation of society toward economic activity (4) Improvement of civil society to empower social cohesion (5) Economic activity based on environment awareness and (6) Improving environmental sustainability. Through economic sustainability programme, government surely guarantee the social protection for society. The United Nations Research Institute for Social Development define social protection as a way of preventing, managing, and overcoming situations that adversely affect people's well being. This policy cover policies and programs which intended to eliminating poverty and vulnerability by promoting efficient labor markets, diminishing people's exposure to risks, and enhancing their capacity to manage economic and social risks, such as unemployment, exclusion, sickness, disability and old age. This paper will elaborate three things: (1) the concept of economic sustainability and social protection (2) the elaboration of micro-economic programme in the aftermath of Merapi Eruption 2010 and (3) to the extent this programme can contribute as a social protection.

Keywords: Economic sustainability, social protection, sustainable development, micro economic programme, disaster

1.0 *Merapi* Eruption 2010

Indonesia appears to be a high-risk country compared to others in the world. Within the last 30 years Indonesia has lost 191,105 lives over the same period, but 165,708 of these casualties were caused by the tsunami in December 2004 (Relief Web). On their current study, the Natural Disasters Risk Index (NDRI) even rated Indonesia as 'the nation with extreme risk to natural disasters' due to their extreme weather and geophysical events (Relief Web). Indonesia's location in the so called Pacific 'Ring of Fire', an area where four of the earth's tectonic plates come together, is the reason behind it. Around 75 percent of the world's active volcano is located in Indonesia and highly vulnerable to earthquake and tsunami (IOM Community Based Disaster Risk Management).

Merapi Mountain is one of the most active volcanoes in the world. It is the most active volcano in Indonesia and has erupted regularly since 1548. Located on the border between Central Java and Yogyakarta, Indonesia, *Merapi* only situated 30 kilometers away from city center of Yogyakarta. *Merapi* has clearly becomes a serious hazard for Indonesia. In 2010,

Merapi was erupted twice causing a big volcanic blast, expulsing hot clouds of ash 9 kilometers from its crater and sending residents fleeing in panic (Jakarta Post: Latest *Merapi* Eruption). The eruptions later were followed by several tremors (Jakarta Post: Latest *Merapi* Eruption). The heat clouds went down the slopes as far as 13km (eight miles) and the explosion was heard as far as 20 kilometers away (BBC: Dozens Die). *Merapi* eruption which occurred on October 26th caused 37 people died and 46 people injured due to hot cloud while the biggest blast occurred on November 5th caused more causality. On their last reports, Indonesian National Body for Disaster Management (*Badan Nasional Penanggulangan Bencana* (BNPB)) stated that the total number of death is almost 400 people. Meanwhile, an estimated 75,000 residents have been evacuated from the area. The worst causalities mostly caused by people low awareness, who lived in the danger zone. Even in the aftermath of first *Merapi* eruption, some people returns to their home, which only located less than five kilometers from *Merapi*. The authorities have decided to widen the "danger zone" around the crater from 15 km (9 miles) to 20km (12 miles) (BBC, 2010). At least four local regions in Yogyakarta province has been affected with the *Merapi* eruption:

Figure 1: Affected Regions in Yogyakarta's Province

Regions	Villages
Turi	- Bangunkerto - Donokerto - Girikerto - Wonokerto
Pakem	- Candibinangun - Hargobinangun - Harjobinangun - Pakembinangun - Purwobinangun
Ngemplak	- Binomartani - Sindumartani - Umbulmartani - Wedomartani
Cangkringan	- Argomulyo - Glagahrejo - Kepuharjo - Umbulharjo - Wukirsari

Source: Yogyakarta's Local Disaster Management Agency (BPBD Provinsi DIY)

Most of these villages are located in the dangerous zone. In 2011, the agreement to regulate the dangerous and affected zone caused by *Merapi* eruption has being signed by Indonesian Ministry of Forest, Indonesian National Disaster Management Agency, Indonesian National Development Plan Agency, Governor of Yogyakarta and Governor of Central Java. The government decided to evacuate the population within the affected area to safe zone. Accordingly, people are no longer permitted to build a house within the 'red zone'. Furthermore, the dangerous zone is currently transformed into national park.

2.0 Micro Economic Programme within Rehabilitation Programme

2.1 Rehabilitation Programme

2.1. 1. Concept

The United Nations secretariat for the International Strategy for Disaster Reduction (UNISDR) defined disaster management as 'the systematic process of using administrative directives, organizations, and operational skills and capacities to implement strategies, policies and improved coping capacities in order to lessen the adverse impacts of hazards and the possibility of disaster' (IOM Community Based Disaster Risk Management). The disaster management essentially covering three phases: preparedness, emergency response and post disaster.

Figure 2: Disaster Management
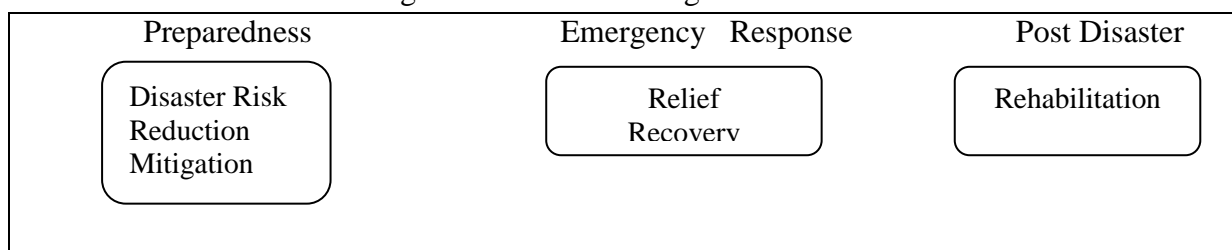
Preparedness

In this phase, the government is obliged to build the knowledge and capacities of disaster risk reduction thus it can effectively work to anticipate, respond, and recover from, the impacts of likely, imminent or current hazard events or conditions (IOM Community Based Disaster Risk Management). There are two kinds of coping mechanisms in which government along with its partner should work on:

a. Disaster Risk Reduction
The concept and practice of reducing disaster risk through systematic efforts to analyze and manage the causal factors of disasters including through reduce exposure to hazard, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events (United Nations secretariat for the International Strategy for Disaster Reduction (UNISDR)
b. Mitigation
The lessening or limitation of the adverse impacts of hazards and related disaster (United Nations secretariat for the International Strategy for Disaster Reduction (UNISDR)

Emergency Response

a. Relief
The response actions that reduce the impact of the disaster event after it has happened (Collins, p.27)
b. Recovery
The process of restoring lives, livelihoods and infrastructure to a locally acceptable standard (Collins, p.27)

Post Disaster

Dealing with the longer-term effects of a disaster and a fuller restoration of development (Collins p 27). Despite its objective to fulfil a complete restoration of development, one of the aims of rehabilitation programme is to contribute to the disaster reduction. The goal of the plan for post-disaster recovery and reconstruction is to take advantage of this process by building a community that is both economically stronger than it might otherwise have been and less vulnerable to future disruptions from natural disaster (American Planning Association, 2005). It is indicated that the aims of rehabilitation programme should contribute on two aspects:

Restoring the livelihood of the society in the aftermath of disaster
Contributing to the disaster resilience of society

The concept of resilience is derived from the Latin word *'resilio',* meaning 'to jump back' and in the context of social entities such as societies or organizations, resilience refers to 'the ability to resist disorder' (Comfort, Boin and Demchak, 2010). In the case of extreme events, the degree of vulnerability is substantially related to the capability to resists toward disaster. Consequently, the limits to resists would cause serious causalities in society. Thomas W Hasse in his publication stated that resilience is defined as the capacity of a system, community or society which potentially exposed to hazard to adapt by resisting or changing in order to reach and to maintain an acceptable level of functioning and structure (Comfort, Boin and Demchak, 2010). Further, through this framework, building resilience community means establishing capability to deal with various hazard through strengthening three phases of disaster management: mitigation, response and recovery.

2.1.2. Strategies: Integration of Rehabilitation Programme and Sustainable Development

In order to achieve a 'complete restoration of development' and 'disaster resilience, the rehabilitation programme should integrate the component of sustainable development. Through this concept, the balance of development in social, economic and environmental aspects could support the rebuilding of stronger communities (Guanzon, 2012). The World Summit on Sustainable Development (WSSD) held in Johannesburg, South Africa, August 26 – September 4, 2002, provided the opportunity to integrate disaster reduction in the agenda of sustainable development. The WSSD proposed a multi-hazard approach to reduce risk and vulnerability within the context of sustainable development. The commitment was sanctioned by three actions:

1. A political statement adopted by heads of state which indentifies "natural disasters" as a severe threat to sustainable development and requiring priority attention.
2. A broad and comprehensive implementation plan that includes commitments related to disaster and vulnerability reduction and improved preparedness capacities.
3. A set of initiatives and partnerships which support the areas committed to in the implementation plan

United Nations (UN) Habitat even established strategic goals to strengthen the integration of disaster risk reduction and sustainable development:

(a) The more effective integration of disaster risk considerations into sustainable development policies, planning and programming at all levels, with a special emphasis on disaster prevention, mitigation, preparedness and vulnerability reduction;

(b) The development and strengthening of institutions, mechanisms and capacities at all levels, in articular at the community level, that can systematically contribute to building resilience to hazards;

(c) The systematic incorporation of risk reduction approaches into the design and implementation of emergency preparedness, response and recovery programmes in the reconstruction of affected communities (Brewster: Built Environment Issues in Small Island States).

There are six indicators which can be used to measure the integration of sustainable development in the rehabilitation programme:

(1) Empowerment of local economy to raise society income

(2) Capacity building for society in order to achieve efficiency of economic activity

(3) Active participation of society toward economic activity

(4) Improvement of civil society to empower social cohesion

(5) Economic activity based on environment awareness

(6) Improving environmental sustainability (Collins)

Through the tools of analysis above, an analysis to classify a good rehabilitation programme could be measured.

2.1.2.1 Social Protection

The ultimate objectives of the rehabilitation programme is essensial. Restoring livelihood and building a disaster resilience would directly contribute to the social protection for the disaster survival. The United Nations Research Institute for Social Development define social protection as a way of preventing, managing, and overcoming situations that adversely affect people's well being (UNRISD: Social Protection). This policy cover policies and programs which intended to eliminating poverty and vulnerability by promoting efficient labor markets, diminishing people's exposure to risks, and enhancing their capacity to manage economic and social risks (UNRISD: Social Protection). Furthermore, United Nations Development Programme (UNDP) stated that the policy on social protection should address:

a. The causes of proverty not simply its symptoms.

b. The variety of hazards, risks, and stresses affecting individuals, households and communities considering the multidimensional of poverty.

c. The investment as a key to poverty prevention and reduction.

d. The involvement of local, national and international stakeholders in the development of social protection instruments in developing countries.

The needs to project the microeconomic development from the perspective of social protection is related to the fact that the disasters particularly hurt developing countries, because poverty and disasters are mutually reinforcing, undermine incentives for development, and particularly hurt the non-formal sector (Bull, 1994). Furthermore, developing world (low- and middle-income countries) suffer a disproportionate share of the economic and human burdens from all natural disaster while no high-income country has been ranked in the top 100 for most costly disasters relative to GDP (Linnerooth-Bayer, 2008).

2.1.2.2 Microeconomic Programme in the aftermath of *Merapi* Eruption

In order to restore the livelihood of the society, many humanitarian stakeholders concentrate on the microeconomic programme. Disaster not only caused casualities but also serious desruptions to infrastructure and property. This direct impact also causes indirect impacts such as loss of economic incomes, fiscal constraints (macroeconomic) (Baez and Santos, 2010). Furthermore, disaster could reduce the ability of the community to accumulate the assets needed to escape poverty through savings and investment (Linnerooth-Bayer, 2008). Considering these severe circumstances, a comprehensive approach on rehabilitation programme should be developed especially when detrimental effects are both large and long-lasting (Baez and Santos, 2010).

Without neglecting other aspects within rehabilitation phase, economic recovery is quite likely the most serious issue facing by comminities in the aftermath of disaster (American Planning Association, 2005). In the case of *Merapi* Eruption, total loss from this disaster is almost IDR 3, 56 Trillion. Indonesian Government has measured any damage and loss from five aspects: shelter, social, economic, infrastructure, inter-sectoral (government, finance, and environment). Most of the affected population lived near the *Merapi* Mountain relies their economic income from loss of crops and livestock. Some people even endangered their lives when they decided to return to home just after the first eruption. It caused more causality when *Merapi* erupted from the second time.

After the eruption of Merapi, Regional Body for Disaster Management *(Badan Penanggulangan Bencana Daerah – BPBD)* in Yogyakarta Province, decided the rehabilitation programme which one of the aspects is the economic sustainability (Aziz, Prameswari and Hestutomo, 2012). On this sector BPBD provide supports for group of farmers, planters, and breeders. BPBD also facilitate alternative farming, provide suitable plant seeds that can grow easily, as well as give the financial aid to Small and Medium Enterprises (Aziz, Prameswari and Hestutomo, 2012). Furthermore, the rehabilitation programme conducted by BPBD Yogyakarta Province has works parallel with the United Nations (UN) effort to restore the livelihood in the aftermath of disaster. UN bodies such as United Nations Development Programme (UNDP), Food and Agriculture Organization (FAO) and International Organization for Migration (IOM) through 'Indonesia Multi-Donor Fund Facility for Disaster Recover' (IMDFF- DR) provides assistance for rehabilitation and reconstruction in the aftermath of *Merapi* eruption and tsunami in *Mentawai* (UNDP, 2012). This formal mechanism would finance series of rehabilitation programme in Yogyakarta Province from February 2012 – 2013 (1 year) (Newsletter IMDFF – DR Vol 1 August 2012). As a joint programme with three UN bodies, IMDFF – DR attempts to reaches three outputs:

Figure 2: IMDFF – DR Rehabilitation Output

FAO → Restoring sustainable livelihoods

Providing cattle stock, transfer knowledge about management of cattle stock, access to business development, system of organic certification and market access.

UNDP → Strengthening government capacity

Conducting capacity-building programme to local government, conducting coordination forum, supporting local government to establish local contingency plan

IOM → Enhancing community resilience

Establishing training for business development, organizing training for livelihood, training for disaster risk reduction and training on disaster preparedness (IMDFF – DR Document: Economic Recovery Programme).

Figure 3: IMDFF – DR Rehabilitation Programme in the Aftermath of *Merapi* eruption

Regions	Villages	
Turi	• Bangunkerto • Donokerto • Girikerto • Wonokerto	
Pakem	• Candibinangun • Hargobinangun • Harjobinangun • Pakembinangun • Purwobinangun	
Ngemplak	• Binomartani • Sindumartani • Umbulmartani • Wedomartani	
Cangkringan	• Argomulyo • Glagahrejo • Kepuharjo • Umbulharjo • Wukirsari	FAO UNDP IOM IOM IOM

2.1.2. 3. Microeconomic Programme in Gondang Village

The rehabilitation programme in the aftermath of *Merapi* eruption has implemented in almost affected – area including Gondang in Wukirsari Village, Province of Yogyakarta. Currently, the authority of the Province of Yogyakarta manages 18 temporary shelters: Gondang I. This paper would elaborate the rehabilitation programme conducted in this village:

Figure 4: Gondang as Affected Villages in Yogyakarta's Province

Regions	Villages
Turi	• Bangunkerto
	• Donokerto
	• Girikerto
	• Wonokerto
Pakem	• Candibinangun
	• Hargobinangun
	• Harjobinangun
	• Pakembinangun
	• Purwobinangun
Ngemplak	• Binomartani
	• Sindumartani
	• Umbulmartani
	• Wedomartani
Cangkringan	• Argomulyo
	• Glagahrejo
	• Kepuharjo
	• Umbulharjo
	• Wukirsari Gondang

Source: Yogyakarta's Local Disaster Management Agency (BPBD Provinsi DIY)

a.   Gondang II, b. Gondang III, c. Kentingan, d. Kuwang, e. Dongkelsari, f. Banjarsari, g. Jetis Sumur

Herewith the rehabilitation programme facilitated by the government and Non-Government Organizations:
1. Providing land for farming, plantation, livestock, fishery, forestation, based on Government Regulation.
2. Land Clearing for farming, plantation, livestock, fishery, forestation, also by providing financial inventives for workers
3. Give loan dispensations for affected people.
4. Providing training to support employment.
5. Building market as a place for trade, based on relocation policy. The market will be managed by local government. The building should be earthquake resistant.
6. In livestock, it is necessary for affected people to receive aid from the government. For example, give them chance to start having their cattle again by giving cows or calves. Government also provide support for cattle's health, as well as nutrition. In this case, BPBD cooperate with Department of Agricultures, Livestock, and Fishery.
   (Aziz, Prameswari and Hestutomo, 2012).

Figure 5: Rehabilitation Programs in Gondang I

Program	Actors	Involvement	Period	Status
Economic Aspect:				
1. Micro economy – Small-Medium Enterprise *Kaliadem Sejahtera* o *Merapi* Mandiri: produce *bakpia* (traditional cake) o Anugerah *Merapi*: produce *kerupuk tela* and ginger drink o *Kaliadem Lancar*: produce casava chips o Produce pin, sticker, shirt o *Barokah*: ginger milk dan *peyek kacang*	1. Sampoerna Foundation (Bait Al Kamil) 2. NGO - Sayap Ibu 3. Local Government	1. Assisting the packaging, providing financial support 2. Training how to produce *Bakpia Tela* 3. Marketing the products	February 2011 - recently	Ongoing
2. Catfish Aquaculture	Department of Agriculture, Cattle Ranch, and Fishery (government)	Providing catfishes	March 2011 – August 2011	end
3. Bank of garbage	UGM	Building the facility of waste management	June 2011 – August 2011	end
4. Mushrooms	1. Department of Agriculture, Cattle Ranch, and Fishery (government) 2. Standard Chartered	Giving the mushroom to be planted	March 2011	Ongoing
5. Strawberry	Department of Agriculture, Cattle Ranch, and Fishery (government)	Giving the seed of strawberry to be planted	March 2011	undeveloped
6. Cattle Ranch	1. Department of Agriculture, Cattle Ranch, and Fishery (government) 2.Small-Medium Enterprise *Sarono Makmur*	1. Lending cows, and letting people have the babies; providing health treathment, place, as well as assisting 2. Cows marketing	March 2011	On going

3.0 Microeconomic Programme as a Social Protection

Indonesian National Body for Disaster Management (*Badan Nasional Penanggulangan Bencana (BNPB)*) has defined nine indicators of resilience community:
- Availability of Disaster Map
- Availability of Vulnerability Analysis Map
- Availability of Capacity Analysis Map
- Early Warning System
- Community based Disaster Risk Management
- Disaster Risk Reduction

- Community Action Plan
- Evacuation and Contigency Plan
- Economic Resilience
    (IMDFF – DR Document: Economic Recovery Programme)

Post-disaster economic recovery initiatives should consider and address the unique needs of the community. Some could include, but are not limited to:
- Community Planning
- Cash Flow
- Business Resumption
- Finance and Insurance
- Workforce Development
- Economic Development
- Small Business
- Marketing and Communications
- Assessment and Evaluation

    (US Economic Development Cooperation: Building Disaster Resilient Economies)

The microeconomic programme has support the community to regain their economic incomes. The programme has expands the diversity of economy from cattle and livestock into home-made economy such as producing cassava chips, mushroom chips, catfish aquaculture. From the Focus Group of Discussion (FGD) organized by the Programme on Humanitarian Action (POHA) Universitas Gadjah Mada on April 13th 2012 try to explore the respond of community on the microeconomic programme. From this FGD, the community stated that:

a. The microeconomic programme has assists the community to gain incomes even though it's still far from their previous earnings.
b. The diversity of economic incomes has expands the point of view of the community.
c. The productivity of small business program at Shelter Gondang I have run efficiently.
d. There was lack of knowledge on transfer from the government to the society in regard to the microeconomic programme.
e. There were some constraints on the microeconomic programme such as: climate difference which affects the production of commodities especially cool highland climate was not suitable catfish.
f. Government could not provide sufficient seeds/capital on the microeconomic programme: Ministry of Agriculture only provided the mushroom seeds for society while complimentary equipments were needed; for example 'wooden house' as planting medium, sacks, fertilized soil and sprayer.

According to United Nations Development Programme (UNDP) social protection should address four aspects (p 7). Despite all the constraints, based on the definition from UNDP, there are three arguments why microeconomic programme in the aftermath of *Merapi* eruption could be perceived as a social protection:

a. Economic protection
(1) The microeconomic programme has been able to protect the affected-society by providing alternative economic income.

(2) The investment has been the foundation for the microeconomic programme. The government and NGOs provided the capital for society.

b. People Participation

UNDP requires the involvement of local, national and international stakeholders in the development of social protection instruments in developing countries as one of the key success behind the social protection. A success livelihood programme should accommodate people participation on the agenda setting and decision making process. Microeconomic rehabilitation has succeeded where grass root-level community participation and ownership have been encouraged from the very beginning of intervention (Philippe Re´gnier, Bruno Neri, Stefania Scuteri and Stefano Miniati: From Emergency Relief to Livelihood Recovery). Furthermore, it could not have succeeded without a strong participatory approach (Philippe Re´gnier, Bruno Neri, Stefania Scuteri and Stefano Miniati: From Emergency Relief to Livelihood Recovery). Furthermore, by empowering people after a natural disaster by giving them access to their rights and entitlements allows them to reconstruct the legal foundation for their lives and livelihoods (Asian Development Bank: Empowering People after Natural Disaster).

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Economic Growth and Institutions in Developing countries: Panel Evidence

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Abstract

Numerous empirical studies have documented the evidence of institutional significance towards economic growth. This study extends such evidence as it examines the link between institutions and growth in developing countries including East Asian region. By using neoclassical growth framework augmented with institutional controls and latest estimation technique in panel data analysis, this study finds evidence of positive institutions growth-effects and uncovers the channel of their effects toward growth. This study also fills the gap in the East Asian growth literature, in which, to the best of our knowledge, only two studies namely Rodrik (1997) and Campos and Nugent (1999) that document the institutional importance toward economic growth for the region and apparently these studies are for the period before the 1997 Asian Financial Crisis.

Keywords: Institutions, economic growth, Asian Financial Crisis, dynamic panel analysis, generalized methods of moments.

1.0 Introduction

The East Asian countries have seen spectacular economic development in the region for the past three decades. Table 1 below shows the countries in the region have undoubtedly achieved miraculous economic growth for the period up to 1996 with the rates of GDP per-capita growth ranging between 4-7 percent on average[1]. The dramatic performance of the region is arguably the results of several institutional qualities[2] that were present in the countries such as strong authoritarian government implementing numerous pro-growth policies, secure private property rights and bureaucratic efficiency (see for example theoretical analyses by Ahrens (2002) strong and authoritarian governments and secure property rights; Gonzalez and Mendoza (2001) well-functioning public institutions). Empirically, Rodrik (1997) and Campos and Nugent (1999) show that secure property rights and bureaucratic efficiency are the significant determinants of the region's economic performance. These are the only two empirical studies focusing on the institutional effect on East Asian growth that we are aware of and apparently they are for period before the Asian Financial Crisis in 1997.

As also shown in Table 1, the miraculous growth achievement has however disappeared beginning 1997 as a consequence of the Asian financial crisis (AFC). Except China, all the

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[1] The phenomenal economic performance during the period 1960s to 1990s was dubbed as "the East Asian Miracle" by the World Bank (1993). There are studies that documented the underlying factors behind the economic achievement by the region such as Young (1995), Krugman (1995), Collins and Bosworth (1996), Sarel (1997) Senhadji (2000), Han *et al.* (2002), Nelson and Pack (1999), Easterly and Levine (2002), and Iwata *et al.* (2002).

[2] Influential studies such as those by Hall and Jones (1999), Acemoglu *et al.* (2001, 2005), and Rodrik *et al.* (2004) has found evidence that institutions do affect growth.

other countries were unable to achieve the pre-crisis level of economic growth. The World Bank (1998) suggests that institutional failures are among the causes of the crisis. Lanyi and Lee (1999) and Lingle (2000) argue that the absence of transparency and accountability and too much intervention and politicisation from the autocratic government are the main causes rendering the countries vulnerable to crisis.

Table 1: Average Real GDP Per-capita Growth for East Asian countries 1960-2008

Year	1960-1980	1981-1984	1985-1988	1989-1992	1993-1996	1997-2000	2001-2004	2005-2008	Average 1960-96	Average 1997-08
China	2.7	8.2	9.2	6.1	10.2	7.0	8.3	9.9	7.3	8.4
Hong Kong	6.6	5.2	6.9	3.6	1.9	1.3	2.9	4.8	4.8	3.0
Singapore	6.7	5.0	4.2	4.5	6.2	3.5	2.7	2.2	5.3	2.8
South Korea	5.1	6.3	8.4	6.5	6.4	2.9	4.0	3.7	6.5	3.5
Malaysia	4.1	3.9	0.8	6.0	6.8	1.0	2.5	3.6	4.3	2.4
Thailand	4.3	3.3	6.2	8.2	6.8	-1.6	3.9	3.4	5.8	1.9
Indonesia	3.2	4.1	3.3	6.5	6.0	-2.3	3.1	4.5	4.6	1.8
Philippines	2.2	-2.4	-1.0	-0.2	1.9	1.3	2.3	3.3	0.1	2.3

Source: Own calculation. The original data are obtained from the World Development Index (WDI) from the World Bank (2009).

This study investigates the link between institutions and economic growth in developing countries from East Asia, Africa and Latin America for the period of 24 years from 18985-2008. Utilizing neoclassical growth model controlling for the steady state determinants, we find empirical support for the significant institutional qualities that matter for growth. Specifically security of property rights that is consistently significant across all estimations and samples, and this finding confirms that of Rodrik (1997) . We also find evidence to the strong government hypothesis that matter for growth in the East Asian region as proposed by Ahrens (2002). Furthermore, we also show that institutions affect growth via total factors productivity channel.

The remainder of this paper is as followed: section 2 presents the growth framework, methodology and data sources. Discussions of the estimation results are presented in section 3 and section 4 concludes.

2.0 Growth Framework, Methodology and Data Sources

Consider the following Cobb-Douglas function, which exhibits constant returns to scale but diminishing return to individual factors:

$$Y_{it} = K_{it}^{\alpha}(A_{it}L_{it})^{1-\alpha} \tag{1}$$

where $\alpha < 1$, and Y is the real output, K is the physical capital, and L is the amount of labour. A represents a labour-augmenting technology assumed to grow exogenously at rate g. After incorporating the institutional effects that is assumed to influence growth via total factors productivity captured in the A function, the standard derivation of steady state income per capita function is therefore:

$$\ln y_{it} = \ln A_0 + gt + I_{it} + \frac{\alpha}{1-\alpha}\ln s_{it} - \frac{\alpha}{1-\alpha}\ln(n+g+\delta)_{it} \tag{2}$$

The assumption that institutions affect growth via total factors productivity (the *A* function) and not via physical capital investment (ln s_{it}) will be valid if coefficients for both institutions and investment terms are significant indicating that their separate channel of effects[3]. The functional form of Equation (4) with appropriate error term is therefore specified as the following:

$$\ln y_{it} - \ln y_{it-1} = \beta_0 + \beta_1 \ln y_{it-1} + \beta_2 I_{it} + \beta_3 \ln s_{it} + \beta_4 \ln(n + g + \delta)_{it} + \varepsilon_{it} \qquad (3)$$

where β's are the parameters to be estimated.

A panel observation for 69 developing countries in three regions namely East Asia, Africa and Latin America for a period of 25 years (1984-2008) is used. The data is converted into 4-year average hence making *t*=6 throughout the sample period. As for the East Asian countries, the 4-year average data fit nicely to the division between the period of high growth (1985-1996, *t*=1, 2 and 3) and the period post-AFC (1997-2008, *t*=4, 5 and 6). The Data on real GDP per capita and population growth are obtained from World Development Indicators (WDI) from the World Bank (2009). We conveniently follow Mankiw, *et al.* (1992), Islam (1995), Caselli *et al.* (1996) and Hoeffler (2002) to assume exogenous technological change plus depreciation rate as 0.05. Similarly, we follow them to use investment share of real GDP per capita as a proxy for physical capital and the investment data are obtained from Penn World Table 6.3 (Heston *et al.*, 2009). To reflect institutional settings in the East Asian region, three classes of institutions are introduced i.e. property rights, bureaucratic efficiency, and political institutions. Four indicators from International Country Risk Guide (ICRG) provided by the PRS Group (2009) –*Investment Profile*[4] and *Law and Order* to reflect secure property rights; *Bureaucracy Quality* and *Government Stability* to reflect bureaucratic efficiency –whereas an index of *Political Rights* from Freedom in the World, also known as Gastil index (Gastil, 1978) and *Polity2* indicator from Polity IV by Marshall and Jaggers (2008) are used to reflect political institutions[5].

In this study, we employ the latest panel data system GMM method developed by Arellano and Bover (1995) and Blundell and Bond (1998), in addition to Pooled Ordinary Least Square (OLS) and panel fixed effect methods, to estimate Equation (4)[6]. System GMM method is shown to be able to correct unobserved country heterogeneity, omitted variable bias, measurement error, and potential endogeneity that frequently affect growth estimations using pooled OLS and fixed effect methods (Bond *et al.* 2001). System GMM is also capable to reduce potential bias and imprecision associated with a simple first-difference GMM estimator (Arellano and Bover, (1995), Blundell and Bond (1998)).

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[3] If institutions primarily affect investment and therefore indirectly affecting growth (via investment channel), the Solow framework could therefore be extended to include institutions via s_{it} as a function of institutions i.e. $s = f(I)$ and $f'(I) > 0$. However, the implication from this specification is that, if it is true institutions affect growth via investment channel only, it will be redundant to include both investment and institutions as regressors in a growth model. Investment (as a proximate growth determinant) should therefore be omitted. On the other hand, if institutions affect growth only partially via investment channel, omitting investment would not be appropriate as important information would be lost (see Dawson (1998) for more discussion on the possible channel of institutional impact towards growth and the consequent assumptions need to be made).

[4] It is a merged version of Government Repudiation of Contracts and Risk of Expropriation indicators previously found in ICRG data (IRIS dataset version). Refer Knack and Keefer (1995).

[5] Both Political Rights and Polity2 indicators represent the rating score for a country as far as the level of democracy is concerned, and the higher the score, the more democratic a country is. Therefore, a positive sign is expected since it is argued that a more democratic government cause better economic growth.

[6] The estimation using Pooled OLS and fixed effect methods will afford an appropriate comparison with previous institutional studies, such as Rodrik *et al.* (2004) and Glaeser *et al.* (2004) that rely on such method.

The general assumptions for the system GMM regression are as follows: we treat lagged dependent variable as predetermined variable and both investment and population growth as potentially endogenous variables. Similarly, we assume all institutional variables are endogenous since reverse causality from growth to institutions is possible. We set the instruments lag to be one to two periods for the predetermined, potentially endogenous and endogenous variables[7]. This assumption is meant to eliminate endogeneity bias. With this assumption, we postulate that, once the steady state determinants are controlled for, growth-effect of institutions would originate from the state of institutions in the past four to eight years to cause an inter-temporal influence on the current institutions[8].

Consistency of the GMM estimator depends on the validity of the instruments. As suggested by Arellano and Bond (1991), Arellano and Bover (1995), and Blundell and Bond (1998), two specification tests are used. Firstly, Sargan/Hansen test of over-identifying restrictions which tests for overall validity of the instruments and the null hypothesis is that all instruments as a group are exogenous. The second test examines the null hypothesis that error term ε_{it} of the differenced equation is not serially correlated particularly at the second order (AR2)[9] Ones should not reject the null hypothesis of both tests.

3.0 Estimation Results and Discussions

The results of the estimation are presented the Table 2 and 3 below. Table 2 contains results for the whole developing countries and East Asian samples meanwhile Table 3 shows the results for East Asian sample for the period before and after the AFC. The parameters of interest in our estimations are the institutional variables as well as the investment term. Based on the results in Table 2, the investment variable is consistently statistically significant and positive across all estimations. This finding, coupled with significant institutional variables clearly supports the assumption that institutions affect growth via factor productivity channel and not via investment.

As for the institutional variables, on overall, security of property rights emerges the most important institutional quality that matters for growth for both samples across all estimations methods (Investment Profile variables are positive significant in all estimations for both samples, while Law and Order shows some influence to growth particularly in the whole sample). Besides, bureaucratic efficiency significantly determines growth particularly in whole sample (particularly Government Stability) but not in East Asian sample. Therefore, these results confirm the finding by Rodrik (1997) on the importance of secure property rights environment, but yield opposite evidence to that of Campos and Nugent (1999) and Gonzalez and Mendoza (2001) that shows significant effect of bureaucratic efficiency to growth (albeit partially since the quality is an important growth determinant in whole sample that also includes East Asian countries).

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[7] These sets of lag are finally chosen after a series of attempts involving multiple combinations of lag were made in running the system GMM regression. The decision to use these sets of lag is because they yield the best results as far as the significance of the steady state determinants and institutional variables as well as the strength of diagnostic test of the regressions are concerned.

[8] We follow Bond *et al.* (2001) to employ one-step GMM estimators since efficiency gain from two-step GMM estimators is shown by Bond *et al.* to be small, and two-step estimators normally converge to its asymptotic distribution relatively slowly, and in finite sample its asymptotic standard errors can be seriously biased downwards, and thus making it unreliable. Despite the Windmeijer (2005) correction to this problem to achieve robust standard errors in two-step GMM estimation, we already enforce heterokedasticity and autocorrelation robust standard error in the one-step GMM estimation, therefore one-step GMM estimation is preferred.

[9] By construction, the differenced error term is probably serially correlated at first-order even if the original error is not. While most studies that employ GMM dynamic estimation report the test for first order serial correlation, some do not.

Another important finding is the consistently negative coefficient for Political Rights variable (for Polity2, some of its coefficients are) particularly in the estimation of East Asian sample. Recall Ahrens (2002) shows strong and autocratic government in the East Asian countries that are able to govern the markets and pursue (and enforce) pro-growth policies is the underlying reason behind the countries' dramatic economic success. The finding in this section therefore gives empirical support to the strong government hypothesis.

As for the East Asian sample between the period of pre- and post-AFC as shown in Table 3, on overall, investment term is consistently positive significant across all estimations and periods thereby giving further evidence to our earlier assumption on the channel of institutional effect towards growth. For institutional variables, it is fair to say, as far as the period of high growth or pre-AFC is considered, all three key institutional characteristics i.e. secure property rights, bureaucratic efficiency and strong government are the key growth determinants (reflected by the positive significant Investment Profile, Bureaucracy Quality, and negative significant Political Rights variables, respectively). For the period of post-AFC, with the exception of property rights quality which is positive significant as expected, the other two key characteristics however yield ambiguous results. Notwithstanding that, negative coefficients for Political Rights remain.

As far as the empirical performance of system GMM estimation in this study is concerned, it is of reasonably satisfactorily robust. The test for first order serial correlation in the residuals AR(1) show that null hypothesis of no first order serial correlation is overwhelmingly rejected in all estimations and samples, which is not unexpected. Meanwhile, test of second order serial correlation AR(2) on overall shows that all estimations have no problem of second order serial correlation since AR(2) test statistics are unable to reject the null of no second order serial correlation (p-value from 0.102 to 0.169 in all four estimations).

Hansen test for overidentification meanwhile indicates the null of exogenous instruments is not rejected with p-value from 0.734-1.000. Nevertheless, the implausibly good p-value of this range for Hansen J test should be interpreted with caution since the test is apparently weakened by too high instrument count[10].

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[10] Nevertheless, there are numerous studies employing system GMM that report p-value of 1.000 or close to 1.000 for Hansen test of overidentifying restrictions, see for example Baltagi *et al.* (2009), Hassan *et al.* (2009), etc.

Table 2: Estimations of growth model augmented with institutional variables for whole countries and East Asian samples

Method	Whole sample: 69 developing countries			East Asian sample: 14 countries		
Sample	Pooled OLS	Fixed effects	System GMM	Pooled OLS	Fixed Effects	System GMM
Constant	-0.142* (0.078)	-0.23*** (0.084)	-0.279** (0.126)	-0.102 (0.080)	-0.192** (0.095)	-0.173 (0.143)
ln (y_{it-1})	-0.002 (0.002)	-0.001 (0.002)	0.000 (0.003)	0.001 (0.003)	-0.001 (0.002)	-0.001 (0.003)
ln (s_{it})	0.017*** (0.004)	0.015* (0.008)	0.033*** (0.009)	0.017*** (0.005)	0.028*** (0.008)	0.039*** (0.011)
ln ($n+g+\delta)_{it}$	0.008 (0.007)	0.022** (0.011)	0.019* (0.012)	0.009 (0.008)	0.019 (0.012)	0.013 (0.015)
Investment Profile	**0.003*** (0.002)	**0.005***** (0.002)	**0.003* (0.002)**	**0.005**** (0.003)	**0.006**** (0.003)	**0.005* (0.003)**
Law and Order	**0.002*** **(0.001)**	**0.002*** **(0.001)**	0.003 (0.002)	0.003 (0.002)	**0.003* (0.002)**	0.002 (0.002)
Bureaucracy Quality	0.000 (0.001)	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.002)	0.004** (0.002)	-0.002 (0.003)
Government Stability	**0.004*** **(0.002)**	0.003 (0.002)	**0.005** (0.002)**	-0.001 (0.002)	-0.004** (0.002)	-0.000 (0.003)
Political Rights	0.002 (0.002)	0.000 (0.002)	0.003 (0.003)	**-0.004*** (0.002)	-0.003 (0.003)	-0.005 (0.003)
Polity2	-0.001 (0.001)	0.001 (0.002)	-0.001 (0.002)	0.002 (0.002)	-0.001 (0.002)	0.003 (0.004)
R^2	0.250	0.493		0.162	0.407	
Adj. R^2	0.233	0.376		0.143	0.270	
No. of instruments			127			113
AR1 p-value			0.032			0.048
AR2 p-value			0.102			0.166
Hansen p-value			1.000			1.000

Notes: Dependent variable is log real GDP per capita growth. Robust standard errors are in parentheses. AR(1) and AR(2) are the Arellano-Bond tests for first-order and second-order autocorrelation in the residuals of differenced equation, respectively. Hansen test of overidentification tests for *Ho*: the instruments as a group are exogenous. ***, **, and * indicate the coefficient is significantly different from zero at 1%, 5%, and 10% respectively.

Table 3: Estimations of growth model augmented with institutional variables for East Asian samples pre- and post-AFC

Sample	East Asian countries for the period pre-AFC (1985-1996)			East Asian countries for the period post-AFC (1997-2008)		
Method	Pooled OLS	Fixed effects	System GMM	Pooled OLS	Fixed effects	System GMM
Constant	-0.101 (0.079)	-0.189** (0.093)	-0.188 (0.151)	-0.114 (0.081)	-0.188** (0.094)	-0.251 (0.153)
ln (y_{it-1})	0.002 (0.002)	-0.000 (0.002)	0.000 (0.003)	0.001 (0.003)	-0.001 (0.002)	0.002 (0.004)
ln (s_{it})	0.018*** (0.005)	0.028*** (0.007)	0.042*** (0.012)	0.021*** (0.005)	0.029*** (0.008)	0.046*** (0.012)
ln ($n+g+\delta)_{it}$	0.008 (0.008)	0.019 (0.012)	0.013 (0.015)	0.009 (0.008)	0.019 (0.012)	0.019 (0.016)
Investment Profile	**0.009*** (0.003)	-0.003 (0.005)	**0.008** (0.003)**	**0.008** (0.004)	**0.009*** (0.003)	**0.008* (0.004)**
Law and Order	-0.003 (0.003)	-0.001 (0.003)	-0.004 (0.003)	0.006 (0.005)	-0.000 (0.004)	0.005 (0.007)
Bureaucracy Quality	**0.003** (0.001)**	**0.004* (0.002)**	0.000 (0.002)	**-0.012** (0.006)**	-0.004 (0.004)	-0.016 (0.010)
Government Stability	0.003 (0.004)	0.004 (0.005)	0.003 (0.004)	0.000 (0.003)	-0.003 (0.002)	0.002 (0.003)
Political Rights	**-0.01*** (0.002)	-0.002 (0.003)	**-0.006* (0.003)**	**-0.013** (0.007)**	**-0.011** (0.005)**	-0.015 (0.010)
Polity2	0.001 (0.002)	-0.002 (0.002)	0.002 (0.003)	**0.012* (0.007)**	**0.009* (0.005)**	0.015 (0.011)
R^2	0.152	0.403		0.135	0.405	
Adj. R^2	0.133	0.265		0.115	0.268	
No. of instruments			92			74
AR1p-value			0.051			0.032
AR2p-value			0.169			0.143
Hansen p-value			0.974			0.734

Notes: Dependent variable is log real GDP per capita growth. Robust standard errors are in parentheses. AR(1) and AR(2) are the Arellano-Bond tests for first-order and second-order autocorrelation in the residuals of differenced equation, respectively. Hansen test of overidentification tests for *Ho*: the instruments as a group are exogenous. ***, **, and * indicate the coefficient is significantly different from zero at 1%, 5%, and 10% respectively.

4.0 Conclusion

The East Asian countries have experienced a dramatic economic performance in the past three decades but an unprecedented financial crisis in 1997-1998 has however brought an end to the achievement, which the countries seem to never recover the pre-crisis rate of growth. Utilizing neoclassical Solow growth framework augmented with institutional variables reflecting property rights, bureaucratic efficiency and political institutions, and employing latest estimation technique and dataset, this study finds empirical support to the proposition *"institutions matter"* for economic growth in developing countries and to show that the institutional growth-effect essentially runs via total factor productivity channel.

Specifically, this study finds security of property rights (proxied by Investment Profile) matter significantly for growth in all developing countries under study including the East Asian region and this finding is consistent to different model specifications, sample of countries and time periods. Another notable finding by this study is the evidence to the strong government hypothesis (reflected by negative coefficient of Political Rights) for East Asian countries. Furthermore, this study is able to show that the institutions affect growth via total factors productivity.
Arguably this study is the first as far as we are aware of that uses dynamic panel data analysis to test for institutions-growth linkage in developing countries particularly the East Asian countries for the period when significant growth achievement and severe financial crisis have happened.

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Financial Development and Economic Growth from the Perspectives of Post Keynesian Economics: An Examination of the Malaysian Data.

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Abstract

Central to Post Keynesian economics is the Principle of Effective Demand, that demand matters in the long run as well as short run. Post Keynesians believe that in a competitive market economy, demand is the major determinant of output and employment – and hence, economic growth and development. However, in recent years, in several countries, congruent with economic growth, we have seen the increased prominance of the financial sector. The relevant issue then would be: does the development of a country's financial sector promote long run economic growth or vice versa? The aim of the present paper is two-fold: First, to examine briefly the theory of economic development from the perspective of Post-Keynesian economics. Secondly, to investigate whether financial development is a necessary causal factor for achieving high rate economic growth in Malaysia. Finding of the study indicates that the causality runs from the GDP to M2. This result supports the demand-following hypothesis for Malaysia. Such a result is consistent with the theory of Post Keynesian economics that the causality should run from the GDP to M2.

Keywords: Post Keynesians, economic growth, VECM

1.0 Introduction

What is the contribution of Post Keynesian economics to the theory of economic development? Such a question might seem to be irrelevant because a great deal of Post-Keynesian economic theorizing has been devoted to analysing issues which are apparently pertinent to developed market economies. However, a careful examination of the writings of Post Keynesian theorists would suggest that the contributions that they have made towards analysis of economic development are meaningful.

Michael Kalecki, Nicholas Kaldor and Joan Robinson were among the front rank Post-Keynesian economists who had considerable firsthand experience of working in major developing economies of Asia and Latin America. Each of them, according to Chakravarty (1987) had some very important things to say on the phenomenon of economic development, particularly on the policy side. Their writings have helped us to conceptualize better some of the pressing problems faced by market oriented developing economies. Richard Kahn (Kahn, 1972) expanded the scope of Keynes' reasoning to include a development dimension.

Chakravarty (1987) underlined that Post Keynesians are almost unique in giving weightage to the role played by demand factors in the process of economic development. Further, Kaldor

(1978) has the view that development is seldom supply-constrained in the case of advanced market economies.

At this juncture it is noteworthy that in many economies in recent years, financial sector seems to have become increasingly important. While such a phenomenon would suggest the increasing proportion of economic activity related to financial sector and unrelated to real activity, knowledge of the nature of causal relationship between financial sector development and economic growth would be useful not only for policy makers and economic planners, but also for investors.

The aim of the present paper is two-fold. First, is to examine briefly the theory of economic development from the perspective of Post Keynesian economics. Secondly, to investigate whether financial development (in terms of M2) is a necessary causal factor for achieving high rate of economic growth in Malaysia. Towards this end, two competing hypotheses are to be tested: supply-leading and demand following hypotheses.

This paper is organized in six sections. The following section provides an overview of the theory of economic development as proposed by Post Keynesians. Section 3.0 examines some of the previous empirical work studying the relationship between financial sector development and economic growth. While Section 4.0 outlines the analytical framework, Section 5.0 presents the empirical findings of the study. The last section, section 6.0, summarises and concludes.

2.0 Underlying Theory

The theoretical foundation of Post Keynesian economics is the Principle of Effective Demand; that demand matters in the long-run as well as the short run. Accordingly, Post Keynesian economics is often characterised as 'demand-side' economics.

Keynes and Michael Kalecki re-established Malthus's Principle of Effective Demand as the key determinant of the level of output and employment in a modern economy (Dow, 2002). This principle states that output and employment (and hence, economic growth and development) are primarily determined by the level of effective demand/aggregate demand. Aggregate demand is defined as the sum of consumption, investment, public sector demand as well as net foreign sector demand.

Keynes and Post Keynesians posit that supply is determined by given technology, the inherited capital stock and also, by expected demand. Investment and production plans are then made based on the expected market for output.

Investment and savings decisions are also fundamental to the arguments of Post Keynesians concerning economic development. Post Keynesians have the view that an essential feature of a market oriented economy is that investment decision are mostly taken independently of those who do the saving.

Post Keynesians in general have the same view with Keynes and Kahn in considering the priority of investment over savings. Kahn was the one who proposed that the causality runs from investment to savings. Keynes then developed this idea into the "General Theory" and Post Keynesians consider this into a core insight (Chakravarty, 1987).

Neoclassicists on the contrary, assumed that savings are automatically invented: Investment and saving decisions are brought into equality via changes in the rate of interest. Some Neoclassists even maintained that saving determine investment.

Further, contrasted with the neoclassical growth models which are presented and analysed in an environment of closed systems, the system underlying Keynesian and Post-Keynesian models of economic growth//development are open system. Ghosh (2005) has showed that if we introduce Keynesian uncertainty and possibility of saving and investment inequality, the economic system can only be represented as an open system.

In an open system changes are continuous and endogenous. In a closed system however, changes as in the case of neoclassical general equilibrium system – are exogenous.

Another area in which Post Keynesian economic can provide some insights into policy formulation in the idea that development measured by gross domestic product (GDP) is not an appropriate measure of welfare. Such a growth is most likely to lead in most cases to external indebtedness in an open economy (Chakravarty, 1987).

An issue that has always been the concern of Post Keynesians since the Great Depression is sustainability. Sustainability according to Common (1995) means to support before a collapse. While neoclassical economics with its current methodological approach is not well suited to understand or analyse the problem of sustainable development, Post Keynesians economics – with its focus on macro and policy outcomes, the role of institutions, uncertainty, historical time, and its criticism of gross substitution and ergodicity – has elements within its methodology that makes it better suited to incorporate sustainability into its analysis (Holt, 2005).

Recent history has witness the increased prominence of the financial sector, which had both lead to and been influenced by globalization. The net impact of such a phenomenon has been to substantially increase the proportion of economic activity related to the financial sector and unrelated to real activity (Kriesler, 2012; see also Chick, 1986).

From the perspective of Post Keynesian economics, high rate of economic growth is a necessary condition for achieving financial development. The demand-following hypothesis contends that real economic growth causes financial development.

A distinctly opposite view however, has emerged in the literature and Patrick (1966) has termed such a view as the 'supply-leading' role of financial development. The supply-leading hypothesis states that financial development causes real economic growth.

3.0 Previous Research

The question of whether financial development precedes economic growth or vice versa has been increasingly studied in recent empirical literature. In his seminal work testing the two competing hypotheses; namely, supply-leading and demand following, Goldsmith (1969) has noted that periods of rapid economic growth were usually accompanied by an above-average rate of financial development.

In a more recent study Jung (1986) however, reported that the supply-leading hypothesis holds for the less-developed countries, whereas the demand-following hypothesis holds for the advanced economies. The study was based on the data from 56 countries.

Spears (1992) in his study used the data from ten sub-Saharan countries. Findings of the study indicate that financial development causes economic growth.

Ahmed and Ansari (1998) investigate financial development and economic growth in India, Pakistan and Sri Lanka. They then report that the causality runs from financial development to economic growth. Simply put, their results support the supply-leading hypothesis.

Using vector error correction model (VECM) mechanism, Murinde and Eng (1994) investigate the causal relationship between financial development and economic growth in Singapore. Finding of the study largely supports the supply leading hypothesis.

A study by Demetriades and Hussein (1996) involves testing for causality between financial development and economic growth based on the data from 16 countries. This study has provided considerable evidence of bidirectional causality. Some evidence of causality that runs from economic growth to financial development are also detected.

More recently, Luintel and Khan (1999) examine the long run relationship between financial development and economic growth for ten countries. Different from previous studies, the authors use multivariate VAR models to examine the data. They report the existence of bidirectional causality between financial development and economic growth for all countries in the sample.

Darrat (1999) uses multivariate Granger causality tests to investigate whether financial development leads to economic growth in three countries; namely, Saudi Arabia, Turkey and the United Arab Emirates. His results in general support the view that financial development is a causal factor of economic growth.

Mazur and Alexander (2001) examine the financial sector development and economic growth in New Zealand. They report that, "some valid long-run relationships are found between indicators of both banking and stock market development and private savings, but rather more mixed results when considering either real GDP per capita or its growth rate." (p. 545).

For mainland China, Chang (2002) has tested the demand-following and supply-leading hypotheses using multivariate VAR models and Johansen cointegration procedures. He concludes that, "This empirical result supports neither the demand-following nor the supply-leading hypothesis for mainland China." (p. 869).

The data of financial development and economic growth in Taiwan are studied by Chang and Caudill (2005), using Granger causality tests based on vector error-correction models (VECM). Results of the study support the supply-leading hypothesis for Taiwan. According to the authors, this finding highlights the importance of financial development in Taiwan recent economic growth.

For the Malaysian data, Ang (2007) has conducted a study to examine whether domestic saving rate leads to higher domestic investment rate. Using the recently developed autoregressive distributed lag bounds testing procedure, they have documented the presence a

robust cointegrated relationships between domestic saving and investment rates during the period 1965 to 2003.

Although much of the recent evidence in several countries seems to suggest that financial development causes economic growth, the issue for Malaysia still appears to be unresolved. Based on this premise, the present study is initiated.

4.0 Data and Empirical Method

As noted in section 1.0, this study involves testing the direction of causal relationship between financial development and economic growth. Towards this end, the data (quarterly data) to be use are gross domestic product (GDP) and broad money (M2). The data are obtained from the Central Bank of Malaysia (Bank Negara Malaysia). The sample period for the quarterly data is fifteen years, ranging from 1997 through 2011. The data are examined and analyzed by using the Johansen Cointegration Procedures. This approach to data analysis involves two steps as follows:

Step One: *Testing for Stationarity*

In dealing with time series data, the issues of stationarity and non-stationarity are critical. In order to avoid the problem of spurious regression, the data need to be tested for the presence of unit roots: the issue of stationarity. For this purpose, the Philips-Perron (PP) test will be utilized because, as pointed out by Mandalla (2001), this test is considered robust in the presence of autocorrelation and heteroscedaticity.

Step Two: *Testing for Cointegration and Causal Relationship(s)*

Given the objectives of the study, three related econometric procedures will be employed to examine the data: i.e., Ordinary Least Squares (OLS), Johansen Cointegration Test and Vector Error Correction Model (VECM). The rationale behind applying these techniques together – particularly the OLS and the Johansen methodology, (in testing the same econometric phenomenon or issue) - is to compare their results with the expectation that they will arrive at the same conclusion.

Further, cointegration method is employed in order to detect for the presence of long run equilibrium and cointegration among non-stationary data series. If the variables are cointegrated then regression analysis will be a meaningful approach in analyzing the data because it would provide more reliable information about long-run relationships.

The stationary linear combination (of variables) is normally referred in the literature as the *cointegrating equation*. Such a phenomenon may be interpreted as a long-run equilibrium relationship among the variables.   When there is a long run relationship (or cointegration) between variables, then the next step is to examine the direction of causality between these variables. The procedure widely used by researchers in detecting for the direction of causality is VECM.

A vector error correction model (VECM) is a restricted VAR model, designed for use with non-stationary series that are known to be cointegrated. Under the VECM model, the cointegration term is known as the *error correction term* since the deviation from long-run equilibrium is corrected gradually through a series of partial short-run adjustments.

The present paper attempts to investigate the presence of causal relationships between the following variables: Gross National Product (GDP) and the broad money (M2) as well as domestic saving and domestic investment. The causal relationship between GDP and M2 is specified in the following representations:

$$M2 = f(GDP)$$
$$M2 = \beta_0 + \beta_1 GDP + \mu \tag{1}$$

Once the variables included in the above model are found to be cointegrated, our next step is to specify and estimate the vector error correction model (VECM) including the error correction term in order to investigate the dynamic behavior of the model. In this case the VECM model is specified in the following equation:

$$\Delta M2 = \beta_0 + \sum_{i=1}^{n} \beta_1 \Delta M2_{t-i} + \sum_{i=0}^{n} \beta_2 \Delta GDP_{t-i} + \beta_{3i} EC_{t-1} + \varepsilon_t \tag{2}$$

5.0 Empirical Findings

As can be displayed in Table 1.0 , the Johansen results indicate that the GDP and M2 are significantly cointegrated – a positive and empirically stable long run relationship (i.e t-value = 19.7266). The OLS parameter estimates also suggests that movements in the Malaysian GDP will significantly affect the level of M2 money supply (i.e. t-value = 44.6719). Column six displays the result from VECM analysis. The t-value for ΔGDP is -0.2961 whereas the t-value for ΔM2 is -2.9079. These results indicate unidirectionallity of causal relationship between the GDP and M2, which runs from the GDP to M2 (GDP $\rightarrow$ M2).

Table 1.: GDP and M2: OLS and Johansen Estimates (VECM)

Technique (Method)	Dependent variable	Intercept	GDP	R^2	Error Correction Term (ECT)
OLS	M2	3.7172	1.2042 (0.0269) [44.6719]	0.9794	
Johansen	M2	6.5969	1.3181 (0.0668) [19.7266]		
	Δ GDP				-0.0337 [-0.2961]
	Δ M2				-0.2226 [-2.9079]

Diagnostic Tests

n = 60	JB is Jarque-Bera test for normality
R^2 = 0.9794	BP is Breusch-Pagan test for heteroskedasticity
Adjusted R^2 = 0.9789	DW is Durbin Watson test for autocorrelation
DW (et) = 0.9308	
DW (ut) = 1.5511	
JB = 3.7729 (0.1516)	
BP (λ^2) = 0.1408	

Notes: GDP is the right-hand side variable and M2 is the left hand side variable. The Johansen cointegration tests assume no linear deterministic trend, lag interval (in first differences): 1 to 1. The trace tests and Max-eigenvalue test indicate two cointegrating equations at the 5 percent level. Values in ( ) denotes standard errors and values in [ ] denotes t- statistics

6.0 Conclusion

The present study employs the cointegration and vector error correction modeling technique of Johansen (1990/91), to investigate the presence/direction of causal relationships between the GDP and M2. Results of the study indicates that the causality runs from the GDP to M2. This result supports the demand-following hypothesis for Malaysia. In other words, the process of economic growth is a leading factor for financial development in Malaysia. Such a result is also parallel with the views of Post Keynesians that the GDP should lead M2.

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Regional Economic Development in Malaysia: A Review

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Abstract

Regional economic development of Malaysia in the past was dominated by an urban-industrialised strategy which brought about the rapid growth of cities and increase of regional inequalities. This strategy had little effect on the development of rural areas of the country, thus a decentralised urbanisation strategy was introduced. The development of rural new towns in the frontier regions of the country and a more recent development of regional economic corridors are two significant strategies to reduce regional imbalance and attracts investment and employment opportunities to all regions of Malaysia. This paper examines the regional economic development policy of the country and evaluates the strategies of developing rural new towns and urban economic corridor development. The findings of the analysis of these strategies indicate that the development of new towns has been slow due to a host of factors which are related to the planning and implementation aspects of development and the impact of the corridor development to spread the distribution of economic growth to other parts of the regions raises some issues and problems. It concludes that the rural new town and urban economic corridor development need to be properly planned based their development concept, urban-rural integration and spatial-economic balance.

Keywords: Regional development, economic policies, development strategies

1.0 Introduction

This paper reviews some aspects of regional economic development in Malaysia in three parts. The first describes the evolution of regional economic policy. The second outlines the strategies which form the main focus of regional development of the country. The last part of the paper discusses the key issues regarding the planning and development of new towns in frontier regions and economic growth corridor development as regional development strategies.

2.0 Regional Economic Policy

Malaysia, which was formed in 1963, comprises Peninsular Malaysia, the former federation of Malaya which achieved its independence in 1957 from Britain and Sabah and Sarawak, the two former British settlements. The present population of the country is estimated to be about 26.5 million comprising of three major ethnic groups, namely Malays and other indigenous groups (66.1%), Chinese (24.9%) and Indians and others (1.5%) (Malaysia, 2010).

The origin of Malaysian regional economic development can be traced back to the Draft Development Plan of 1950. After experiencing the effects of Second World War and uncertainty over the future of its two major export commodities, tin and rubber, the country was ready to begin planning for the development of its economy. Following the recommendations of the 1955 World Bank Mission, the overall development policy then was guided by two main strategies. One was agricultural crop modiification so as to reduce heavy reliance on the traditional exports and the other was industrialisation based on import substitution. The major trust of the development was to concentrate on improving infrastructure and competitiveness of the traditional products and widening the agricultural

base (Spinager, 1986). The establishment of Federal Land Development Authority (FELDA) was an example of one of the measures undertaken to increase the general standard of living of the people in the rural areas through land development. The latter involves a general programme to attract investors to widen the industrial based development. This includes the enactment of the Pioneer Industries (Income Tax Relief) Ordinance in 1958 followed by the development of industrial estates as an attempt to encourage properly planned growth of new industries. All these efforts have resulted in the concentration of manufacturing activities in the already developed urban centres in the West Coast of Peninsular Malaysia.

It was not until the Second Malaysia Plan (1971-75) that development efforts were aimed at reducing imbalances between sectors of the economy, between rural and urban areas, and between races. The regional policy is committed to the objectives of the New Economic Policy (NEP) in reducing poverty and restructuring the society by 1990. Regional and urban plans were constructed in the 1970s and Regional Development Authorities (RDAs) were established to implement the plans.

For the first time, the regional development strategy under the NEP was explicitly spelled out in the Third Malaysia Plan (1976-80) as '*the regional development strategy under the New Economic Policy (NEP) seeks to bring about closer integration among the States of Malaysia. This will be achieved through redressing economic and structural imbalances among the regions in the country*.' (Malaysia, 1976:199). Implicit in the above goals is the continuation of the existing policy of agricultural and industrial development, however, with an increased emphasis on the modernisation of rural areas and the development of less developed states. The main elements of the regional economic policy as stated in the Third Malaysia Plan (Malaysia, 1976) are new land development for the future growth of agriculture, manufacturing and services in the poorer states and the exploitation of natural resources and development of agro-based activities in resource rich states; the development of existing agricultural areas with high incidence of poverty through an integrated *in situ* development approach; and the industrial development emphasises the redistribution of manufacturing activities to the less developed parts of the country and integrates the development of growth centres with the hinterlands.

3.0 Regional Development Strategy

Within the broad framework of the above regional economic policy, basically four important strategies can be identified: resource and new land development strategy; *in situ* rural development; industrial dispersal strategy; and rural urbanisation and growth centre strategy.

3.1 Resource and New Land Development

The strategy aims at increasing agricultural productivity in highly productive land development schemes by absorbing the rural poor from less developed states. This implies a mobility of large numbers of people to the new development areas. The method used to achieve this is through the creation of RDAs which are empowered to transform virgin land into agriculturally productive areas. They are related to the resource based industries served by a relatively high level of urban services and infrastructure (Choguill, 1989). The RDAs also have the responsibility to coordinate the activities of other government agencies involved in the development of land in their respective regions.

3.2 *In situ* Rural Development

The *in situ* development is an integrated development approach aimed at modernising the existing rural areas by providing infrastructural facilities such as drainage, irrigation, marketing and other agricultural services. The aim is to increase the productivity of the farmers and thus increase their standard of living. Large *in situ* development projects which have a regional impact on the surrounding regions are mainly located in the less developed parts of the country. The important ones are Muda Agricultural Development, Kemubu Agricultural Development and Besut Irrigation and Agricultural Development which are all located in the low income states of Kedah, Kelantan and Terengganu respectively. The *in situ* development is different from the old rural development approach in that the new strategy involves defining areas, planning integrated activities, and special implementing and coordinating organisation (Johari, 1983).

3.3 Industrial Dispersal Strategy

The strategy seeks to encourage new manufacturing industries to move to the less developed parts of the country especially in the East Coast states from the congested Kelang Valley and other major urban centres in the West Coast. A number of instruments have been used to achieve this including tax holidays, investment allowances, provision of industrial estates and free trade zones (Alden and Awang, 1985). The industrial decentralisation is seen as a means to accelerate development in the poorer states through the utilisation of the local resources and thus absorbing a large number of the unemployed, especially the Malays. This strategy is linked to the strategy of growth centres in that the development of these centres would spread the development to the hinterlands.

3.4 Rural Urbanisation and Growth Centre Strategy

Rural urbanisation and growth centre strategy is an integral part of urbanisation strategy designed to encourage rural to urban migration especially among the Malays in the context of the NEP. It is aimed at relieving the congested metropolitan areas and at the same time developing the depressed areas by restructuring the indigenous rural communities into more modern and productive communities. Rural urbanisation strategy is related to other strategies like rural industrialisation, industrial dispersion and growth centres. According to Johari (1983) the rural urbanisation concepts has three purposes:

a) To introduce an urban type environment, facilities and services to generally agricultural and rural areas;
b) To foster development of modern commercial and industrial activities in the rural areas, and in the designated new growth centres, in particular; and
c) To induce active participation by the Malays and other indigenous people in the modern sector of commercial and service activities.

The strategy of growth centres operates at three levels in the context of restructuring the society and economy. The first level involves the promotion of "natural" primary growth centres in the Klang Valley, Penang and Ipoh. The second level focuses on the intermediate cities such as Kuantan, Johor Bharu and Kota Bharu. The third level involves the planning and implementation of "new towns" programme throughout the country, particularly in the newly developed resource frontier regions (Kamal and Young, 1988).

From the above discussion, it can be seen that the regional development policies and strategies in the Malaysian context are aimed at redressing the growing imbalances among the sectors of the economy, among the states, and the races.

4.0 Rural New Towns

The creation of new towns in the frontier regions in the early 1970s marked a new emphasis in the new town planning in Malaysia, from a concern with the relieving of the urban congestion to a more comprehensive approach of the development of frontier regions and the urbanisation of the rural areas. The main reason for the change in the emphasis is to realise the objectives of the NEP to restructure society and eradicate poverty in the rural areas.

When the NEP was first incorporated in the Second Malaysia Plan 1971-75, the emphasis of the plan was to strengthen the process of restructuring society in order to correct the economic disparities among the major ethnic groups. One of the strategies identified in the plan to achieve the goals of the NEP was urbanisation of the rural areas. This strategy involved the introduction of modern industries in rural areas, the development of new growth centres and migration of rural inhabitants to urban areas. It was hoped that this process would speed up the exposure of the people in the rural areas, particularly the Malays, to the influences of an urban environment. The Third Malaysia Plan explicitly spelt out the objectives and the strategy of regional development in meeting the objectives of the NEP. Greater emphasis was given to the role of "new growth centres" in urbanising the rural areas, particularly in the East Coast of the Peninsular Malaysia. Since the Second Malaysia Plan, several urban and regional planning studies had been undertaken and major land development schemes were identified.

Among the major land development schemes were regional development authorities of South-East Johor (KEJORA), South-East Pahang (DARA), Central Terengganu (KETENGAH), South Kelantan (KESEDAR) and Jengka (JENGKA). Land development and new town development are common elements in the development of these regions. In these land development schemes, RDAs were created by the Government to carry out large-scale integrated agricultural and settlement schemes.

The new town development in the frontier regions is based on two concepts: the "centralised township" concept and the "expanded township" concept. In the case of the "centralised township" concept, the settlers and workers working in agricultural hinterlands are required to live in the new towns provided with urban facilities which are comparable to other urban areas. The centralised township concept was based on the various master planning studies, and it was envisaged that these new towns would be able to provide substantial secondary and tertiary employment (about 30 per cent of primary sector employment) to the population of the new towns (Ghani, 2000).

The concept of "expanded township" implies upgrading of existing towns in the RDA areas by providing better amenities and facilities (ADB, 1985). The development of new towns in DARA, KEJORA, KETENGAH and JENGKA is based on the "centralised township" concept, while in KESEDAR it is based on the "expanded township" concept. The role of these new towns in the context of regional development of Malaysia lies in the provision of urban facilities and services to rural areas, assimilation of rural dwellers into urban environment, inducing urban economic opportunities and attracting agro and resource-based industrial development, and contributing to the development of a national urban hierarchy. Thus, it implies that the new towns generate their own growth based initially on the primary

sector then later on secondary and tertiary sectors and their growth would spread to the surrounding areas.

The main strategy in the planning of the resource frontier regions is to develop an agricultural sector which has good returns and to create an urban environment through the provision of a wide range of social amenities and services. Income generation combined with social infrastructural development in the short to medium-term will be the best way to accomplish the longer term objectives of employment creation.

It has been noted that isolated small settlements in rural areas of the region are unable to support even a minimum level of social facilities and amenities. Thus the creation of towns of a certain minimum size would ensure that these services can be economically provided. The settlement pattern proposed for the frontier regions aims at meeting the need for urbanisation and for widening of the economic base. The planning of the new settlements in the regions is based on the concept "centralised township". The concept is based on the broad approach to the planning of the new settlements involved the division of the land proposed for agricultural development into urban catchment areas, each of which could be served from a single central community.

Based on the above concept, new towns each serving a series of agricultural development areas, with a level of services and infrastructure justified by the size of the communities, have been built in the frontier regions of the country. The new towns form a hierarchy of settlements with one sub-regional centre, several district centres and estate towns. The new towns proposed do not replace existing village and estate settlements, but they absorb most of the additional population of the area and provide the necessary services (Ghani, 2000). Most of the development authorities, particularly those were established in the 1970s, are related to the development of new towns while others are related to revitalisation of existing rural development projects (Table 1). The population growth in these regions and the progress of the new town development in the frontier regions has been rather slow. This is evident from a study by Ghani and Choguill (1992) which shows that the new towns in the KETENGAH region in Terengganu, for example, had attracted only about 34 per cent of their projected population of 85,000 in 1990.

Table 1: The Regional Development Authorities in Malaysia

Project (State)	Year Taken Up	Area in million hectares	Population in 1984
JENGKA (Pahang)	1971	0.197	180,000
DARA (Pahang)	1972	1.012	126,800
KEJORA (Johor)	1972	0.3	110,000
KETENGAH (Terengganu)	1973	0.444	55,400
KESEDAR (Kelantan)	1978	1.233	171,300
KEDA (Kedah)	1981	0.834	n.a
PERDA (Pulau Pinang)	1983	0.073	n.a

Source: Ibrahim (1993).

There may be a multitude of factors contributing to the slow population build up in the new towns. Some of these factors are the competition of better paid employment in the already established regions, the traditional labour shortages in the region, the failure of the towns to attract secondary employment due to infrastructural deficiencies, and the lack of linkages between the new towns and the surrounding settlement.

Thus, the new town development, based on growth centre strategy, fails to generate 'the spread effects' to the surrounding areas, instead it 'filters up' to the existing towns in the surrounding areas. This partly implies the application of growth pole theory to the development of rural new towns has not been appropriately implemented. Besides that, Lee (1987) noted that the unsatisfactory performance of the new town development was due to the overly idealistic planning concepts, top down decision environment and a rigid planning process. As a result, the government has decided dissolve some RDAs by stages in the 1990s due to changes of development paradigm which emphasised on private led growth. DARA was privatized to Teras DARA Konsotium and JENGKA to Warisan Jengka Holdings Sdn Berhad. The other RDAs still continue their operation, having less scope for new land development than the development of existing settlements and community (Ibrahim, 2010).

5.0 Regional Economic Corridor Development

A more recent Government initiative to reduce regional disparities and rapid growth of the central region of Klang Valley is to develop five regional economic growth corridors namely, Iskandar Malaysia, Northern Corridor Economic Region, East Coast Economic Region, Sabah Development Corridor and Sarawak Corridor of Renewable Energy. The regional economic growth corridors were established during the Ninth Malaysia Plan. The development aims at reducing regional imbalance and attracts investment and employment opportunities to all regions of Malaysia by creating new sources of growth and ensuring a comprehensive and widespread economic development in a more coordinated and integrated manner (Malaysia, 2006). The development of the corridors will be the private sector driven and the government role was to provide conducive environment to attract private sector's participation such as competitive package of incentives as well as the establishment of one stop centres to enhance delivery of services and promote investment (Malaysia, 2008).

As a partial evaluation of the performance of the implementation the regional economic corridor development strategy, many issues and aspects need to be considered. However, in terms of investments in the development corridors as shown in Table 2, the achievement has been encouraging with Iskandar Malaysia while other development corridors are still lagging behind (Malaysia, 2010).

Table 2: Value of Investment in the Regional Economic Development Corridors, 2009

Economic Development Corridor	Target Investment (billion)	Committed (billion)	Actual (billion)
Iskandar Malaysia	47	59.58	22.64
Northern Corridor Economic Region	28	39.94	1.40
East Coast Economic Region	20	28.30	2.06
Sabah Development Corridor	16	30.06	11.95
Sarawak Corridor of Renewable Energy	34	87.61	2.69
Total	145	245.49	40.70

Source: Malaysia, 2010.

It would be interesting to review some planning aspects of the development of the corridors based on the lessons learnt from the earlier experience of the regional development of the country. Some of the questions which need to be seriously considered are as follows. Does the application of the corridor development concept is appropriately implemented? To what extent does the corridor development integrate urban-rural areas in respective regions? Does the development give equal emphasis spatially and economically?

The corridor development is a private sector driven development focusing on agglomeration economies which limits equal distribution of economic growth and increases regional disparities. According to Ibrahim (2010), the concept of corridor development confines to narrow stretch of transport networks and urban expansion. However, the growth corridor development strategy in Malaysia covers the whole regions including rural areas without proper access and infrastructure and the areas covered by the regional corridors are too big and lack of spatial focus. Therefore, the impact on the development of rural areas is minimal if they are not properly integrated with the urban development of the regions.

6.0 Conclusion

In this paper, some aspects of regional economic policy and the development of frontier region as a regional development strategy have been discussed. It is obvious that the development policies and strategies in the earlier years emphasised a rapid growth of economic development of the country and this has resulted in an increase in the disparities among the sectors of the economy, regions and races. However, the impact of the policy on the reduction of regional disparities has been marginal. The regional strategies are aimed at redressing the growing regional disparities in the country through increasing agricultural productivity and modernising rural areas, dispersing industries to less developed areas, and promoting the development of rural and urban growth centres. New towns in the frontier regions are aimed at urbanising the rural areas. They are based on the exploitation of agricultural resources and the provision of social amenities and services. The development of new towns has been slow due to a host of factors which are related to the planning and implementation aspects of development.

A more recent private-sector driven strategy to reduce regional imbalance and attracts investment and employment opportunities to all regions of Malaysia by creating regional economic development corridors needs to reviewed from the development concept and their implementation strategies. The impact of the corridor development to spread the distribution of economic growth to other parts of the regions raises some issues and problems. Therefore, the development of regional economic development corridors needs to be properly planned based their development concept, urban-rural integration and spatial-economic balance.

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The Willingness to Pay for Better Environment: The Case of Pineapple Cultivation on Peat Soil in Samarahan, Sarawak

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Abstract

Pineapple cultivation practiced in Samarahan, Sarawak adopted the traditional method of residue burning (RB). Peat soil, which contains high amount of carbon, released carbon dioxide into the atmosphere when RB is practiced and this method is harmful to the environment as it caused among others air pollution. The air quality deteriorated when there is open burning and this can lead to the haze problem when large scale burning is involved. Zero burning (ZB) is a more sustainable method as it mitigated the release of carbon into the atmosphere and it is a step to achieve better environment. The villagers and farmers in Samarahan are asked to state their willingness to pay (WTP) for better environment in this study and 206 respondents were interviewed. The average WTP among the respondents was RM4.12. This low value is expected as most of the farmers are low income earners but this should not be seen as giving a low environmental value by the community in this area. Policymakers are sometimes looking at the monetary value/cost per se but this does not necessarily mean a relatively low WTP value justifies the lack of effort to promote good agricultural practices such as ZB.

Keywords: Willingness to Pay, zero burning, residue burning, sustainable agriculture

1.0 Introduction

Samarahan is an area in the state of Sarawak, Malaysia that is developing in many aspects – in terms of infrastructure such as commercial and residential area, education facilities, and agriculture. Agriculture has been practiced for many years as it is traditionally the life of most of the people who lived in the villages in this area. As agriculture expanded with the Integrated Agriculture Development Area (IADA) Samarahan, many farmers begin to learn to cultivate their land beyond the scope of subsistence farming. Pineapple cultivation is a well-known practice in Samarahan as many farmers are involved in planting pineapple. The adaptability of pineapple to peat soil could be one of the reasons why pineapple is planted in Samarahan. In fact, most pineapples in Malaysia are planted on peat soil, a practice uniquely found in this country (Py, et al., 1987). The IADA Samarahan also targeted pineapple cultivation as its main project and thus many farmers under the IADA scheme are pineapple farmers. Most of them have been planting pineapple previously and then joined the IADA scheme to plant at a higher density as to increase their production. However, there are also pineapple farmers that choose not to be under the IADA for their own reasons.

Regardless of whether they are under the IADA scheme or not, most of the farmers in Samarahan have been practicing residue burning (RB) method, whereby they will burn the pineapple residue at the end of the planting cycles before they begin another cycle. This is in a way to clear the plot and prepare it for the new planting cycle. The effect of RB is the releasing of carbon dioxide into the atmosphere as peat soils contain a large amount of carbon (Hooijer, et al., 2006). The releasing of thick black smoke into the atmosphere can be clearly seen when burning is done on peat soil. This directly affects the air quality and obviously polluting the environment. The long term impact of this practice needs to be informed to the farmers as it can contribute to global warming at a larger scale. Agricultural sector (land use change and agricultural byproducts) is one of the main contributors to greenhouse gas emission behind the industrial sector (i.e., the burning of fossil fuel). Haze problem has becoming a common phenomenon for the people in this region (Malaysia and Indonesia) and the 1997 peat fire was so devastated that most of the Borneo Island was enveloped with haze and reduced visibility in some areas to only 50 meters.

The air pollutant index (API) is used by the Department of Environment (DOE) to measure air quality in which a reading below 50 is considered *good*, *moderate* between 51-100, *unhealthy* between 101-200, *very unhealthy* between 201-300, and *hazardous* for reading above 300. Table 1A shows the reading of API for Samarahan during the second half of 2008 when this study was conducted. The reading was randomly taken on the 25th of the month. Although, there was no severe haze problem during that time it shows that the reading from June to September tend to be higher compared to the reading at the end of the year when there is less burning activity. A comparison with the capital city, Kuching which is located some 25 kilometer away is also given. We are merely pointing out that RB can result in poor air quality as shown in the reading from June to August compared to the last quarter of the year. On another note, could it be that the higher API for Samarahan is caused by the agriculture activities in the area? This is beyond the scope of this study and should be researched further. Table 1B shows the reading for the next three years after the study was conducted and it shows a similar pattern in Samarahan.

Table 1A: Air Pollutant Index for Samarahan and Kuching in 2008

2008	25 Jun	25 Jul	25 Aug	25 Sep	25 Oct	25 Nov	25 Dis
Samarahan	53	55	41	60	46	38	33
Kuching	42	45	26	46	23	37	17

Table 1B: Air Pollutant Index for Samarahan and Kuching in 2009, 2010, and 2011

2009	25 Jun	25 Jul	25 Aug	25 Sep	25 Oct	25 Nov	25 Dis
Samarahan	52	48	53	59	40	43	37
Kuching	32	33	38	53	22	35	21
2010	25 Jun	25 Jul	25 Aug	25 Sep	25 Oct	25 Nov	25 Dis
Samarahan	37	46	50	44	49	52	43
Kuching	23	32	32	26	28	28	22
2011	25 Jun	25 Jul	25 Aug	25 Sep	25 Oct	25 Nov	25 Dis
Samarahan	56	45	81	56	37	25	41
Kuching	51	48	78	58	37	33	24

Source: Department of Environment, API Management System (2008). Ministry of Natural Resource and Environment, Malaysia.

Zero burning (ZB) is a technique of felling without burning and letting it to naturally decompose as opposed to the conventional practice of burning after felling (Ahmed et al., 2002). The main benefit of ZB is the cleaner environment or better air quality for the society. In oil palm cultivation, the benefits of ZB includes higher return, cost saving from nutrient recycling and soil preservation according to Mohd Noor (2003). As for pineapple cultivation, the study by Ahmed, et al. (2002) is relevant to the benefit of ZB as it highlighted the cost of RB in the form of penalty for open burning. RB has been a common practice in pineapple cultivation in Malaysia as indicated by the study. Although not to the scale of the oil palm plantation, RB has detrimental impact on the air quality; thus the preservation of the environment is the ultimate advantage of ZB as aptly said by Mohd Noor (2003).

The willingness to pay (WTP) is a concept used by economists to value something that does not have a market value. Better air quality or better environment has not been assigned any value in the past like a better quality fruit for example. Therefore, one can estimate that value by using WTP concept to arrive at the value. Survey is normally carried out to estimate such value whereby respondents are directly asked of how much they are willing to pay for something (Mitchell and Carson, 1989). There has been no WTP study in the country that relates good agricultural practices to the benefits of having better environment as a result of that practice. Most of the WTP studies on the environment in the countries have been in the hospitality and ecotourism sector as shown in the next section. ZB practice is definitely a more sustainable method and it should be adopted by the farmers if they value a better and cleaner environment. In this study, the agriculture community in Samarahan will be asked of their WTP to have better environment. That is, we are trying to measure how much they value better environment in the form of better air quality as a result of the practice of ZB.

2.0 Literature Review

Zero burning (ZB) practice received wide attention in the region after the severe haze problem in 1997 as a result of the forest fire in Indonesia. The commitment by the ASEAN countries to address this problem was evidence when the ASEAN Environmental Ministers signed the ASEAN Agreement on Haze (AMMH) on 10 July 2002 in Kuala Lumpur (ASEAN, 2006). The policy on ZB was first adopted in April 1999. A study by Mohd Shahwahid and Jamal (1998) indicated that Malaysia suffered a loss of RM800 million as a result of that forest fire. Open burning was totally banned after the incident and anyone found to break the law will be imposed with a penalty of RM500, 000.

The policy on ZB mainly target large scale oil palm plantations as they were the main reason for the haze problem. Forest clearing and burning at the scale of oil palm plantation definitely result in adverse impact on the environment. Actually, prior to the forest fire in 1997, no-burning practice in oil palm plantation has been practiced by many plantations in Malaysia from 1993 (Mohd Noor, 2003). He pointed that the idea of ZB was initiated back in 1989 in view of the environmental concern by the large plantation houses in Malaysia. The benefit of ZB which includes faster plantation development and cheaper private cost was reported by Mohd Hashim, et al. (1993). Both studies suggested that ZB is financially and environmentally better than the clearing and burning method. As for pineapple cultivation, there has been minimal study on ZB and perhaps the study by Ahmed, et al. (2002) is worth mentioning as it shows the economic viability of adopting the ZB technique. According to the study, there is slight increase in cost when adopting the ZB technique but it does not significantly affect production. The social cost of RB technique perhaps justifies the use of ZB technique and furthermore the penalty of open burning is a hefty cost associated with the

burning technique. Although the study was looking on the effect of different residue management practices on yield, it also shows that the environmental cost is included in its analysis. In other words, the social cost needs to be accounted for to give a balance perspective.

There have been numerous studies on economic valuation and the widely-practiced contingent valuation method (CVM) has been the more popular method since the 1990s. This is largely due to its ability to estimate non-use value of natural resources (Mitchell and Carson, 1989). Despite of its popularity, CVM has also received a lot of critics as a result of the controversies associated with it and this has been discussed in Carson, et al. (2001). The concept of value in economics is expressed in terms of willingness to pay (WTP) or willingness to accept (WTA). The different method such as CVM used by economist enable them to estimate the non-use value of natural resources by asking the respondents what is their WTP. Studies on WTP concerning the environment had been practiced for several years now and it involves many aspects such as the world ecosystem as a whole. Costanza, et al. (1998) was the first to attempt to value the world ecosystem in which they estimate the ecosystem services of different biomes. Perhaps the magnitude of their work attracts a lot of comment including a critic from Pearce (1998) where the later stated that they violated the basic rule that WTP should not exceed income. Nevertheless, the idea of valuing the ecosystem services continued to receive attention since then. Farber, et al. (2002) further demonstrated the concept of ecosystem valuation.

The economic valuation on wetlands is perhaps the more frequently conducted study probably because of the attempt to preserve these sites from being used in an unsustainable manner. Apart from that there are many services that wetlands can offer to human society (Turner, 2000). The Ramsar Convention on Wetlands is an international treaty that has the goal of using the wetlands in a sustainable manner. Barbier (1994) seeks the value of the functions of the tropical wetlands where it gives the idea of people paying for the environmental service. A summary of different wetland valuation was done by Brander, et al., (2006) but what is more important is that we should be able integrate different disciplines to better understand the interactions between nature and society as suggested by Turner (2000). Jamal and Shahariah (2003) is among the earliest study conducted on Malaysian wetlands.

Payment for environmental service study involves different aspects. For example, the WTP to have better water quality where the upstream landowners are to adopt practices that result in better water quality (Johnson and Baltodaro, 2000). Other notable examples in the region are the WTP for watershed protection carried out by Pattanayak and Kramer (2001) and Calderon, et al. (2006) in Indonesia and the Philippines respectively. They have found that people are WTP \$0.23/month in Indonesia and \$0.53/month in the Philippines. Although these values seem minimal, it does give us the notion that people do value better environment. Indeed the value obtained from studies conducted in less-developed countries has been on the lower end as shown in the studies above. A study in Malaysia by Bann (1999) shows the value of RM1.38/month by the respondents on the protection of the mangrove forest in Johor. The study by Jamal and Shahariah (2003) on wetland conservation shows the mean WTP of RM4.87 among single respondents and RM3.61 among married respondents. WTP studies in Malaysia have been more in the hospitality and ecotourism sector as mentioned earlier. These include study by Alias et al. (2002) in Damai, Sarawak, with WTP of RM11.64; Alias and Mansor (2005) in Manukan Island, Sabah with WTP of RM5.02; and Mohd Rusli, et al. (2006) with WTP of RM7.84 for local tourists and RM10.63 for international tourists. All of these values can give us an idea of how society place value on the environment.

3.0 Methodology

This study mainly employs survey technique as we are using the contingent valuation (CV) method. The study covered the area surrounding the IADA Samarahan whereby the pineapple planting project is carried out. The population in this study includes six different villages where the people are living nearby if not on the peatland itself. Most of these villages are located along the Samarahan River. We sampled 206 respondents from the population as shown in Table 2. We are confident that this group of people are the most likely to be affected by any change in the agricultural practices adopted in this area and they represent a good estimate of the population. They will be the group that will benefit from a better environment if ZB technique is adopted in the pineapple farming among farmers in Samarahan.

The familiarity to peat area among these people is a good reason to include them in the population beside the fact that most of them are involved with pineapple farming on peat soil. They have been living in the area and make use of the land for their agricultural activities before and in will derive the benefit from better environment such as good air quality. These are the people that will be affected by the benefits of better environment in this area if a more sustainable agriculture method is adopted. Familiarity with the goods/services being studied is important to reflect a true value as argued by Mitchell and Carson (1989). They also suggest that interview should be done by asking the head of the household and not just any individuals as we are assuming that it is payment for public goods (i.e., better environment quality). Some questions are asked to gauge their attitudes towards environmental valuation. They are asked to rank on a scale of 1-5 whether they agree or not on something related to the environment, 1 being strongly disagree and 5 being strongly agree.

Table 2: Population and Sample Surrounding Pineapple Cultivated area in Samarahan

Villages	Population	Sample
Meranek	235	37
Empila	298	45
Melayu	190	31
Sungai Mata	174	40
Mang	131	32
Nakong/Naie	83	21
Total	1111	206

After selecting the villages that represent the population of the study, we employed random sampling technique as it is a common technique in survey (Bateman, et al., 2002). The face-to-face interview is employed as it is recommended by the US National Oceanic and Atmospheric Association (NOAA) Panel to be used in CV studies (Arrow, et al., 1993). Although the face-to-face interview is much more expensive, it is the higher response rate (more than 70%) than the other methods such as mail survey and telephone interview that makes it more attractive (Bateman, et al., 2002). They also argued that more information can be collected with face-to-face interview and it allows the interviewer to have control over the information given during interview. Also, the interviewer can assist the respondents to answer complex questions or to understand any other questions in the questionnaire.

To find the average WTP, we use non-parametric estimation of the mean WTP for its simplicity to estimate mean WTP (Vaughan, et al., 1999; Bateman, et al., 2002). Since we are using binary data we employ logit analysis where we use a probabilistic model as given by

equation (1). A probabilistic distribution shows the likelihood of observing a particular WTP value.

$$\Pr(WTP = C|\beta,\alpha,\sigma^2) = f(\beta C;\alpha,\sigma^2) \qquad 0 \le C \le y \qquad (1)$$

Equation (1) is a model that estimates the probability that a household is having WTP of value C. The estimated probability is dependent on the parameters of the model, which are basically categorized as *location parameter* and *scale parameter*. The former refers to the mid-point of the distribution and the latter determines the spread of the probability distribution. This is shown by α and σ^2 respectively in (1). β refers to the coefficient for the variables that are used, for example income.

In the surveys households are asked whether they are willing to pay certain values, which we called as the bid (B). Basically, respondents will answer "Yes" if their WTP is higher than B, and will answer "No" if their WTP is lower than B.

Yes if $C_i > B$
No if $C_i < B$

This can be illustrated by using the cumulative density function (CDF) which basically shows the probability of households saying "No" (i.e., WTP being less than B). So the probability of households saying "Yes" will be the opposite and this can be obtained by one minus the CDF evaluated at B. Let say that the probability using CDF (i.e. "No") evaluated at B is p_i, then:

$$\Pr(No) = p_i = F(B;\alpha,\sigma^2)$$
$$\Pr(Yes) = 1 - p_i = 1 - F(B;\alpha,\sigma^2) \qquad (2)$$

Another way of showing the same thing is by using the survivor function, $1 - F(B)$, which is the inverse of the CDF. Survivor function gives the probability of observing a WTP greater than B whereas CDF shows the probability of observing B lesser than the WTP. That is to say with the survivor function we have:

$$\Pr(WTP_i > B_i) = 1 - F(B;\bullet) \qquad (3)$$

With this we are able to estimate the mean WTP by using the survivor function. First, there has to be different bid levels, B_j, $j = 1, 2, ..., J$ and households will respond whether they are willing to pay this amount or higher. For binary data we can calculate the point estimate of the survivor function using the different bid levels. Let say there are N households in the sample, then the sub-sample facing the bid level B_j can be denoted N_j (as illustrated by Bateman, et al., 2002). Households who reply "Yes" are willing to pay B_j are those who have higher WTP and this can be denoted as n_j. For each of the bid level, the estimate of the survivor function can be calculated as

$$\hat{S}(B_j) = \frac{n_j}{N_j} \qquad j = 0 \dots J \qquad (4)$$

The mean WTP can be calculated as the area under the step function according to (5) and we can use this to get the mean WTP of the respondents for securing a better environment through ZBT and the preservation of the peatland

$$\overline{C} = \sum_{j=1}^{J} \hat{S}(B_j)[B_j - B_{j-1}] \qquad (5)$$

Alternatively, we can use Kristrom (1990) non-parametric estimation to find the mean WTP (as shown by Vaughan, et al. 1999). In mathematical terms, the mean WTP is the integral of

the survivor function between the lowest possible value (zero) and highest possible value of WTP. As mentioned there is a simple relationship between the survivor function and the cumulative density function (CDF), $F(z;\bullet)$.

$$\overline{C} = \int_0^\infty 1 - F(z;\bullet)dz = \int_0^\infty S(z;\bullet)dz \qquad (6)$$

Put differently we can get the expected WTP mathematically as

$$E(WTP) = \int_0^\infty [1 - F(WTP)dWTP \qquad (7)$$

4.0 Results

The farmers do have some basic understanding of peat soil and its vulnerability to peat fire. They are aware of the haze problem that is due to the mass burning in the neighboring country and the haze of 1997 is still vivid in their mind (the API reaches 300, which is a "hazardous" level during that time) and thus environmental concern is important to the people living in this area. They also stated that it is important to have clean rivers although only 21.4% of them use the river directly especially for fishing. Table 3 shows the mean rank given by the respondents. All of the characteristics give a mean rank that is at least 4 and it shows that the villagers in the area value the environment. At least it gives us the idea that they have the affinity to appreciate cleaner or better environment.

Table 3: Ranking of Environmental Preservation Characteristics

Characteristics	Strongly agree (5)	Agree (4)	Neutral (3)	Disagree (2)	Strongly disagree (1)	Mean Rank
Important to manage peat soil	57	147	0	1	1	**4.25**
Important to have clean rivers	15	191	0	0	0	**4.07**
There is a need to keep the rivers clean	26	180	0	0	0	**4.13**

The respondents are asked to state their WTP to have a better environment through the practice of ZB. The benefits of ZB were explained to the respondents during the interviews and they are aware of the benefits. Table 4 gives the result of the WTP analysis. The mean WTP is RM4.12 (RM1 = US$0.313) which is obtained from the Kristrom non-parametric mean WTP as given by (7) above. This low WTP is expected for the case in developing countries and most of the respondents are low income people. We are not surprised with the result as the value given by other studies like Jamal and Shahariah (2003) Bann (1999) show value at the lower end. The former gives a value of RM4.87 (single) and RM3.61 (married) for conservation of Paya Indah wetlands and the later with RM1.38/month in her valuation of the mangrove forest in Benut, Johor. The pre-test result has indicated that they are not willing to pay for higher value.

The low income level of most of the farmers surrounding this area could influence the result of this WTP as income can affect WTP (Hanley and Shogren, 2006). Further analysis reveals that 32% of respondents are living below the poverty line income of RM600/month. We have further use logit analysis to look at how certain socio-economic factors may influence the WTP bid. The dependent variable in this model is the bid function (WTP) and the independent variables are the income level, education level and the distance from the peat

area. The results suggest that income level and education has a positive relationship with WTP and the distance from peat area on the other hand is negatively related to WTP (Table 5).

Table 4: Willingness to Pay Value

Bid Group j	Bid (RM)	Bid Range	Bid Mid-Point	Total of "yes" answer (n_j)	Total respondents (N_j)	1-F_j (n_j/N_j)	[1-F_{j-1}]-[1-F_j]	Est WTP
n.a	0	0	0	n.a	n.a	1.000	n.a	0
1	2	0-2	1	31	32	0.969	0.031	0.03
2	3	2-3	2	38	45	0.844	0.124	0.31
3	4	3-4	3	24	31	0.774	0.070	0.25
4	5	4-5	4	24	40	0.600	0.174	0.78
5	6	5-6	5	14	37	0.378	0.222	1.22
6	7	6-7	6	3	21	0.143	0.236	1.53
							WTP	**4.12**

These variables conform to theory whereby people with higher income and more educated would pay more. The farther someone is from the peat area then they are expected to pay less than those who live closer (Pate and Loomis 1997). Two variables (income level and distance) are significant at 99% but education is not significant in this case. Since logit is about the probability of saying a *yes* or *no*, we only conclude that higher income tends to increase the probability of saying *yes* to a particular bid in this WTP. The negative sign from the distance variable simply means that it decreases the probability of saying *yes* to pay the bid.

Table 5: Logit Analysis of WTP

Variables	Coefficient	Std. Error	z-Statistics	Prob.
Income	6.4254	1.1931	5.3855**	0.0000**
Education	0.6014	0.4531	1.3273	0.1844
Distance	-3.3141	0.6701	-4.9456**	0.0000**
Constant	-4.1742	1.4044	-2.9723**	0.0030**
McFadden R-squared = 0.7385				

Notes: ** = significant at 0.001

5.0 Conclusion

The value to secure a better environment in this study seems to be relatively low at RM4.12. This is however not surprising as other studies conducted in the country also indicated lower values as well. The income level of most of the people living surrounding the peatland area in Samarahan is very low and thus could affect their WTP for better environment. There is no denial that income restrain can have its effect on WTP as the percentage of respondents saying "yes" to higher bid in this survey is low. The probability of respondents paying at a higher bid is much lower. Nevertheless, there is a value in a better environment as suggested in this study. The tendency for the respondents to emphasize on cleaner environment can be seen through their attitude toward the preservation of the environment. Most of them agreed that it is necessary to take care of the environment.

Peat soil and its usage for agricultural activities should be carefully monitored as unsustainable use could leave a detrimental impact toward the environment. The practice of RB in pineapple cultivation on peat soil is not a sustainable method as it causes pollution to the environment. The release of carbon dioxide with this farming method can contribute to the

global warming effect. Sustainable agriculture seeks to use method that are not harmful to the environment and at the same time can generate income to the farmers. ZB is an option for pineapple farmers in Samarahan as this method can help in mitigating the release of carbon dioxide into the atmosphere. It also can help to avoid peat subsidence as the carbon content in the soil remain there when there is no burning carried out.

Sustainable agriculture practice should be promoted and adopted by everyone and the issue of sustainability should cover not only the economic and social angles, but also the environment (ecological). These three components have been pointed out by Tisdell (1999) in view of the concept of sustainability when it comes to agriculture. Any agricultural practices that degrade its natural resource base and pollute the environment will lose its ability to produce and therefore deemed not sustainable. Thus, for the farmers in Samarahan, they should be encouraged to practice ZB as it is a more sustainable method in pineapple cultivation on peat soil.

This is the greatest challenge for policy makers nowadays, to balance between development and preservation of natural resources. In this particular case, the clearing of more land for agricultural activities may continue in the future, but efforts to educate the society of sustainable agriculture practices must be done and most importantly the implementation of this knowledge must be seen on the field in order to realize the benefits of sustainable agriculture. There is no point of conceiving any ideas without really implementing it in real life. Perhaps our greatest achievement so far has been the preaching of the concept of sustainable development but we need to go one step better at practicing what we preached.

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The Response of Hours Worked to Changes in Minimum Wage in Indonesia

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Abstract

This study examines the effect of a change in minimum wage on hours worked of urban paid employment in Indonesia using the Indonesian Labour Force Survey (Sakernas). Compared to the existing developing countries literature, the sample selection corrections based on a multinomial logit for a potential selection bias from a non-random sample is taken into account. This study compares the estimates from two different approaches to correct for a potential selection bias based on multinomial logit, including Lee's and Bourguignon et al's selection biased correction approaches. This study extends the hours worked specification by analysing the effects of minimum wage on hours worked separately across individuals in different groups of workers in terms of gender (male-female workers). This study found that an increase in the minimum wage increases hours worked of the existing urban paid employees in Indonesia. This study also found that the effect of minimum wage on hours worked is stronger for female workers as the most vulnerable workers in the labour market.

Keywords: Minimum wage, hours worked, Indonesia

1.0 Introduction

A standard competitive model suggests that a minimum wage which is above equilibrium level will reduce demand for labour. Based on the standard literature, the effects of an increase in minimum wage on demand for labour can be analysed from employers' decisions on how many workers would be employed (a stock variable) and how many hours they should work (a flow or utilization variable) (Hart, 1987; Hamermesh, 1993). On the demand side, employers, therefore, have the option of either (or both) changing the number of workers employed or changing the number of hours worked of their existing workers in response to an increase in minimum wage. Specifically, Hamermesh (1993) pointed out that, in response to minimum wage, employers might reduce (or increase) the number of workers employed (employment) at the *extensive* margin, while on the other hand employers might also adjust the labour utilization at the *intensive margin* by changing their working time or changing the relative use of their full-time and part-time employment of the existing workers.

Compared to developed countries, the empirical studies of the effect of a change in minimum wage on hours worked in developing countries are very limited. Evidence from Costa Rica using panel data across industries indicates that an increase in minimum wage increased hours worked, suggesting the presence of monopsony power (El-Hamidi and Terrell, 2002). In Brazil, Lemos (2004) found some positive effects of minimum wage on number of hours worked (hours effect), although the effect on the employment rate (jobs effect) was negative. In a more recent study, Gindling and Terrell (2007) found that an increase in the Costa Rican minimum wage reduced the number of hours worked per worker in the covered sector.

Figure 1 illustrates the kernel density estimate for the distribution of the hours worked among urban paid employment in Indonesia using individual pooled data from 1996 to 2003[1]. The x-axis of the kernel density indicates the number of hours worked per week, while the y-axis shows the density. A spike in the kernel density estimate indicates a large proportion of workers found relating to their hours worked. As presented in figure 1, there is a substantial spike of workers who work around 48 hours per week for both men and women, which has to be viewed as a standard workweek particularly in the manufacturing sector. This spike actually represents around 20% of the urban workers who are working 48 hours per week during the sample periods. The second substantial spike is 40 hours (representing over 10% of the urban workers), indicating that some businesses, particularly in the public sector, have applied 40 hours per week as a normal workweek based on the government regulation. The third highest cluster is found around 54-55 hours per week, indicating the maximum hours worked allowed based on the government recommendation.

Figure 1 Distribution of Hours Worked among Urban Paid Employment
(Pooled Data 1996-2003)

(a) Males   **(b) Females**
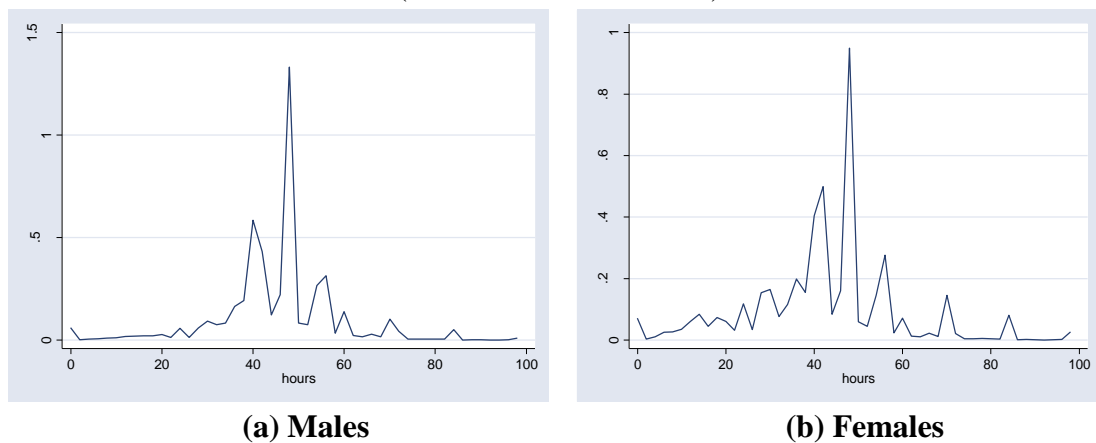
There is no clear spike found at less than 40 hours per week (part-time workers), although there are some clusters for female workers, supporting evidence that urban workers are mostly working full-time. In addition, there are some clusters found above 60 hours per week representing some workers with very long working hours (and usually with very low earnings) that still exist in the labour markets. Based on the labour force survey data, most of these are found working in the domestic helper activities, although Agrawal (1995) also found some cases in the manufacturing sector. In practice, the government regulation for fundamental worker's rights (such as Ministy of Manpower Regulation No. 13/2003) is more effective to be enforced to workers in business activity but less effective in private households and domestic workers because their work takes place in the private sphere and most of them are uneducated and poor (Amnesty International, 2007).

This study specifically examines the effect of a change in minimum wage on hours worked for urban paid employment in Indonesia using the Indonesian Labour Force Survey (Sakernas) from 1996 to 2003. Relating to hours worked, the regional minimum wages in Indonesia are primarily set for full-time workers based on monthly terms (not hourly terms) with a standard of 40 hours worked per week. Although the minimum wage is primarily set for full-time workers, minimum wage level is also flexible and can be adjusted for part-time workers who work less than 40 hours per week on a pro-rata basis. In addition, the overtime

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[1] The kernel density is estimated using an Epanechnicov kernel with bandwith of 0.05

wage rates (overtime premium) will also be applied for workers who work more than 40 hours per week.

Using a pooled cross-sectional time-series data, the sample selection corrections based on a multinomial logit for a potential selection bias from a non-random sample will be taken into account. This is important particularly to control for the potential selection bias arising from the correlation between the unobserved factors that affect the choice of employment sectors and the unobserved factors that affect their hours worked. In practice, individuals who expect fixed (or standard) working hours are more likely to select themselves (self-selection) into the paid employment category, while individuals who expect more flexible (part-time) working hours might put themselves into uncovered sector employment (such as the self-employed and unpaid family workers categories). Specifically, this study compares the estimates from two different approaches to correct for a potential selection bias based on multinomial logit, including Lee (1983) and Bourguignon, et al. (2007) selection biased correction approaches. This comparison is necessary to obtain the most robust specification in examining the effect of minimum wage on hours worked in Indonesia.

This study extends the hours worked specification by analysing the effects of minimum wage on hours worked separately across individuals in different groups of workers in terms of gender (male-female workers). Male and female workers behave differently as minimum wage increases because they have different labour market characteristics. Female workers with young children in their household, for example, tend to work shorter hours (part-time) because of their domestic responsibilities. In addition, this study also focuses on workers in urban areas because minimum wage is more effectively enforced in urban areas than in rural areas.

The rest of this study is structured as follows. The second section discusses the literature review of previous studies on the effects of minimum wage on hours worked. The third section describes the data research methodology used in this study. The fourth section reports the empirical results. Finally, the last section provides conclusions.

2.0 Literature Review

There are an extremely limited number of publications in examining the effect of minimum wage on hours worked in developing countries. However, there have been some studies conducted in Latin-America that have used hours worked per worker as an alternative measure of the effect of minimum wage on employment, such as El-Hamidi and Terrell (2002) and Gindling and Terrell (2007) for Costa Rica.

El-Hamidi and Terrell (2002) estimated the effect of the Costa Rican industrial minimum wage on employment using industrial panel data for the covered and uncovered sectors from 1980 to 1992. In Costa Rica, the minimum wage is set differently across occupations and skill-levels, providing more variation in minimum wage level. Specifically, they found that the minimum wage was positively associated with hours worked particularly when toughness (the ratio of minimum wage to the average wage) was low, indicating the presence of monopsony power in the labour market. However, a minimum wage increase was negatively associated with hours worked when minimum wage reached 66%-71% of the average wage. The result suggests that an increase in minimum wage by 1% reduced hours worked of covered sector employment by 0.2% when toughness was high.

Gindling and Terrell (2007) found different results using individual pooled cross-section data from 1988 to 2000. They found that an increase in minimum wage reduced the average number of hours worked by 0.062% in the covered sector. The result confirmed that employers respond to an increase in the minimum wage by reducing the number of hours worked as well as the number of workers. However, they found that there was no significant effect of minimum wage on hours of work of workers in the uncovered sector. In conclusion, they confirmed that the employment effect is larger than the hours effect, indicating that employers are more likely to adjust their number of workers' than their workers hours worked in the short run in response to minimum wage increases.

3.0 Data and Research Methodology

The main source of the individual level data set used in this study is the Indonesian Labour Force Survey (the so-called Sakernas) for the years 1996-2003 (pooled cross-sectional time-series data). The individuals (aged>15) included in the sample are those who held one of the following primary activities: self employed, unpaid family worker, paid employment and unemployed consisting of 175245 males and 104027 females. In practice, paid employment is the category of employment legally covered by minimum wage, while self-employed and unpaid family workers are categorised as employment in the uncovered sector. Following the previous studies (Gindling and Terrell, 2007), this study uses hours worked per week as a common unit of the hours worked variable rather than hours worked per day. In addition, minimum wage data used in this study is the regional monthly minimum wage level (26 provinces) obtained from the Department of Manpower and Central Bureau of Statistics (CBS) weighted by the provincial consumer price index (CPI). Finally, the provincial unemployment rate is obtained from the CBS publication.

In order to control for a potential sample selection bias, two-step procedure of selection biased corrections is employed. This study presents the comparison of the estimates from two methods to correct for selection bias based on the multinomial logit model, including Lee's (1983) and Bourguignon et al's (2007) methods. For comparison purpose, the hours worked equation will also be estimated using OLS (without correction process).

In general, the two-step procedures of selection biased corrections are as follow:

$$y_s^* = z\gamma_s + \eta_s; \qquad s = 1, 2, 3, 4, \qquad\qquad (1)$$

$$h_j = x\beta_j + \mu_j \quad ; \qquad\qquad j \;=\; 3 \;=\; paid \quad employment$$
(2)

In the first equation (first-stage of estimation), y_s^* is a latent dependent variable representing four different main employment categories, including *(1)* self-employed, *(2)* unpaid family worker, *(3)* paid employment, and *(4)* unemployed. Therefore, *s* is a categorical variable, indicating the selection process between these four different employment categories. The multinomial logit model of these four categories of employment will be estimated in order to obtain the predicted values used to generate the selectivity term(s) associated with each employment categories. This selection term(s) will then be used as an additional explanatory variable(s) in the hours worked equation (second-stage of estimation). Specifically, in equation 2 (second-stage of estimation), *h* is the hours worked variable (as the outcome variable) examined for paid employment in the covered sector category. On the right-hand-side of the equations, *z* and *x* are a set of the explanatory variables, while η and μ are the error terms.

As indicated in Bourguignon, et al. (2007), a general expression for the conditional probabilities of each employment category that will be used to generate the selection term(s) associated with each employment category in the first-stage of estimation is given by:

$$P_s = \frac{\exp(z\gamma_j)}{\sum_{k=0}^{3} \exp(z\gamma_s)} \tag{3}$$

where the explanatory variables (z) used in the multinomial logit model are (1) log of real provincial minimum wage; (2) gender (female is the reference group); (3) a set of age group (>=50 years old is the reference group); (4) a set of marital status (singles are the reference group); (5) a set of highest education completed (not finished primary school yet or never been in school is the reference group); (6) a set of provincial dummy variables (West Java is the reference group); (7) a set of year dummy variables (1996 is the reference group); (8) a set of family background variables, including head of household (not head of household is the reference group) and number of children in the household (no children is the reference group).

Relating to the explanatory variables, the identifying variables are necessarily needed to identify the selection term(s). As suggested by Purwaningsih and Murtiningsih's (2006) study of Central Java in Indonesia, dummy variables of highest education completed are suitable to be employed as the identifying variables for selection equation purposes (first-stage of estimation). In practice, the individuals' hours worked will not be affected by the levels of education as workers tend to work similar hours regardless of their levels of education. However, levels of education are likely to substantially affect the employment categories. In this case, highest education completed are divided into six education categories including university, academy (vocational education), senior high school, junior high school, primary school, and not finished primary school (as a reference variable).

4.0 Empirical Results

Table 1 presents the first-stage estimation of multinomial logit selection model for male workers. The marginal effects are used to interpret the first-stage of estimation analysis. As presented in table 1, an increase in the minimum wage increases the probability of being self-employed (marginal effect is 0.022) and decreases the probability of being unemployed (marginal effect is 0.012). A potential explanation of a decrease in the probability of being unemployed is that there are no social benefits provided by the government to being unemployed in Indonesia. Moreover, the effect of the minimum wage on the probability of being in paid employed for male workers is negative but the coefficient is not significant.

Table 1: Employment Equation, Males (First-stage Estimation)

	Self-Employed		Unpaid Family Worker		Paid Employment		Unemployed	
	M.E.	P value	M.E.	P value	M.E.	P value	M.E.	P value
Lrealmw	**0.0220**	**0.036**	**0.0071**	**0.163**	**-0.0169**	**0.139**	**-0.0122**	**0.041**
Married	0.1049	0.000	-0.0142	0.000	-0.0195	0.001	-0.0712	0.000
Separated	0.1257	0.000	-0.0157	0.000	-0.0788	0.000	-0.0311	0.000
Primary	-0.0463	0.000	-0.0061	0.002	0.0581	0.000	-0.0057	0.135
Junior H.S.	-0.1088	0.000	-0.0061	0.002	0.1086	0.000	0.0063	0.113
Senior H.S.	-0.2532	0.000	-0.0217	0.000	0.2320	0.000	0.0429	0.000
Academy	-0.3098	0.000	-0.0310	0.000	0.3135	0.000	0.0274	0.000
University	-0.3214	0.000	-0.0300	0.000	0.3074	0.000	0.0440	0.000
age15-24	-0.1482	0.000	-0.0244	0.000	0.1405	0.000	0.0321	0.000
age25-34	-0.0770	0.000	-0.0349	0.000	0.1256	0.000	-0.0136	0.001
age35-50	-0.0677	0.000	-0.0298	0.000	0.1238	0.000	-0.0263	0.000
Head of HH	0.1053	0.000	-0.0863	0.000	0.0658	0.000	-0.0847	0.000
1 child	-0.0153	0.000	-0.0002	0.875	0.0206	0.000	-0.0051	0.004
>=2 children	-0.0019	0.577	-0.0020	0.196	0.0100	0.009	-0.0061	0.004
Year 1997	0.0014	0.738	0.0054	0.008	-0.0031	0.502	-0.0037	0.143
Year 1998	0.0247	0.000	0.0125	0.000	-0.0505	0.000	0.0133	0.000
Year 1999	0.0263	0.000	0.0095	0.002	-0.0631	0.000	0.0274	0.000
Year 2000	0.0348	0.000	0.0122	0.000	-0.0698	0.000	0.0228	0.000
Year 2001	0.0015	0.772	0.0080	0.002	-0.0199	0.000	0.0104	0.001
Year 2002	0.0074	0.068	-0.0003	0.895	-0.0318	0.000	0.0246	0.000
Year 2003	0.0170	0.000	0.0009	0.653	-0.0422	0.000	0.0243	0.000

Note: All regressions include province dummies. Estimated by Multinomial Logit.
Number of obs = 175245; Wald chi2(135) = 31250.78
Prob > chi2 = 0; Pseudo R2 = 0.1776

The identifying variables (the levels of education) are significant in explaining each category of employment. This result indicates that the levels of education are suitable as the identifying variables due to the fact that they are strongly correlated to the employment categories. In terms of paid employment, men with higher education are more likely to be in the paid employed category and less likely to be employed as unpaid family workers and less likely to be self-employed. In addition, it is interesting to note that there is a greater probability for men with higher education to be unemployed. This result is consistent with Feridhanusetyawan and Gaduh (2000) analysis that in the absence of employment benefits provided by the government, only individuals who have higher family incomes (usually with a high education level) might remain unemployed in search of better-paid jobs.

In the second-stage of estimation, the selection term(s) obtained from the first-stage of estimation is included in the paid employment hours worked equation in order to correct for potential selection bias. The first column of table 2 presents the hours worked estimation for male paid employment using Lee's method. As indicated, the sample selection term is negative and significant, suggesting evidence of a positive selection effect in the male paid employment hours worked equation. In other words, this result suggests that there is an upward bias in the hours worked equation without a correction process. However, the result from Lee's method seems to be inconsistent. As presented in the third column of table 2, the estimated coefficient of the minimum wage using OLS is 0.024 which is slightly lower than the estimated coefficient of the minimum wage using Lee's method, indicating a downward bias (not an upward bias as predicted by Lee's method). Bourguignon et al (2007) confirmed that Lee's method is likely to be inconsistent and inefficient in the case of big samples. In

addition, Lee's method has a very strict assumption that the unobserved factors that make one more likely to choose one employment sector choice against any other employment sector choices in the first-stage of estimation should be correlated in the same direction as the unobserved factors in the second-stage of estimation (Bourguignon, et al, 2007). In practice, there is no clear indication that the unobserved factors in the employment equation has the same direction as the unobserved factors in the hours worked equation.

Table 2: Hours Worked Equation, Males (Second-stage Estimation)

	Lee		Bourguignon		OLS	
	Coef.	P value	Coef.	P value	Coef.	P value
Lrealmw	**0.0260**	**0.003**	**0.0270**	**0.002**	**0.0243**	**0.005**
Married	0.0240	0.000	0.0235	0.000	0.0184	0.000
Separated	-0.0313	0.000	-0.0277	0.003	-0.0186	0.023
Head of HH	0.0092	0.006	0.0188	0.012	0.0004	0.894
1 child	0.0076	0.001	0.0084	0.000	0.0065	0.005
>=2 children	0.0038	0.141	0.0057	0.026	0.0043	0.097
Age15-24	0.0781	0.000	0.0738	0.000	0.0614	0.000
Age25-34	0.0874	0.000	0.0762	0.000	0.0581	0.000
Age35-50	0.0652	0.000	0.0591	0.000	0.0391	0.000
Industry	0.1567	0.000	0.1519	0.000	0.1413	0.000
Trade	0.2104	0.000	0.2062	0.000	0.1934	0.000
Services	0.0305	0.000	0.0281	0.000	0.0014	0.728
Mining	0.1482	0.000	0.1446	0.000	0.1310	0.000
Electricity	0.0712	0.000	0.0649	0.000	0.0455	0.000
Construction	0.1478	0.000	0.1440	0.000	0.1420	0.000
Transportation	0.2182	0.000	0.2132	0.000	0.2059	0.000
Finance	0.1080	0.000	0.1080	0.000	0.0759	0.000
Unemployment	-0.0413	0.632	-0.0324	0.706	-0.0398	0.645
Year 1997	-0.0022	0.491	-0.0015	0.648	-0.0022	0.487
Year 1998	-0.0138	0.002	-0.0137	0.003	-0.0077	0.086
Year 1999	-0.0035	0.493	-0.0046	0.372	0.0038	0.458
Year 2000	-0.0062	0.207	-0.0064	0.200	0.0024	0.629
Year 2001	-0.0022	0.620	-0.0023	0.601	-0.0012	0.778
Year 2002	-0.0150	0.000	-0.0165	0.000	-0.0123	0.003
Year 2003	-0.0044	0.297	-0.0062	0.152	-0.0005	0.915
$\lambda 1$			-0.5089	0.000		
$\lambda 2$			-0.2409	0.000		
$\lambda 3$	-0.1010	0.000	-0.1874	0.000		
$\lambda 4$			-0.4246	0.000		
Constant	3.2265	0.000	3.1167	0.000	3.3630	0.000
Observations	88828		88828		88828	
F test	189.84 (0.00)		185.102 (0.00)		183.04 (0.00)	
R squared	0.0966		0.0995		0.0918	

Note: All regressions include province dummies. Selection term: ($\lambda 1$) Self-employed, ($\lambda 2$) Unpaid Family Workers, ($\lambda 3$) Paid Employed, ($\lambda 4$) Unemployed

As the second alternative, Bourguignon et al's selection biased correction method is estimated (second column of table 2). This method provides information on all correlation patterns or selection terms between the unobserved factors in the employment categories and the unobserved factors in the paid employment hours worked equation. Using this method, all of the selection terms are significant, confirming that there is a strong evidence of sample selection bias in the hours worked equation for male paid employment. This evidence also

suggests that the OLS estimate is not robust to provide a consistent and efficient estimate due to selection bias.

The negative coefficients of the selection terms in Bourguignon et al's method mean that there are strong negative selection effects, indicating a downward bias in the OLS estimate without correction process. As suggested by Dimova and Gang (2007), any negative coefficients in the outcome equation would also mean that individuals in this sector are likely to work fewer hours than a random set of comparable individuals because individuals with less suitable unobserved characteristics have allocated into this sector out of an alternative one or because individuals with more suitable unobserved characteristics for this sector have allocated elsewhere from this sector. Specifically, a downward bias in the hours worked equation therefore means that paid employees (not randomly selected) are likely to work fewer hours than random ones from the population because of the allocation of individuals that are basically more suitable for paid employment category (based on their unobserved characteristics) into the other categories.

The strongest effect is found in the self-employed (λ_1) and unemployed (λ_4) categories, indicating that the downward selection bias is mostly caused by the allocation of individuals that are basically more suitable for paid employment category into the self-employed and unemployed categories. The potential reason for this allocation could be that they are more likely to work more flexible working hours compared to paid employees with fixed (or standard) working hours. Consistent with Bourguignon et al's method, the minimum wage coefficient using OLS without a correction process (the third column of table 2) is slightly lower than Bourguignon et al's method estimate, supporting evidence of downward bias using OLS.

As indicated in Bourguignon et al's result, it is suggested that an increase in minimum wage by 10% increases the average hours worked for male paid employment in urban areas by 0.27%. It seems that an increase in minimum wage is predicted to decrease employment but increase hours worked of the existing workers. The potential reason is that a decrease in employment is compensated by requiring the existing workers to work longer hours when minimum wage increases (substitution effect between employment and hours worked).

Table 3 presents the first-stage estimation of selection bias corrections for female paid employment. As indicated in table 3, an increase in minimum wage tends to decrease the probability of being in paid employment (marginal effect is 0.029) for female workers. In contrast to male workers, an increase in the minimum wage is likely to increase the probability of women being unpaid family workers (marginal effect is 0.032). As pointed out by Singh et al (2004), women are more likely to enter the unpaid family workers category, compared to men, because of their home-based locations and flexible working hours related to domestic tasks. In addition, the effects of the minimum wage on the probability of being self-employed and unemployed are not significant. Most of the educational attainment marginal effects are significant at 5% level, suggesting that they are appropriate as the identifying variables.

Table 3: Employment Equation, Females (First-stage Estimation)

	Self-Employed		Unpaid Family Worker		Paid Employment		Unemployed	
	M.E.	P value	M.E.	P value	M.E.	P value	M.E.	P value
Lrealmw	**-0.0038**	**0.781**	**0.0319**	**0.009**	**-0.0287**	**0.048**	**0.0006**	**0.947**
Married	0.1667	0.000	0.0638	0.000	-0.1285	0.000	-0.1020	0.000
Separated	0.1483	0.000	-0.0728	0.000	-0.0708	0.000	-0.0047	0.431
Primary	0.0123	0.003	0.0025	0.537	-0.0147	0.019	0.0000	0.996
Junior H.S.	-0.0021	0.676	0.0033	0.463	-0.0223	0.001	0.0210	0.001
Senior H.S.	-0.1360	0.000	-0.0822	0.000	0.1490	0.000	0.0691	0.000
Academy	-0.2698	0.000	-0.1538	0.000	0.3789	0.000	0.0448	0.000
University	-0.2655	0.000	-0.1408	0.000	0.3062	0.000	0.1001	0.000
age15-24	-0.2401	0.000	-0.0600	0.000	0.1103	0.000	0.1899	0.000
age25-34	-0.1106	0.000	-0.0723	0.000	0.0795	0.000	0.1035	0.000
age35-50	-0.0460	0.000	-0.0552	0.000	0.0894	0.000	0.0119	0.173
Head of HH	0.2020	0.000	-0.1724	0.000	0.0440	0.000	-0.0736	0.000
1 child	0.0092	0.011	-0.0079	0.013	-0.0011	0.784	-0.0001	0.967
>=2 children	0.0146	0.001	-0.0034	0.360	-0.0091	0.059	-0.0022	0.500
Year 1997	-0.0139	0.004	0.0208	0.000	-0.0011	0.844	-0.0058	0.129
Year 1998	-0.0233	0.000	0.0406	0.000	-0.0270	0.000	0.0097	0.070
Year 1999	-0.0167	0.018	0.0336	0.000	-0.0525	0.000	0.0356	0.000
Year 2000	-0.0468	0.000	0.0559	0.000	-0.0380	0.000	0.0288	0.000
Year 2001	-0.0462	0.000	0.0396	0.000	-0.0199	0.003	0.0265	0.000
Year 2002	-0.0616	0.000	0.0329	0.000	-0.0140	0.012	0.0426	0.000
Year 2003	-0.0628	0.000	0.0430	0.000	-0.0250	0.000	0.0449	0.000

Note: All regressions include province dummies. Estimated by Multinomial Logit.
Number of obs = 104027; Wald chi2(135) = 21053.08
Prob > chi2 = 0; Pseudo R2 = 0.189

Table 4 presents the second-stage estimation for female paid employment in urban areas. As presented in the first column, the selection term of Lee's method is significant at 5% level, suggesting that there is significant evidence of selection bias in the hours worked equation for female workers. The selection term is negative, indicating that there is a potential positive selection effect (or an upward bias in the OLS estimate) in the hours worked equation. Similar to finding for males, although the selection term is negative and significant, there is no clear evidence of upward bias in the OLS estimate suggested by the Lee's method finding. There is also no large difference between Lee's and the OLS estimate, suggesting that Lee's correction method might not necessarily be needed in examining the effects of minimum wage on hours worked.

Table 4: Hours Worked Equation, Females (Second-stage Estimation)

	Lee		Bourguignon		OLS	
	Coef.	P value	Coef.	P value	Coef.	P value
Lrealmw	**0.0369**	**0.026**	**0.0467**	**0.005**	**0.0369**	**0.026**
Married	-0.1226	0.000	-0.1812	0.000	-0.1113	0.000
Separated	0.0196	0.020	-0.0056	0.595	0.0405	0.000
Head of HH	-0.0665	0.000	-0.0637	0.000	-0.0768	0.000
1 child	0.0146	0.001	0.0111	0.009	0.0146	0.001
>=2 children	0.0089	0.074	0.0024	0.634	0.0098	0.050
age15-24	0.1630	0.000	0.1887	0.000	0.1466	0.000
age25-34	0.0987	0.000	0.0949	0.000	0.0734	0.000
age35-50	0.0838	0.000	0.0554	0.000	0.0611	0.000
Industry	0.3677	0.000	0.3535	0.000	0.3555	0.000
Trade	0.4540	0.000	0.4542	0.000	0.4339	0.000
Services	0.2992	0.000	0.2902	0.000	0.2712	0.000
Mining	0.2792	0.000	0.2774	0.000	0.2658	0.000
Electricity	0.3617	0.000	0.3593	0.000	0.3353	0.000
Construction	0.4199	0.000	0.4315	0.000	0.4032	0.000
Transportation	0.4200	0.000	0.4238	0.000	0.3937	0.000
Finance	0.3605	0.000	0.3698	0.000	0.3278	0.000
Unemployment	0.0863	0.614	0.1438	0.397	0.0907	0.597
Year 1997	0.0084	0.157	0.0063	0.289	0.0078	0.189
Year 1998	0.0036	0.662	0.0094	0.265	0.0050	0.543
Year 1999	0.0113	0.230	0.0344	0.000	0.0152	0.107
Year 2000	0.0172	0.057	0.0330	0.001	0.0204	0.024
Year 2001	0.0046	0.575	0.0198	0.022	0.0047	0.566
Year 2002	-0.0025	0.754	0.0208	0.015	-0.0030	0.710
Year 2003	0.0105	0.200	0.0346	0.000	0.0117	0.155
$\lambda 1$			-0.4624	0.000		
$\lambda 2$			-0.4722	0.000		
$\lambda 3$	-0.0754	0.000	-0.2479	0.000		
$\lambda 4$			-0.0228	0.686		
Constant	2.8699	0.000	2.7713	0.000	2.9550	0.000
Observations	41055		41055		41055	
F test	153.99 (0.00)		158.22 (0.00)		154.01 (0.00)	
R squared	0.1581		0.1698		0.1554	

Note: All regressions include province dummies.
Selection term: ($\lambda 1$) Self-employed, ($\lambda 2$) Unpaid Family Workers, ($\lambda 3$) Paid Employed, ($\lambda 4$) Unemployed

As indicated in the previous section, Lee's method tends to be problematic in the case of big samples (Bourguignon, et al., 2007). In addition, Lee's method also has a very strict assumption that that the unobserved factors in the employment categories equation should be correlated in the same direction with the unobserved factors in the hours worked equation. Therefore, we need to interpret this carefully as Lee's method has a potential inconsistency problem in its specification particularly if its assumption does not hold.

As an alternative, Bourguignon et al's method is presented in the second column of table 4. Most of the selection terms of Bourguignon et al's method are significant, supporting evidence that selection biased correction is needed. In contrast to Lee's method, the selection terms of this method are significantly negative, suggesting a downward bias in the hours worked estimate using OLS without correction procedure. These negative selection effects

suggest that female paid employees selected into the sample tend to work longer hours than female paid employees randomly selected from the population. This downward bias is mostly caused by the allocation of women who are basically more suitable for paid employment category into self-employed (λ_1) and unpaid family worker (λ_2) categories in the uncovered sectors.

Using Bourguignon et al's method, the effect of the minimum wage on hours worked is positive and significant at 5% level. The result indicates that, on average, a 10% increase in minimum wage increases hours worked of female paid employees in urban areas by 0.47%. By implication, an increase in hours worked of female workers indicates that there is an hours worked substitution of the existing female workers for female workers who lose their job as minimum wage increases. Moreover, the coefficient supports the Bourguignon et al's method which predicts that there is a downward bias in the OLS estimate. In general, the result confirms that Bourguignon et al's method finding is more robust compared to Lee's method, in the case of female paid employment in urban areas.

Compared to male workers, the effects of the minimum wage on hours worked are much stronger for female workers. This evidence supports the previous finding that female workers are more likely to be affected by minimum wage. The reason is the fact that female workers are mostly employed in industries which contain more low-wage workers, such as in the manufacturing labour-intensive industries (Pangestu and Hendytio, 1997).

In summary, the full results of the effects of minimum wage on hours worked reveal that hours worked increase as the minimum wage rises. Using Bourguignon et al's method, it is suggested that an increase in the minimum wage by 10% increases hours worked of male workers by 0.27% and increases hours worked of female workers by 0.47%. The result confirms that employers make an adjustment by employing their existing workers for more working hours in response to an increase in minimum wage. In other words, there is a tendency for employers to compensate for their loss of employment by requiring longer hours from the existing paid employees (substitution effect between hours worked and employment). Moreover Bourguignon et al's method tends to be more appropriate than Lee's method in explaining the effects of minimum wage on hours worked due to the fact that Lee's method has a tendency to be inconsistent in the case of big samples. On the other hand, using OLS without accounting for selection bias, the minimum wage effect is underestimated by 0.27% for male workers and 1% for female workers.

5.0 Conclusion

This study has examined the effects of changes in minimum wage on hours worked of paid employment using an Indonesian micro level data set, covering the period 1996 to 2003. Using the pooled cross-sectional time-series data methodology, this study extends the hours worked specification by employing two different methods of the selection biased corrections based on multinomial logit, including Lee's and Bourguignon et al's methods.

This study found that an increase in the minimum wage increases hours worked for the existing paid employees. In this case, employers appear to make adjustments by employing the existing workers for more hours as the monthly minimum wage increases. Using Bourguignon et al method, it is suggested that an increase in the minimum wage will increase the average of paid employment hours worked by 0.27%-0.47%. In addition, compared to the employment effect in the previous Indonesian studies (Suryahadi et al, 2003), the effect of

minimum wage on hours worked is relatively small. This result implies that hours worked are less sensitive to a change in minimum wage compared to employment due to the fact that the Indonesian minimum wage is set based on monthly terms (not hourly terms) suggesting a change in per-worker cost rather than in per-hour cost.

Bourguignon et al selection bias correction tends to provide more robust findings in explaining the effects of minimum wage on hours worked in Indonesia. Lee's method seem to give inconsistent results, supporting Bourguignon et al (2007) findings that Lee's method is not robust in the case of big samples. In addition, one of the other advantages of Bourguignon et al method is that this method provides information about which employment category in the samples causes the selection bias. Although the difference is relatively small, it is suggested that the minimum wage coefficient using the OLS estimate is underestimated because of sample selection bias.

As mentioned above, this study found that an increase in minimum wage will increase hours worked. By implication, the government should ensure a greater compliance of their labour policy relating to hours worked, including overtime premium, job security for overtime working and minimum wage compliance. An effective control (both from government and trade union at the enterprise level) and sanction for employers who fail to comply with the regulation is required in order to protect workers from any potential exploitation. Moreover, this study found that the effect of minimum wage on hours worked is stronger for female workers as the most vulnerable workers in the labour market. In this case, there needs to be much greater effort made by the government to reduce possible gender discrimination and to ensure equality for them in access to the labour market. A further area of research is how the minimum wage affects the relative use of full-time and part-time employment. Gramlich (1976) found that an increase in minimum wage reduced full-time employment and substituted part-time employment.

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Regional Tourism Demand in Lao PDR

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Abstract

Tourism industry has a significant contribution to economic activity as they benefit from strong international tourist arrivals in Lao PDR. Over 80% of total international tourists to Lao PDR are major regional tourists from Thailand, Vietnam and China. This study investigates the demand of regional tourists from Thailand, Vietnam and China visiting to Lao PDR. Income, tourism price and substitution price are the factors that included in the tourism demand model. The sample period of the study is from 2005 – 2010. Bounds testing cointegration procedure or autoregressive distributed lagged model (ARDL) is used in the method. The result shows that income has a positive relationship with demand of Thai, Vietnamese and Chinese tourists to Lao PDR. Then, regional tourism in Lao PDR indicates that is a luxury service. On the other hand, substitution price has a positive relationship demand of Vietnamese tourists. However, it has a negative relationship demand of tourists from China. Therefore, Thailand is a competitor tourism market with Lao PDR for tourists from Vietnam and it is also a complementary tourism market with Lao PDR for China's tourists. This study is suggested that Lao PDR should improve the infrastructure and develop new tourism destinations continuously. In addition, it should integrate tourism market with Thailand for sustainable tourism in Lao PDR.

Keywords: Tourism demand, regional tourism, regional tourism demand

1.0 Introduction

Tourism is prioritized as an important sector in Lao PDR, it is also related to many industries in Lao PDR because it has a significant contribution to economic activity as they benefit from strong international tourist arrivals in two countries. Mekong Tourism Coordinating office (2011) reported that the number of international tourist arrivals to Lao PDR is gradually expansion. Moreover, the numbers of visitors to Lao PDR have also risen dramatically over the years, from 1.2 million people in 2006 to 2.5 million people in 2010 (Table 1).

Lao National Tourism Administration (2011) reported that revenue from international tourism was about 381 million USD. World Tourism Council (2011) also stated that tourism contributed 13.3 percent to the national GDP while tourism exports shared 15 percent of the total exports. Tourism employment was 11.6 percent in 2010 (see Table 2). These indicators can be mentioned that Tourism is an important contributor to economic growth and employment creation in Lao PDR.

Table 1: International Tourist Arrivals to in Lao PDR 2006 -2010

Year	Lao PDR
2006	1,215,106
2007	1,623,943
2008	1,736,788
2009	2,008,363
2010	2,513,028

Source: Mekong Tourism Coordinating office (2011)

Table 2: Tourism as percentage of GDP, Exports and Total Employment in Lao PDR 2006 - 2010

Item	2006	2007	2008	2009	2010
Tourism GDP (% of National GDP)	12.3	13.0	13.7	13.2	13.3
Tourism Exports (% of total exports)	13.5	14.7	16.3	16.8	15.0
Tourism Jobs (% of total employment)	10.7	11.3	11.9	11.5	11.6

Source: World Tourism Council (2011).

Lao PDR is located in the center of Mekong river area. Lao PDR's location shares a very long border with China, Thailand, Vietnam, Myanmar and Cambodia consequently. In term of international tourists visit to Lao PDR, over 83% of total international tourist to Lao PDR, there are included Thai, Vietnamese and Chinese tourists (see Table 3). It means that the major of international tourists visit to Lao PDR is regional tourists from Thailand, Vietnam and China. Therefore, the regional tourists in Lao PDR have become a revenue contributor to Laotian. Moreover, during 2008 and 2010, Thailand experienced a political crisis. This led to Suvanabhumi international airport was closed during a protest by the yellow shirt group and Rachaprasong shopping district was occupied by a red shirt group. There were variable effects on the confidence of regional tourism to Lao PDR. Because, Thailand, Lao PDR, China and Vietnam have had social, ethnic, economic and tourism-related relationships over a long period of time.

Regional tourists remained the largest group in the tourism industry of Lao PDR because there are many modes of transport available between regional tourists visit to Lao PDR as well as many channels tourism marketing promotion. A number of papers studied the tourism demand however, there is a lack of research study on regional tourism demand in Lao PDR. Especially, comparing demand of regional tourists visit to Lao PDR in each country has recently received attention.

Table 3: Top 5 Ranks Country by International Tourist Arrivals in Lao PDR in 2010

Rank	Country	Number	Share (%)
1	Thailand	1,517,064	60
2	Vietnam	431,011	17
3	China	161,854	6
4	USA	49,782	2
5	France	37,272	2

Source: Lao National Administration (2011)

The purpose of this paper is to examine the existence of both long-run and short-run relationships affecting regional tourist demand to Lao PDR, it consists regional tourists from Thailand, Vietnam and China by considering the Thailand's political crisis as dummy variable to check the impact of shock that included in the tourism demand model and using bounds testing cointegration procedure or autoregressive distributed lagged model (ARDL) method. The rest of the paper in this study reviews the relevant literature in section 2.0 that describes the analysis model and methodology in section 3.0. In addition, the study presents the empirical results, conclusions and policy applications.

2.0 Literature Review

In this paper focuses estimation model to identify any causal relationships between the tourism demand variables and its influencing factors. The estimation long- run relationship of tourist arrivals is analyzed by using the co-integration test. Narayan (2002) estimated the demand for tourism in Fiji. In Tunisia, both Ouerfelli (2008) and Choyakh (2009) investigated tourism demand on European tourists in Tunisia. The results showed that the income of tourists in origin countries is positively related with the income of tourists from major trading partners as well as Chiboonsri, et al. (2010) indicated long-run result of demand of international tourists to Thailand that growth income (GDP) of Thai's Asia major tourist source markets (Malaysia, Japan, Korea, China, Singapore and Taiwan) have a positive impact on international tourist arrivals to Thailand. Therefore, the income of international tourists is used to explain and determine tourism demand functions. However, Phakdisoth and Kim (2007) applied international tourism demand to Lao PDR. The study found that income is not significant. This means that tourism in Lao PDR is income inelastics.

Regarding of tourism price, price is an important factor to determine international tourism demand because it reflects another dimension of purchasing power. In the case of international tourism, the tourism price is particular vexatious of definition. However, Martin and Witt (1987) used relative prices by a consumer price index (CPI) for proxy the cost of the travel to destination and the cost of living for tourist in the destination and it was also supported by Crouch (1994) and Morley (1994). Therefore, the use of a CPI is widely justified on the grounds of international tourism demand factors as it was applied to substitution price as well. According to Narayan (2002) found that relative price has a positive relationship demand for international tourism in Fiji. However, relative price does not play a crucial role in attracting international tourists and tourism demand is negatively affected by prices of competitor destinations (Ouerfelli, 2008; Choyakh, 2009). Moreover, Phakdisoth and Kim (2007) found that the relative price is not significant for international tourism demand in Lao PDR.

Furthermore, Lao PDR's tourism demand for the period 1995–2004, Phakdisoth and Kim (2007) found that international tourism in Lao PDR is not a luxury good and the destination-specific variables, communication and transportation infrastructure and the stability of destination are also significant determinants of total tourism flow to Lao PDR. However, Lao PDR has been promoting tourism development projects since 2005 and tourist destinations developed by socio-economic development plan for 2006-2010 (Asian Development Bank, 2008). In addition, Lao National Administration (2011) reported that regional tourists remained the largest group in the tourism industry of Lao PDR during 2005 -2010.

3.0 Methodology

3.1. Determinants of tourism demand

Most tourism demand models are from consumer theory, which assumes that the optimal consumption level depends on the price of goods, consumer income, the price of relative goods and other factors (Kadir and Karim, 2009). The demand for tourism is as follows: (1) The tourism price, the selection of a price variable is included in the study because it is particularly difficult. In relation to a similar international tourism, price is combined of several components. This factor should be included tourists' living costs and travel costs to Lao PDR. However, Witt and Martin (1987) and Morley (1994) explained the tourism price variable which is used as a proxy for the cost of tourism in destination relative to the cost of living in the origin country adjusted by the exchange rate. Therefore, a measure of the tourism price will be the consumer price index (CPI) adjusted by real exchange rate (ER). The tourism price (P) is then given by

$$P_{it} = \frac{CPI_{it}}{CPI_{At}} ER_{Ait} \tag{1}$$

Where CPI_{it} is the consumer price index of Lao PDR, CPI_{At} is the consumer price index of the country A (Thailand, Vietnam and China) and ER_{Ai} is exchange rate between country A on Lao PDR. (2) The income factor is significant in determining leisure spending consumption and takes an important place in the domestic budget. The income measure selected in this study is the real Gross Domestic Product of origin country in per capita terms and is collected from the World Bank Indicator published by World Bank (2012). (3) The substitution tourism price factor which generally China and Thailand are major destinations of international tourists in Asia's international tourism market. Therefore, Thailand is selected to be the competitor of Lao PDR for tourists from China and Vietnam. For Thai tourists, China is selected the competitor market of Lao PDR. A proxy of substitution tourism price in Lao PDR are used the consumer price index (CPI) of Thailand and China. The substitution tourism price is follow:

$$P_{St} = \frac{CPI_{St}}{CPI_{At}} ER_{ASt} \tag{2}$$

Where CPI_{St} is the consumer price index of competitor country of Lao PDR (s = CPI of Thailand for tourists of China and Vietnam and CPI of China for Thai tourists). CPI_{At} is the consumer price index of the country A (Thailand, China and Vietnam) and ER_{AS} is exchange rate between country A on country s.

There are many non–economic factors that affect tourism demand are impossible to quantify such as special events, terrorism, and political instability (Choyakh, 2009). For this reason, the study focused on Thailand's political crisis as a dummy variable to determine the effect of qualitative factors on tourism. Because, Thailand and Lao PDR have had social, ethnic, economic and tourism-related relationships over a long period of time.

From the demand theory, the model of regional tourism demand in Lao PDR is expressed by a log - linear functional form as follows:

$$LQ_{At} = \beta_0 + \beta_1 LP_{At} + \beta_2 LY_{At} + \beta_3 LS_{At} + \beta_4 DT_t + \varepsilon_{At} \tag{3}$$

Where;

LQ_{At} = Natural log of number of tourists of country A visiting to Lao PDR at time t

LP_{At} = Natural log for tourism price for tourists from country A visiting to Lao PDR at time t

LY_{At} = Natural log for the real gross domestic product of country A in US dollars at time t

LS_{At} = Natural log for substitution tourism price for tourists from country A to Lao PDR at time t, when Thailand is the competitor of Lao PDR for tourists from China and Vietnam; China is the competitor of Lao PDR for Thai tourists

DT_t = Dummy variable: to capture the effect of Thailand's political crisis, taking the value 1 if observation in the period of Thailand's political crisis, and 0 if otherwise.

A = Thailand, Vietnam and China

Form the equation (3), the expected signs for coefficients of explanatory variables are as *β2, β3>0 ; β1,β4 < 0* . This study investigates the long run and short run relationship between Regional tourism demand in Lao PDR. This research study uses cointegration and error correction models to analyze the data. The sample period of the study is monthly data from 2005 – 2010 is used to estimate model, and the data were then collected from the World Tourism council, Lao National Tourism Administration and Mekong Tourism Coordinating office.

3.2 Cointegration Test

For the next step, the long-term relationship of the time series data was tested by using a co-integration process of the autoregressive distributed lag (ARDL). The co-integration procedure proposed by Pesaran, et al. (2001), is employed to analyze the long-run relationships and dynamic interactions among the variables of interest. This procedure is adopted for the following reasons. First, the bounds test can be applied irrespective whether the variables are purely I(1), purely I(0) or mutually cointegrated. This study used 72 observations and this test is more efficient with small or finite sample data sizes. The ARDL model in this study can be specified as an unrestricted error correction model (UECM) as:

$$\Delta LQ_{At} = \beta_0 + \beta_1 LQ_{At-1} + \beta_2 LP_{At-1} + \beta_3 LY_{At-1} + \beta_4 LS_{At-1} + \sum_{i=1}^{p} \beta_5 \Delta LNQ_{At-i} +$$

$$\sum_{i=0}^{q} \beta_6 \Delta LP_{At-1} + \sum_{i=0}^{q} \beta_7 \Delta LY_{At-i} + \sum_{i=0}^{q} \beta_8 \Delta LS + \beta_9 DT_t + \varepsilon_{At}$$

(4)

The *F* test is used for testing the existence of a long –run relationship. When a long-run relationship exist the *F* test indicates which variable should be normalized. The null hypothesis for no cointegration among variables in equation (4) is Ho: $\beta_1=\beta_2=\beta_3=\beta_4=0$ and against the alternative hypothes is $\beta_1\neq\beta_2\neq\beta_3\neq\beta_4\neq0$, the *F* test has non-standard are I(0) or I(1). Given the relatively small size of 72 observations in this study, the critical value used are reported by Narayan (2005) in case III (unrestricted intercept intercept and no trend). The test involes I(0) and I (1).

When critical values for I(0) or I(1) series are referred to upper bound critical values, the variables are cointegrated. There is then evidence of a long – run relationship between variables regardless of the order of variables integration. If the test statistic is lower than critical values, the variables are not cointegrated (Duasa, 2007). In addition, if variables are

cointegrated, it is evidence of a long – run relationship. The long – run model is estimated as follows:

$$LQ_{At} = \alpha_0 + \sum_{i=1}^{p} \alpha_1 LQ_{At-i} + \sum_{i=0}^{q} \alpha_2 LP_{At-1} + \sum_{i=0}^{q} \alpha_3 LY_{At-i} + \sum_{i=0}^{q} \alpha_4 LS + \alpha_5 DT_t + \mu_{At} \qquad (5)$$

The order of lags in the ARDL model is selected by Schwarz Baysian criterion (SBC).

3.3 Error Correction Models (ECM)

For the ARDL specification of the short – run dynamics, if the study find that the variables are cointegrated, in accordance with Granger's causality test based on vector error-correction model (VECM). Following Engle and Granger (1987), the short – run models are as follows:

$$\Delta LQ_{At} = \lambda_0 + \sum_{i=1}^{p} \lambda_1 \Delta LQ_{At-i} + \sum_{i=0}^{q} \lambda_2 \Delta LP_{At-1} + \sum_{i=0}^{q} \lambda_3 \Delta LY_{At-i} + \sum_{i=0}^{q} \lambda_4 \Delta LS + \lambda_5 \Delta DT_t + \lambda_6 EC_{At-1} + \upsilon_{At}$$

(6)

Where Δ denotes the differences, υ_t is the disturbance term and EC_{t-1} is the lagged error correction term generated from the long – run relationship (equation 5).

$$EC_{At} = LQ_{At} - \alpha_0 - \sum_{i=1}^{p} \alpha_1 LQ_{At-i} - \sum_{i=0}^{q} \alpha_2 LP_{At-1} - \sum_{i=0}^{q} \alpha_3 LY_{At-i} - \sum_{i=0}^{q} \alpha_4 LS - \alpha_5 DT_t$$

(7)

The coefficients of the short –run equation are related to the short run dynamics of the model's convergence to equilibrium and represent the speed of adjustment.

4.0 Results of the Study

The result of the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests are accepted the alternative hypothesis of intercept, trend and intercept stationary. Hence, the ADF and PP statistics showed that almost stationary is at I(1). Therefore, the combination result from both tests (ADF and PP) are integrated in order I(1).

The next step after confirming the stationary properties of each series, is employed a long-run coefficient test. The long –run equilibrium of regional tourist demand in Lao PDR is tested by using a bounds testing approach. For the $(LQ_A | LP_A, LY_A, LS, DT)$, this research study used the ARDL cointegration method to estimate the parameters of equation (3) with a maximum order lag to set 8, findings the optimal length of the variables of long – run coefficients, where lag selection criteria of SBC are different in each country. Then, estimating the coefficients of the ARDL model of Thailand, Vietnam and China to calculate F –statistics are 156.26, 102.25 and 85.95 respectively. The calculated F-statistic is greater than the 1% upper bounds critical value in Case III: unrestricted intercept and no trend (Nayaran, 2005). Therefore, there are long –run relationships. The long –run coefficient result is presented in Table 4.

Table 4: Long Run Coefficients

Dependent Variable: LQ$_A$

Original regional tourists	Thailand	Vietnam	China
Dependent Variables	ARDL (4,1,2,0)	ARDL(4,2,6,4)	ARDL(6,5,6,1)
Constant	-22.2302	-21.6053	-21.5135
	(-2.0196**)	(-8.0306***)	(-10.9273***)
LP	0.0746	-0.5838	-0.0798
	(0.0644)	(-0.7253)	(-0.6682)
LY	2.8952	3.0653	2.7109
	(5.7096)	(10.1471***)	(19.8787***)
LS	0.17151	1.7073	-1.1925
	(0.1531)	(5.9615***)	(-2.8427***)
DT	.01245	-0.2446	0.0932
	(0.1122)	(-0.0406)	(1.2238)

Note: t- statistics is parentheses. The asterisk ***, ** denotes significance at 1 and 5percent levels, respectively.

The ECM is a mechanism that enables an examination of the short-term equilibrium adjustment process. The optimum order of ARDL, determined by information criteria based on SBC. The coefficient of the error correction model is the linkage between short-term and long-term adjustment mechanisms. The result of the error correction information of the ARDL model is presented in Table 5.

Table 5: Error Correction Coefficients in terms of ARDL Model

Dependent Variable: ΔLQ$_A$

Original regional tourists	Thailand	Vietnam	China
Dependent Variables	ARDL (4,1,2,0)	ARDL(4,2,6,4)	ARDL(6,5,6,1)
Constant	-8.9705	-28.8893	-25.9898
	(-2.3824**)	(-5.3487***)	(-6.5369***)
ΔLQ(-1)	0.0322	0.38738	0.045227
	(0.3223)	(2.9252***)	(0.3497)
ΔLQ(-2)	-0.04138	0.1077	0.0295
	(-0.4402)	(0.8126)	(0.2440)
ΔLQ(-3)	0.45504	-0.22515	0.63148
	(4.6208***)	(-2.1124**)	(0.4660***)
ΔLQ(-4)			0.5167
			(4.3596***)
ΔLQ(-5)			0.2559
			(2.8423***)
ΔLP	-1.8074	-0.9835	0.22118
	(-1.8590*)	(-0.69024)	(2.6025)
ΔLP(-1)		3.0165	0.1730
		(2.4145**)	(1.4499)
ΔLP(-2)			0.38954
			(3.6941***)
ΔLP(-3)			0.30719
			(3.2708***)
ΔLP(-4)			0.4797
			(5.8513***)
ΔLY	1.1593	0.6960	-0.7416
	(4.0273***)	(1.5192)	(-1.4028)
ΔLY(-1)	-2.2985	-3.7912	-5.9701
	(-8.9701***)	(-6.2887***)	(-8.2809***)
ΔLY(-2)		-2.9838	-3.0933
		(-5.3049***)	(-3.7973***)

ΔLY(-3)		-1.3847	-5.8609
		(-3.4706***)	(-8.8634***)
ΔLY(-4)		-2.6170	-4.0821
		(-7.8899***)	(-5.1045***)
ΔLY(-5)		-1.3628	-6.1584
		(-3.2270***)	(-7.0986***)
ΔLS	0.0692	-0.8966	3.6007
	(0.1550)	(-.77972)	(1.6780*)
ΔLS(-1)		-4.0151	
		(-3.5715***)	
ΔLS(-2)		-3.2194	
		(-3.1049***)	
ΔLS(-3)		-3.9591	
		(-3.8222***)	
ΔDT	0.0050	0.032701	0.1126
	(0.1114)	(0.6062)	(1.1985)
EC(-1)	-0.40353	-1.3371	-1.2081
	(-5.2662***)	(-8.0553***)	(-7.7522***)

Note: t- statistics is parentheses.   The asterisk ***, ** and * denotes significance at 1, 5 and 10 percent level respectively.

5.0 Conclusion and Policy Recommendation

The main objective of the study is to investigate the effect of factors which demand on regional tourists to Lao PDR. The main findings of this study are as follows. First, the long-run, Thailand's political crisis in the ARDL model is not significant. However, the elasticity of regional's income has a significant positive effect on regional tourists from Thailand, Vietnam and China to Lao PDR. On the other hand, substitution price has a positive relationship with demand of Vietnamese tourists. However, it has a negative relationship with demand of tourists from China.

Second, the empirical results of the ECM supported the fact that the speed of adjustment, when the demand of Thai, Vietnamese and Chinese tourists in Lao PDR deviates from the equilibrium to return to long-term equilibrium, are approximately 40.35%, 133.71% and 120.81% in each time period respectively.

Moreover, the study focuses on the long-run. Thailand's political crisis has no a significant impact of regional tourism to Lao PDR. However, in the long-run, the study has found that the demand of regional tourism to Lao PDR has a positive relationship with income factor of Thailand, Vietnam and China. Hence, any short term instability may not shake the relationship in the long run and the previous studies were found that income in the original countries offers a robust explanation for the changes of tourism demand as well as this result shows that income of tourist becomes the most significant factor. It means that tourism product in Lao PDR is a luxury service.

In addition, substitution price has a positive relationship with tourism demand of Vietnam tourists to Lao PDR. However, the substitution price has a negative relationship with demand of tourists from China to Lao PDR. Therefore, Thailand is a competitor tourism market with Lao PDR for tourists from Vietnam and it is also a complementary tourism market with Lao PDR for China's tourists.

Finally, this study suggests that for the first priority, Lao PDR should improve the infrastructure and develop new tourism destination continuously. In addition, it should integrate tourism market with Thailand for sustainable tourism in Lao PDR.

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Tourism Receipts, Health and Economic Growth: Johansen Cointegration and Granger Causality Approach

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Abstract

Tourism is one of the largest and fastest growing industries in the world. The upsurge of interest in the role of tourism for economic growth is due to its contribution to the host country in terms of foreign exchange earnings, employment, multiplier effects, etc. This turns the sector into a potential strategic factor for economic growth. Tourism in Malaysia follows the same trend. It is fast growing and becoming a major contributor in foreign exchange earnings, second only to manufacturing. Apart from that, government resources are not unlimited. One of the major government expenditures in developing countries is related to health. Thus, what is the effect of health on economic growth in the long run? In addition, the mixed empirical results associated with Granger causality among tourism, health and economic growth have inspired the study to venture into this area within the Malaysian context. Therefore, the study's objectives are to determine statistically: 1) the determinants of long run economic growth; 2) the directions of Granger causality; and 3) the speed of adjustment for economic growth. The study employs econometric techniques namely Johansen cointegration and Granger causality in vector error correction model (VECM). Based on time series data from 1974-2010, the study comes out with the following results: 1) the long run relationships reveal that tourism receipts and health are positively and significantly influencing economic growth, 2) economic growth and health precede tourism receipts and 3) the speed of adjustment is 0.11 per cent. The results obtained in the study add to the knowledge in this field and suggest to the policy makers to further improve and sustain tourism to generate higher growth.

Keywords: Economic growth, tourism receipts, health, Johansen cointegration, Granger causality

1.0 Introduction

Tourism is one of the largest and fastest growing industries worldwide (Parrilla, et al., 2007; Lau, et al., 2008; Abu Aliqah and Al-rfou, 2010). Tourism, a non smoky industry, is able to contribute to the balance of payments through foreign exchange earnings and this can represent a significant income source for a country's economy (Balaguer and Cantavella-Jorda, 2002). The income earned from tourism is then used as a source to import capital goods to produce other goods and services leading to further economic growth (McKinnon, 1964). Other advantages of tourism activities include tax revenues, employments, etc. (Archer 1995; Durbary, 2002; Khan, Seng and Cheong, 1990; Uysal and Gitelson, 1994). Thus, in general, tourism growth should provide positive contributions to economic multiplier (Tse, 1998) and economic growth (Balaguer and Cantavella-Jorda, 2002; Dritsakis, 2004; Turtureanu, 2005; Kim, Chen and Jang, 2006; Abu Aliqah and Al-rfou, 2010). These activities might even lead to the visibility of tourism led growth (TLG) as a result of the multiplying process (Bini and Masini, 2008). There are a number of empirical papers on this area, some of them confirm

that tourism does contribute to a country's economic growth (Balaguer and Cantavella-Jorda, 2002; Dritsakis, 2004; Gunduz and Hatemi-J, 2005; Kim, Chen and Jan, 2006; Noriko and Mototsugu, 2007), whilst some others such as Chen and Devereux (1999), Lee and Chang (2008), Oh (2009), etc. could not establish any positive link between them. This shows that the empirical results between tourism receipts and economic growth have been mixed (Katircioglu, 2009a, 2009b, 2008; Gunduz and Hatami, 2005).

The government expenditures and its effect on long run economic growth has been an interesting issue all this while. One of the major government expenditures in developing countries is related to health. Schultz (1961), Arrow (1962), Mushkin (1962) and Ehrlich and Liu (1991) believe that health is one of the important sources of economic growth. Government expenditure in health is essential to the nations because it leads to a healthy population. The healthier the people, the greater are the labour productivity which would give impact to the powerful economic growth. However, government resources are not unlimited. Having spent a huge amount of money for investment in health, what is the effect on economic growth in the long run? The direction of causality between this two is also another interesting issue. As far as the study is concerned, the empirical findings between government expenditure and economic growth are still controversial (Jiranyakul and Brahmasrene, 2007). Some researchers find that the relationship is unidirectional while others find it bidirectional or there is no causality at all.

Figure 1 shows the trends of economic growth, tourism receipts and health in Malaysia from 1974-2010. As gross domestic product (GDP) increases along with time, tourism receipts and health are also moving positively. The upward trends of these variables might exhibit some kind of relationship and causality. Therefore, this study is interested to determine the long run relationship among tourism receipts, health and economic growth as well as to find out the type of causality among them.

Figure 1: Economic Growth, Tourism Receipts and Government Expenditure on Health from 1974-2010
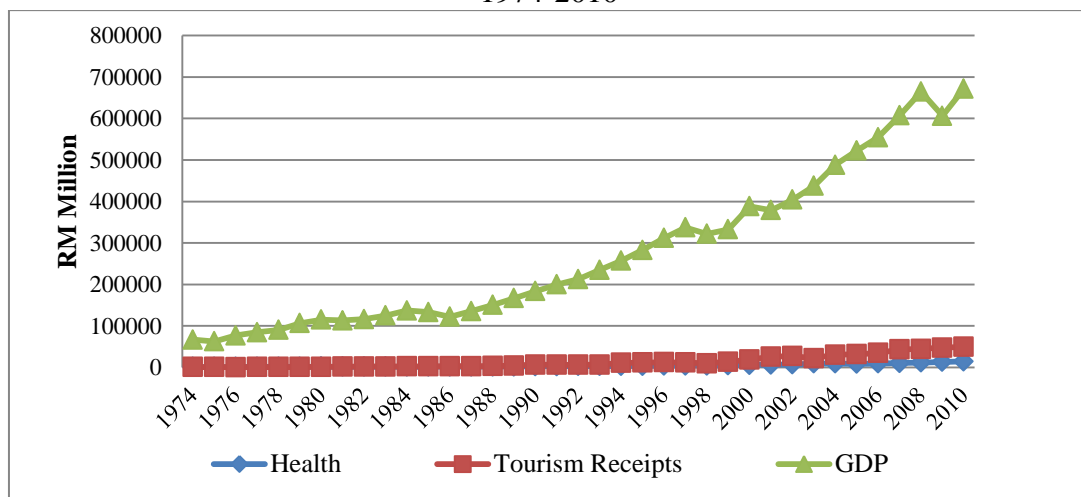
Source: Department of Statistics Malaysia

Specifically, the objectives of the studies are:

1) to determine the impact of international tourism receipts and health towards the long run economic growth

2) to estimate the directions of Granger causality among economic growth, tourism receipts and health and

3) to determine the speed of adjustment for economic growth to the changes in tourism receipts and health.

2.0 Literature Review

Many of the studies have investigated whether tourism exert an increase in the economic growth for a particular country or region. A number of researchers have proven that tourism promotes high economic performance, job creation as well as generating revenue for the government (Lea, 1988; Akis, 1998; Sinclair, 1998; Lanza, et al., 2003; Narayan, 2004; Lee and Chien, 2008 and Lee and Chang, 2008).

Balaguer and Cantavella-Jorda (2002) were the first to study Tourism Led Growth (TLG). They based TLG on the ELG (export led growth) literature on Spain and found that the economic growth there had been supported by its international tourism expansion. The same goes to Gunduz and Hetami-J (2005) in Turkey; Lau, et al. (2008), Sarmidi, et al. (2010), and Tang (2011) in Malaysia; Kreishan (2010) in Jordon; Katircioglu (2010) in Singapore; and many more.

On top of that, there are also evidences showing tourism does not lead to growth. This is proven by Oh (2005) in Korea; Katircioglu (2009a) and Ozturk and Acaravci (2009) in Turkey. On the other hand, Paynes and Mervar (2010) and Lee (2008) examine TLG hypothesis for Croatia and Singapore respectively and the empirical findings reveal the support for economic driven tourism growth instead of TLG.

In terms of government expenditure and economic growth in general, the findings are also mixed where there is bidirectional causality (Tang, 2009; Tuck, 2009), unidirectional causality from economic growth to government expenditure (Tan, 2003); while Sinha (1998) find no Granger causality at all in Malaysia cases.

Chew and Woan (2010) adopt Granger causality test to examine the long run and short run relationship among tourist arrivals, GDP and government expenditure on health in Singapore from 1978-2007. The findings found long run Granger causality from health and tourism to GDP, while in the short run, unidirectional causality is found running from GDP to health and bidirectional causality is found between health and tourism.

On studies unrelated to tourism, Oluwatobi and Ogunrinola (2011) show that there is a long run positive relationship between recurrent expenditure on education and health in Nigeria. Tang (2009) and Samudram, et al. (2009) find bidirectional causality between health and economic growth in Malaysia. Bloom and Canning (2000) find the health factor is a positive and significant contributor in economic growth.

3.0 Methodology

To determine whether tourism receipts and government expenditure in health are the engine of growth, the model of the study is then written as Y= f(TR, H). It demonstrates that economic growth is a function of tourism receipts and government expenditure in health.

Taking logs on the both side, the equation becomes:

$$LY_t = \omega_0 + \omega_1 LTR_t + \omega_2 LH_t + v_t \tag{1}$$

The proxy for Y, TR and Hh in the model are real Gross Domestic Product (GDP), real tourism receipts, real government expenditure on health respectively, $_t$ = time; ω_0 = intercept terms; ω_1, ω_2 = coefficient; and υ = error terms. These variables are evaluated in Malaysian currency at constant year 2005 prices.

The study employs econometric procedures such as unit roots, Johansen cointegration and vector errors correction model (VECM) within Granger causality tests to find out the long run equilibrium and Granger causal relationships among the variables from 1974-2010.

The econometrics technique starts with detecting the presence of unit root for individual variables. If the data is confirmed to be stationary at the same order, the second step is to test Johansen cointegration for estimating the long run relationship between nonstationary variables for the number of cointegration relationship as well as to estimate the parameters of these cointegration relationship. Two likelihood ratio tests are proposed for cointegration rank, they are trace test and maximum eigenvalue. If the data is cointegrated, Granger causality tests by vector error correction model (VECM) is continued to check the causality among the variables in the study

The study's three VECM based on (1) are as follows:

$$\Delta LY_t = \alpha_{01} + \sum_{i=1}^{p} \alpha_{11i} \Delta LY_{t-i} + \sum_{i=1}^{p} \alpha_{21i} \Delta LTR_{t-i} + \sum_{i=1}^{p} \alpha_{31i} \Delta LH_{t-i} + \theta_1 ECT_{t-1} + \mu_{1t} \tag{2}$$

$$\Delta LTR_t = \alpha_{02} + \sum_{i=1}^{p} \alpha_{12i} \Delta LY_{t-i} + \sum_{i=1}^{p} \alpha_{22i} \Delta LTR_{t-i} + \sum_{i=1}^{p} \alpha_{32i} \Delta LH_{t-i} + \theta_2 ECT_{t-1} + \mu_{2t} \tag{3}$$

$$\Delta LH_t = \alpha_{03} + \sum_{i=1}^{p} \alpha_{13i} \Delta LY_{t-i} + \sum_{i=1}^{p} \alpha_{23i} \Delta LTR_{t-i} + \sum_{i=1}^{p} \alpha_{33i} \Delta LH_{t-i} + \theta_3 ECT_{t-1} + \mu_{3t} \tag{4}$$

where the notation for Y, TR and H have explained in (1); while ECT is error correction terms; i is the number of lagged terms; t denotes time; Δ is the lag operator; μ are the disturbances in each equation; α_s are constant terms and the parameters of the lagged values of the relevant in each equation.

The above models tested will show the results for both the t- and F-statistics. The t-statistics on ECT shows the existence of long run causality while F-statistics indicates the presence of short run causality. In addition, the coefficient of θ_1 for ECT $_{t-1}$ in model (2) indicates the speed of adjustment. It shows how much the economic growth should adjust when a state of disequilibrium exists.

4.0 Empirical Findings

The first panel from Table 1 shows all variables are not stationary at level when constant, constant with trend are selected. The calculated t-statistic of ADF test is higher than the critical value of ADF test statistic at 1 per cent level of significance, this implies that the null hypothesis of unit root for Y, TR, H cannot be rejected at 1 per cent level of significance. The second panel shows 1st difference null hypothesis of a unit root is rejected for all data series at 1 per cent level of significance when constant or constant and trend are included. This implies that there is no unit root and the series are stationary process at 1 per cent level.

Table 1: ADF Test for Unit Root

Level	Constant	Constant and trends
LY	-0.516004(0)	-2.805241(0)
LTR	-0.254592(0)	-2.532315(4)
LH	0.391274 (0)	-1.360481 (0)
1st Difference		
LY	-6.650937*(0)	-6.682864*(0)
LTR	-6.230403*(0)	-6.133888*(0)
LH	-5.728983*(0)	-5.750105*(0)

*denotes rejection of the null hypothesis at the 1 per cent level of confidence and the values in parentheses represent number of lag

Once the unit root is confirmed for the time series data, the next question is whether there exists some long run equilibrium relationship among variables that are non stationary in levels but stationary in the first differences. The study employs cointegration test developed by Johansen (1988) and Johansen and Juselius (1990) to answer this question as this procedure is known to be the most reliable test for cointegration.

Prior to cointegration tests, the study chooses 1 lag to test the cointegration among Y, TR, and H based on criteria such as likelihood ration test (LR), final predication error (FPE), Akaike information criterion (AIC), Schwarz Bayasian criterian (SBIC), and Hannan and Quinn criterian (HQ).

Johansen's cointegration trace statistic values show the null hypothesis of no cointegration (r=0) between the variables is rejected because the value, 45.51193 is greater than the critical value of 42.91525 at 5 per cent level of significance. This is confirmed by maximum eigenvalue statistic values, which is also rejecting the null hypothesis of no cointegration (r=0) because test statistics of 30.53777 is greater than the critical values of 25.82321 at 5 per cent level of significance. Thus, the null hypothesis of no cointegration is rejected for rank of zero in favour of the alternative hypothesis of one or more cointegration vectors at 5 per cent significance level for trace and maximum eigenvalue tests.

Table 2: Johansen's Test for the Number of Cointegration Vectors

Null	Trace			Maximum Eigenvalue		
N	Statistics	0.05 critical value	Prob.	Statistics	0.05 critical value	Prob.
r=0	45.51193*	42.91525	0.0269	30.53777*	25.82321	0.0111
r≤1	14.97417	25.87211	0.5767	11.30828	19.38704	0.4821
r≤2	3.665887	12.51798	0.7898	3.665887	12.51798	0.7898

Trace test and max-eigenvalue tests both indicate 1 cointegrating equations at the 5 per cent level of significance
* Denotes rejection of the hypothesis at 5 per cent level of significance
** MacKinnon-Haug-Michelis (1999) p-values

The above results confirm that Y, TR, H are cointegrated and there exists long run equilibrium relationship among them. When normalized for a unit coefficient on Y, the cointegrating regression of economic growth in Malaysia can be written as follows:

$$LY_t = 1.22^*LTR_t + 0.45^{**}LH_t \tag{5}$$

This normalized equation describes the signs on the variables whether they are consistent with a priori expectation. The results show that TR and H are positive and statistically significant at 1 and 5 per cent level respectively. This means that tourism receipts and health are statistically significant contributing to economic growth in the long run. In terms of degree of impact, it indicates that 1 per cent change in TR and H will lead to 1.22 per cent and 0.45 per cent increased in Y respectively, which is in line with a priori expectations. The figures in brackets show t-tests value.

Tourism receipts (TR) have contributed significantly to economic growth. This is supported by Balaguer and Cantavella-Jorda (2002), Kasman and Kirbas (2004), Gunduz and Hetami-J (2005), Cortes-Jimenez (2008), Kareem (2008), Lau, et al. (2008), Fayissa, et al. (2007; 2009), Chen and Song Zan (2009), Ka (2009), Brida, et al. (2010, 2008), Chew and Woan (2010) and Kreishan (2010). On the other hand, Bloom and Canning (2000), World Health Organization (2001), Cooray (2009) and Oluwatobi and Ogunrinola (2011) support positive and significant impact of health (H) to economic growth.

Table 3: VEC Granger Causality/Block Exogeneity Wald Tests

Dependent Variables	ΔLY	ΔLTR	ΔLH	ECT$_{t-1}$
ΔLY	-	0.314681	0.758311	-0.108909
		(0.5748)	(0.3839)	[-1.46723]
ΔLTR	0.678679	-	0.017556	0.799978*
	(0.4100)		(0.8946)	[5.50222]
ΔLH	7.095584*	2.807223***	-	-0.066386
	(0.0077)	(0.0938)		[-0.89313]

* and *** Denote rejection of the hypothesis at 1 and 10 per cent significant level
The values in [ ] and ( ) are t-statistics and p-value respectively

Based on the findings exhibit in Table 3, long run unidirectional causality is found from Y to TR and H to TR and are statistically significant at 1 per cent level. Short run causality is observed from Y to H and from TR to H at 1 and 10 per cent of significant level respectively. As for the speed of adjustment, the result reveals that it is not significant but it has the correct sign. The insignificant might be due to the small sample size used. The interpretation for the speed of adjustment in the study is that any disequilibrium in the error term for the dependent variable in time t-1 will be adjusted the next year at 11 per cent.

Figure 2: Long Run Causal Relationship among Economic Growth, Tourism Receipts and Health
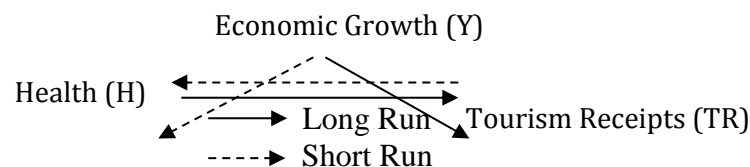
Figure 2 is the graphical illustration of Table 4's findings. In the long run, economic growth and health is found to Granger cause tourism receipts. Causality from economic growth to tourism receipts is consistent with findings of Kadir and Karim (2009), Kadir, Abdullah and Nayan (2010b) and Tang (2011c) for Malaysia and Cortes-Jimenez and Pulina (2009) for Spain. Long run causality from health to tourism is similar to Chew and Woan (2010)'s findings but they encounter it in the short run. Apart from that, the above illustration also depicts short run economic growth and tourism receipts cause health. The short run causality

from economic growth to health is affirmed by Tan (2003), Furuoka (2008), Tang (2008) and Chew and Woan (2010); while from tourism to health is supported by Chew and Woan (2010).

5.0 Conclusion

The empirical findings show that there is long run relationship between tourism receipts and health to economic growth. In other words, tourism receipts and health have translated into a meaningful growth in the long run. In terms of long run Granger causality, only growth-led tourism and health-led tourism receipts are evidence. The former causation shows tourism receipts come after economic growth. Policy makers should promote economic growth criteria such as political stability, enforceable property rights, adequate investment in socio-economy in order to facilitate the development of tourism. The latter causality reveals health precedes tourism receipts, an interesting finding suggesting that Malaysia has great potential in health led tourism. This is proven by the recent statistics that show medical tourism hit a record high last year where the receipts amounted to RM509.77 million from 578,403 foreign patients which is more than RM431 million, the amount forecasted (Health Tourism Exceeds Initial Production, 2012). In view of health tourism is the potential sub-sector in generating foreign exchange earnings and creating multiplier effects to the other industries, it is further hope that the government continue to focus in developing Malaysia to become one of the best health tourism hub in the Asean region. This can be done by maintaining and improving existing infrastructures, maintaining the affordable pricing in the medical industry, as well as worldwide advertisement and marketing strategies.

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Economic Freedom, Inequality and Growth

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Abstract

The importance of economic freedom and income inequality on economic growth has been extensively investigated. Income inequality itself is a problem that needs to be addressed. Yet, the dilemma whether economic freedom and income inequality actually help to explain the corresponding differences in across countries economic growth rates are still in debate. Thus, the aims of this study were to examine the link between income inequality and economic growth, and to determine the effect of economic freedom on economic growth. Data were gathered from 44 developing countries from year 1976 to 2005 and analysed using a dynamic panel GMM estimation technique. Besides, the economic freedom, income inequality and economic growth data, data on institutional, investment, population and human capital are added to control variation in economic growth. It is argued that there are interactions between economic freedom, income inequality and economic growth. The empirical results reveal that economic freedom and income inequality are statistically significant determinants of economic growth. Improvement in both economic freedom and income equality lead to economic growth. Increasing the economic growth had been the centre of economic policymaking in many countries around the globe. As such, the issues presented in this study would serve as important guidelines for the understanding the influence of the economic variables and provide a platform for debate on the experiences of developing countries in increasing the economic growth in their countries.

Keywords*: Economic freedom, income inequality, economic growth, developing countries*

1.0 Introduction

The objectives of this paper are to examine the link between income inequality and economic growth, and to determine the effect of economic freedom on economic growth. Economic growth is a standard tool to measure the performance of an economy. It is the main objective or goal of every developed or developing country's governmental policy. Economic growth in this study is defined as the increase in per capita real gross domestic product (GDP) by a country over a certain period of time.

There are many determinants of economic growth which may directly or indirectly affect growth. Levine and Renelt (1992) identify four variables that are robust in determining the economic growth. These variables are the initial level of real GDP per capita, the rate of population growth, a proxy for human capital and the share of investment in GDP. Earlier researchers suggest that reducing income inequality or improving income distribution among individuals and groups within a society may also increase economic growth (Kuznets, 1955; Kaldor, 1956; Persson and Tabellini, 1994; Alesina and Rodrik, 1994; Perotti, 1996; Mo, 2000; Yu Hsing, 2005). Socio-political instability that reduce incentives to save and invest, trade-off between equity and efficiency that pressure the government to improve income

distribution that may reduce economic incentives and difficulty to invest in human capital are some of the reasons of the trade-off between income inequality and economic growth.

There are also some who disagree on the trade-off between the two (Bourguignon, 1981; Saint-Paul and Verdier, 1993; Galor and Tsiddon, 1997). When government revenues collected through income taxation and are used to finance public consumption instead of production, improving income distribution may lead to a higher income tax rate and may lower economic growth (Li and Zou, 1998). More recent work shows that panel estimations result a positive link between income inequality and economic growth (Li and Zou, 1998; Forbes, 2000). Forbes (2000) argues that fixed effects estimations yield consistent result of a positive short-term link compared to cross-country specific where omitted variables are the cause of negative link in the estimations. Barro (2000) finds a positive link between income inequality and economic growth only in developed countries but negative link in developing countries using three stages least squares. In addition, Banerjee and Duflo (1999) argue that the link between income inequality and economic growth is non-linear and that changes in income inequality are associated with lower subsequent growth.

The debate continues in the existing literature as to whether the link between income inequality and economic growth is positive, negative or not significant. Income inequality is measured as market-based income as represented by a GINI coefficient which ranges from zero represents perfect equality to a coefficient of 100 implies perfect inequality.

Economic freedom is also another determinant of economic growth. Free market activity and exchange may promote economic growth (Dawson, 1998; Ayal and Karras, 1998; Gwartney et al., 1999; De Haan and Sturm, 2000; Carlssson and Lundstrom, 2002; Dawson, 2003; Justesen, 2008). This happens when there is a limited roles of government which focuses on the protection of property rights and the enforcement of contracts. There are five economic freedom indicators namely size of government, legal structure and security property rights, access to sound money, freedom to trade internationally, and regulation of credit, labour and business. All the indicators are scored on a scale of zero (best or freest) to ten (worst of less free). According to De Haan and Sturm (2000), the changes in economic freedom index are strongly related to economic growth but the levels of economic freedom are non-significant. However, according to Dawson (2003), using the Granger causality test, the overall level of economic freedom appears to cause growth, while changes in economic freedom are jointly determined with growth. Justesen (2008) argued that both changes and the level of economic freedom are significantly affecting economic growth. Using annual economic freedom indicators developed by the Heritage Foundation, Heckelman (2000) finds that the average level of economic freedom contributes to the economic growth. Although the economic freedom indicators developed by the Heritage Foundation and Fraser Institute differ somewhat in their aspect, they show similar rankings for the countries covered. The debate continuous in the existing literature whether economic freedom affects economic growth are level effects or caused by changes in economic freedom.

The organisation of this paper is as follows: an explanation of the empirical model is given in section 2. Section 3 describes the data employed in the analysis, while the discussion of the results is reported in section 4 and finally section 5 concludes.

2.0 Empirical Model

Log-linear equation for economic growth

$$\ln GDPC_{it} = \alpha_1 \ln GDPC_{it-1} + \alpha_2 \ln GINI_{it} + \alpha_3 \ln INS_{it} + \alpha_4 \ln POP_{it} + \alpha_5 \ln SCH_{it} + \alpha_6 \ln INV_{it} + \varepsilon_{it} \tag{1}$$

$$\ln GDPC_{it} = \beta_1 \ln GDPC_{it-1} + \beta_2 \ln EFW_{it} + \beta_3 \ln INS_{it} + \beta_4 \ln POP_{it} + \beta_5 \ln SCH_{it} + \beta_6 \ln INV_{it} + \varepsilon_{it} \tag{2}$$

where GDPC is the real GDP per capita, GINI is the GINI index which measures the degree of income inequality, EFW is the average of the five indices of the economic freedom present in the economy, INS is the average of the three institutional indices, corruption, rule of law and bureaucratic quality, POP is the population growth, SCH is human capital based on the average year of secondary schooling, and INV is the investment. Data were gathered from 44 developing countries from year 1976 to 2005 and analysed using a dynamic panel GMM estimation technique.

3.0 The Data

To estimate the models, annual data on real GDP per capita (GDPC) and population growth (POP) indicator are obtained from the World Development Indicators based on 2000 US dollar constant prices, and annual percentage respectively. The income inequality (GINI) indicator employed in the analysis is proxies by GINI indices of net income inequality, where the dataset is obtained from the Standardized World Income Inequality database (SWIID).
The economic freedom (EFW) indicator is obtained from the Fraser Institute's Economic Freedom and is measured by the average of the five indices of the economic freedom present in the economy: Size of government; legal structure and security of property rights; access to sound money; freedom to trade internationally; and regulation of credit, labour and business. The data provided by the Fraser Institute is used since the data cover a large number of countries over a considerable period of time.

The institutions (INS) data set employed in this study is from the International Country Risk Guide (ICRG). Only three indicators are used which are corruption, rule of law and bureaucratic quality. The three variables are scaled from 0 to 6, where higher values imply better institutional quality. Human capital (SCH) indicator is taken from Barro and Lee dataset and is proxies by average year of secondary schooling whereas Investment (INV) indicator is measured by the investment share of PPP converted GDP per capita at 2005 constant prices, where the dataset is obtained from Penn World.

Table 4: Correlation between Real GDP Per Capita Indicators
(1976-2005, 5-year average)

	GDPC	GINI	EFW	INS	POP	SCH	INV
GDPC	1.0000						
GINI	0.2390	1.0000					
EFW	0.3209	0.0822	1.0000				
INS	0.3069	0.1078	0.3630	1.0000			
POP	-0.3406	0.1197	-0.2606	-0.1364	1.0000		
SCH	0.5647	-0.0640	0.4113	0.2367	-0.2790	1.0000	
INV	0.0995	-0.2417	0.1818	0.2708	-0.0620	0.2485	1.0000

The correlation of the variables used in this study is summarized in Table 1. As shown in Table 1, the correlation between income inequality and real GDP per capita is surprising because it shows a positive correlation. Hence, increase income inequality will increase real GDP per capita. This is not in line with claimed by earlier researchers such as Simon Kuznets and Nicholas Kaldor. However, as can be seen from Table 1, although the correlation between income inequality and real GDP per capita is positive, it is a weak relationship. This shows that increase income inequality is not necessary will encourage people to be more productive. Besides, the correlations between real GDP per capita with economic freedom, institution, human capital and investment are also positively correlated.

Economic freedom will increase real GDP per capita. Since economic freedom is expected to have positive effect on economic growth, increase institutional quality will also increase real GDP per capita as well. Increase in human capital or average year of secondary schooling, will increase real GDP per capita by learning, creating and implementing new technologies. Increase in internal or external investment will increase real GDP per capita although it shows a weak relationship. Overall, there is a clear positive correlation between the variables. However, for population growth variable, interestingly it shows a negative correlation. This means population growth can bring detriment to economic growth. As mentioned by Solow (1956), increase in population growth rate will decrease the capital per worker as well as the steady-state output per worker.

4.0 Estimation Results

The empirical results of equation (1) and equation (2) are presented in Table 2 and Table 3 respectively. As shown in Table 2, the real GDP per capita (GDPC) with lagged one year is positive and has significant effect on real GDP per capita in developing countries. Real GDP per capita in each developing country is very important in influencing the current real GDP per capita. From the estimation coefficients, income inequality (GINI) is significant with negative effect on real GDP per capita at 1 percent level based on the system two-steps. This result is parallel with theoretical prediction where there is a trade-off between reducing income inequality and promoting growth (Kuznets, 1955; Kaldor, 1956; Persson and Tabellini, 1994; Alesina and Rodrik, 1994; Perotti, 1996; Mo, 2000; Yu Hsing, 2005). In addition, institutional (INS) and investment (INV) indicators are significant with positive effect on real GDP per capita at 1 percent level whereas population (POP) indicator is significant with negative effect on real GDP per capita also at 1 percent level. The results are in line with findings by Yu Hsing (2005), that economic growth has a positive relationship with the growth in investment spending and human capital. Human capital is a key to sustained growth since it helps increase productivity. However, surprisingly for human capital it is not significant although it shows a positive relationship. Comparing the results when using vce(robust) system two-steps, institutional (INS) and investment (INV) again show a positive significant at 5 and 1 percent level respectively.

Table 2: Results of Dynamic Panel GMM Estimations (Dependent Variable: Real GDP Per Capita)

	System Two-steps	System Two-steps Vce (robust)
Constant	0.360	0.360
	(1.47)	(0.88)
GDPCi_{t-1}	0.956	0.956
	(20.21)***	(11.15)***
GINI	-0.227	-0.227
	(-3.51)***	(-1.70)
INS	0.088	0.088
	(5.87)***	(2.31)**
POP	-0.05	-0.047
	(-2.87)***	(-1.58)
SCH	0.053	0.053
	(1.48)	(0.75)
INV	0.263	0.263
	(12.31)***	(5.51)***
Sargan test	17.161	
	(0.192)	
Arellano-Bond test for AR(2)	-0.814	-0.810
	(0.416)	(0.418)

Notes:
1.   All models are estimated using the Arellano and Bond dynamic panel system GMM estimations (Strata xtdpdsys command).
2.   Figures in the parentheses are t-statistics, except for Sargan test and Arellano-Bond test for serial correlation, which are p-values.
3.   ** and *** indicate the respective 5% and 1% significance levels.

As shown in Table 3, the real GDP per capita (GDPC) with lagged one year is also positive and has significant effect on real GDP per capita in developing countries. From the estimation coefficients using system two-steps, economic freedom (EFW) is not significant on real GDP per capita. In addition, only institutional (INS) and investment (INV) indicators are significant at 1 percent level with positive effect on real GDP per capita. Since economic freedom is one type of institutional, the result must be similar on growth. Thus, when the institutional variable (INS) is removed from the model, it shows that economic freedom indicator (EFW) is significant with positive effect on real GDP per capita at 1 percent level. The results also show that population (POP) and investment (INV) are significant at 5 and 1 percent level respectively.

Table 3: Results of dynamic panel GMM estimations (Dependent variable: Real GDP per capita)

	System Two-steps	System Two-steps vce(robust)	System Two-steps (without institutional variable)	System Two-steps vce(robust) (without institutional variable)
Constant	-0.875	-0.875	-1.118	-1.118
	(-3.64)	(-2.42)	(-4.88)	(-2.97)
GDPCi$_{t-1}$	0.980	0.980	0.999	0.999
	(26.66)***	(19.48)***	(27.54)***	(18.18)***
EFW	0.061	0.061	0.117	0.117
	(1.46)	(0.86)	(3.61)***	(1.96)
INS	0.076	0.076		
	(3.31)***	(1.96)		
POP	-0.036	-0.036	-0.050	-0.050
	(-1.97)	(-1.00)	(-2.61)**	(-1.41)
SCH	0.057	0.057	0.030	0.030
	(1.43)	(0.89)	(0.86)	(0.50)
INV	0.297	0.297	0.327	0.327
	(13.45)***	(6.39)***	(15.21)***	(7.18)***
Sargan test	19.065		18.188	
	(0.121)		(0.151)	
Arellano-Bond test for AR(2)	-1.859	-1.855	-1.735	-1.731
	(0.063)	(0.064)	(0.083)	(0.084)

Notes:

1. All models are estimated using the Arellano and Bond dynamic panel system GMM estimations (Strata xtdpdsys command).

2. Figures in the parentheses are t-statistics, except for Sargan test and Arellano-Bond test for serial correlation, which are p-values.

3. ** and *** indicate the respective 5% and 1% significance levels.

5.0 Conclusion

Increasing the economic growth had been the center of economic policymaking in many countries around the globe. The analysis shows that economic freedom and income inequality have significant effect on economic growth at 1 percent level. From these results, it shows that free market activity and exchange, and improving income distribution promote economic growth. Thus, government has to increase both their economic freedom and income distribution in order to sustain economic growth although there will be a trade-off between the two. The issues presented in this study would serve as important guidelines for the understanding the influence of the economic variables and provide a platform for debate on the experiences of developing countries in increasing the economic growth in their countries.

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An Analysis of Hang Zhou Urban Commodity Housing Market

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Abstract

The housing market, an important component of the urban economy, is closely integrated with urban development, which plays a pivotal role in the ongoing economic reforms. The complete abandonment of the socialist housing allocation system during the housing reform has led to profound changes in housing provision and consumption in urban China. This paper presents a chronological reform process and an investigation of the interaction between urban commodity housing prices and general economic conditions in Hang Zhou for the period of 1978-2010. The empirical results indicate that urban commodity housing prices in Hang Zhou are predicted by market fundamentals, which could explain most of the variations in urban commodity housing prices. The findings indicate that there is a stable and strong long-run equilibrium relationship between urban commodity housing prices, consumer price index, construction cost index, and one year real lending interest rate in Hang Zhou, and it is the identified fundamentals that drive the prices up, rather than a bubble. Consumer price index and construction cost index positively related to urban commodity housing prices, while change of one year lending interest rate will negatively influence the urban commodity housing prices. The results of Granger causality tests confirm there is a weak short-run relationship from urban commodity housing prices to consumer price index.

Keywords: Housing reform, housing prices, economic fundamentals, hang zhou

1.0 Introduction

There are many studies about the growing prices in Chinese housing market (see, for example, Tian, 2007; Liu and Shen, 2005). In 1998, an active fiscal policy was adopted by the Chinese government to diminish the negative impacts of the Asian financial crisis. From then on, housing construction was confirmed as a major generator to drive the national economic growth. In 2001, it's estimated that the real estate sector accounted for 30% of the GDP growth rate (Liu and Shen, 2005). From the economy experience of other countries, it seems to be the rapidest developing period for the real estate industry. In addition, it was estimated that the real estate sector contributed 1.5-2.9 % of GDP in 2002-03 (Gu, 2005).

However, according to the market demand and supply, price is the heart and most conclusive factor. It is also a noticeable signal of market performance. The surge of housing prices increasing rapidly, hence, the housing investment growths up sharply. Furthermore, there is a violent controversy on analyzing whether the current housing market is based on the general economic conditions. The public was shocked by the statement of Stephen Roach, the Morgan Stanley's Chief Economist, "China's real estate cycle is teetering on the edge of a huge blast".

After ending the direct welfare housing distribution in 1998, more and more housing products have been commercialized and the price of real property has gone up dramatically (eg. Figure 1). At the same time, the salary or the income of civil did not catch up promptly. The burden

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of housing becoming heavier, especially for men in the society, as the growing speed of their income is not equal to the increasing housing price. The affordable housing has become one of the most remarkable problems in Chinese residential property market.

Figure 1: The average commodity housing price in Hang Zhou, (RMB/M^z)
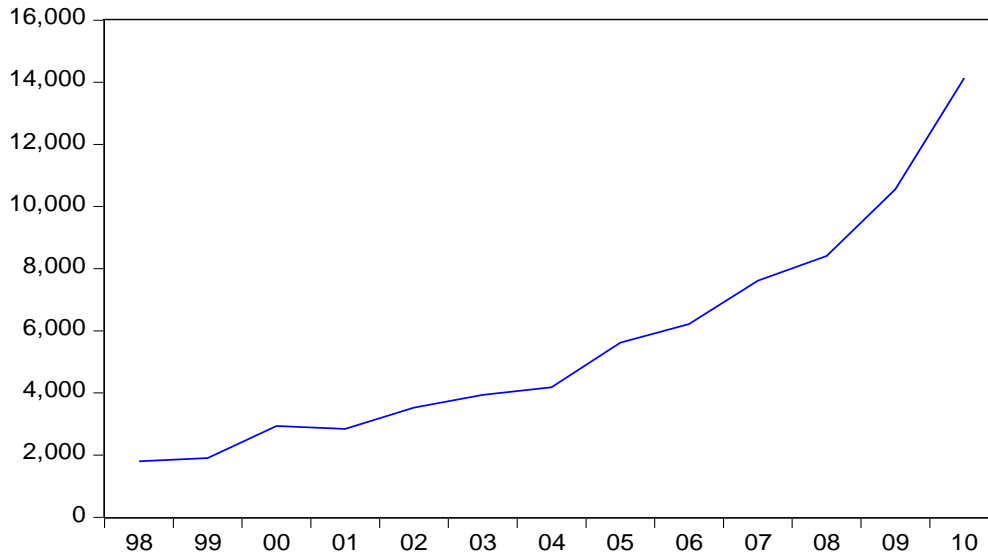
2.0 Literature Review

There is no dying that housing price is known as the equilibrium price when the supply of the residential property equals the quantity demanded. In earlier, more researchers fell interesting in finding the relationship between the housing price and the factors that can influence it. For example, Gottlieb (1976), who uses the graph comparison method to draw the conclusion that the construction activities fluctuate in step with the macro economy, which support his opinion that the changes in real estate market followed the change in economy fluctuation in some extent.

In succession, people began to be curious of how the house price is formed. However, the opinions of previous researches are vary, due to the different emphasis on the variety of objectives and the diversified housing market factors. They can be divided into 3 groups: (1) some research contribute to analyzing the economic aspects (DiPasqual and Wheaton, 1994); (2) some exploratory apply the study result to do the research in some certain region (Case and Mayer, 1995, Clapp and Giaccotto, 1994); (3) furthermore, some initial models which are used to explain the economically fluctuations in housing price, begin to be induced to apply in explaining the variety of regional housing price (Case and Shiller, 1990, Potepan, 1996, Poterba, 1999).

In china, the housing market almost affected by the macroeconomic policy or in predicting the price trends are well known. However, the quantitative research in determinants of housing price model is less realized although the empirical study in this area is witnessed an increase in academic research recently. For instance, Zhou (2006), Tian (2007), Long, Guo and Zheng (2009), Xu and Chen (2010), Wang and Wen (2011), and especially Liu and Shen (2005) present an investigation of the interaction between housing prices and general economic conditions in China using series of urban economic indicators for the period of 1986-2002. They confirm that unemployment rate, total population, changes in construction costs, changes in the consumer price index (CPI) all have significant impacts on the housing price

level. In some extent, they agree the opinion that housing price can be predicted in some cities in some years, but the Chinese real estate market is not an effective market. Nevertheless, the conclusion from the national overall situation is not able to be applied in particular cities, because the levels of social and economic development vary from different cities.

However, maybe because setting-up a housing price model of urban housing requires the collection of voluminous data and carrying out comparatively extensive investigation, empirical researches on the urban housing market in specific city have been very few, thus specific the research area is more significant.

3.0 Data and Methodology

The variables include average commodity housing price (HP), the consumer price index (CPI), the construction cost (CCOST), and the one year lending interest rate (RATE). The data of lending interest rate is collected from World Bank. CPI and the most important HP are taken from Hang Zhou Year Statistic Book (2010; 2011). In addition, the data of construction cost is collected from Zhuan Tang government office.

Here, we will use the ADF and PP test to test whether all the variables are significant at first, then check whether they have long run relationship through Johansen Cointegration test based on VAR. Followed by is the general equation:

HP=f (CPI, CCOST, RATE)   (1)

Econometric model:

$$lnHP = \alpha + \beta_1 lnCPI + \beta_2 lnCCOST + \beta_3 RATE + \varepsilon \tag{2}$$

lnHP =log (HP), the average commodity housing price in urban area (RMB/M^2)
lnCPI =log (CPI), the consumer price index
lnCCOST =log (CCOST), the construction cost (RMB/M^2)
Rate = one year lending interest rate (%)
ε = error term

Finally, we will use Granger-causality test based on VECM to find whether they have the causality relationship. In this sense, the average commodity housing price and the related factors models to be tested are as follows:

$$\Delta LHP_t = \alpha_0 + \sum_{i=1}^{p} \alpha_{1i} \Delta LHP_{t-i} + \sum_{i=1}^{p} \alpha_{2i} \Delta LCPI_{t-i} + \sum_{i=1}^{p} \alpha_{3i} \Delta LCCOST_{t-i}$$
$$+ \sum_{i=1}^{p} \alpha_{4i} \Delta LRATE_{t-i} + \delta_1 EC_{t-1} + \varepsilon_{1t} \tag{3}$$

$$\Delta LCPI_t = \alpha_0 + \sum_{i=1}^{p} \alpha_{1i} \Delta LCPI_{t-i} + \sum_{i=1}^{p} \alpha_{2i} \Delta LHP_{t-i} + \sum_{i=1}^{p} \alpha_{3i} \Delta LCCOST_{t-i}$$
$$+ \sum_{i=1}^{p} \alpha_{4i} \Delta LRATE_{t-i} + \delta_2 EC_{t-1} + \varepsilon_{2t}$$

$$\Delta LCCOST_t = \alpha_0 + \sum_{i=1}^{p} \alpha_{1i} \Delta LCCOST_{t-i} + \sum_{i=1}^{p} \alpha_{2i} \Delta LHP_{t-i}$$
$$+ \sum_{i=1}^{p} \alpha_{3i} \Delta LCPI_{t-i} + \sum_{i=1}^{p} \alpha_{4i} \Delta LRATE_{t-i} + \delta_3 EC_{t-1} + \varepsilon_{3t}$$

$$\Delta LRATE_t = \alpha_0 + \sum_{i=1}^{p} \alpha_{1i} \Delta LRATE_{t-i} + \sum_{i=1}^{p} \alpha_{2i} \Delta LHP_{t-i}$$
$$\sum_{i=1}^{p} \alpha_{3i} \Delta LCPI_{t-i} + \sum_{i=1}^{p} \alpha_{4i} \Delta LCCOST_{t-i} + \delta_4 EC_{t-1} + \varepsilon_{4t}$$

Where ΔLHP_t , $\Delta LCPI_t$, $\Delta LCCOST_t$, and $\Delta LRATE_t$ are the different stationary and cointegrated variables; t stands for time; EC_{t-1} is the lagged value of the error-correction term from the cointegrating vector regression; the coefficient δ represents the response of the dependent variables in each periods to a departure from the equilibrium; ε_1, ε_2, ε_3, and ε_4 are white noise error terms following the classical linear regression model assumptions; and the α_1, α_2, α_3, and α_4 are parameters of interest. In equation (3), (4), (5) and (6), the ECM regress the change in the variables, both dependent and independent, on lagged deviations.

$$
\begin{pmatrix} \Delta LHP_t \\ \Delta LCPI_t \\ \Delta LCCOST_t \\ \Delta LRATE_t \end{pmatrix} = \alpha_0 + \begin{pmatrix} A_{11,1} & A_{12,1} & A_{13,1} & A_{14,1} \\ A_{21,1} & A_{22,1} & A_{23,1} & A_{24,1} \\ A_{31,1} & A_{32,1} & A_{33,1} & A_{34,1} \\ A_{41,1} & A_{42,1} & A_{43,1} & A_{44,1} \end{pmatrix} + \begin{pmatrix} \Delta LHP_{t-1} \\ \Delta LCPI_{t-1} \\ \Delta LCCOST_{t-1} \\ \Delta LRATE_{t-1} \end{pmatrix} + \ldots + \begin{pmatrix} A_{11,p} & A_{12,p} & A_{13,p} & A_{14,p} \\ A_{21,p} & A_{22,p} & A_{23,p} & A_{24,p} \\ A_{31,p} & A_{32,p} & A_{33,p} & A_{34,p} \\ A_{41,p} & A_{42,p} & A_{43,p} & A_{44,p} \end{pmatrix}
$$

$$
+ \begin{pmatrix} \Delta LHP_{t-p} \\ \Delta LCPI_{t-p} \\ \Delta LCCOST_{t-p} \\ \Delta LRATE_{t-p} \end{pmatrix} + \begin{pmatrix} \delta_1 \\ \delta_2 \\ \delta_3 \\ \delta_4 \end{pmatrix} [EC_{t-1}] + \begin{pmatrix} \varepsilon_{1t} \\ \varepsilon_{2t} \\ \varepsilon_{3t} \\ \varepsilon_{4t} \end{pmatrix} \qquad (7)
$$

Where α_0 is constant term; α_p is the matrix of parameters and ε_t is the white noise innovation term. The number of lags is determined by AIC and LR test. Thus, the optimum lag was selected with the lowest values of AIC and with the rejection of the null hypothesis in the LR test.

4.0 Empirical Results and Analysis

Table 1: The Results of ADF Unit Root Test

Variables	Augmented Dickey-Fuller Test (ADF)	
	Intercept	Intercept and Trend
Level		
lnhp	2.1232	-1.8013
lncpi	-2.3687	-2.4486
lnccost	-1.4207	-0.3112
rate	-1.6829	-1.8601
First Difference		
lnhp	-5.4375***	-6.5756***
lncpi	-5.1270***	-5.1241***
lnccost	-4.2520***	-4.5695***
rate	-5.4559***	-5.5636***

Note: (***) denotes significance at the 1% level, (**) refers to significant at the 5% level and
(*) indicates significant at 10% level.

Refers to the tables above, they show that the average commodity housing price (lnhp), consumer price index (lncpi), construction cost (lnccost), and the one year lending interest rate (rate) are stationary at five percentage level on both intercept and trend & intercept at 1st difference. Since we choose the 5% level to run the ADF test, we can see each variable is significant. What means the data is available to use at the following steps.

Table 2: The Results of PP Unit Root Test

Variables	Phillips-Perron Test (PP test)	
	Intercept	**Intercept and Trend**
	Level	
lnhp	2.1232	-1.7122
lncpi	-2.3687	-2.4354
lnccost	-1.3500	-0.5422
rate	-1.7101	-1.8220
	First Difference	
lnhp	-5.4880***	-6.5702***
lncpi	-6.3047***	-6.4594***
lnccost	-4.2520***	-4.5708***
rate	-5.4541***	-5.5936***

Note: (***) denotes significance at the 1% level, (**) refers to significant at the 5% level and
(*) indicates significant at 10% level.

Table 3: The Results of Johansen Cointegration Test

Hypothesized Numbers of CE(s)	Trace Statistic	0.05 Critical Value	Probability	Results
None	77.96320**	54.07904	0.0001	Coint.
At most 1	40.71056**	35.19275	0.0115	Coint.
At most 2	15.38064	20.26184	0.2054	Non-coint
	Max-eigen Statistic	**0.05Critical Value**	**Probability**	**Results**
None	37.25264	28.58808	0.0031	Coint.
At most 1	25.32992	22.29962	0.0183	Coint.
At most 2	10.07117	15.89210	0.3279	Non-coint

Note: (**) indicates the level of significant at the 5% level. The number of lags is according to the AIC.

In table 3, the results of the Trace statistic indicate there are 2 cointegration vectors at 5% level. The same results from maximum eigenvalues test. From the cointegration vector, the long run HP equation can be written as:

$$lnHP = -115.5804 + 26.95182lnCPI + 0.370330lnCCOST - 0.993198RATE$$
$$(33.2656) \quad (7.42174) \quad (0.15663) \quad (0.21627)$$

From the equation above, we can conclude that the HP is positively related to CPI and CCOST, but negatively related to RATE, and they are both significant with the T-statistic. The signs of each variable are consistent with the economic theory and satisfy the prior expectation in last chapter. The average commodity housing price is considered as the main component of living standard, which is closely related to residents' daily lives. The average

commodity housing price increases dramatically because of the boost in economy, and the increasing average commodity housing price can promote the development of the real estate market and finally booming the economy. Due to the higher price level, stimulating the producers who pay much more attention to developing the estate market, and the demand will increase as some consumers will buy the housing as one kind of investment, which is another reason that might push up the average commodity housing price.

The estimated coefficient of 26.95182 for CPI means that a 1% increase in CPI growth will enhance the HP growth by 26.95182%. It is believed that the CPI is strongly influence the average commodity housing price, which is the same as the conclusion by Case and Shiller (1990).

Surprisingly, we find the relationship between CCOST and HP is not so strong as we estimate, the coefficient of 0.370330 for CCOST indicates that the average commodity housing price will goes up 0.370330% if the construction cost increase 1% more. While in 1996, Potepan said the construction cost is the most influential factors of housing price, which is a little different with this result.

The estimated coefficient for RATE is -0.993198, which means if the bank increases 1% one year lending interest rate, the price level will come down by 0.993198%. It is the results that the government will like to see, due to the unreasonable high commodity housing price in Hang Zhou is exceed the citizen income level too much, which has already causing the society unstable and the government want to holding the increasing average commodity housing price through the interest rate tool.

The results are similar to the literatures. For construction cost, positively affect the average commodity housing price. Poterba (1991), Quigley (1999) found the construction cost is the main fundament which attribute to the fluctuation of average housing price. In addition, Case and Shiller (1990) and Potepan (1996) found that consumer price index can affect the average commodity housing price, and the construction cost is the most important influence factor of average commodity housing price. In this study, we found the construction cost and consumer price index are the influence factors, while the consumer price index is more important than the construction cost. In other words, we can judge to a certain extent that the current average commodity housing price in Hang Zhou is unreasonable and out of the basic economic theory. The real estate market of Hang Zhou, which with the huge problem of unreasonably high price level to different extent. The reason might be "Chao Fang Group", especially from Wen Zhou province, who holding the homes, and selling to the others in order to make higher profit. The behavior of them causing the real estate market in Hang Zhou under a unhealthy status, the average commodity housing price continue pushing up sharply.

Generally speaking, a higher interest rate will also lead to reduced housing prices from the opinion of Potepan (1996). However, Liu ang Shen (2005) found the opposite result that the higher whole Chinese housing price with the higher interest rate. They guessed the reason for this special phenomenon might be government regulation of the interest rate. In this study, we found the one year lending interest rate negatively related to average commodity housing price in Hang Zhou, which is consistent with the basic economic thought and the results from Potepan (1996).

Table 4: The Results of Granger Causality Test

Variables	Cointegration	Granger causality	Chi-square test and P value
In(HP)-△lnCPI	1	In(HP)→△lnCPI	4.859458 , P[0.0275]
In(HP)-△lnCCOST	1	In(HP)⁻△lnCCOST	1.181143, P[0.2771]
In(HP)-RATE	1	In(HP)⁻RATE	0.361894, P[0.5475]

Note: "→" indicated the direction of Granger Causality.

The results indicate that the average commodity housing price Granger-cause CPI changes, but there is no feedback from the CPI to the average commodity housing price, which is inconsistent with basic economic thought that housing prices comprise a large proportion of the consumer price index. Surprisingly, we find that there is no causality relationship between average commodity housing price, construction cost and one year lending interest rate, which is inconsistent with the study from Liu and Shen (2005).

The results are surprisingly different from the basic economy thought. Liu and Shen (2005) found that housing prices Granger-cause CPI changes and there is feedback from the CPI to the housing prices, which is consistent with the basic economic thought that housing prices comprise a large proportion of the consumer price index. However, we can only found the average commodity housing price Granger-cause of CPI in this study. The reason maybe Chinese statistic office under national control that does not collect the data and regard the housing price as a part of consumer price index, who think the housing price should be a separate and independent price index. While, this is not the same as the international situation that consumer price index should include the housing area, like USA, European. There is a debate from economists that a consumer price index without housing area is not a real signal that reflecting the real living standard.

In addition, Liu and Shen (2005) found the construction cost and housing prices have a two-way relationship, increasing in housing price may increase the cost of labor and materials in construction, so that feedback occurs in the long run, although their results only reflect that construction cost Grange-cause of housing price, housing price does not Granger-cause in construction cost. The reason might be the "Chao Fang Group" speculate and secure personal gain which push up the housing price level even the estate market or the economy is in recession, and the property developers holding the land resources due to the striction of land policy (Bi, 2009).

Potepan (1996) found the loan rate has a Granger causality relationship with private family house price index and rate index. Nonetheless, we cannot found one year lending interest rate can Granger-cause of average commodity housing price, or on the contrary. The reason might be Chinese government regulation of interest rate (Liu and Shen, 2005).

5.0 Conclusion

The empirical results indicate that urban commodity housing prices in Hang Zhou are predicted by market fundamentals, which could explain most of the variations in urban commodity housing prices. The findings indicate that there is a stable and strong long-run equilibrium relationship between urban commodity housing prices, consumer price index, construction cost index, and one year real lending interest rate in Hang Zhou, and it is the identified fundamentals that drive the prices up, rather than a bubble. Consumer price index

and construction cost index positively related to urban commodity housing prices, while change of one year lending interest rate will negatively influence the urban commodity housing prices. The results of Granger causality tests confirm there is a weak short-run relationship from urban commodity housing prices to consumer price index.

Since the housing reform in the early 1990s, the Chinese housing market has gone through four phases of development with different policies imposed: (1) From January 1998 to May 2003: steady real estate price increase under expansionary monetary policy. In order to stimulate domestic demand and combat the Asian Financial Crisis, the minimum down payment was only 20%, and the mortgage rate dropped from 10.53% to 5.76%, the commercial bank was encouraged to make mortgage loans to individual; (2) From June 2003 to August 2008: dramatic real estate price growth despite tightening monetary policy. During that period of time, the minimum payment for the first house was increased to 30%, and the mortgage rate was raised up to 7.83%. The tightening monetary policy adopted to prevent the price speculation and protect the estate market under a healthy environment, while the Chinese real market price continued to soar; (3) From September 2008 to December 2009: extraordinary expansionary monetary policy to cope with the global financial crisis. At the shock of global financial crisis, the export and economic growth decreased, the PBC employed expansionary money supply and bank loans to combat the bad influences; (4) From January 2010: tightening monetary policy to control the real estate bubble. The option for this policy is due to the overheating and unreasonable housing price and to reduce the risk of a real estate bubble, like Hai Nan housing bubble. (Xu and Chen, 2011)

From the empirical results discussed above, the policy makers should issue some reasonable policies and mark rules to intervene in order to control the soaring housing price trend in Hang Zhou: (1) Control the population (One-Child policy and transient population approach); (2) Regulate the land use; (3) Strengthen the effectiveness of housing market and ensure the information system: There are a group of people, who buy the house regard as one way of investment. They expect the trend in future will better and the return will higher based on the outdated information. According to this, the government should provide an open, equal, and permanent information exchange platform, to standardize the housing market; (4) Interest rate policy; (5) Reserve requirement; (6) Open market operation; (7) Credit policy and window guidance; (8) Imposing a fine and criminal law.

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Electricity Consumption, Export and Production: Evidence from Malaysian Manufacturing Sector

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Abstract

Study on the impact of energy on economic development becomes the new interest in the economy since the industrial revolution where greater amount of energy have been used in industrial production with high scale. Numeral studies have been done at the micro and macro levels to discover the role of energy and its impact on economic growth. However, little have been done to explore the essence of energy in a particular sector especially the energy based sector like manufacturing sector. This paper investigates the relationship between electricity consumption, export and production in Malaysia's manufacturing sector in a multivariate framework. This study has two objectives. The first objective is to discover the existence of long-run relationship among the variables and the second objective is to examine the short-run causality among the variables. This is a time series analysis with the sample period covers from 1980-2010. Johansen and Juselius Cointegration test is employed to discover the long-run relationship while Vector Error Correction Model (VECM) Granger causality test will be used to find out the causal relationship. We found that GDP of manufacturing sector, electricity consumption of the manufacturing sector, export of manufacturing sector, labor of the manufacturing sector and capital of the manufacturing sector are cointegrated in the long run. The VECM results show unidirectional causality running from electricity consumption of manufacturing sector to GDP of the manufacturing sector and from electricity consumption of manufacturing sector to labor of the manufacturing sector. Hence, these results indicate electricity is essential in the manufacturing sector.

Keywords: Electricity consumption, output, Granger causality, cointegration

1.0 Introduction

Study on the impact of energy on economic development becomes the new interest in the economy since the industrial revolution where greater amount of energy have been used in industrial production with high scale. Numeral studies have been done at the micro and macro levels to discover the role of energy and its impact on economic growth.

To date, there are a lot of studies have done on the relationship between energy consumption and economic growth as an aggregate by using production function theory and demand function. However, little have been done to explore the essential of energy in a particular sector especially the energy based sector like manufacturing sector. It is important to discover the essential of energy in strategic sector like manufacturing sector consequently some significant implication can be made for both policy makers and manufacturing firms. Thus, there is a need to determine whether the amount of energy consumption gives significant impact towards manufacturing sector performance. In addition, it is also crucial to determine the impact of energy consumption in manufacturing sector on the performance of its export

since manufacturing goods is the biggest contribution in Malaysian export growth. In sum, the pattern of energy consumption may improve forecasting of the manufacturing sector's contribution to the growth at micro and macro level.

A few study on relationship between production in manufacturing sector and the amount of energy consumption, which in this study used electricity consumption since electricity is heavily used in manufacturing sector, call further research need to be done regarding on this matter. To this point, this paper will explore the relationship between the amount of electricity consumption, export and production in manufacturing sector. The study has two objectives. First is to discover the long run relationship between electricity consumption, output (Share of GDP by Manufacturing Sector), labor force, capital, and export in manufacturing sector. The second objective is to discover the short run as well as causal relationship between electricity consumption, output (Share of GDP by Manufacturing Sector), labor force, capital, and export in manufacturing sector.

2.0 Literature Review

Study on the relationship between energy consumption and aggregate output becomes one of the most debated in recent decades. Most of the study used bivariate framework gives way of inconsistency findings including the findings which that against the theory derive from the problem of omitted variable in the model. Ozturk and Acaravci (2011) and Tang (2008) found there is no relationship between energy consumption and output. However, Jiuwen and Fangmei (2011) and Erdal et al. (2008) are some of the studies used bivariate framework which found unidirectional and bidirectional relationship between energy consumption and output.

Numerous of the researchers argue that it is not accurate to use bivariate framework to discover the relationship of energy consumption and aggregate output because energy consumption is not giving the big impact even a direct impact on GDP and there are others variables more significant in contributing economic growth. Thus, it leads the problem of omitted variable in the model. Latest studies come out with some argument that, in order to explore the impact of energy in the economy, we need to use multivariate framework by taking into account on others variables such as labor, capital, export, population, urbanization and so on. Hannesson (2009) and Mahadevan and Asafu-Adjaye (2007), are some of the recent studies used multivariate model. On the other hand, Apergis and Payne (2009) and Menyah and Wolde-Rufael (2010) are some of the study used production function multivariate framework to explore the essential of energy in production and followed by Lean and Smyth (2010) and Sadorsky (2010) who did extension of production function multivariate framework by taking into account the export as an additional function in the sense that export influences the pattern of energy consumption in production and it also one of the significant factors in contributing economic growth.

Due to the argument of Soytas and Sari (2007), inconsistency result of previous study regarding on the study of relationship between energy consumption and economic growth is also refers to the different in term of the pattern of energy usage and also the availability of energy resources and commodity in some particular country. It is believed that it will have different impact on economic growth with different used of energy sources and commodity. Study related on this matter was made by Lotfalipour, et al. (2010) and Ziramba (2009) where in their study they disaggregated the data of energy consumption by type of energy commodity such as natural gas, coal, electricity and oil to examine the causal relationship of

the energy commodity on economic growth. However, Yoo and Ku (2009) and Nazlioglu, et al. (2011) used disaggregated data of energy resources such as renewable energy and nuclear energy to explore the relationship of energy resources and economic growth

In micro level, it is essential to explore the impact of energy consumption on output in some particular sector especially energy based sector like manufacturing sector. It is because different sector has different energy intensity, hence, it may have different impact on each sector in term of production. To best of our knowledge, the first study on this matter did by Soytas and Sari (2007) and it follows by Bekhet and Harun (2012). Indeed, there is limited studies has been done in micro level.

In the case of Malaysia, Lean and Smyth (2008), and Yoo (2006) are some of the studies in Malaysia discover the essential of energy in economy at macroeconomic level. To the extent of our knowledge, Bekhet and Harun (2012) is the first study in Malaysia explores the essential of energy at micro level. Towards an extended, this study intends to investigate not only the essential of energy which in this study used electricity consumption in production but also its relationship with export growth in manufacturing sector since theoretically, export influence the pattern of energy consumption in production and it also one of the significant factors in contributing economic growth (Sadorsky, 2012; Lean and Smyth, 2010).

3.0 Data and Methodology

This study employs annual time series data for Malaysian manufacturing sector from 1980 to 2010. Data for export of manufacturing sector, labor of manufacturing sector and the real gross domestic product of manufacturing sector are taken out from Department of Statistics Malaysia, the data for capital of manufacturing sector and electricity consumption of manufacturing sector is taken from Malaysian Investment Development Authority and Malaysian Energy Information Hub database respectively. Figure 1 shows the time series plots for each variable.

We explore the relationship between electricity consumption of manufacturing sector, aggregate output of manufacturing sector and export of manufacturing sector by employing neo-classical production function model where the capital, labor, export and energy as a different factor of production. This model was presented by Menyeh and Wolde-Rufael (2010) and Yuan et al. (2008). All variables are employed with their natural logarithms form. It is as follow:

$$LMGDP_t = \beta_0 + \beta_1 LMEC + \beta_2 LMEX + \beta_3 LMK + \beta_4 LML + \varepsilon_t \tag{1}$$

Where,
LMGDP –Total Real Gross Domestic Production of Manufacturing Sector in million (Constant at 2000 RM)
LMEC –Total electricity consumption of industry (ktoe)
LMEX- Total export of manufacturing sector in million (constant at 2000 RM)
LMK- Total capital investment of manufacturing sector in million (constant at 2000 RM)
LML- Number of worker in manufacturing sector

Philips and Perron (1998) test is employed for stationary test before conducting cointegration test and granger causality test. The cointegration test is constructed to test long run relationship and the Granger causality is employed to test short run relationship same as the direction of the relationship.

First step is to check for stationary of the each time series data. The application of Granger causality test (1988) and Johansen and Juselius cointegration (1990) test require that the time series data to be stationary. If the test result found that it is non-stationary, both long run and short run test cannot be regressed respect to the problem of spurious regression. The Philips and Perron test is used to examining the unit root and stationary test for each variable.

In order to identify the long run relationship, Johansen and Juselius cointegration test is employed to identify the existence of a long-run relationship between the variables in the model and estimate the vector error correction model (VECM) which include error correction term to capture long-run causality. Johansen and Juselius cointegration test is based on trace statistics and maximum eigenvalue statistic.

Finally, the last test need to be done is Granger Causality. It is the test to identify which variable leads the other as well as the short run impact. To test Granger causality, the VECM for eq. 1 can be written as follows:

$$\Delta LMGDP_t$$
$$= \beta_1 + \alpha_{1i} \sum_{i=1}^{k} \Delta LMGDP_{t-i} + \mu_{1i} \sum_{i=1}^{k} \Delta LMEC_{t-i} + \gamma_{1i} \sum_{i=1}^{k} \Delta LMEX_{t-i} + \partial_{1i} \sum_{i=1}^{k} \Delta LMK_{t-i}$$
$$+ \lambda_{1i} \sum_{i=1}^{k} \Delta LML_{t-i}$$
$$+ \delta_1 ECT_{t-1}$$
$$+ \varepsilon_{1t} \tag{2}$$

$$\Delta LMEC_t$$
$$= \beta_2 + \alpha_{2i} \sum_{i=1}^{k} \Delta LMGDP_{t-i} + \mu_{2i} \sum_{i=1}^{k} \Delta LMEC_{t-i} + \gamma_{2i} \sum_{i=1}^{k} \Delta LMEX_{t-i} + \partial_{2i} \sum_{i=1}^{k} \Delta LMK_{t-i}$$
$$+ \lambda_{2i} \sum_{i=1}^{k} \Delta LML_{t-i}$$
$$+ \delta_2 ECT_{t-1}$$
$$+ \varepsilon_{2t} \tag{3}$$

$$\Delta LMEX_t$$
$$= \beta_3 + \alpha_{3i} \sum_{i=1}^{k} \Delta LMGDP_{t-i} + \mu_{3i} \sum_{i=1}^{k} \Delta LMEC_{t-i} + \gamma_{3i} \sum_{i=1}^{k} \Delta LMEX_{t-i} + \partial_{3i} \sum_{i=1}^{k} \Delta LMK_{t-i}$$
$$+ \lambda_{3i} \sum_{i=1}^{k} \Delta LML_{t-i}$$
$$+ \delta_3 ECT_{t-1}$$
$$+ \varepsilon_{3t} \tag{4}$$

$$\Delta LMK_t$$
$$= \beta_4 + \alpha_{4i} \sum_{i=1}^{k} \Delta LMGDP_{t-i} + \mu_{4i} \sum_{i=1}^{k} \Delta LMEC_{t-i} + \gamma_{4i} \sum_{i=1}^{k} \Delta LMEX_{t-i} + \partial_{4i} \sum_{i=1}^{k} \Delta LMK_{t-i}$$
$$+ \lambda_{4i} \sum_{i=1}^{k} \Delta LML_{t-i}$$
$$+ \delta_4 ECT_{t-1}$$
$$+ \varepsilon_{4t} \tag{5}$$

$$\Delta LML_t$$
$$= \beta_5 + \alpha_{5i} \sum_{i=1}^{k} \Delta LMGDP_{t-i} + \mu_{5i} \sum_{i=1}^{k} \Delta LMEC_{t-i} + \gamma_{5i} \sum_{i=1}^{k} \Delta LMEX_{t-i} + \partial_{5i} \sum_{i=1}^{k} \Delta LMK_{t-i}$$
$$+ \lambda_{5i} \sum_{i=1}^{k} \Delta LML_{t-i}$$
$$+ \delta_5 ECT_{t-1}$$
$$+ \varepsilon_{5t} \tag{6}$$

The symbol of Δ represented the first difference while LMGDP, LMEC, LMEX, LMK and LML are the natural logarithms of real GDP of manufacturing sector, electricity consumption of manufacturing sector, export of manufacturing sector, capital of manufacturing and labor of manufacturing sector. α_n, μ_n, γ_n, ∂_n, λ_n (n=1,2,3,4,5) are the coefficients determine short run causality. Expected result from the Granger test is either there is no granger causal or granger causal (Uni-directional or Bi-directional). The hypothesis test is as follow:

$$H_{01}: \mu_{11} = \mu_{12} = \mu_{13} = ... = \mu_{1k}$$
$$= 0, Meaning\ LMEC\ does\ not\ Granger\ cause\ LMGDP$$
$$H_{02}: \alpha_{21} = \alpha_{22} = \alpha_{23} = ... = \alpha_{2k} = 0, Meaning\ LMGDP\ does\ not\ Granger\ cause\ LMEC$$
$$H_{03}: \gamma_{21} = \gamma_{22} = \gamma_{23} = ... = \gamma_{2k} = 0, Meaning\ LMEX\ does\ not\ Granger\ cause\ LMEC$$
$$H_{04}: \mu_{31} = \mu_{32} = \mu_{33} = ... = \mu_{3k} = 0, Meaning\ LMEC\ does\ not\ Granger\ cause\ LMEX$$
and so on for the other variables.

The ECT is referring to error correction term. $\delta_n (n = 1,2,3,4,5)$ are the coefficients determine long run relationship. The hypothesis test is as follow:

$$H_{01}: \delta_{11} = \delta_{12} = \delta_{13} = ... = \delta_{1k}$$
$$= 0, Meaning\ LMEC, LMEX, LMK\ and\ LML\ do\ not\ jointly\ cause\ LMGDP$$
$$H_{02}: \delta_{21} = \delta_{22} = \delta_{23} = ... = \delta_{2k}$$
$$= 0, Meaning\ LMGDP, LMEX, LMK\ and\ LML\ do\ not\ jointly\ cause\ LMEC$$
$$H_{03}: \delta_{31} = \delta_{32} = \delta_{33} =. .. = \delta_{3k}$$
$$= 0, Meaning\ LMGDP, LMEC, LMK\ and\ LML\ do\ not\ jointly\ cause\ LMEX$$

And so on for the other variables.

4.0 Empirical Result

First of all, it begins with the test for unit root in each variable. In general, Philip-Perron unit root tests, which are not reported, indicate that all variables are stationary of order 1.

Figure 1: Series Plots for Each Variable
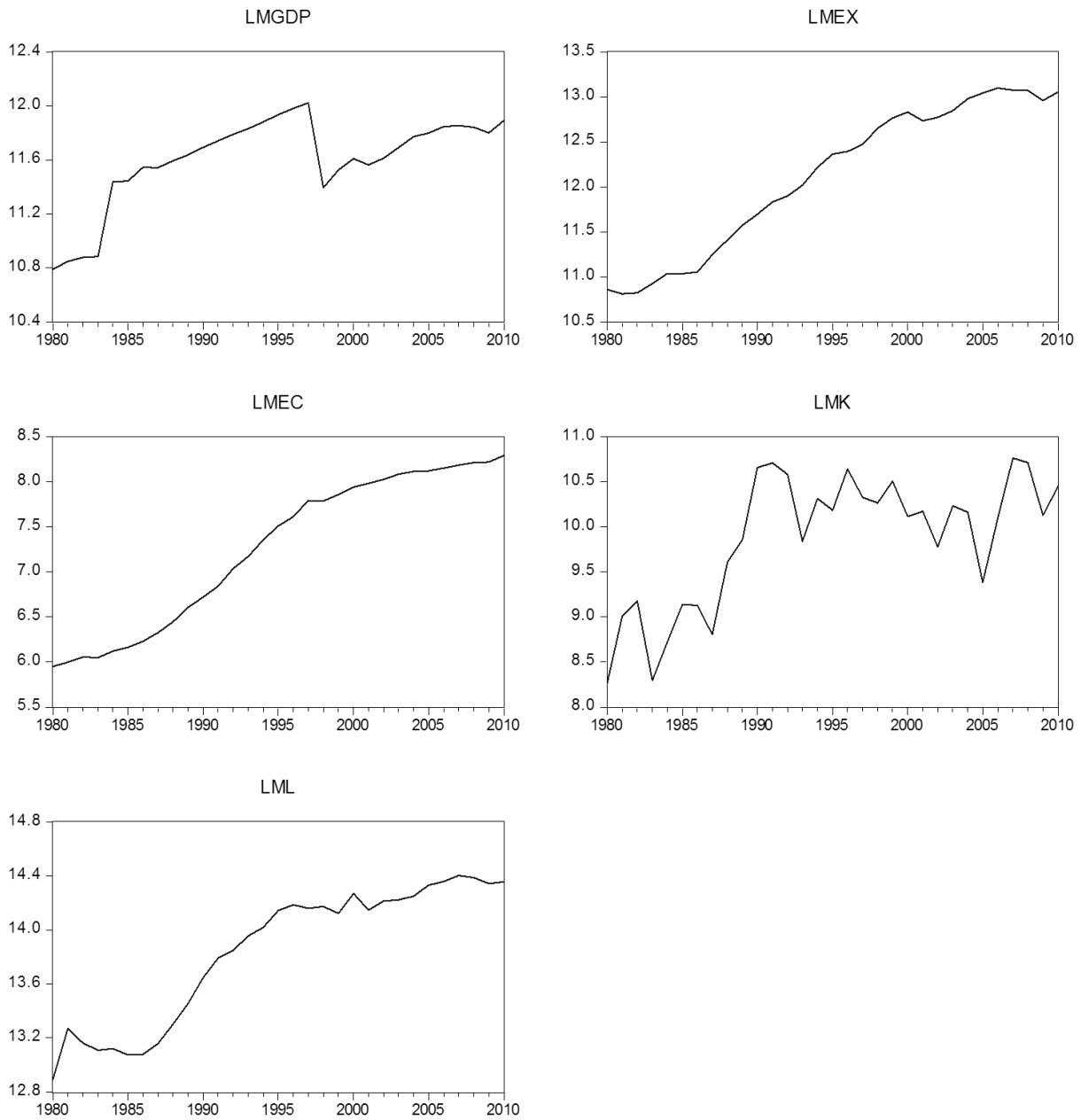
Since all the variables are stationary at order 1, we can employ the Johansen and Juselius cointegration test. Choosing an appropriate lag length is required as the test is sensitive to the number of lag length selected. The lag length of 1 was selected on the basis of the Akaike's information criterion.

The results of the cointegration test are documented in table 1. The maximum eigenvalue statistic suggests 1 cointegrating vectors driving the series with the assumption of no deterministic trend. On the other hand, the trace statistic suggests 4 cointegrating vectors driving the series with the assumption of no deterministic trend. It implies the existence of long-run causality though the direction is still not clear. Furthermore, the Granger causality test was conducted and based on VECM.

Table 1: Johansen and Juselius Cointegration Result

Rank, r	Trace Statistic	Max-Eign Statistic
None	111.8704**	51.8842**
≤1	59.9862**	20.4275
≤2	39.5587**	16.1596
≤3	23.3991**	15.9494**
≤4	7.4497	7.4498

Notes: Rank (r) denotes the number of cointegration equations for each tested hypothesis. Lag length was selected on the basis of the Akaike's Information Criterion. The asterisks (*) and (**) denote significant at the 1% and 5% levels respectively.

Since all variables are measured in natural logarithms, the estimated coefficients from the long run cointegration relationship can be interpreted as long run elasticity. The results of normalized equation show that all variables significantly affect LMGDP at 1% significant level excluded LMK. LMEX affects LMGDP negatively while the others variable affect LMGDP positively. The coefficients of elasticity show that the decrease in LMEX by 1 percent will be followed by the increase in LMGDP by 171 percent. An increase in LMEC by 1 percent will be followed by the increase in LMGDP by 117.2 percent. The increase in LML by 1 percent will be followed by the increase in LMGDP by 73.4%. All and all, the coefficients of elasticity show that the export (LMEX) has more influence on GDP (LMGDP) than the others.

LMGDP=	229.4064	-171.0705LMEX	+117.1502LMEC	+0.4193LMK	+73.4915LML
Std error		(28.0503)	(30.0618)	(5.7578)	(20.8858)
t-test		[-6.0987***]	[3.897***]	[0.0728]	[3.5187***]

The negative effect of export on GDP is against the theory of economics. However, the rest of the factors follow the nature of economic law where the increase of electricity consumption and number of labor will lead to the increase of GDP. According to Safdari et al. (2012), the reason why export has negative impact on economic growth is that the number of quantity supplied for exported goods (especially raw material) are little in domestic market but a lot in foreign market. Thus, the production of exported goods depend much on foreign market and consequently an increase in exported goods production will decrease domestic production activity. Result, it will bring to negative impact to economic growth.

Table 2: VECM Granger Causality Result

Independent Variable	Dependent Variable				
	LMGDP	LMEX	LMEC	LMK	LML
LMGDP		0.8269	0.7831	0.1455	0.1937
LMEX	2.4445		0.3317	0.8571	0.2268
LMEC	6.5868**	0.9392		0.8611	8.9962***
LMK	0.0678	0.1318	0.0595		0.0585
LML	0.1526	1.0383	1.751	5.6953**	
ECT	-0.4291	-1.868*	0.2017	0.8723	2.6614**

Notes: The asterisks (***), (**) and (*) denote rejection of the corresponding non-causality hypothesis at the 1 %, 5 % and 10% respectively. Lag length was selected on the basis of the Akaike's Information Criterion.

The Granger causality test was conducted based on VECM. The result of VECM Granger causality test is given in Table 2. The VECM Granger causality test suggests that in the long-run Granger causality runs from LMGDP, LMEC, LMK and LML to LMEX where the ECT is significant at 10% critical value; and from LMGDP, LMEX, LMEC and LMK to LML where ECT is significant at 5% critical value. The error correction term shows that there are 2 significant equations found out of 5 suggested equations. It indicates that long run adjustment to equilibrium is important in explaining short run movement in export and labor.

In the short-run, there are three unidirectional relationships running from LMEC to LMGDP (significant at 1% critical value); from LML to LMK (significant at 5% critical value); and from LMEC to LML (significant at 1% critical value). The 3 Granger causality relationships can be summarized as follows:

Figure 2: Summary of Granger Causality Result
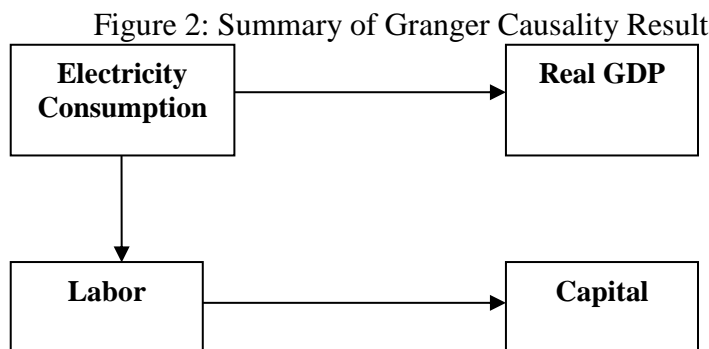
5.0 Conclusion and Policy Implication

This study attempted to test multivariate production framework of the variable of GDP of manufacturing sector, electricity consumption of manufacturing sector, export of manufacturing sector, capital of manufacturing sector and labor of manufacturing sector. This model estimates long run relationship and its causal relationship. The Johansen and Juselius cointegration test found that GDP of manufacturing sector, export of manufacturing sector, electricity consumption of manufacturing, capital of manufacturing sector and labor of manufacturing sector are cointegrated in the long run. We also found that electricity consumption of manufacturing sector has a positive relationship with GDP of manufacturing sector according to normalize equation. This result is supported by Narayan et. al. (2008) and Li et al. (2011) where they are also found the same result but they used aggregate data. Moreover, Granger causality test shows that there are unidirectional relationships found from electricity consumption of manufacturing sector to GDP of manufacturing sector and electricity consumption of manufacturing sector to labor of manufacturing sector in the short run. Finding of unidirectional relationship from electricity consumption of manufacturing sector to GDP of manufacturing sector is supported by Odhiambo (2009) and Yuan et al. (2008) where they found similar result in their study which used aggregate data. Second result of unidirectional relationship has been found from electricity consumption of manufacturing sector to labor of manufacturing sector. Sadorsky (2012), and Apergis and Payne (2009) have found similar result of our finding of unidirectional relationship from electricity consumption to labor but they used aggregate data.

Result in the long run is slightly different with the short run. In the short run, there is no relationship between electricity consumption of manufacturing sector and export of manufacturing sector, however, empirical result significantly found that it has long run

relationships running from electricity consumption of manufacturing sector to export of manufacturing sector and from electricity consumption of manufacturing sector to labor of manufacturing sector. Both results are in the same way with the finding of Sadorsky (2012) which used aggregate data in his study.

Thus, the empirical result indicates that electricity consumption is essential in Malaysian manufacturing sector. As what has been stated earlier, manufacturing sector is the second largest industry contributes to the growth of GPD through the year. In term of export, manufacturing industry's product is the highest number of good exported in abroad. Hence, electricity consumption in manufacturing sector is not just give an impact on production output in the sector but it also significant in the growth of GDP as an aggregate. A change in energy policy which related to electricity supply such as a change in electric tariff or subsidy will definitely give some direct or indirect impact on the production in manufacturing sector also an economy as a whole. On the other hand, increases on electricity consumption in manufacturing industry significantly influence the number of employment. Since manufacturing sector is energy based sector, they need sufficient manpower in production to process a mix of inputs become output. In neoclassical model, energy is considered as raw material. Thus, the trend of electricity consumption seems to be in the same line with the number of employment required in the sector. In sum, electricity consumption is just not only promoted an increase in output but also create a number of employment opportunities.

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Trade Balance and its Determinants: A Dynamic Perspective in ASEAN

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Abstract

This paper studies the influence of some determinants of trade balance for ASEAN countries in dynamics perspective. Based on quarterly data (1980q1 to 2007q3), investigation is carried out using VECM. Results show that in the long run: (i) income effect is found to be dominant in determining the change in trade balance; (ii) the cash balance effect do influence the bilateral trade; (iii) bilateral trade is affected by the exchange rate movements. With respect to that, the small economy effects are suspected to be present in ASEAN region. Meanwhile, in the short run: (i) the cash balance effect relatively plays a major role in influencing the trade balance improvement; (ii) compared to cash balance effect, the income effect is present with slightly less contribution; (iii) the exchange rate effect is observed in the analysis, while a J-curve phenomenon exists in minor cases.

Keywords: Export, Trade Balance, VECM, J-curve

1.0 Introduction

After financial crisis struck the Southeast Asian region in 1997, ASEAN started to maintain intensively two fundamental internal actions in order to accelerate the recovery process and out of the downturn period. They are: first, doing intensification on trade cooperation among the member states and with other major trading partners (e.g. US, Japan, and EU); and second, doing expansion on financial cooperation among the member states itself, including China, Japan and Korea (Severino, 2002).

From the first point, we know that consistent emphasis on trade arrangement is still going to be a keyword and is also extremely reasonable since ASEAN has been recognized as: (i) an open organization that should liberalize its intra and inter-regional trade; and (ii) a regional bloc whose economy highly dependent on trade. With respect to the latter, Huang *et al.* (2004) finds that prior to the financial crisis (1996), ASEAN's ratio of exports to GDP has achieved about 46% while the ratio of imports to GDP is around 49%. After crisis (2000), the declining of its GDP which accompanied by the growing of exports performance results in the ratio of exports to GDP increases by 71% while the ratio of import to GDP climbs to 62%. It shows the condition of ASEAN which apparently becomes more trade-dependant, even after the crisis period.

The objective of this paper is to analyze the role of real exchange rates, real income and real cash balance on the bilateral trade balance among selected ASEAN countries (Indonesia, Malaysia, the Philippines, Singapore, Thailand) and between those ASEAN countries and the US and Japan, due to their position as the major ASEAN's trading partners and two major economies in the world. As regarded by Tongzon and Felmingham (1998), study in bilateral trade provides a deeper insight in highlighting particular issues related to trade activity between countries, which usually are not addressed in studies of aggregate trade. Bilateral trade flows tend to respond differently to the factors (*e.g.* real exchange rate, income, and other monetary instruments) which determine aggregate trade flows, *i.e.* those variables may

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have different impacts on certain country where the impacts depend highly on the characteristics that owned by the country itself or its trading partner.

To address the paper's objective, a vector error correction model (VECM) is estimated. In this case, VECM treats all variables in the model as potentially endogenous. The model will analyze the impact of all considered variables on bilateral trade flows, both in the short run and long run. Additionally, the impulse response function is also utilized to support the results of VECM.

The paper finds that in the long run, income effect appears to be dominant in determining the change in trade balance. Bilateral trade is affected too by the cash balance, and exchange rate movements. Further, in the short run, the cash balance effect relatively plays a major role in influencing the improvement of trade balance. With slightly less difference in contribution, the income effect also appears. The exchange rate effect is observed as well, where our findings are supportive for the J-curve phenomenon in minor cases. The paper will be structured as follows. Section 2 discusses some principal facts around ASEAN trade. Section 3 provides the empirical methodology. While, in section 4, presents the empirical results, and finally section 5 concludes the paper.

2.0 The Facts of ASEAN Trade

Two indicators which are often used for explaining global trade and describing the importance of trade in the economy are the ratio of trade in goods to GDP and the ratio of trade in services to GDP. Trade in goods consist of all merchandise which are exported and imported by a country, while trade in services has a same meaning but it involves some different sectors, such as transport, travel, finance, insurance, royalties, construction, communication and cultural services (World Bank, 2006).

Table 1: The Importance of Trade in ASEAN Economies

Country	Trade in goods as a share of GDP (%)					Trade in services as a share of GDP (%)		
	1990	2001	2003	2004	2005	1990	2004	2005
Cambodia	22.4	91.7	80.5	122.2	109.9	5.7	25.3	28.1
Indonesia	41.5	60.1	44.9	49.4	54.2	7.5	17.9	12.8
Lao PDR	30.5	50.4	42.5	35.4	43.6	5.8	*na*	*na*
Malaysia	133.4	184.0	174.8	195.9	196.1	21.2	29.9	31.9
Philippines	47.7	88.9	94.3	97.0	89.5	11.3	11.2	10.4
Singapore	309.5	277.6	297.8	321.5	368.0	58.1	76.6	90.4
Thailand	65.7	110.9	109.4	119.2	129.3	14.9	26.1	27.3
Vietnam	79.7	93.6	115.0	125.4	129.9	*na*	19.0	18.0

Source: *World Development Indicators*, 2003; 2005; 2006 and 2007, World Bank.
Notes: *na* means "not available".

As seen in Table 1, the importance of trade in the economies of the region (as indicated by the ratio of trade in goods and trade in services to GDP) is quite varying for all considered periods. Singapore, one of the most open economies in the world could be expected to be superior to other economies in the region. It is verified by its ratio of trade in goods to GDP which has reached over 200%, ranging from about 277% to 368% and its ratio of trade in

services to GDP which has achieved more than 50% ranging between 58% and 90%. The trades in goods/GDP ratios of other ASEAN countries move far lower than that of Singapore. The story seems still to be the same for the ratio of trade in services to GDP.

As a group, as indicated by Figures 1 and 2, the distributions of ASEAN trade are relatively concentrated in its own area. On average, during 1996-2005, intra-ASEAN trade accounted for more than 23% of export and 22% of import. Data show that intra-ASEAN trade is of growing importance, particularly for the import.

Figure 1: Distribution of ASEAN exports by major destination (%), 1996-2005
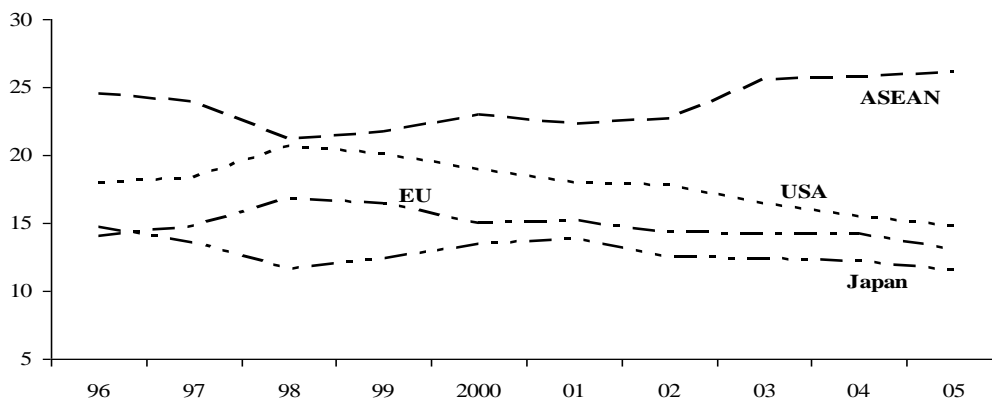
Source: *Direction of Trade Statistics Yearbook*, 2003 and 2006, IMF.

Figure 2: Distribution of ASEAN imports by major destination (%), 1996-2005
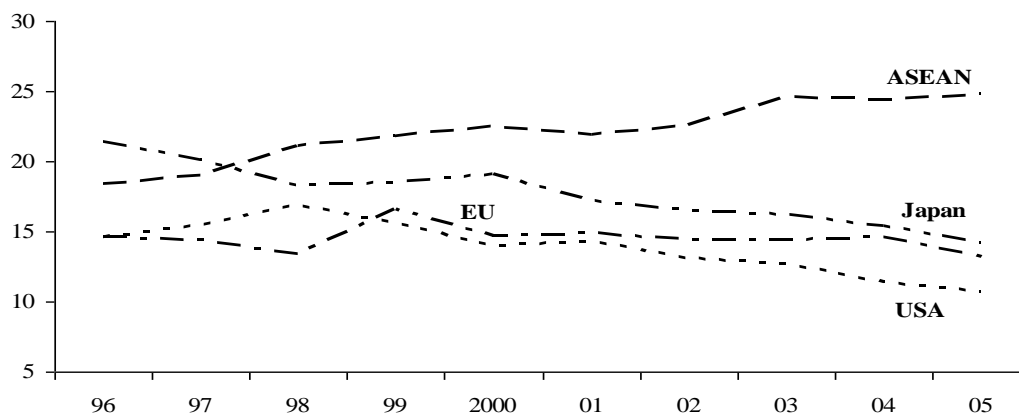
Source: *Direction of Trade Statistics Yearbook*, 2003 and 2006, IMF.

Intra-ASEAN import shows a gradual increase in share during 1996-2005, except for 2001, where the figure drops slightly to 21.9%. Generally, intra-ASEAN import grows from 18.4% of total in 1996 to 24.8% of total in 2005. In term of export, intra-ASEAN export always displays an increasing figure since 2001, though prior to that period, its distribution inclines to fluctuate. After ASEAN itself, developed countries are the next most significant trade partners of ASEAN. Three of them, namely the US, Japan and EU are noted as the countries whose contribution always dominate ASEAN's export and import activities. Their contributions during 1996-2005 reach more than 11% each for both trade activities. The most dominant market for ASEAN merchandises is the US, which accounted for around 18% of total in 1996 and around 15% of total in 2005.

3.0 Empirical Methodology

3.1 Model specification

This paper adopts a trade balance model that relies on a standard two-country model as applied by Rose and Yellen (1989), and Rose (1991). Significantly, this paper also follows the work of Tongzon and Felmingham (1998) which incorporates real cash balance variable in determining the bilateral trade flows. The following specification will clarify the points.

$$TB = TB\left(q, y, y^*, h, h^*\right) \tag{1}$$

where, trade balance (*TB*) is expressed as a function of real exchange rate (*q*), the domestic (foreign) country's real income (y, y^*) and the domestic (foreign) country's real cash balance (h, h^*). According to Equation (1), *TB* will improve if y^* and h^* increase or if y and h decrease. For *q*, this paper specifies *q* as the domestic currency price of the foreign currency. It indicates that a positive change in *q* implies a real depreciation of the domestic currency. If this variable gives a positive impact to *TB*, then one can says that the exchange rate effect is present. Marshall-Lerner condition will be satisfied, if the effect persists in the long run. The paper will investigate as well the J-curve effect. J-curve will be verified by the paper, if initially, real exchange rate (*q*) gives a negative impact to *TB* and then followed by positive impact after some particular periods.

Regarding the model used, this paper starts by forming Equation (1) into a log-linear standard model and then modifies a VECM specification for *TB* conditional on *q*, *y*, y^*, *h*, and h^*. The model will be estimated in order to identify the dynamic bilateral trade relationship among selected ASEAN countries (Indonesia, Malaysia, Singapore, Thailand, and the Philippines) and between ASEAN countries with the US and Japan.

3.2 Data Source

To carry out the empirical work, quarterly data for the first quarter of 1980 to the third quarter of 2007 (1980q1-2007q3) are used. Data are collected from *Direction of Trade Statistics* (DOTS) of IMF and *International Financial Statistics* (IFS) of IMF. The real bilateral trade balance (*TB*) is measured as a ratio of merchandise *f.o.b.* exports to merchandise *c.i.f.* imports multiplied by 100. Since *DOTS*-IMF only covered 2003q1-2007q3 Singapore's export-import data to and from Indonesia, then the paper will only used that respected series in the analysis.

Due to the absence of quarterly GDP data in most countries during the research periods (1980q1-2007q3), following Wilson and Tat (2001), Bahmani-Oskooee and Goswami (2003) and Bahmani-Oskooee and Ratha (2004), this paper uses industrial production index (for Malaysia, Japan and the US) and manufacturing production index (for Indonesia, Philippines, and Singapore) as a proxy for the real domestic (foreign) income. All with index numbers (2000=100). Note that, since those two indexes are not available for Thailand, then this paper uses quarterly data of nominal GDP for that country but with a shorter research period (1993q1-2007q3). Thailand's quarterly nominal GDP series was deflated by its CPI (2000=100) to express it in real terms. It then was expressed as an index with 2000=100.

Home country's real cash balance (*h*), following Bahmani-Oskooee (1985) and Tongzon and Felmingham (1998), is obtained by adding currency outside banks (*IFS*, 14a) and commercial banks reserves (*IFS*, 20) and then deflated by the country's CPI (*IFS*, 64). An equivalent

procedure (as shown by h) is used to generate the foreign country's real cash balance (h^*) based on their respective data.

The bilateral real exchange rate (q) is computed by multiplying the spot or market exchange rate $-e$ (*IFS*, rf) by the ratio of foreign price to the domestic price level and then multiplied by 100. CPI will represent the price level (*IFS*, 64). Note that, since the IMF provides all exchange rates in relation to the US dollar, then a conversion adjustment in relation to other currencies -outside the US dollar- are needed. If the bilateral exchange rate want to be generated against the Malaysian Ringgit, then domestic currency value of the Ringgit can be measured as the ratio of the domestic currency exchange rate against the US dollar to the Ringgit rate against the US dollar. All variables are in natural logarithm form.

4.0 Empirical Results

After determining the lag length of each bilateral case using AIC, we do the ADF test. The ADF test finds two individual time series are stationary in level [I(0)], namely (i) the trade balance (*TB*) between Indonesia and Malaysia, and (ii) the trade balance between Malaysia and Indonesia. For the majority of remaining series, the ADF tests provides a strong indication of unit roots, in which they are [I(1)]. However, there are exceptions for ten series which are stationary in second differences [I(2)], namely the variable of y for Thailand and the US (in Thailand-US case), h for Indonesia, Malaysia and Philippine (when they do trade with Thailand), q for Malaysia-Thailand, Singapore-Indonesia, Thailand-Malaysia, Thailand-the US, and *TB* for Singapore-Thailand. All bilateral cases which posses variables that get stationary in second differences [I(2)] are excluded from the co-integration test.

This paper uses Johansen co-integration test in finding out the possibility of long run relationship among variables in each case. Using the procedure proposed by McKinnon *et al.* (1999), we reject the null hypothesis of no co-integration ($r=0$) in 9 out of 17 cases. Those 9 cases have at least one co-integrating relationship among the variables, hence as a result; we only can apply VECM in those bilateral cases. They are: (i) Indonesia-Singapore; (ii) Indonesia-Japan; (iii) Indonesia-the US; (iv) Malaysia-Philippines; (v) Malaysia-Japan; (vi) Malaysia-the US; (vii) Philippines-Japan; (viii) Singapore-Japan; and (ix) Singapore-the US.

4.1 The Long Run Relationship

Since the results of Johansen co-integration test show various numbers of co-integrating vectors in the bilateral cases which reject the null hypothesis, this suggests that the long run relationship is not unique. With respect to that, following Singh (2002), we decide to use the first co-integrating vector as the most likely vector in our not unique long run analysis due to it provides the maximum eigenvalue statistics in the test. So, hereafter we consistently hold the idea when applying Johansen co-integration test.

Table 2: Long Run Relationship of the Variables: Estimation of VECM

Case	Variable				
	y_t	y_t^*	h_t	h_t^*	q_t
Indonesia-Sing.	0.889***	-0.766	-0.121	-1.249***	-1.807**
Indonesia-Japan	-4.997**	-13.473***	5.999**	-14.752**	4.440*
Indonesia-the US	-0.935**	10.483**	-0.073	-4.030*	-1.382**
Malaysia-Philip.	-36.649	-20.503	18.008**	-12.310	-81.920**
Malaysia-Japan	-22.443	45.348***	3.395	-10.058	-57.924**
Malaysia-the US	-0.502***	-0.983	-0.234	1.960**	-1.993**
Philip.-Japan	-0.169	12.173**	-2.050	2.957**	-8.299**
Sing.-Japan	-0.513	2.235**	-1.425**	0.875**	-0.744**
Sing.-the US	3.461**	1.756***	3.842**	0.551	0.028

Notes: *, ** and *** denote rejection of null hypothesis at 5%, 1% and 10%, respectively.

In Table 2, the estimated coefficients of the first co-integrating vector (γ) are normalized with respect to the coefficient of the *Ln TB*. Among all bilateral cases which are reported, only the case of Indonesia-Singapore and Indonesia-Japan indicate an expected positive long run relationship between the real exchange rate (*q*) and the real bilateral trade balance (*TB*). With a long run elasticity of 1.81 and 4.44, respectively, they provide strong empirical support to the theoretically predicted real depreciation improves the trade balance in the long run. Marshall-Lerner condition holds in those bilateral cases. On the contrary, for other bilateral cases, this paper fails to find such a relationship. However, the case of Singapore-the US still shows an expected positive sign though it is statistically insignificant.

Through those 9 cases, we discover some issues related to the long run analysis. First, we find that the income effect seems more dominant and consistent than the import-substitution effect. Second, the income effects play a major role in determining the trade balances since their coefficients are relatively greater than other variables' coefficients and they appear in relatively more bilateral cases. Third, the cash balance effects play a minor role in influencing the trade balance since their coefficients show the smallest figure in relative meaning. Fourth, the results provide evidence for the exchange rate effect in our bilateral cases. It suggests that a real depreciation improves the trade balance eventually. However, in several cases, the coefficients of *q* are wrongly signed.

4.2 The Short Run Relationship and the Speed of Adjustment

The results of VECM estimation for the short run relationship are reported in Table 3. Changes in the value of Indonesia's bilateral trade balance with Singapore are affected by the lagged four period value of the domestic real income ($\Delta y_{(t-4)}$). Domestic real income (y) seems always be a variable which brings a significant positive impact to the Indonesia-Singapore real trade balance in both types of relationship long run and short run. It strengthens a possibility that the import-substitution effect exists for the case. Yet, another possibility also could happen, *i.e.* the reporting country's exports are not driven by the demand factor but determined by the supply factor. Onafowora (2003) notes that supply can also be a main determinant factor of exports and imports when higher exports are originated from the utilization of domestic surplus which are carried by a condition where increase in domestic output surpasses increase in domestic consumption.

The import-substitution effects are found in the bilateral trade for Indonesia, Malaysia, and Singapore with respect to the US. In addition, the effects also appear in the case of Malaysia-Japan and Philippines-Japan. Meanwhile, the income effect can be seen in Malaysia-Philippines. In this case, the Philippines income carries the expected positive sign and it is statistically significant at the 10% level of significance, indicating that the Malaysian export to Philippines have increased in the short run due to the Philippines income effect. However, we also note that both income and import-substitution effect exist simultaneously in the case of Philippines-Japan and Singapore-the US.

The findings indicate that in the short run relationship, the import-substitution effect seems more dominant than the income effect. The situation is quite different with the situation when the analysis is performed for the long run relationship. At long run analysis, the income effect is found as the most influential effect which determines the trade balance. In the short run, the income effect plays a less influential role than the cash balance effect in determining the trade balances since the income effect presences in relatively less bilateral cases and the cash balance effect displays more consistent appropriate sign on the variables. However, the magnitudes of the variables which are related to those two effects seem are not so significantly different in figure. In this short run relationship, the exchange rate effect appears in most bilateral cases and we find that the effect are more frequently observed than in the long run relationship.

Looking at the speed of adjustment coefficients (δ), their sizes imply a particular adjustment information to a deviation from the long run equilibrium. Four out of nine coefficients of the speed of adjustment are statistically insignificant, while the remaining five coefficients of δ carry theoretically predicted negative signs and are statistically significant. In Indonesia-Singapore bilateral case, the coefficient suggests a quite rapid speed of adjustment, where nearly 65% of the disequilibrium is eliminated in each quarter. For Indonesia-the US case, we can see that about 25% of disequilibrium corrected each quarter by changes in the trade balance. In other bilateral cases, i.e. Malaysia-Philippines, Malaysia-Japan and Philippines-Japan, those coefficients are fairly small in size. It implies that they characterize a slow adjustment to the disequilibrium. Those coefficients suggest about 1.2%, 0.7% and 7.4% of disequilibrium is eliminated in one quarter for each case respectively. Table 3 also includes a brief description of diagnostic tests. As can be seen, the null hypothesis of no serial autocorrelation and no heteroskedasticity are not rejected. The coefficients of determination (R2) in 9 bilateral cases vary in value from 0.453 to 0.637.

Table 3: Short Run Relationship of the Variables and the Speed of Adjustment Coefficients: Estimation of VECM

Variable	Case and coefficients[1]								
	Ina-Sing	Ina-Jap	Ina-US	Mal-Phil	Mal-Jap	Mal-US	Phil-Jap	Sing-Jap	Sing-US
$\Delta TB_{(t-1)}$	0.050 (0.400)	-0.310* (-2.558)	-0.357** (-2.717)	-0.703** (-7.271)	-0.310* (-2.624)	-0.230*** (-1.677)	-0.367** (-3.151)	-0.510** (-3.453)	-0.733** (-5.171)
$\Delta TB_{(t-2)}$	0.051 (0.419)	-0.082 (-0.756)	-0.156 (-1.144)	-0.490** (-4.247)	-0.153 (-1.282)	-0.142 (-0.934)	-0.172 (-1.358)	-0.239 (-1.576)	-0.341* (-2.172)
$\Delta TB_{(t-3)}$	0.073 (0.631)	0.021 (0.208)	-0.287* (-2.236)	-0.345** (-2.943)	0.079 (0.631)	0.196 (1.244)	-0.338* (-2.625)	-0.323* (-2.197)	-0.312*** (-1.905)
$\Delta TB_{(t-4)}$	-0.033 (-0.307)	-0.177*** (-1.779)	-0.203 (-1.566)	-0.255* (-2.230)	0.044 (0.352)	0.035 (0.208)	-0.275* (-2.170)	-0.271*** (-1.958)	-0.084 (-0.553)
$\Delta TB_{(t-5)}$	-0.095 (-0.954)	-0.142 (-1.408)	-0.043 (-0.363)	-0.237* (-2.491)	0.033 (0.287)	0.229 (1.392)	-0.245*** (-1.831)	-0.124 (-0.957)	0.070 (0.490)
$\Delta TB_{(t-6)}$	- -	-0.030 (-0.318)	0.041 (0.387)	- -	-0.231* (-2.025)	-0.144 (-0.968)	-0.065 (-0.512)	0.035 (0.309)	0.041 (0.384)
$\Delta y_{(t-1)}$	-0.024 (-0.050)	-0.229 (-0.699)	0.588 (1.320)	-1.261 (-1.665)	0.180 (0.830)	0.710* (2.079)	0.271 (1.025)	0.017 (0.056)	0.055 (0.156)
$\Delta y_{(t-2)}$	0.636 (1.357)	0.182 (0.545)	-0.449 (-1.080)	0.853 (1.127)	-0.310 (-1.462)	-0.213 (-0.683)	0.491*** (1.704)	-0.217 (-0.689)	-0.491 (-1.405)
$\Delta y_{(t-3)}$	0.202 (0.443)	-0.309 (-0.864)	0.090 (0.213)	0.967243 (1.228)	-0.063 (-0.296)	0.082 (0.269)	0.440 (1.557)	0.076 (0.240)	-0.577*** (-1.817)
$\Delta y_{(t-4)}$	1.009* (2.234)	-0.155 (-0.446)	0.216 (0.526)	-0.601 (-0.745)	0.136 (0.641)	0.140 (0.469)	0.653* (2.303)	0.475 (1.484)	0.115 (0.384)
$\Delta y_{(t-5)}$	0.555 (1.168)	-0.059 (-0.185)	-0.256 (-0.641)	0.085 (0.107)	0.408* (1.913)	-0.122 (-0.424)	0.523*** (1.760)	0.141 (0.479)	-0.617* (-2.303)
$\Delta y_{(t-6)}$	- -	0.442 (1.379)	0.476 (1.124)	- -	0.125 (0.577)	-0.044 (-0.152)	0.442 (1.651)	-0.048 (-0.172)	-0.616* (-2.194)
$\Delta y^*_{(t-1)}$	-0.720 (-1.184)	-0.804 (-0.682)	3.073 (1.043)	1.132*** (1.784)	-1.121 (-1.606)	1.481 (0.887)	0.516 (0.524)	1.327*** (1.709)	1.653 (1.315)
$\Delta y^*_{(t-2)}$	-0.686 (-1.339)	0.416 (0.354)	1.687783 (0.600)	-0.516 (-0.802)	0.910 (1.367)	-2.569 (-1.498)	0.184 (0.193)	-0.429 (-0.543)	2.129 (1.649)
$\Delta y^*_{(t-3)}$	0.726 (1.485)	1.271 (1.308)	-6.125* (-2.158)	-0.009 (-0.012)	-1.146* (-2.027)	-1.755 (-0.994)	-0.216 (-0.275)	-1.635* (-2.402)	-2.347*** (-1.855)
$\Delta y^*_{(t-4)}$	0.136 (0.255)	-1.170 (-1.156)	-2.680 (-0.900)	0.055 (0.079)	-0.574 (-1.010)	2.086 (1.361)	1.547*** (1.925)	0.652 (0.978)	0.490 (0.460)
$\Delta y^*_{(t-5)}$	0.057 (0.093)	-0.901 (-0.789)	2.339 (0.883)	0.295 (0.438)	-0.138 (-0.217)	-0.924 (-0.589)	-1.292 (-1.374)	0.391 (0.558)	-0.056 (-0.049)
$\Delta y^*_{(t-6)}$	- -	1.024 (0.885)	-0.284 (-0.118)	- -	-0.837 (-1.327)	0.189 (0.144)	-0.986 (-1.005)	-0.277 (-0.400)	-1.992*** (-1.893)
$\Delta h_{(t-1)}$	0.142 (0.530)	-0.166 (-0.990)	-0.168 (-0.714)	0.778* (2.113)	-0.197*** (-1.722)	0.153 (0.806)	0.168 (1.217)	-0.249 (-0.736)	0.197 (0.619)

Variable	Case and coefficients[1]								
	Ina-Sing	**Ina-Jap**	**Ina-US**	**Mal-Phil**	**Mal-Jap**	**Mal-US**	**Phil-Jap**	**Sing-Jap**	**Sing- US**
$\Delta h_{(t-2)}$	-0.124 (-0.410)	-0.091 (-0.493)	-0.469*** (-1.856)	-0.146 (-0.398)	-0.033 (-0.288)	0.109 (0.555)	0.102 (0.655)	-0.679*** (-1.872)	0.185 (0.566)
$\Delta h_{(t-3)}$	-0.129 (-0.426)	0.029 (0.155)	-0.514*** (-1.837)	-0.217 (-0.574)	0.145 (1.228)	-0.261 (-1.300)	-0.010 (-0.074)	-1.045** (-2.845)	0.067 (0.206)
$\Delta h_{(t-4)}$	-0.291 (-1.078)	0.422* (2.402)	-0.308 (-1.133)	-0.020 (-0.053)	0.084 (0.710)	0.196 (1.099)	-0.051 (-0.356)	-0.285 (-0.774)	0.592*** (1.873)
$\Delta h_{(t-5)}$	0.167 (1.625)	0.341* (2.041)	-0.112 (-0.476)	-0.698*** (-1.802)	-0.239* (-2.132)	-0.082 (-0.465)	-0.023 (-0.142)	-0.353 (-1.012)	0.309 (1.046)
$\Delta h_{(t-6)}$	- -	0.120*** (1.678)	0.060 (0.536)	- -	-0.113 (-0.958)	-0.086 (-0.493)	0.126 (0.894)	0.069 (0.181)	0.176 (0.578)
$\Delta h^{*}_{(t-1)}$	-0.131 (-0.171)	0.088 (0.299)	0.658 (0.632)	0.525 (1.602)	0.206 (1.079)	-0.401 (-0.638)	0.205 (0.822)	0.065 (0.291)	0.335 (0.615)
$\Delta h^{*}_{(t-2)}$	0.207 (0.254)	-0.268 (-0.885)	2.242* (2.178)	0.731* (2.428)	-0.247 (-1.281)	0.145 (0.214)	0.523* (2.050)	0.172 (0.802)	-0.214 (-0.399)
$\Delta h^{*}_{(t-3)}$	0.062 (0.075)	0.172 (0.599)	2.834* (2.607)	0.399 (1.401)	-0.040 (-0.211)	1.064*** (1.833)	0.370 (1.489)	0.103 (0.527)	0.747 (1.311)
$\Delta h^{*}_{(t-4)}$	1.308 (1.641)	0.204 (0.668)	0.649 (0.666)	0.628* (2.132)	0.178 (0.887)	0.487 (0.847)	0.748** (2.813)	-0.051 (-0.225)	0.585 (1.080)
$\Delta h^{*}_{(t-5)}$	0.300 (0.389)	0.520 (1.489)	2.042* (2.084)	-0.012 (-0.039)	0.520* (2.448)	0.072 (0.121)	0.584*** (1.979)	0.277 (1.171)	0.256 (0.519)
$\Delta h^{*}_{(t-6)}$	- -	0.036 (0.107)	1.224 (1.271)	- -	0.401* (2.060)	-0.293 (-0.505)	-0.069 (-0.242)	0.040 (0.171)	0.923* (2.097)
$\Delta q_{(t-1)}$	-0.990** (-2.739)	-0.055 (-0.292)	0.196 (0.790)	-0.128 (-0.128)	0.247 (1.111)	-0.087 (-0.159)	0.571* (2.116)	-0.458 (-1.605)	0.795 (1.517)
$\Delta q_{(t-2)}$	-0.478 (-1.252)	0.096 (0.498)	1.203** (4.372)	0.923 (0.898)	-0.058 (-0.229)	1.537** (2.666)	0.336 (1.189)	-0.518*** (-1.711)	0.221 (0.453)
$\Delta q_{(t-3)}$	-0.753*** (-1.975)	-0.196 (-0.972)	-0.051 (-0.162)	-1.103 (-1.080)	0.282 (1.151)	0.068 (0.111)	0.648* (2.513)	-0.271 (-0.878)	0.749 (1.547)
$\Delta q_{(t-4)}$	-0.734*** (-1.937)	0.200 (1.048)	0.011 (0.040)	0.465 (0.456)	0.241 (0.954)	0.365 (0.553)	0.289 (1.072)	0.061 (0.207)	-0.464 (-0.921)
$\Delta q_{(t-5)}$	-0.336 (-0.908)	0.374*** (1.961)	0.972** (3.370)	-1.157 (-1.145)	0.380*** (1.670)	0.580 (0.881)	0.390 (1.612)	-0.064 (-0.211)	0.174 (0.332)
$\Delta q_{(t-6)}$	- -	-0.096 (-0.512)	0.221 (0.737)	- -	-0.071 (-0.301)	0.019 (0.032)	0.322 (1.303)	-0.074 (-0.265)	0.280 (0.522)
Const.	-0.030 (-0.445)	-0.043 (-1.217)	-0.021 (-0.432)	-0.084 (-1.511)	-0.012 (-0.840)	-0.014 (-0.518)	-0.115** (-3.311)	0.034 (1.474)	-0.006 (-0.239)
δ	-0.649** (-4.973)	-0.002 (-0.136)	-0.254* (-2.551)	-0.012* (-2.426)	-0.007** (-3.121)	-0.166 (-1.583)	-0.074** (-3.941)	0.025 (0.342)	0.053 (0.741)
Diagnostics:									
R^2	0.453	0.481	0.571	0.609	0.594	0.538	0.495	0.522	0.637

Variable	Case and coefficients[1]								
	Ina-Sing	Ina-Jap	Ina-US	Mal-Phil	Mal-Jap	Mal-US	Phil-Jap	Sing-Jap	Sing- US
Serial Correlation LM (6)	39.415	43.422	42.419	37.093	28.037	19.985	44.232	39.989	32.167
p-value	0.320	0.185	0.214	0.418	0.826	0.986	0.163	0.298	0.652
HET χ^2	54.995	65.130	68.581	75.632	66.436	78.271	74.591	70.173	81.332
p-value	0.724	0.760	0.656	0.114	0.722	0.345	0.459	0.605	0.262
[$d.f.$]	[62]	[74]	[74]	[62]	[74]	[74]	[74]	[74]	[74]

Notes: (1) Only those variables which are stated statistically significant are included, except for the speed of adjustment coefficients (δ). (2) Dependent variable is real bilateral trade balance (ΔTB_t). (3) All variables are in natural logarithm form. (4) The t-statistics are reported in the parenthesis. (5) *, ** and *** denote rejection of null hypothesis at 5%, 1% and 10%, respectively. (6) Ina=Indonesia, Mal=Malaysia, Phil=Philippines, Sing=Singapore, Jap=Japan, and US=the US. (7) [$d.f.$] denotes the degree of freedom. (8) Serial correlation test with H_0: no serial correlation. (9) HET (Heteroskedasticity Test) with White Heteroskedasticity *no cross terms* method where H_0: no heteroskedasticity.

4.3 The Impulse Response Function[1]

For Indonesian IRF, we find that Indonesia's trade balance with respect to Singapore reacts positively to real depreciation. This pattern reinforces evidence for a Marshall-Lerner condition. The import-substitution effect appears in the case. The effect seems consistently influence the trade balances, particularly through real domestic income (y), where as Indonesia income increases, imports from Singapore decline due to an increase in the production of import-substitute goods. For the case of Indonesia-Japan, we find the presence of a negative short run effect of a real depreciation which is supportive of the J-curve phenomenon. The findings also observe the presence of a Marshall-Lerner condition for the case eventually. As is observable from our previous analysis, the figure clarifies about the existence of import-substitution effect in this bilateral case. For some initial extents, the cash balance effect seems exist in this case. Our findings suggest that a J-curve effect does not exist in Indonesia-the US case, since the impulse response function reveals that rising real exchange rate (q) eventually correspond to declining their bilateral trade balance.

The impulse response functions for Malaysia reveal that increases in real exchange rate (q) eventually lead to reductions in the bilateral trade balance for all three Malaysia's bilateral cases (Malaysia-Philippines, Malaysia-Japan and Malaysia-the US). The negative long run effect of a real depreciation on bilateral trade balance in respective case is not supportive of the J-curve hypothesis. So, these results strengthen our finding. It is also observed that increases in Malaysia's real income (y) lead to increases in the bilateral trade balance on all cases. This is not a surprising result since we have observed the same finding about the presence of import-substitution effect for these 3 cases in previous analysis. While, only in Malaysia-Japan bilateral case a positive innovation to foreign real income (y^*) produces an increase in the bilateral trade balance, indicating income effect is present in the case. In the case of Malaysia-Philippines and Malaysia-the US, we can see that trade balance reacts positively to foreign real cash balance (h^*), *i.e.* rising foreign real cash balance eventually correspond to rising bilateral trade balance. It suggests that the cash balance effect is seems consistently present in the trade between Malaysia and the US.

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[1] Due to the space limitation, all IRF's figure are available on request

From the Philippine's IRF, we found the absence of J-curve phenomenon in Philippine-Japan bilateral case. Through the findings which related to variables y^* and h^*, we confirm the existence of income and cash balance effect in this case. As shown before by VECM analysis, these two effects are clearly present in the short run and long run. The effects have been observed since the VECM provide evidence for positive influence of Japan's income and cash balance on the improvement of trade balance.

Looking at the Singapore's IRF (Singapore-Japan and Singapore-US), this paper fails to find the J-curve effect. Meanwhile, for the case of Singapore-Japan, Singapore's trade balance reacts negatively to Singapore's real cash balance (h) and responds positively to a positive shock in foreign real cash balance (h^*), indicating that the cash balance effect appears in the case.

5.0 Conclusion

The objective of this paper is to analyze the dynamics of bilateral trade balance in ASEAN region. In order to realize the objective, we investigate the role of exchange rate, income and cash balance on the change of trade balance. Our analysis includes the bilateral trade cases among selected ASEAN countries (Indonesia, Malaysia, Singapore, Thailand, and Philippines) and between those ASEAN countries and their major trading partners, *i.e.* the US and Japan. In the investigation of all considered variables effects on the bilateral trade balance, a vector error correction model (VECM) is specified. Besides that, the impulse response function is employed to complement the dynamic perspective of VECM.

Based on the results obtained, this paper suggests some interesting points. In the long run, income effect is found to be dominant in determining the change in trade balance. The cash balance and exchange rate affect the bilateral trade, although their roles are relatively lower than income effect. This condition may be attributed to a small economy effect, where usually a small economy inclines to use foreign currency in trading, avoiding the uncertainty of their domestic currency fluctuation. As a group of small open economies, mostly foreign trades (exports and imports) of ASEAN countries are invoiced in foreign currency. Consequently, the effect of real depreciation is hedged and the trade balance remains unaffected.

For the short run, the cash balance effect relatively plays a major role in influencing the improvement of trade balance. The exchange rate effect is observed, where J-curve phenomenon is verified in minor cases.

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Sustainability Reporting: Japanese vs. European Automotive Manufacturers

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Abstract

Sustainable development could be defined as inculcating the process of maintaining human needs while preserving the environment for future generations. Most of the organizations realized that the importance of sustainability in order to gain competitive advantage. Corporate Socially Responsibility (CSR) covers issues from business ethics, corporate governance and socially responsible investing (SRI) to environmental sustainability and community investment. There have been comparison studies on sustainability reporting in different countries and industries. Yet, there is less studies found to evaluate sustainability reporting comparison particular in automotive industries. Thus, this study tries to fill this research gap by comparing Japanese and European car manufacturers' sustainability reporting. Automotive industry is considered as one of the industries that most challenged by the society's expectations about responsible behaviors. It is said to cause the major environmental and social impacts applying from production until the end life and disposal of the vehicle. In this study, 3 Japanese automotive companies (Honda, Toyota and Mazda) as well as 3 European automotive manufacturers (Volkswagen, Peugeot-Citroen and Volvo) have been chosen as sample for research. Their sustainability/CSR reports have been reviewed and compared on their latest development on sustainability activities and their responsibilities to the environment as well as the society.

Keywords: CSR reporting, automotive, Japanese, European.

1.0 Introduction

The World Business Council for Sustainable Development states that 'CSR is the continuing commitment by business to behave ethically and contribute to economic development while improving the quality of life of the workforce and their families as well as of the local community and society at large.' Corporate Social Responsibility (CSR) covers issues from business ethics, corporate governance and socially responsible investing (SRI) to environmental sustainability and community investment. Business enterprises integrate social and environmental concerns in their operations and their interaction with their stakeholders above what is ordinarily required by regulatory bodies and legal requirements, not least because it is voluntarily practiced but because they suppose it to be in their long-term interest to do so. The impact of CSR reporting will then determine their reaction to the business in terms of "allowing" the business to operate in the manner that they have been and hence the concept of "license to operate".

Before 1970, CSR is considered as after-profit obligation. During 1970 to 1990, organizations used CSR as public relation tool in improving company's image and performance. Furthermore, during 1990 to 2001 period, CSR is increasingly being embedded into the corporate mission, strategy and actions. CSR is said to be thought as part of firm strategy (Galbreath, 2009). CSR should be integrated in companies' operations and proactive actions must be taken to avoid waste of resources. CSR can be a strategic tool to reduce reputational risk during hard period of a company. Studies have been made to observe the returns from

CSR through tough time and results showed that CSR worked to save firm's reputation (Minor and Morgan, 2011).

Online reporting of environmental data is obvious in terms of the cost savings and the ease of access. There are studies that focused on CSR disclosure in annual reports (Bowman and Haire, 1975, Abbott and Monsen, 1979, Bouten et al., 2011, Waller and Lanis, 2009). Nowadays, companies are getting more used in publishing sustainability reports allowing more space to fully and thoroughly disclose CSR matters. This scenario illustrates the growing interest for the reporting on social responsibility performance illustrated by the worldwide rising use of guidelines such as the Global Reporting Initiative (Brown et al., 2009). GRI Sustainability Reporting Guidelines are the dominant guidelines for reporting and there is an increasing trend of adoption of GRI guidelines in the business sector (Naeem and Welford, 2009).

There are also increasing literatures that studied on sustainability reporting in companies or particular industries. Study found that Internet environmental reporting (IER) is increasingly being used in China to disclose corporate social and environmental activity and policy (Zhang, et al., 2007). Recently, multinational automotive corporations' sustainability reports were studied using critical discourse analysis from the perspectives of sociological institutional theory and strategic legitimacy theory (Shinkle and Spencer, 2012). Another study on India's largest automotive companies, Tata Motors found a link between corporate social responsibility (CSR) and corporate reputation (Mitra, 2011). Yet, there is less studies found to evaluate sustainability reporting comparison particular in automotive industries. Thus, this study tries to fill this research gap by comparing Japanese and European car manufacturers' sustainability reporting.

2.0 Literature Review

Website CSR reporting within the Asia-Pacific region including Australia, Singapore, Malaysia and Hong Kong were studied (Williams and Ho Wern Pei, 1999). CSR website reporting of seven countries in Asia namely India, Indonesia, Malaysia, Philippines, South Korea, Singapore, and Thailand were also studied (Chapple and Moon, 2005). A review of written policies of both listed local firms and multinational corporations were used to test the sensitivity to CSR amongst businesses operating in Bangladesh and Pakistan (Naeem and Welford, 2009).

Besides studies focused on countries sustainability reporting, there are also research on companies and industries basis. Corporate social disclosures of 33 publicly-listed Singapore-based companies in the banking, food and beverages, and hotel industries from 1986 to 1995 were studied. The amount of disclosures were analyzed using sentence-by-sentence content analysis of the annual reports (Zhang, et al., 2007). CSR reporting practice among the largest hotel companies in the world were evaluated based on the content analysis of websites and reports published online by the top 150 hotel companies in the world in summer 2010 (de Grosbois, 2012).

CSR practices by the hotel industry in Swaziland were examined and it is found that community involvement is higher than the other categories of CSR and there are no mandatory regulations in Swaziland requiring companies to practice social responsibility. Most data and analysis are as of December 2010 (Kabir, 2011). Trends in social and environmental disclosure reporting in mining industry (Jenkins and Yakovleva, 2006) and

advertising agencies (Waller and Lanis, 2009) were also evaluated. Yet, there is less studies found to evaluate sustainability reporting comparison particular in automotive industries. Thus, this study tries to fill this research gap by comparing Japanese and European car manufacturers' sustainability reporting.

3.0 Conceptual Framework

CSR is redefined as an element of wider framework of Corporate Social Performance (CSP) and to be applicable on institutional and managerial level of a company (Wood, 1991). At the institutional level, the company is considered as an element of society. The company's part is to provide society with goods and services within the frame of power and legitimacy the society granted to it. At the individual level, managers are considered as "moral actors" and are socially responsible to bring new initiative for the company. This principle is called as managerial discretion. At organizational level, businesses are responsible for applying the principle of public responsibility. Companies must responsible in solving problems directly caused by their activities in the area of primary involvement while taking care of problems that are related to their activity or to their interests in the area of secondary involvement. The CSR Principles by Wood (1991) are summarized in Figure 1 and is applied in this study.

Figure 1: Wood's CSR Conceptual Framework
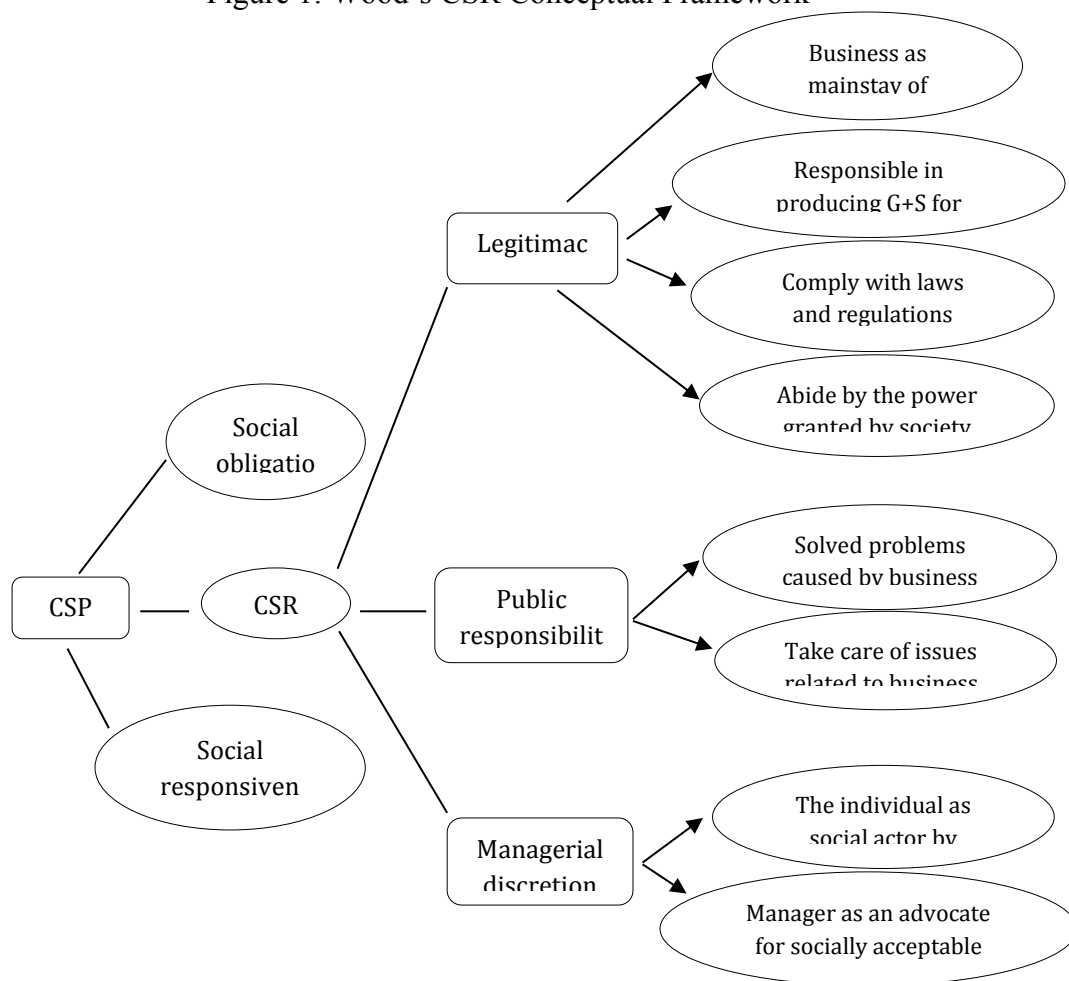
Source: Wood (1991)

4.0 Research Methodology

Bouten et al.'s coding system is one of the most comprehensive and practical used to apply a content analysis of CSR in corporate communication. The coding system is illustrated in Figure 3. Bouten et al. (2011) remains the six topics used in the GRI guidelines including Economic, Environment, Labor practices and decent work, Human rights, Product responsibility and Society.

Figure 3: Coding system created and used by Bouten et al.
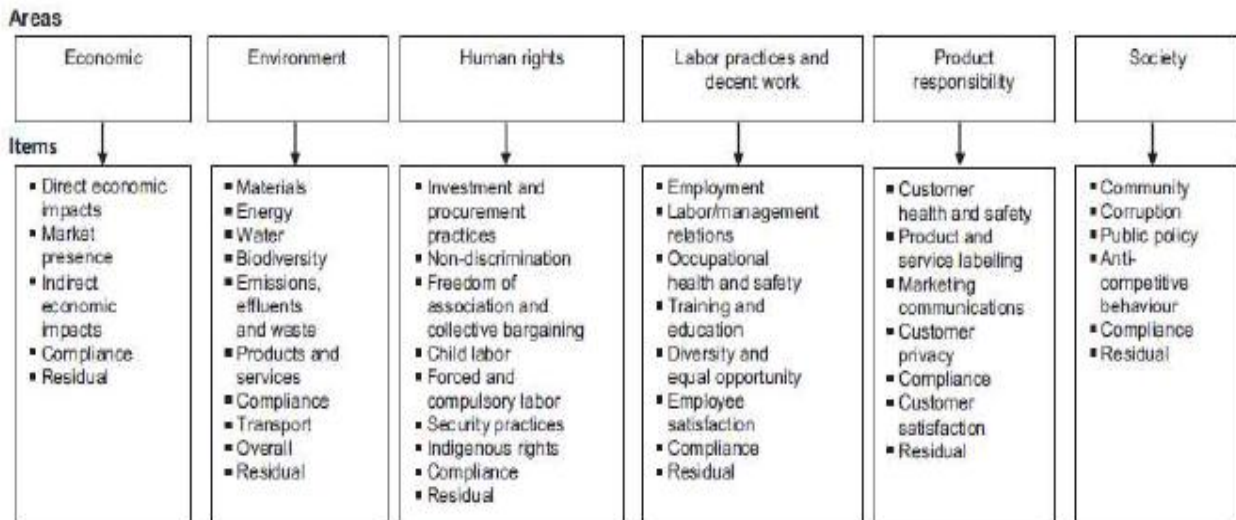
Source: (Bouten et al., 2011)

Automotive industry is considered as one of the industries the most challenged by the society's expectations about responsible behaviors. With 58,264,852 passenger cars produced worldwide in 2010 to 59,929,016 in year 2011 (OICA, 2012). This industry is said to cause the major environmental and social impacts applying from production until the end life and disposal of the vehicle (Nunes and Bennett, 2010). Therefore, automotive companies are responsible in reducing the consequences of their activities (Whitmarsh and Kohler, 2010). Nowadays, most of the automotive manufacturers are using sustainability reports to replace the annual reports in disclosing their responsible behavior to sustain the image of their companies. Thus, 3 Japanese automotive companies including Honda, Toyota and Mazda as well as 3 European car manufacturer companies consisting Volkswagen, Peugeot-Citroen and Volvo have been chosen to be the sample for this study.

Questionnaire survey and content analysis methods were frequently used in prior studies, yet the latter is the most commonly used research method to assess organization's social and environmental disclosures (Milne and Adler, 1999). Sources for CSR disclosures include corporate websites, annual reports, and CSR reports. However, companies websites were still among the best and most reliable sources of information about companies' CSR activities (Chapple and Moon, 2005).

Thus, in this study, sustainability reports year 2011 available on companies' websites of selected companies (*see reference*) will be reviewed and compared on the latest development of companies' sustainability activities. In order to achieve this, six main CSR categories were adopted (Economic, Environment, Human Rights, Labor Practices and Decent Work, Product

Responsibility and Society) and classified disclosed information in relation with these categories to compare both Japanese and European automotive companies in their sustainability reports. The amount of disclosures were analyzed using sentence-by-sentence content analysis of the annual reports as used in research by (Zhang et al., 2007). However, to be more precise, contents that are not classified into the 6 categories mentioned are not included in this analysis. For instance, front page of report (titles), table of contents, statements by CEO or person in charge, sub-headings in between reports, company history and information as well as editorial information. Besides that, sentences or information that is repeated are not included in the content analysis either. Pages or information that could be classified in the categories are counted and is analyzed in percentage basis as well. Thus, more pages/ higher percentage indicate its higher disclosure on that particular category.

5.0 Analysis and Results

Table 1: Analysis of Annual Report on Selected Japanese Automotive Companies

| Categories | Japanese Automotive Manufacturers | | | | | |
| | Toyota | | Honda | | Mazda | |
	Pages	%	Pages	%	Pages	%
TOTAL Pages Covering All Categories	**16**	**100.00**	**50**	**100.00**	**50**	**100.00**
Economic	2	12.50	5	10.00	6	12.00
Environment	4	25.00	12	24.00	22	44.00
Human Rights	1	6.25	5	10.00	2	4.00
Labor Practices and Decent Work	2	12.50	9	18.00	7	14.00
Product responsibility	5	31.25	12	24.00	8	16.00
Society	2	12.50	7	14.00	5	10.00

Source: Author's calculation from selected companies' annual report

5.1 Toyota

Product responsibilities and environmental care activities ranked highest as disclosed in Toyota's sustainability report. Toyota was the world's first use of Bio PET in car interiors like luggage compartment liner found in Lexus CT200h. Bio PET is a plastic material formulated from sugarcane-derived bio-substance, replacing conventional PET's mono-ethylene glycol (constituting 30% of weight). Toyota is also planning to apply smart grid concept into vehicles. Smart grid is a type of electrical grid to intelligently use electric powers collaborating renewable energy like solar and wind power with houses, plants, etc. Toyota's recycling/recovery rate also rose from 76% in year 2007 to 85% in 2010.

Toyota also has equal level of information in the areas of economic, labor practices and society with 12.50% in each category revealed in the report. It includes customer assistance center and Lexus information desk, education programs like Toyota Institute, Pro-WIN Program and RandD Learning Center. Toyota Family Literacy Program was established by Toyota and the National center for Family Literacy (NCFL) in 1991 to improve education of preschool children and "Kurapika Box", reflective materials introduced in May 2010 to help elderly pedestrian safety during nighttime (Toyota, 2011).

5.2 Honda

Activities involved in the area of environment, product responsibility and labor practices ranked the highest as revealed in the sustainability report of Honda Corp. Honda is having Next-generation Personal Mobility Proving Tests Plan with Kumamoto Prefecture and Saitama Prefecture in Japan in order to launch future automotives with electromotive technologies in reducing CO2 emissions. In the area of product responsibility, Honda's RandD departments create drawings that serve as the basis of quality assurance efforts in order to limit process variability and prevent human error during the manufacturing process. It also uses second-generation line end testers (LETs) to inspect electronic control systems, quality audits on suppliers' manufacturing facilities and runs aggressive durability testing to assure the long-term reliability of products. In addition, Global Honda Quality Standard (G-HQS) was introduced in April 2005 to provide high quality end products as well as Customer Relations Center to serve customers in a better way. As in the area of labor practices, Honda is known with its effort in rehiring the retirees increased from 185 employees in 2009 to 415 employees in 2011. It also implemented Total Health Promotion Plan (THP). Worker movements are analyzed and improvements made in order to ensure optimal work position and scope to prevent muscoskeletal disorders. Honda shows its care to the society by donating fixed percentage of customers' Honda C-card usage to the Japanese Red Cross Society and the Japan Committee for UNICEF and these donations totaled ¥736 million in year 2011. Honda also implemented Nature Wagon, a traveling environmental learning program which conducted by retired Honda associates teaching natural mechanisms and the importance of conserving the environment (Honda, 2011).

5.3 Mazda

Environment care, product responsibilities, labor practices and decent work are the top three areas concerned by Mazda Corp. as shown in its report. Mazda is putting effort to preserve the natural environment in Hiroshima Prefecture under the Mazda-no-Mori (Mazda Forest) program. Mazda also introduced Idling Stop System "i-stop" that automatically shuts the engine off temporarily when the vehicle is stopped which has been installed in the Mazda Axela/Mazda3 in 2009 and is said to improve fuel economy by 7% to 10%. Mazda RX-8 Hydrogen RE and the Mazda Premacy Hydrogen RE Hybrid runs on hydrogen fuel which produced zero CO2 emissions. Mazda has also shifted to the "milk-run" system (MRS), in which Mazda trucks stop at multiple suppliers to collect parts to reduce workload in logistical operations and contributes to reduced environmental impact.

While on the side of labor practices, mutual learning (Tomoiku) and mutual instruction is encouraged between superior and junior staffs. Mazda utilizes the Tobiuo (flying fish) Human Resources System to provide the appropriate jobs and environments where each employee can demonstrate their best performance. Mazda also cares for the society by contributing in Mazda Wildlife Fund (MWF), teaching children about the environment through automobiles and acceptance of trainees at Mazda Technical College. The Mazda Foundation USA collaborated with the Student Conservation Association (SCA), a US student environmental conservation organization in implementing Save Our American Resources (SOAR) program to enhance environmental conservation and youth education. Even Human Rights ranked the lowest area of involvement in the report, Mazda still contributed to preserve the concept of non-discrimination as Mazda became the first Japanese automaker to launch a vehicle (the Carol i) that featured a ramp for wheelchair access in 1995. In March 2008, Mazda as the first corporation in Japan to be awarded the Human Rights Merit Award by Japan's Ministry of

Justice and the National Federation of Consultative Assemblies of Civil Liberties Commissioners (Mazda, 2011).

Table 2: Analysis of Annual Report on Selected European Automotive Companies

| Categories | European Automotive Manufacturers | | | | | |
| | Volkswagen | | Peugeot-Citroen | | Volvo | |
	Pages	%	Pages	%	Pages	%
TOTAL Pages Covering All Categories	**55**	**100.00**	**30**	**100.00**	**45**	**100.00**
Economic	6	10.90	11	36.67	11	24.44
Environment	25	45.45	8	26.67	15	33.33
Human Rights	2	3.63	2	6.67	4	8.89
Labor Practices and Decent Work	11	20.00	3	10.00	7	15.56
Product responsibility	3	5.45	4	13.33	2	4.44
Society	8	14.54	2	6.67	6	13.33

Source: Author's calculation from selected companies' annual report

5.4 Volkswagen

As shown in Table 2, environmental-care activities were most discussed in Volkswagen group consisting 45.45% of the sustainability report. Part of the contributions include the launch of cylinder deactivation for greater fuel efficiency where 2 of the 4 cylinders are temporarily shut down under low and medium load conditions, reducing NEDC fuel consumption by 0.4l/100 km. Volkswagen also invested around €120 million in 2011 in the expansion of hydroelectric power generation In Brazil. The Volkswagen plant in Chattanooga in the U.S. state of Tennessee set new standards in water management. Rainwater is collected in three tanks and used for example to flush toilets (Volkswagen, 2011).

Volkswagen Group also put a lot of effort in labor practices by training 4,667 apprentices and students in 33 professions and 20 courses at Wolfsburg, Hanover, Braunschweig, Kassel, Emden and Salzgitter in 2011. In 2008, Volkswagen launched the StartUp Direct program to give university students a head start in the company. Besides that, as of end 2011, the company's pension fund had total assets of €2,589 million for employees' retirement, disability pensions and death benefits. Since 2004, the company organized "Woman DrivING Award" in Germany every 2 years, aimed at encouraging young female graduates into employment in technical areas where they can contribute to designing and producing the cars. Women accounted for 26.4% of all apprentices in 2011, including 20.4 percent of apprentices in industrial or technical areas (Volkswagen, 2011).

The group is also giving effort in taking care of the society as well as sustaining human rights. Volkswagen regularly engages in dialogue with the Extractive Industries Transparencies Initiative (EITI) to identify early on any risks to secure long-term supplies arising from corruption. Other effort includes the "Neue Schule Wolfsburg" project in partnership with the town and local businesses to set up a new primary and secondary school, which is open to all children from the town of Wolfsburg and the surrounding region. The group also takes care of senior staffs where about 2 years before older employees due to retire, they will be arranged to take part in events facilitated by HR staff like volunteering to work in schools to help children with reading or as learning support assistants. In Wolfsburg alone, employees from the group also donated over €400,000 in 2011 to support social welfare organizations.

Volkswagen of South Africa donates more than 3 million rand (€273,000) to South Africa and works closely with the authorities, NGOs and charities to help AIDS orphans in the South Africa and Brazil (Volkswagen, 2011).

5.5 Peugeot-Citroen

Surprisingly, Peugeot-Citroen discloses their economic activities more than environment and product responsibility with 36.67%, 26.67% and 13.33% respectively. In the report, it is stated that the group's sales and marketing operations were separated to achieve higher efficiency. Another strategy implemented by company is the active cash management in 2012 which will be supported by an asset disposal plan that should generate around €1.5 billion including sale of property assets and the sale of a stake in wholly-owned subsidiary Gefco to outside investors, with PSA Peugeot Citroen remaining the company's strategic shareholder. Business expansion will also be increased in China with the construction of a third facility in Wuhan as part of the cooperative venture with Dong Feng (Peugeot, 2011).

In the area of environment, the group launched HYbrid4 technology which combines a diesel HDi power train and an electric motor available in the Peugeot 3008, 508 and 508 RXH and the Citroen DS5. This technology records low carbon emissions which is 30% lower than a conventional diesel. PSA Peugeot Citroen was also the first carmaker to introduce electric vehicles, Peugeot iOn and the Citroen C-ZERO in Europe starting in late 2010. The average CO_2 emissions of Group vehicles declined to 127.9 g/km in 2011 from 132 g/km in 2010. It is also developing new generation engines like the three-cylinder EB family of petrol engines (1.0 l and 1.2 l) that offer particularly low fuel consumption and emissions. Peugeot 208 which weighs 110 kg less on average than the Peugeot 207 built with green materials accounting for 25% of its 170kg of polymers (excluding rubber) compared with 7% for the Peugeot 207 (Peugeot, 2011).

While in the area of product responsibility, the group also increases customer care service by implementing Peugeot Connect Fleet service that provides remote access to odometer readings and maintenance data for more effective management. eTouch also offers a web-based virtual maintenance log, eco-driving lessons and allow motorists to track fuel consumption and schedule vehicle servicing and maintenance (Peugeot, 2011).

In the area of labor practices, the company implements internal mobility with 5,000 employees in France were reassigned, 1,000 moved to a new site and 1,300 changed departments in 2011. During the same year, the lost time incident frequency rate reduced by 38% from 2010. The group also recruits more than 150 women managers in its membership and was awarded certification under the Gender Equality European Standard in 2011 (Peugeot, 2011).

5.6 Volvo

Environment, economic and labor practices are the top 3 areas being revealed in the Volvo Corp CSR report with 33.33%, 24.44% and 15.56% respectively. In 2010, the Volvo Group became the world's first automotive manufacturer to join the World Wildlife Fund for Nature's (WWF) Climate Savers Program. Volvo Trucks and Mack Trucks were the first manufacturers to have their engines certified by the U.S. Environmental Protection Agency and the California Air Resources Board as meeting EPA 2010 emissions regulation. New low-floor bus, Volvo 7900 launched in 2011 is lighter by 550 kg with the body structure and roof

made of aluminum. The Volvo Group is also known with its I-SAM (Integrated Starter Alternator Motor) concept consists of an electric motor and a diesel engine working in parallel, applied in Volvo Hybrid city bus and the Volvo Hybrid double-decker started in 2010 with fuel savings of up to 37%. The diesel engine does not start until the bus reaches 15–20 km/hour, which ensures a quiet and exhaust-free environment at bus stops. In 2011, Volvo Trucks launched the new Volvo FM Methane Diesel truck which is powered by up to 75% gas (Volvo, 2011).

The Volvo Group started to impose on suppliers' environmental performance in 1996 while CSR requirements were introduced in 2006, and later updated in 2009. It is described in the report about the joint venture of Volvo Buses with the Chinese company SAIC Motors for the development of driveline systems for electric and hybrid drive. Other economic performance stated in the report includes net sales, operating income, market review, market development, R and D costs, etc (Volvo, 2011).

The Volvo group puts a lot of effort in labor practices area. In 2011, the Volvo Group continued to conduct Diversity and Inclusive Leadership (DIL) training courses for managers. The Walk the Talk network consists of male managers to organize gender awareness training for male executives. In addition, Females at their Best, a new women's professional network was launched in Asia in 2011. The group treats all as equal by implementing Volvo Eagle to support its members and act as a stakeholder group helping to create a lesbian, gay, bisexual and transsexual inclusive culture. The Volvo European Workers Council was also formed in Europe in 1996 as a forum for employer-employee dialogue. In 2011, the Project Manager (PM) Pipeline was introduced to ensure that all future Project Managers are equipped with the necessary skills and to secure project management skills (Volvo, 2011).

The Volvo Corp. also has an Anti-Corruption Compliance Policy adopted by the Audit Committee. In 2011, the Volvo Group launched the Competition Law Compliance Program to provide an overall understanding of what is accepted and what is not as well as to promote healthy competition in the markets. The company also contributes to the society in assisting the Japanese Government in the form of equipment, mainly trucks, and funds of approximately JPY 100 million during Japanese tsunami disaster. The Industrial High School – Volvo Aero Corporation collaborated with the Local Education Authority of Trollhattan to develop Industrial High School – a three-year upper secondary school education. Volvo Aero sponsors one-third of the theoretical and practical tuition where students are educated to become operators with special skills for aviation and space vehicle production work (Volvo, 2011).

6.0 Conclusion

In sum, 3 Japanese automotive manufacturers have involved more in environment and product responsibility areas of sustainability activities while only Honda and Mazda ranked higher in labor practices compared to Toyota. Companies do not reveal much in the area of economic performance maybe because this area of information is to be included in the annual financial report rather than sustainability report. We also can conclude that Honda ranked higher in revealing activities preserving human rights and caring for the society as compared to Toyota and Mazda Corp. On the other hand, the European automotive companies like Peugeot-Citroen and Volvo have more disclosures involved in economic and environmental care areas while Volkswagen reveals more on environment more than economic. This is probably based on different companies' policies and willingness to reveal their economic activities like

markets trends, sales and revenue, market strategies, etc for public perusal. Volkswagen also discloses much on its labor practices and society activities report compared to Peugeot-Citroen and Volvo Corp. Japanese companies also have higher percentage in product responsibility areas as compared to European automotive companies most probably because Japanese companies revealed more on customer care and after sales services in their reports. Overall, both selected Japanese and European automotive companies in this study revealed lesser on human rights area of activities not because they are not concerning but usually human rights are stated as companies' policies in lists and few paragraphs which requires only few pages in the report (lower in percentage). We also can conclude that selected companies both Japanese and European are doing quite well in upgrading their business strategies and at the same time preserving their responsibilities to the society as well as enhancing the quality of the environment.

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Hydroelectricity Consumption-Economic Growth Relationship and Carbon Dioxide Emission in Malaysia

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Abstract

This study investigates the causal relationship between hydroelectricity consumption, economic growth and CO_2 emission in Malaysia by applying the time-series techniques. The major findings for this paper are as follows: (1) Long run relationships are detected between hydroelectricity consumption, economic growth and CO_2 emissions. (2) We found a unidirectional causality relationship from hydroelectricity consumption to CO_2 emissions without any feedback in the short run. In this manner, Malaysia is advice to carry on more green energy programmes, especially the hydroelectric energy such as Bakun Dam. Building hydroelectric power station and hydroelectric dam can not only can solve the energy security problem, but also reduce greenhouse gas emissions. Moreover, since these hydroelectric development plans managed to enhance the economic growth in the long run, more research and development should be conducted.

Keywords: Hydroelectricity consumption, economic growth, CO_2 emission, causality

1.0 Introduction

Energy is a crucial factor of production as well as a key player in the production process (Stern, 2000). This is because energy can directly be used to manufacture a final product. In addition, Pokrovski (2003) also proposed that energy can be used as an external source to substitute labour input in technological processes. He also stated that energy is used as a value creating production factor. Energy is the main factor of economic growth because many of the production and consumption activities are using energy as a basic input while, the growth of industry area will lead to an increase of energy consumption (Noor and Siddiqi, 2010).

Hydroelectric energy is one of the renewable energy that has more advantages compared to fossil fuels (non-renewable energy). The advantages are cheap energy sources, high level of reliability and low maintenance and operating cost. Moreover, hydroelectric power plans are normally allocated near reservoirs to control the flow of water supply to cities. The most important is that hydroelectric power plans do not produce emissions of air pollutants and greenhouse gases to the environment [US Energy Information Administration (EIA), 2012; ETP, 2011].

Malaysia, with a GDP of RM 765,965 million (Department of Statistics Malaysia, 2011) and real GDP growth of 7.2% in 2010 (Bank Negara Malaysia, 2011), is one of the developing countries in ASEAN. Besides that, demand for energy in Malaysia has increased rapidly in past decades (Islam et al., 2009; Bari et al., 2011). Energy sources in Malaysia originated from oil, coal, natural gas, and renewable energy. Overall, Malaysian energy consumption of fossil fuels (oil, natural gas and coal) is over about 96.6% of the total primary energy consumption in 2010 (BP, 2011). The fossil fuels that are being used to generate electricity

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are the main cause of the increasing carbon dioxide (CO_2) emissions (Bari et al., 2012). In other words, the more we use electricity, the more fossil fuels usage that contributes to emission of CO_2. According to BP (2011), Malaysia CO_2 emission raised from 162.1 million tonnes in 2009 to 166.5 million tonnes in 2010. It is indisputable that CO_2 emission has risen tremendously comparatively 10 years ago, in which the difference is about 34% of increment from 2000 to 2010.

In fact, Malaysia is facing crucial challenge in energy security and reliability of energy supply. According to Islam et al. (2009), diverse energy resources are pertinent to Malaysia to ensure that we are not only relying on a single source of energy (fossil fuels). Currently, there is a variety of the energy resources, such as solar, hydroelectric, biomass, nuclear energy and so forth. However, we need to find a stable, safe and clean energy supply as main priorities of energy policy (Toth and Rogner, 2006). Besides that, Malaysia and other countries are facing the problems in producing more secure and cheap energy and how to reduce greenhouse gas emissions at the same time.

Due to the increasing energy demand accompanying economic growth, hydroelectric energy will become one of the main resources in electricity generation, with regard to environmental conversation and the energy supply security. According to Abidin (2005), hydroelectric energy is very useful in Malaysia. He also pointed out that hydroelectric energy has many benefits, not only for Malaysia economy, but also to the environment, as explained earlier. Furthermore, hydroelectric dam is the most suited due to high energy demands, limited alternative resources, capital intensive, top-notch energy supply security, and not to mention, hydroelectric is important in reducing air pollution and greenhouse gas emissions.

Historically, Malaysia involves in hydroelectric energy since 1930, where Chenderoh Dam in Perak, which is the oldest hydroelectric dam and power station in Malaysia. After World War II, the Sultan Abu Bakar Dam (Cameron Highlands) in Pahang started its operation at 1963. Between late 60's and early 70's, the price of fossil fuels (oil) were more attractive so Malaysia had a break in the construction of the hydroelectric dams. When the oil crisis caused the increasing of oil prices in 1973, Malaysia government once again paid attention to the development of hydroelectric dam. Plans for the hydroelectric dam constructions were developed one after another at that time. Government had built numerous of hydroelectric dams at 70's and 80's. Those built are Temenggor, Perak, started operation in 1978; Bersia, Perak, started operation in 1982; Kenering, Perak, started operation in 1983; Tenom Pangi, Sabah, started operation in 1984; Batang Ai, Sarawak, started operation in 1985; and Kenyir, Terengganu, started operation in 1988 (Abidin, 2005). Thereafter, the Pergau Dam in Kelantan started operation in 2003. Besides that, Bakun Dam started operation earlier and produced the first 300 megawatts (MW) in 2010, out of its total design capacity, 2400 MW of electricity (The Star, 2010). Currently, few hydroelectric dam projects were still under constructions, such as Murum Dam (Islam et al., 2009; Oh et al., 2010).

According to BP (2011), hydroelectricity consumption in Malaysia contributed about 3.4% of total primary energy consumption in year 2010. In addition to that, hydroelectric energy share of worldwide primary energy consumption contributed about 6.5% in 2010. The figure of the hydroelectricity consumption might seem like a small value if compared to fossil fuels, but nowadays many countries are trying start to using more hydroelectric energy to produce the electricity than using fossil fuels, which hydroelectric energy can reduce the CO_2 emissions or greenhouse gases. Therefore, hydroelectric energy can become the most attractive as one of the sources of electricity generation, with regards to the security of energy supply.

The purpose of this paper is to investigate the causality interplay between hydroelectricity consumption, economic growth and CO_2 emission Malaysia from 1965 to 2010, and to derive policy implications from the results. The remainder of the paper is organized as follows. Section 2 illustrates the literature review. Section 3 describes the data and the empirical model. Section 4 shows the empirical results. Section 5 concludes the paper.

2.0 Literature Review

Studies on the relationship between energy consumption and economic growth can be traced back to Kraft and Kraft (1978) who examine causal relationship between energy consumption and economic growth in the United States. They found that a unidirectional long run relationship from economic growth to energy consumption exist in the United States. After the idea of the relationship between energy consumption and economic growth from Kraft and Kraft (1978), there are many researchers argue about the causal relationship between energy consumption and economic growth in different countries, methodologies and so forth. But, the results of the previous studies are mixed in which some studies found bidirectional causality relationship, no causality relationship, and unidirectional causality that run from energy consumption to economic growth or the other way around.

In a recent study in Malaysia, Ang (2008) examined the relationship between output, pollutant emissions and energy consumption and found that there was a short and long run unidirectional causality running from economic growth to energy consumption in this study. However, the causality from pollutant emissions to economic growth and the relationship between economic growth and energy consumption only had feedback effects in long run. Similarly, Aziz (2011) carried out a study to test the causal relationship between energy consumption, energy prices and economic growth from year 1970 until 2009 in Malaysia. Aziz (2011) found that that there was short and long run relationship running from economic growth to energy consumption. In additional, Islam, et al. (2011) examined the relationship among energy consumption, population, aggregate production and financial development in Malaysia based on data from year 1971 to 2008. They also found that energy consumption has affected by economic growth in short and long run.

On the other hand, Nanthakumar and Subramaniam (2010) conducted a study to identify sustainability between energy consumption and economic performances in Malaysia. They found that there has bidirectional relationship between energy consumption and Malaysian's economic performance in Malaysia. Furthermore, Ismail and Yunus (2012) conducted a study to examine relationship between energy, emission and economic growth in Malaysia from year 1971 to 2007 and found that there was unidirectional relationship from energy to economic growth. The result is different with the others (previous paragraph) even all the previous study which mention in previous paragraph are examine in Malaysia.

3.0 Data and Empirical Model

3.1 Data Sources

Annually data of hydroelectricity consumption (HC) and CO_2 emission (CO_2) over the period 1965-2010 were obtained from British Petroleum (BP); and the gross domestic product (GDP) was taken from Department of Statistics Malaysia. Furthermore, all of the series used are transformed into logarithm form prior to estimation.

3.2 Empirical Model

The study will analyze the relationship between hydroelectricity consumption, economic growth and CO_2 emissions in Malaysia. The function is as follow:

$$Y = f(HC, CO_2) \tag{1}$$

where, *Y* is Gross Domestic Product (GDP), *HC* is hydroelectricity consumption and CO_2 is carbon dioxide (CO_2) emissions (Dipendra, 2009; Noor and Siddiqi, 2010). The production function is expressed in linear logarithmic regression form to investigate short run and long run relationship between GDP, hydroelectricity consumption and CO_2 emissions:

$$LY_t = \alpha + \beta_1 LHC_t + \beta_2 LCO_{2t} + \varepsilon_t \tag{2}$$

where LY_t is natural logarithm of GDP, LHC_t is natural logarithm of hydroelectricity consumption, LCO_{2t} is natural logarithm of carbon dioxide CO_2 emissions and ε_t is error term.

4.0 Empirical Results

4.1 Unit Root and Stationary Test

This paper conducts ADF test (see Dickey and Fuller, 1979) in order to discriminating the conclusion of stationarity and nonstationarity of these series. The results of ADF test suggest the existence of unit root or nonstationarity in level or *I(1)* for these there variables. *LGDP*, *LHC* and *LCO₂* are not stationary at level form of intercept and form of trend and intercept, but all variables are shown to be stationary at first difference form of intercept and form of trend and intercept. On the other word, the findings that all the variables have the same order of integration allowed to proceed with the Johansen Juselius cointegration analysis. Results for unit root test were portrays in Table 1.

Table 1: Augmented Dickey-Fuller (ADF) Unit Root Test Results

Variables	Level		1st Difference	
	Intercept	Trend and Intercept	Intercept	Trend and Intercept
	ADF			
LGDP	-0.7702[0]	-1.4782[0]	-5.9715[0]**	-5.9817[0]**
LKWH	-1.3643[0]	-2.3112[0]	-5.9867[0]**	-5.9390[0]**
LCO2	-2.9147[0]	0.6866[0]	-4.9752[0]**	-5.5298[0]**

Notes: Asterisks (**) indicates statistically significant at 5 percent level. Figures in parentheses are the lag lengths. The asymptotic and finite sample critical value for ADF is obtained from MacKinnon (1996). The ADF test examines the null hypothesis of a unit root against the stationary alternative. Δ denotes first difference operator.

4.2 Cointegration Test

The null hypothesis of no cointegrating vector (r = 0) was soundly rejected at 5 percent significance level in Malaysia. This implies that there is one cointegrating over the long run.

Table 2: Johansen Juselius Cointegration Tests Results

Null	Alternative	λ_{max}		Trace	
		Unadjusted	95% C.V	Unadjusted	95% C.V
			k = 4 r = 1		
r = 0	r = 1	21.5468**	21.1316	31.1040**	29.7971
r ≤ 1	r = 2	9.2254	14.2646	9.5572	15.4947
r ≤ 2	r = 3	0.3319	3.8415	0.3319	3.8415

Notes: k is the lag length and r is the cointegrating vector and r is number of cointegrating vectors that are significant under both tests. Asterisks (**) denotes significant at 5 percent significance level.

4.3 Vector Error Correction Model (VECM) Test

In the presence of cointegration, there always exists a corresponding error correction representation. In other words, if a vector autoregressive (VAR) system is cointegrated, the Granger causality test may be conducted in the environment of vector error correction model (VECM). Otherwise, the analyses may be conducted as a standard first difference vector autoregressive (VAR) model. The relevant error correction terms (ECTs) must be included in the VAR to avoid misspecification and omission of the important constraints. In this study, the there dimensional VECM systems are as follows:

$$\Delta LGDP_t = \alpha + \sum_{i=1}^{p} \beta_i \, \Delta LGDP_{t-i} + \sum_{i=1}^{p} \emptyset_i \, \Delta LHC_{t-i} + \sum_{i=1}^{p} \eta_i \, \Delta LCO^2_{t-i} + \mu ECT_{t-i} + \theta_t \qquad (3)$$

$$\Delta LHC_t = \varphi + \sum_{i=1}^{p} \delta_i \, \Delta LHC_{t-i} + \sum_{i=1}^{p} \Upsilon_i \, \Delta LGDP_{t-i} + + \sum_{i=1}^{p} \omega_i \, \Delta LCO2_{t-i} \lambda ECT_{t-i} + \sigma_t \qquad (4)$$

$$\Delta LCO_{2t} = \gamma + \sum_{i=1}^{p} \zeta_i \, \Delta LCO2_{t-i} + \sum_{i=1}^{p} \pi_i \, \Delta LGDP_{t-i} + \sum_{i=1}^{p} \nu_i \, \Delta LHC_{t-i} + \psi ECT_{t-i} + \kappa_t \qquad (5)$$

where $\Delta LGDP_t$ is gross domestic product, ΔLHC_t is hydroelectricity consumption and LCO_{2t} is CO_2 emission. θ_t, σ_t and κ_t are white noise and p refer to the order of lag for $\Delta LGDP_t$, ΔLHC_t and LCO_{2t}. The μ, λ and ψ are coefficient in the error-correction term (ECT), measure a single period response to a departure from equilibrium of the dependent variable. Take for example, to test whether HC does not Granger cause movement in GDP, H_0: ϕ_i, $i = 0$ for all i and $\mu = 0$ in Equation (3). The rejection implies that HC causes GDP. Similarly, to test that GDP does not Granger cause movement in HC the null hypothesis, H_0: γ_i, $i = 0$ for all i and $\lambda = 0$ in Equation (4), where the rejection implies that GDP Granger cause HC.

Results for VECM were portrays in Table 3. First, the short run channel of unidirectional causality from HC to CO_2 without any feedback effect is active for Malaysia. Second, the ECT is significant and the burden of short run adjustment is bared by CO_2 in Malaysia where the ECT carries the correct sign (negative). The speed of adjustment stands at 27 percent per year due to the short run adjustments. So, this implies that Malaysia will need 3.7 years to adjust back to equilibrium whenever disequilibrium happens. So, CO_2 emission functions as the initial receptor of any exogenous shocks that distort the equilibrium system in Malaysia. Further, the ECT result shows that there has long run causality running from GDP and HC to CO_2.

Table 3: Granger Causality Test in VECM Results

Dependent Variables	χ^2-statistic (p-value)			ECT	
	ΔLGDP	ΔLHC	ΔLCO$_2$	Coefficient	T-Statistic
ΔLGDP	-	2.7248 (0.6049)	2.6802 (0.6127)	-0.1395	-1.0455
ΔLHC	1.4906 (0.8283)	-	2.1827 (0.7022)	-0.6539	-1.8540
ΔLCO$_2$	4.9407 (0.2934)	11.3429 (0.0230)**	-	-0.2689**	-2.9418

Notes: "Δ" is the first different operator. Asterisks (**) indicates statistically significant at 5 percent level.

4.4 Variance Decomposition (VDC) Test

Although the Granger causality presented in the previous section provided a rich framework for which causality may be tested, they are strictly within the sample test. According to Masih and Masih (1996) mention that VECM is a test within the sample size while the VDCs measured the strength of the variables while providing the dynamic properties of the system beyond the sample. In order to strengthen the empirical evidence from causality analysis, the dynamic analyses of the system are examined. We relied on VDCs to gauge the strength of the causal relationship among GDP, HC and CO$_2$. Results of the VDCs (from 1 to 48 years for all the models) are given in Table 4. The major findings are discussed as follows.

GDP seems to be the most interactive variable in the system. The VCDs show that almost 98% of the forecast error variance can be explained by HC (64%) and CO$_2$ (34%) at the end of the 48 years horizon. This provides for strong direct causality originating from HC and CO$_2$ to GDP. Although the result of VDCs is in line with VECM, but the picture that emerged from the VCDs supports the unidirectional causality relationship from HC and CO$_2$ to GDP is happen beyond the sample. Furthermore, the variable that is least explained by its own shock is considered to be the most endogenous variable. In this study, it is proven that GDP is the most endogenous variable. Besides that, HC is the most exogenous variable in the system with only about 45% of its forecast variance being explained by the remaining variables in the entire forecast horizon.

Table 4: Variance Decomposition (VDC) Test Results

Percentage of variations in	Horizon	Due to innovation in:		
		LGDP	LHC	LCO$_2$
Years Relative Variance in: LGDP	1	**100**	0	0
	4	**68.52**	26.93	4.55
	8	**48.73**	40.01	11.25
	12	**32.10**	50.57	17.33
	24	**7.11**	64.12	28.77
	48	**2.25**	63.83	33.92
Years Relative Variance in: LHC	1	4.90	**95.10**	0
	4	33.30	**65.42**	1.28
	8	38.83	**53.68**	7.49
	12	38.80	**36.75**	24.46
	24	17.64	**42.71**	39.65
	48	8.580	**54.74**	36.68
Years Relative Variance in: LCO$_2$	1	7.78	9.00	**83.26**
	4	2.31	31.47	**66.21**
	8	1.49	47.00	**51.51**
	12	2.42	52.52	**45.06**
	24	4.14	56.87	**39.00**
	48	5.36	58.75	**35.89**

Note: The column in bold represent their own shock.

5.0 Conclusion

The purpose of this study is to investigate the relationship between hydroelectricity consumption, economic growth and CO_2 emission in Malaysia, as well as to obtain policy implications from the results. This study uses annual observation covering the period from 1965 until 2010. In summary, time series properties of the data have been analyzed by way of unit root and cointegration test before applying Granger causality test and VECM were estimated to test for the direction of Granger causality, and VDCs measured the strength of the variables while providing the dynamic properties of the system beyond the sample.

The result of VECM in this study indicates that there is long run causality between hydroelectricity consumption, GDP and CO_2 emissions, which similar with the previous studies (energy consumption) in Malaysia (Ang, 2008; Nanthakumar and Subramaniam, 2010; Aziz, 2011; Ismail and Yunus, 2012). Besides that, Granger causality test based on VECM supported that the unidirectional causality relationship exists from hydroelectricity consumption to CO_2 emissions without any feedback in the short run. This will imply that hydroelectricity consumption and GDP can help to reduce CO_2 emissions in the long run. On the other word, it suggests that Malaysia can reduce CO_2 emissions by increasing hydroelectricity consumption. However, VDCs test, which was tested for the relationship beyond the sample, supported that the causality relationship from hydroelectricity consumption and CO_2 emissions to GDP. This situation implies that lack of the infrastructure for hydroelectric energy and impact of CO_2 emissions may restrain to GDP in the future.

In this manner, Malaysia is advised to carry on more green energy programmes, especially the hydroelectric energy. Malaysia government can invest more in the hydroelectric project, such

as the hydroelectric project in Bakun Dam, Sarawak. Nowadays, Malaysia has taken note on green technology in energy. For example, Bakun Dam under SCORE project in Sarawak is called the backbone for the SCORE. The benefit of SCORE is industrialization and improved energy security for this energy megaproject (Sovaccol and Bulan, 2012). In addition, National Key Economy Areas (NKEA) also mentions that Malaysia has plans to increase using renewable energy, including solar energy, biomass, hydroelectric energy (ETP, 2011).

The builds of hydroelectric power station and hydroelectric dam can not only solve the energy security problem, but also have the capacity to reduce greenhouse gas emissions, as explained before. Moreover, since these hydroelectric development plans manage to enhance the economic growth in the long run. Jobert and Karanfil (2007) also advised the government to make more considerable efforts about the hydroelectric energy such as to strengthen research and development on energy technologies to reduce the environmental issues.

Acknowledgement

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The Long-Run Relationship between Gross National Income Per Capita and Research and Development Expenditure of Indonesia

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Abstract

The objective of this study is to examine the long-run relationship between the research and development expenditure and the gross national income per capital of an emerging economy, Indonesia. The econometrics analysis method used to analyze the relationship between these two variables is the ARDL approach. A thirteen-year time series data were used in the analysis. Empirical findings showed that there is a significant long-run relationship between the variables under study. Nevertheless, the expenditure on research and development does not produce a high return in terms of gross national income per capita; indeed, it produces a rather mild payback. Since expenditure in research and development is inevitable for a country to remain competitive in a globalized economy; therefore, enhancing research and development is still a relevant strategy. Nonetheless, the government needs to identify the areas of research and development which better suit the characteristic of its economy.

Keywords: Research and development expenditure, gross national income per capita.

1.0 Introduction

As the fourth most populated country in the world, Indonesia strived to improve in the world economic platform and to become a higher earning nation. Among others, research and development has been identified as one of the most important activities to be engaged in developing its economic activities. The gross national income per capita for Indonesia stands at USD2500 in 2010 (World Bank Data, 2012). There is a high gap if compared to its neighboring countries. The service sector accounts for approximately 45% of the country's GDP. This is followed by manufacturing (41%) and agriculture (14%). Nevertheless, 44% of Indonesia's workforce was coming from the agricultural sectors. Advancement in research and development is important as it could contribute to a higher productivity and better quality of output across different sectors.

This claim was endorsed by economic theory which posited that higher income can only be achieved via greater productivity which in turn required higher level of innovations, technologies and highly skilled workforce (Aghion and Howitt, 1992). Even though research and development particularly in the area of science and technology has been identified by the Indonesian government as one of the key drivers in pushing the nation's gross national income per capita (GNI) to a greater height, the effort to promote research and development was still far behind its neighboring countries like Singapore and Korea. This is evidenced by its less than 1% of research and development expenditure as a percentage of GDP per annum for the last decade. Generally, research and development policy of Indonesia is closely linked and involved both government and research institutes.

2.0 Problem Formulation

From the literature review, economic variables such as foreign exchange rates, interest rates, oil prices and money supply are endogenous factors affecting a nation's wealth (Flannery and

Protopapadakis, 2002 and Liow et. al., 2005). Recently, with the advancement of technology and the emergence of knowledge economy, research and development has become another important factor which could affect the well-being of a country's economy. Nevertheless, the impact of research and development expenditure on variable such as gross national income per capital was rarely examined especially for developing country. The reason behind this phenomenon could be related to the risky return on research and development and the fact that gestation period of research and development especially on the macro level is long. Thus far, empirical evidences showed that inconclusive relationship between research and development expenditure and a country's growth rates with some documented a positive return and vice versa. With that, the objective of this study is to examine the relationship between research and development expenditure and gross national income per capita of a developing economy – Indonesia.

3.0 Literature Review

Numerous studies have been carried out to examine the impact of R&D investments on both the macro and firm level. On the firm level, Jong (2007) examined the how R&D spending affects the capital investment of pharmaceutical firms. He found that these two variables are cointegrated while the causality runs reciprocally. However, R&D spending and capital investment does not Granger cause each other in the short-run

On the macro level, Aghion and Howitt (1992) contended that R&D should be encouraged theoretically as it promotes growth and sustainability of a country. This statement was echoed by Griffith (2000) study which stated that the social rate of return to R&D is significantly higher than that of the private rates of return. Hence, it is beneficial for the government to have a more proactive R&D policy so that a more balanced private and social rate of R&D returns can be achieved.

Nonetheless, according to Wailde and Woitek (2004), there exists a negative correlation between R&D expenditure and growth rates of GDP. They conducted a study on R&D expenditure in G7 countries from 1973 to 2000 and found a procyclical nature of the R&D expenditure. Furthermore, a negative correlation between R&D expenditure and the GDP growth in these countries were confirmed.

4.0 Methodology

This study employed the annual data collected from World Bank Database covers a period of 13 years from 1997 to 2010. Data on gross national income per capita (*GNI*), research and development expenditure as a percentage of GDP (R&D) of Indonesia are utilised for further analysis. Overall, the R&D expenditure for Indonesia fractures over the study period but stays below one per cent of its GDP per annum. GNI per capital for Indonesia was on an increasing trend but reported a drop during the 1998 financial crisis.

To determine whether there is a relationship between GNI and R&D of Indonesia, the autoregressive distributed lag (ARDL) bounds testing framework pioneered by Pesaran and Shin (1995; 1999) is adopted in this study. This approach was used because it is suitable for small sample size and also for model with variables of mixed integration orders of I(0) and I(1) like this study.

Using this, the regression equations in the ARDL (m, n) framework to be estimated in this study are:

$$\Delta gni_t = \alpha_1 gni_{t-1} + \alpha_2 rd_{t-1} + \sum_{i=-1}^{m} \beta_i \Delta gni_{t-i} + \sum_{i=0}^{n} \gamma_i \Delta rd_{t-i} + \varepsilon_t \tag{1}$$

Whereby,
Δ is the first difference operator, gni and rd represent gross national income per capita of Indonesia and research and development expenditure as percentage of gross national product of Indonesia respectively. Under this approach, the optimal lag order m and n needs to be predetermined by objective criteria while ε is a series of random errors. The parameters need to be estimated are α's, β's and γ's. c is the intercept included in the estimation. Here, α s are the parameters of interest.

In this study, the null and alternative hypotheses for regression Equation (1) are,
$H_0: \alpha_1 = \alpha_2 = 0$ (There is no long-run relationship between GNI per capita and R&D expenditure),
and
$H_1: \alpha_1 \neq \alpha_2 \neq 0$ (There exists a long-run relationship between GNI per capita and R&D expenditure).

The null hypothesis will be rejected when the computed F-statistics exceed its upper bound critical values. Due to the fact that the F-statistics in the ARDL framework does not follow standard distribution, hence, they need to be simulated. The critical values used for referencing are available in Pesaran and Pesaran (1997) and Pesaran, et al. (2001).

5.0 Results and Discussions

Firstly, unit root test is performed to make sure that the variables: GNI and RD are not integrated of higher order then one. This is because the ARDL bound testing approach is suitable only for I(0) or I(1) variables. Here, the conventional ADF test is performed and the results are reported in Table 1.

Table 1: ADF Unit Root Test Results for Order of Integration

Variable	Unit Root Test	
	Level	First-difference
GNI	-4.931 [0.009]	-
RD	-2.225 [0.439]	-4.758 [0.014]

Notes: The optimal lag of the ADF test is selected based on AIC, with a maximum lag of 2. The regression equation for the level of GNI is estimated with a trend and intercept, the same is applied for RD in the estimation. The values presented in the square brackets next to the reported t-statistic are the p-value of the statistic.

Referring to Table 1, GNI is stationary in its level form whilst RD is stationary after first differencing. From this result, it is obvious that GNI and RD are integrated of order 0 and 1 respectively. In other words, GNI is an I(0) variable while RD is an I(1) variable. As such, ARDL approach is relevance to be used for further analysis in this study.

The choice of optimal lag is important for the estimation of the ARDL procedure. Pesaran and Shin (1999) show that Akaike Information Criterion (AIC) and Schwarz Bayesian Criterion (SBC) are the two commonly used minimum information criteria and the latter perform better in the ARDL setting. In addition, for annual data setting, Pesaran and Shin (1999) suggested

to choose the optimal lag from a maximum lag of 2. Therefore, in this study, SBC will be adopted to choose the optimal lag from a maximum of 2 lags. The results are reported in Table 2.

Table 2: Bounds Test for Long-run Relationship Results

Order of ARDL(m, n)	F-statistic	AIC	SBC
(1,1)	6.941***	10.989	11.223
(1,2)	2.933	11.237	11.490
(2, 1)	1.386	11.331	11.584
(2, 2)	1.044	11.700	11.229

Notes: The 10, 5 and 1% critical values I(0) are 4.04, 4.94 and 6.84 respectively for with unrestricted intercept with no trend , while the critical values for I(1) are, in that order, 4.78, 5.73 and 7. 84 These values are reproduced from Table CI.iii (with an unrestricted intercept and no trend; with one regressor) in Pesaran *et al.*, 2001). Asterisks ** and *** denotes rejection of null hypothesis at 5 and 1% significant level respectively.

With reference to Table 2, based on *SBC* (note that *AIC* consistently has chosen the same), ARDL(1, 1) is the appropriate specification, and the *F*-statistic obtained is larger than the 1% its upper bound critical value. With that, this study concluded that there is a long-run relationship between the gross national income per capita and research and development expenditure (% GDP) of Indonesia.

After established the long-run relationship of the variables under study, the ARDL (*m,n*) dynamic model is to be estimated for the derivation of long-run elasticity. Since the elasticity of the variables is to be assessed here, therefore, the variables are log transformed before further analysis.

Table 3: Estimated ARDL Dynamic Model for Long-run Elasticity

$$\widehat{LGNI}_t = 0.303 + 0.049 LGNI_{t-1} + 0.039 LRD_{t-1} \tag{2}$$

p-value: [0.137]   [0.000]   [0.022]

Goodness-of-fit

R-squared = 0.993
F-statistic = 263.14
AIC = -4.394
SBC = -4.192

Diagnostic test

Test	Test Statistic	p-value
Breusch-Pagan-Godfrey Heteroscedasticity Test	1.202	0.340
Jarque-Bera Normality Test	0.600	0.740
Breusch-Godfrey Serial Correlation LM Test	0.078	0.925
Ramsey RESET Test	2.568	0.160

Table 3 reports the resulting optimal model based on *SBC* results and a battery of diagnostic tests. Referring to Table 3, this model has passed through a battery of diagnostic tests and hence, the estimated model is valid for interpretation. With reference to Equation (2) presented in Table 3, it is obvious that the first lagged values of LGNI and LRD have significant positive impact on the current values of LGNI. The plot of CUSUM of square

statistic as shown in Figure 1 is found to be well fitted within the 5% critical bounds, implying the estimated coefficients are stable.

Figure 1: Plot of CUSUM of Square Test.
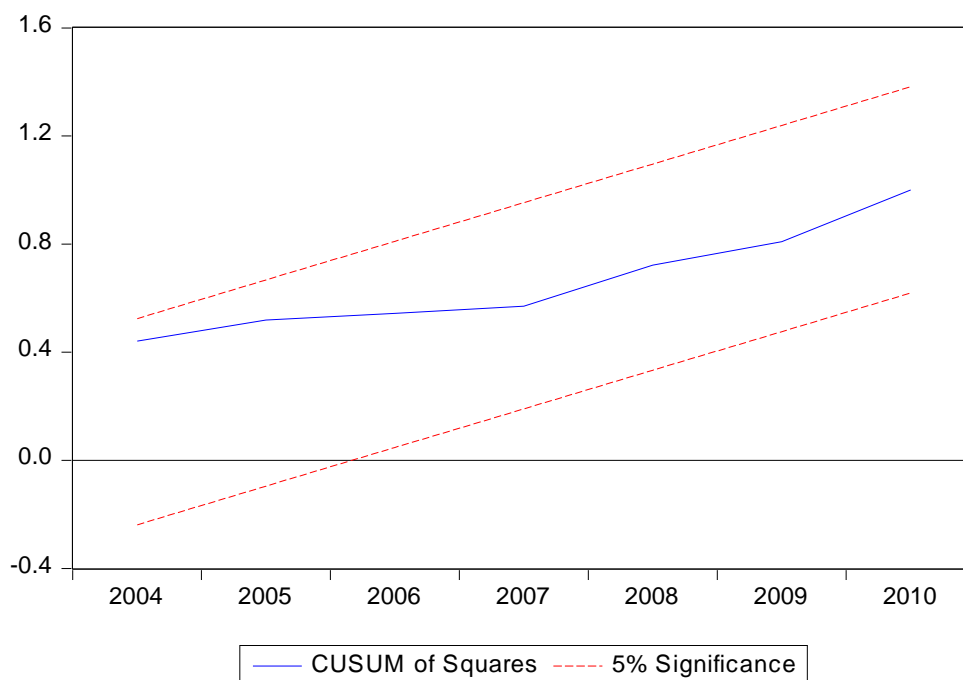
The long-run elasticity can be calculated from Equation (2) and the resulting long-run model is:

$$\widehat{LGNI}_t = 0.318 + 0.041 LRD_t \tag{3}$$

Equation (3) reveals that INT and GNI are positively related, whereby a 10% change in R&D expenditure is associated to approximately 0.4% change in GNI in the same direction.

The result shows that the return of R&D expenditure on Indonesia's GNI is rather mild. The reason could be the State Ministry of Science and Technology which overlooking the research and development policy is concentrating more on science and technology which is not the main economic activity of Indonesian's economy. As mention earlier, 44% of the workforce is coming from the agriculture sector, hence, the policy makers should channel more research and innovation efforts to the agricultural sector in the country. With that, the productivity and the income level of the people involved in this area can be improved further and the research and development will bring a higher return to the GNI.

6.0 Conclusion

After analyzing the annual data of gross national income per capital as well as the research and development expenditure (% GDP) of Indonesia from 1997 to 2010, this study found a significant long-run relationship between these two variables. However, the return of research and development in terms of generating a higher gross national income per capita was not proportionate and prominent. Nonetheless, research and development has been identified as the key drivers for a country or firm to succeed in the long-term. With that, this study concludes that incorporating research and development effort into the national economic development strategy is beneficial to Indonesia even though the contribution is mild. To

improve on the return of research and expenditure, the Indonesia needs to identify the areas of research and development which better suit the characteristics of its economy.

Acknowledgement

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Old Wine in a New Bottle: Growth Convergence Dynamics in ASEAN and SAARC Countries

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Abstract

The purpose of this paper is to examine whether convergence of real income exists among Association of South East Asian Nations (ASEAN) and South Asian Association for Regional Cooperation (SAARC) countries for the period covering 1970-2009. The study further investigates existence of common convergence of income across the two regional blocs. The unit root tests with structural break(s) introduced by Lee and Strazicich (2003; 2004) are employed to check for the incidence of stochastic convergence, which is a necessary condition for conditional convergence as proposed in the neoclassical model. Carlino and Mills (1993) method is adopted to verify the presence of β-convergence, which is considered as the sufficient requirement for conditional convergence. Empirical findings suggest limited convergence among ASEAN countries, with no convergence in SAARC countries. Moreover, there is no inter-regional convergence of incomes in the two blocs.

Keywords: Economic growth, convergence, SAARC, and ASEAN

1.0 Introduction

Neoclassical model suggests wide gulf of living standards that initially separates the poorest and richest nations will disappear, overtime. In other words, countries that are originally poor should have faster growth rates relative to the originally rich, so that their income levels will eventually converge. The theoretical proposition is premised on several assumptions including the postulation that with passage of time, production technology which was exclusive to prosperous economies is available to the underdeveloped nations. Moreover, capital per worker is assumed to be less in poor economies, implying higher marginal products of capital. In search for higher rate of return on capital, savers in many economies will direct their fund, at the expense of rich economies, to poor states, which capital stocks are expected to grow quickly, even if domestic savings rate are very low. Beyond the ability of economic integration to deflate the possible risk for outbreak of political tensions and hostilities among countries, economic integration is likely to heighten the pace of technology spillover and capital mobility. In the recent times, several economic blocs have been formed to enhance inter-country and interregional activities.

Convergence of income has attracted considerable attention of economists. Starting with Baumol (1986), establishment or otherwise of convergence is utilised to verify the validity of neoclassical growth model. Common among the earliest empirical literatures (such as DeLong, 1988; Dowrick and Nguyen, 1989; Barro, 1991; and Sala-i-Martin, 1996) is the use of cross-sectional techniques, which has been challenged in some quarters (for example see Friedman, 1992). The vulnerability of cross-sectional techniques generated another wave of literatures on convergence of income that employs time series procedures to examine convergence of income (see Bernard and Durlauf, 1995; Greasley and Oxley, 1997; Datta, 2003; Strazicich, Lee and Day, 2004; Dawson and Strazicich, 2010, among others). Common amid the foregoing studies is the focus on convergence of income in advanced countries; with evidence mostly in support of income convergence. Researches dedicated to developing

countries are not widespread as literatures on developed countries. Further, finite among the few researches on developing countries consider regional inclination(s) of the countries under investigation in order to verify the impact of economic integration on income convergence. For example, to our knowledge, the few studies on Association of South East Asian Nations (ASEAN) and South Asian Association for Regional Cooperation (SAARC) with time series orientation are Lim and Mcaleer (2004); Lee, Lim and Azali (2005); Chowdhury (2004); Jayanthakumaran and Lee (2009).

This paper considers convergence of income for nine ASEAN and eight SAARC countries for the period 1970-2009. Unlike Jayanthakumaran and Lee (2009), who utilized Lumsdaine and Papell (1997) stationarity tests, we employ Lee and Strazicich (2003; 2004) unit root tests procedures, which are considered more reliable and not affected by size distortions (Lee and Strazicich, 2001) to verify stochastic convergence. Distinct from the existing studies, we check the inter-regional convergence among the two economic blocs. The justification of this exercise hinges upon the efforts undertaken in the past years to improve economic integration of the two regional blocs. SAARC has several collaborations ties with ASEAN countries. For instance Myanmar (an ASEAN-member country) is an observer nation of SAARC (Brief, 2010). Further, different from previous paper on the either ASEAN or SAARC, the current paper considers the existence of β-convergence, as proposed by Carlino and Mills (1993). According to Carlino and Mills (1993), β-convergence is the sufficient condition for conditional convergence as proposed in classical model, with stochastic convergence as merely a necessary condition for conditional convergence. This exercise will afford us the opportunity of actually determining the countries that fulfil the neoclassical assumption of conditional convergence from the pool of (possible) stochastically convergent countries. Also distinctive from existing study is the inclusion of more countries in this paper.

The rest of this paper is ordered as follows. Section 2 presents the literature review. Section 3 briefly reviews the methodology of the study. Empirical findings are discussed in Section 4 and finally, Section 5 deals with the conclusion of the study.

2.0 Literature Review

In the literature, there are at least three likely scenarios of convergence, which include no convergence, unconditional (absolute) convergence and conditional convergence. No convergence captures the situation in which poor countries fail to catch-up with rich ones, over time. The validity of Solow model becomes questionable in such case. Unconditional convergence implies that income level in poor countries will get closer to the rich countries so that in the long run, disparity in the level development among the countries will disappear. This involves running a regression involving per capita income growth and initial income, without the inclusion of conditioning variables. Papers within this framework include Baumol (1986) who employ a sample of 16 countries, for 1870-1979. Conditional convergence suggests that initially deprived countries will get catch up with rich countries in terms of development, if they do not differ in characteristics such as savings rates, population growth rates, and access to technology. Researches within this framework are Barro (1991), Mankiw, Romer and Weil (1992) and Sala-i-Martin (1996), who confirm conditional convergence in industrialized countries.

Mutual in the preceding literatures is the utilisation of cross sectional techniques, which has been widely questioned by scholars. For instance, Friedman (1992) demonstrate inverse link between the initial level of income and growth in cross-country regressions does not

adequately represent the concept of convergence. Further, Quah (1993) demonstrate that similar negative association is subjected to various deductions, which include a stable variance in cross-section distribution of incomes. Bernard and Durlauf (1996) show cross-section techniques as biased towards rejecting the null of no convergence; and cannot differentiate between local and global convergence hypotheses.

The criticism led to the rise of the second generation of literatures, which applies time series method to verify convergence of income. Bernard and Durlauf (1995) study per capita convergence in a sample of 15 Organisation for Economic Co-operation and Development (OECD) countries for 1900-1987 period. Using cointegration tests, findings exhibit limited proof of conditional convergence. Greasly and Oxley (1997) explore convergence among OECD countries with annual time series data dating 1900-1987. Premised on ADF and Zivot and Andrews (1992) tests, Greasly and Oxley (1997) detect bilateral convergence within: Belgium and the Netherlands; Italy and France; Australia and the United Kingdom; and Denmark and Sweden. Li and Papell (1999) evaluate the possibility of stochastic convergence among 16 OECD countries for the period 1990-1991. The paper confirms convergence in most of the 16 OECD countries. Strazicich, Lee and Day (2004) exploit the two-break unit roots test of Lee and Strazicich (2003) to test for income convergence in 15 OECD countries for 1870-1994. Findings exhibit stochastic convergence in most countries. According to Carlino and Mills (1993), stochastic convergence as applied in the foregoing time series literatures is merely necessary condition for conditional convergence. Carlino and Mills (1993) propose an additional time-series test to evaluate sufficient condition for conditional convergence implied by exogenous growth theory. Using the same dataset and time period as Strazicich, Lee and Day (2004), Dawson and Sen (2007) supplement stochastic convergence with β-convergence test. The study submits that relative income series of 21 and 16 countries achieve stochastic convergence and β-convergence, respectively.

Similar to the polarisation of literatures on developed countries in terms of methodology, the few papers on ASEAN and SAARC can also be polarised based on methodology. Studies on the region with cross sectional techniques include Ismail (2008) that explore convergence of income in ASEAN countries inclusive of Indonesia, Malaysia, Singapore, The Philippines and Thailand for the period of 1960-2004. Using panel techniques, Ismail (2008) find empirical evidence for conditional and unconditional convergence hypotheses in the South East Asian economies. In a study inclusive of more economies, Chowdhury (2005) investigate convergence of per capita income in five ASEAN countries during 1960-2001. Unlike Ismail (2008), the paper fails to provide evidence for convergence. For SAARC countries, Chowdhury (2004) investigates convergence of per income capita for 7 countries (with the exception of Afghanistan) for 1960-2000 period. The paper fails to establish convergence in SAARC countries.

Lim and Mcaleer (2004) employ the ADF unit root tests and cointegration test to examine convergence in five ASEAN countries (Indonesia, Malaysia, Singapore, The Philippines and Thailand) for 1965-1992. The paper is unable to find any evidence of convergence in the countries. Lee, Lim and Azali (2005) investigate convergence of income in same five ASEAN countries during the period of 1960 to 1997, using ADF and Zivot and Andrews (1992) unit root tests to focus on same five ASEAN countries and Japan. With the use of ADF test, the findings reveal existence of divergence of income between each of these five ASEAN countries and Japan. Using Zivot and Andrews (1992), the findings of Lee, Lim and Azali (2005) reveal the existence of divergence of income between each of these five ASEAN countries and Japan, with the exception of Singapore. Jayanthakumaran and Lee (2009)

examine the convergence of income in five ASEAN countries and five SAARC countries, separately. Applying Lumsdaine, and Papell (1997) method, convergence is found in the ASEAN countries, without any evidence for income convergence among SAARC countries.

3.0 Data and Econometric Methodology

Data for the 17 Asian countries, under consideration were extracted from the Penn World Table 7.0, which has the benefit of providing purchasing power parity data. The countries include Brunei, Cambodia, Indonesia, Laos, Malaysia, Philippines, Singapore, Thailand and Vietnam for ASEAN countries. Myanmar is the only ASEAN country left out because of lack of data. SAARC countries under consideration are Afghanistan, Bangladesh, Bhutan, India and Maldvies. Other SAARC nations in paper are Nepal, Pakistan and Sri Lanka. The study employs yearly series of per capita real GDP (rgdpch variant, in line with Galvao and Gomes, 2007) ranging from 1970 through 2009. The current study does not consider the 1960s because of several factors. Firstly, data of that period are not available for most countries in these regions. Secondly, the period was associated with (potential) conflicts with no concrete effort for economic integration in the two blocs. Singapore became independent from Malaysia in 1965, while Bangladesh separated from Pakistan in 1971. There were three major wars that took place between India and Pakistan namely in 1947, 1965 and the Bangladesh Liberation War (which also involved Bangladesh) in 1971. From 1962 to 1966, an undeclared military conflict between Indonesia and Malaysia (which included Singapore for part of that time) known as the Konfrontasi was a major source of tension in the ASEAN region. Infact, ASEAN as an economic associated was created in 1967, while SAARC was established in 1985(Ewing-Chow, 2010).

3.1 Methods

This study follows the procedure of Carlino and Mills (1993), which comprises two steps in verifying conditional convergence. The first step concerns the investigation of the existence of stochastic convergence with the use of per capita income of a country relative to average per capita income of all the countries on regional and total basis such that:

$$y_{it} = \ln\left[GDP_{it} / \left(\sum_{i=1}^{I} GDP_{it} / I \right) \right] \tag{1}$$

Here the relative income of country y_{it} is the ratio of per capita income of country i to the ASEAN, SAARC or total average. I refers to the sample size. Unit root test is performed on the relative income- y_{it} to decide the presence of stochastic convergence. Failure to reject null hypothesis of unit root demonstrate the case in favour of stochastic convergence. Nevertheless, rejecting null hypothesis of a unit root is merely a necessary but not sufficient condition for conditional convergence, which is only established, when stochastic convergence and β-convergence exist (Galvao and Gomes, 2007). The second step involves the verification of β-convergence, which is satisfied if the countries with initial incomes beneath the average income grow faster than countries with initial incomes higher than the average income.

$$y_{it} = \chi_i + \beta_i t + \varepsilon_{it} \tag{2}$$

Here ε_{it} is the error term that fulfils the classical assumptions i.e. zero mean and constant variance. For β-convergence to exist, the growth rate(s) of y_{it} must be positive (negative), provided the initial value(s) of y_{it} is negative (positive). In other words, χ_i and β_i must generate different signs.

Several unit root tests inclusive of the routinely-used Augmented Dickey Fuller (ADF) test are available in the literature to inspect stochastic convergence. Reliance on ADF test has been questioned because it ignores the existence of possible structural breaks. Perron (1989) demonstrate that the power to reject a unit root decline when the time series concerned is stationary around a structural break. As an alternative, Perron (1989) introduce unit root test that incorporate dummy variables to permit one exogenous or known breakpoint. Succeeding papers improved the test to allow for unknown structural break(s), which is (are) determined endogenously from the data. Popular among these papers include of Zivot and Andrews (1992) and Lumsdaine and Papell (1997), who introduce unit roots with one and two endogenously determined structural breaks, respectively. Zivot and Andrews (1992) test involve selecting the structural break at a point in which the t-statistic testing the null of a unit root is the most negative. Lumsdaine and Papell (1997) simply replicate this idea, but providing for two breakpoints.

One important concern of Zivot and Andrews (1992) and Lumsdaine and Papell (1997) is the assumption of no break(s) under the unit root null, in which their critical values were derived, accordingly. Thus, the alternative is "structural breaks are present," which inculcates the likelihood of a unit root with break(s). Therefore, rejecting the null does not essentially mean rejecting unit root in isolation, but would mean rejecting unit root without breaks (Lee and Strazicich, 2003). Moreover, Lee and Strazicich (2001) demonstrate that the assumption of no break under the null in endogenous break tests causes the test statistic to diverge and lead to significant rejections of the unit root null when the data-generating process (DGP) is a unit root with break(s).

As a solution to the drawbacks noted with earlier tests, Lee and Strazicich (2003: 2004) propose Lagrange multiplier (LM) unit root test with endogenous determined structural break(s) in which the alternative hypothesis unambiguously implies trend stationarity as follows:

$$\Delta y_t = \delta' \Delta Z_t + \phi \overline{S}_{t-1} + \sum_{i=1}^{p} \chi \Delta \overline{S}_{t-i} + \mu_t \tag{3}$$

Locate here Δ is the first difference operator. $\overline{S}$ is a de-trended variable, with $\overline{S}_t = y_t - \hat{\psi}_x - Z_t \hat{\delta}, t = 2...,T.$ Expatiating on the symbols, $\hat{\delta}$ is a vector of the coefficients in the equation of Δy_t on ΔZ_t and $\hat{\psi}_x = y_t - Z_t \hat{\delta},$ with y_1 and Z_1 depicting the first observations of y_t and Z_t respectively. μ_t is error term, that is assumed to fulfil the classical properties of zero mean and finite variance. Z_t is a vector of exogenous variables characterised by data generating process. Taking into consideration two-time changes in level and trend, $Z_t = \left[1, t, D_{1t}, D_{2t}, DT_{1t}, DT_{2t} \right]'$ where $D_{jt} = 1$ if $t \geq T_{Bj} + 1, j = 1, 2,$ and 0 otherwise, and also $DT_{jt} = t$ if $t \geq T_{Bj} + 1, j = 1, 2,$ and 0, otherwise. Position of T_{Bj} which are break dates, are given by $\lambda_j = T_{Bj} / T, j = 1, 2.$ If one structural break (level and/or trend) is significant, then

$Z_t = [1, t, D_{1t}, DT_{1t}]'$ where $D_{jt} = 1$ if $t \geq T_B + 1$, and 0 otherwise and also $DT_{jt} = t$ if $t \geq T_B + 1$, and 0, otherwise. Generally, $LM_\tau = \text{Inf}_\lambda \tilde{\tau}(\lambda)$ is used in locating the break dates, which minimises τ (*t-statistics*) for the null hypothesis of unit root ($\phi = 0$). Augmented terms of $\Delta \bar{S}_{t-1}, i = 1, \ldots k$ are included to thwart the problem of serial correlation in errors (see Lee and Strazicich, 2004, 2003 for details).

Providing for the dummies of structural breaks, β-convergence is re-specified as $y_t = \eta_0 + \eta_1 t + \eta_2 D_{1t} + \eta_3 D_{2t} + \eta_4 DT_{1t} + \eta_5 DT_{2t} + \varepsilon_t$ where $\chi = \eta_0 + \eta_2 + \eta_3$, $\beta = \eta_1 + \eta_4 + \eta_5$ depending on the presence of structural breaks. This is applied on relative incomes of countries which display stochastic convergence with two significant breaks in level and trend. In estimating the β-convergence, for stochastic convergent countries with one-break, $\eta_3 = \eta_5 = 0$ and with no break, the paper further imposes $\eta_2 = \eta_4 = 0$. As specified earlier χ_i and β_i must produce opposite signs with significant entries for β-convergence to exist.

4.0 Empirical Findings

The concept of stochastic convergence does not only require differences in per capita to achieve stationarity at level, but also the actual per capita income of each country must not be stationarity at level (i.e. they must attain stationarity at first difference) (Cunado and Perez de Gracia, 2006). In Table 1, we display the result of ADF and Model C of Lee and Strazicich tests of each country's per capita income, alongside the average of ASEAN, SAARC and all the countries under consideration. Following the work of Galvao and Gomes (2007) and Strazicich, Lee and Day (2004), the Lee and Strazicich (2003) is re-specified, when level (B_{jt}) and the trend (D_{jt}) are insignificant for one of the two breaks. Table 1 indicates the null of no stationarity cannot be rejected at level, for any of the series, when ADF test is utilized. Moreover, the null of no stationarity cannot be rejected at level for any of the series, when Lee and Strazicich test(s) is employed. These outcomes generally prove all the series achieve the first requirement of stochastic convergence.

The unit root results of each country's relative income to the regional average income are exhibited in Table 2. Results for ASEAN countries are reported in the upper panel. Subjecting the ASEAN countries to ADF test, the null of unit root can be rejected for Vietnam at 5 percent significance level. For other countries, the null of unit root cannot be rejected. This suggests Vietnam as the only nation which converges to the average per capita income of ASEAN countries. Proceeding to Lee and Strazicich test(s), the null of unit root cannot be rejected for Cambodia, Indonesia Laos and Thailand, implying that these countries do not possess stochastic convergence towards ASEAN average. The null of unit root can be rejected for Vietnam at 1 percent level; Brunei, Malaysia and Singapore at 5 percent; and Philippines at 10 percent significance level, suggesting these countries do have stochastic convergence with ASEAN average. Apart from Philippines, two structural breaks are detected in all the countries.

Findings for SAARC countries are reported in the lower panel of Table 1. For the ADF test case, the null of unit root cannot be rejected for any of the SAARC country. Using Lee and Strazicich test for SAARC countries, the null of unit root can be rejected for Bhutan at 10 percent significance level. For other SAARC economies, the null of unit root cannot be rejected. Overall the findings are in contrast to Lim and Mcaleer (2004), but confirm the

assertion of Jayanthakumaran and Lee (2009) which indicates stochastic convergence is present in most ASEAN countries, but non-existent in SAARC countries. With the exception of Afghanistan, two structural breaks are recorded for all the countries. More than 40 percent of the structural breaks were in the late 1990s, a period coinciding with Asian financial crisis of 1997 and the subsequent recovery phase.

Table 1: Asian countries unit root tests

Country	ADF		Lee and Strazicich test				
	K	T-Stat	k	T_{B1}	T_{B2}	T-Stat	Break point(s)
ASEAN Countries							
Brunei	0	-2.352	1	1976	1994	-3.839	(0.2, 0.6)
Cambodia	0	-2.655	1	1977	2005	-4.600	(0.2, 0.8)
Indonesia	0	-2.343	3	1978	1997	-4.793	(0.2, 0.8)
Laos	4	-0.707	0	1980	2004	-3.855	(0.2, 0.8)
Malaysia	4	-1.140	2	1975	1993	-4.256	(0.2, 0.6)
Philippines	4	-2.081	4	1979	1982	-4.674	(0.2, 0.4)
Singapore	2	-1.939	1	1978	2000	-4.527	(0.2, 0.8)
Thailand	4	-1.789	1	1987	1999	-3.223	(0.4, 0.6)
Vietnam	0	-1.976	1	1977	1997	-4.927	(0.2, 0.8)
ASEAN Average	4	-2.142	2	1978	1988	-4.436	(0.2, 0.4)
SAARC Countries							
Afghanistan	4	-0.501	1	1982	1991	-4.600	(0.4, 0.6)
Bangladesh	0	-2.815	1	1981	1993	-4.609	(0.2, 0.6)
Bhutan	0	-3.167	2	1979	2000	-4.136	(0.2, 0.8)
India	4	1.469	3	1984	1998	-3.679	(0.4, 0.8)
Maldvies	3	-2.530	1	1980	2001	-3.517	(0.2, 0.8)
Nepal	4	-2.244	2	1982	1997	-3.560	(0.4, 0.8)
Pakistan	0	-1.285	1	1982	1998	-3.259	(0.4, 0.8)
Srilanka	4	-1.939	2	1981	2002	-3.873	(0.2, 0.8)
SAARC Average	0	-2.870	1	1979	1995	-3.004	(0.2, 0.6)
Total Average	4	-2.014	1	1982	-	-3.001	(0.4)

Critical values for Lee and Strazicich (2003)

Y									
	0.4			0.6			0.8		
	10%	5%	1%	10%	5%	1%	10%	5%	1%
0.2	-5.27	-5.59	-6.16	-5.32	-5.74	-6.41	-5.33	-5.71	-6.33
0.4	-	-	-	-5.31	-5.67	-6.45	-5.32	-5.65	-6.42
0.6	-	-	-	-	-	-	-5.32	-5.73	-6.32

T_B is the estimated break points. *, **, *** imply 1%, 5% and 10% levels of significance. Critical values in the lower panel of Table 1 are from Lee and Strazicich (2003).Critical values for ADF test obtained from MacKinnon (1996) are -4.03, 3.44 and -3.15 at the 1, 5 and 10 % levels of significance while the corresponding critical values for Lee and Starzicich (2004) one break tests are -5.05, -4.50 and -4.18.

In Table 3, the β-convergence result of Brunei, Malaysia, Philippines Singapore, Vietnam and Bhutan are presented. These countries were established as stochastically convergent, using the regional average. Findings show that these countries do not only produce significant signs but also opposite signs as required to fulfil the β-convergence. Therefore, five ASEAN nations -

Brunei, Malaysia, Philippines Singapore and Vietnam- conditional converge to the ASEAN average, while Bhutan is the only country that conditionally converges to the SAARC. Since Bhutan is the single country that satisfies the convergence criteria, this is evidence of non-existent in SAARC countries, different from ASEAN countries with limited convergence. These results confirm the findings of Chowdhury (2004, 2005) and Ismail (2008), but in contrast to observations of Lee, Lim and Azali (2005).

Table 2: ASEAN and SAARC unit root tests

Country	ADF		Lee and Strazicich test				
	k	T-Stat	k	T_{B1}	T_{B2}	T-Stat	Break point(s)
ASEAN Countries							
Brunei	0	-2.217	3	1978	1999	-5.757**	(0.2, 0.8)
Cambodia	3	-2.789	3	1979	1993	-3.939	(0.2, 0.6)
Indonesia	4	-1.575	2	1978	1996	-3.750	(0.2, 0.6)
Laos	4	-2.595	1	1982	1997	-3.968	(0.4, 0.8)
Malaysia	4	-0.783	3	1976	1994	-6.211**	(0.2, 0.6)
Philippines	4	-2.138	3	1980	-	-4.451*	(0.2)
Singapore	4	-0.663	3	1985	1999	-6.120**	(0.4, 0.8)
Thailand	0	-1.161	3	1978	1995	-4.005	(0.2, 0.6)
Vietnam	0	-3.735**	1	1976	1982	-6.246***	(0.2, 0.4)
SAARC Countries							
Afghanistan	4	-0.638	1	1991	-	-3.231	(0.6)
Bangladesh	1	-2.190	2	1975	1984	-5.042	(0.2, 0.4)
Bhutan	1	-2.332	1	1985	2003	-5.338*	(0.4, 0.8)
India	4	-0.063	2	1981	2000	-4.285	(0.4, 0.8)
Maldvies	3	-0.862	1	1982	2001	-3.994	(0.4, 0.8)
Nepal	1	-1.815	1	1979	1999	-3.402	(0.2, 0.8)
Pakistan	0	-2.035	0	1982	2001	-3.315	(0.4, 0.8)
Srilanka	4	-2.686	4	1985	1999	-4.821	(0.4, 0.8)

T_B is the estimated break points. *, **, *** imply 1%, 5% and 10% levels of significance. Critical values for Lee and Strazicich (2003) are reported in the lower panel of Table 1. Critical values for ADF test obtained from MacKinnon (1996) are -4.03, 3.44 and -3.15 at the 1, 5 and 10 % levels of significance while the corresponding critical values for Lee and Starzicich (2004) one break tests are -5.05, -4.50 and -4.18.

Table 3: β-convergence for ASEAN and SAARC countries

Country	Intercept and Trend	
	χ	β
Brunei	2.126***	-0.025***
Malaysia	-1.437***	0.006***
Philippine	-1.463***	0.003***
Singapore	-0.206***	0.017***
Vietnam	-2.542***	0.042***
Bhutan	-0.076***	0.003***

*, **, *** implies significance at 10, 5 and 1%, respectively.
The Newey-West estimator is applied to correct for possible serial correlation and heteroscedasticity.

Integration efforts between ASEAN and SAARC are in place to further improve economic link of the two regional blocs. In Table 4, we investigate possible stochastic among the two

associations. Results for ASEAN countries are reported in the upper panel, while the results of SAARC countries are reported in the lower panel. Using the ADF test for ASEAN countries, the null of unit root cannot be rejected for all countries with the exception of Vietnam at 5 percent significance level. Introducing Lee and Strazicich test(s), the null of unit root cannot be rejected for all countries with the exception of Brunei at 1 percent level; Malaysia and Vietnam at 1 percent significance level. These outcomes reveal Brunei Malaysia and Vietnam as the ASEAN countries with stochastic convergence towards total average. Double structural breaks are detected in all the countries, excluding Philippines with single structural break.

Table 4: Asian countries unit root tests

Country	ADF		Lee and Strazicich test				
	k	T-Stat	k	T_{B1}	T_{B2}	T-Stat	Break point(s)
ASEAN Countries							
Brunei	0	-2.456	3	1978	1999	-5.606**	(0.2, 0.8)
Cambodia	4	-2.711	2	1982	1995	-3.970	(0.4, 0.6)
Indonesia	4	-1.468	3	1983	1996	-4.895	(0.4, 0.6)
Laos	4	-2.589	1	1982	1997	-3.978	(0.4, 0.8)
Malaysia	4	-0.548	3	1976	1994	-6.691***	(0.2, 0.6)
Philippines	4	-2.176	2	1981	-	-3.973	(0.2)
Singapore	4	-0.444	4	1985	1999	-4.549	(0.4, 0.8)
Thailand	2	-2.428	3	1978	1995	-4.105	(0.2, 0.6)
Vietnam	0	-	1	1976	1982	-6.758***	(0.2, 0.4)
SAARC Countries							
Afghanistan	4	-0.945	1	1982	1995	-4.685	(0.4, 0.6)
Bangladesh	0	-	2	1979	1993	-3.805	(0.2, 0.6)
Bhutan	0	-3.008	1	1982	-	-2.597	(0.4)
India	1	-3.095	4	1978	1991	-3.848	(0.2, 0.6)
Maldvies	0	-2.000	1	1982	-	-3.254	(0.4)
Nepal	2	-2.134	2	1981	1997	-3.718	(0.2, 0.8)
Pakistan	1	-1.399	4	1979	1995	-4.022	(0.2, 0.6)
Srilanka	2	-2.868	2	1978	1985	-5.131	(0.2, 0.4)

T_B is the estimated break points. *, **, *** imply 1%, 5% and 10% levels of significance. Critical values for Lee and Strazicich (2003) are reported in the lower panel of Table 1. Critical values for ADF test obtained from MacKinnon (1996) are -4.03, 3.44 and -3.15 at the 1, 5 and 10 % levels of significance while the corresponding critical values for Lee and Starzicich (2004) one break tests are -5.05, -4.50 and -4.18.

Table 5: β-convergence for Asian countries

Country	Intercept and Trend	
	χ	β
Brunei	2.680***	-0.029***
Malaysia	-0.858***	0.002***
Vietnam	-2.000***	0.040***

*, **, *** implies significance at 10, 5 and 1%, respectively.
The Newey-West estimator is applied to correct for possible serial correlation and heteroscedasticity.

The results for SAARC countries are displayed in the lower panel 4. Considering the ADF test, null of unit root cannot be rejected for any of the SAARC country, with the exclusion of Bangladesh at 5 percent significance level. Using Lee and Strazicich test for SAARC countries, the null of unit root cannot be rejected for any of the country. Dual structural breaks are noted in all the SAARC countries, excluding Bhutan and Maldives with single structural break. This is an indication that none of the SAARC countries stochastically converge to average per capita income of all countries, under consideration. Since Lee and Strazicich test are more robust relative to ADF, it is concluded that SAARC do not display stochastic convergence towards the Asian economies. About 50 percent of the breakpoints were in the late 1990s, a period corresponding to Asian financial crisis of 1997 and the following recovery phase.

In Table 5, the β-convergence result of Brunei, Malaysia and Vietnam -which are all ASEAN countries- are reported. Using the total average, these countries were found to be stochastically convergent. Table 5 demonstrates these countries do not only produce opposite signs but also significant signs as required to fulfill the β-convergence criteria. Three ASEAN nations- Brunei, Malaysia and Vietnam - conditional converge to the total average, while no SAARC country conditionally converges to the total average. These imply that all the inter-regional efforts to foster integration between have not yielded dividends.

5.0 Conclusion

Verifying the convergence of per capita income is not only a means of assessing the validity of Solow growth model, but also evaluating the success of economic integration efforts. However, for ASEAN and SAARC, the paper observes the limited literatures on the regions selected few countries, to appraise existence of convergence. This paper considers stochastic convergence of income for nine (out of ten members) ASEAN and all (the eight) SAARC countries for the period 1970-2009, using the ADF and Lee and Strazicich (2003: 2004) test of unit roots, with structural breaks. Unlike previous papers, this research also checks possible inter-regional stochastic convergence of income among the countries. Further, the β-convergence, considered as the sufficient condition for conditional convergence, is also assessed in the current study.

The findings illustrate Brunei, Malaysia, Philippines Singapore and Vietnam as having stochastic convergence towards ASEAN average. These countries also fulfil sufficient condition criteria, implying limited convergence in ASEAN countries. For SAARC countries, it is observed that Bhutan singly shows stochastic convergence towards the SAARC average and also fulfil sufficient condition criteria. This indicates lack of convergence among SAARC countries as earlier observed by Chowdhury (2004). Considering the average of all countries involved in this study, Brunei, Malaysia and Vietnam demonstrate stochastic convergence towards total average of the Asian countries. These countries also satisfy sufficient condition criteria. Evidently, these results generally point out that while limited convergence exists within ASEAN countries, there is virtually no convergence of income in the SAARC countries.

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Electricity Consumption, Urbanisation and Economic Growth: Evidence from Angola

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Abstract

Utilizing data for 1971 to 2009, this paper examines the causal relationship between electricity consumption and economic growth in Angola. In a trivariate system that is inclusive of urbanization rate, Lee and Srazicich (2004) tests are applied to check the integration properties of the series. ARDL bound test is employed to determine long run association, while standard Granger causality test is utilised to check the flow of causations in the variables. The findings illustrate the presence of long run connection. The paper further observes two-way causation between electricity consumption and economic growth. Similarly, two-way causation is also established for urbanization and economic growth; and between urbanization and electricity consumption. Premised on these findings, Angola is an energy (electricity) dependent country. Hence, electricity generation should be boosted as a way of improving the economy.

Keywords: Electricity consumption, economic growth

1.0 Introduction

Although neoclassical energy-neutrality models imply energy does not influence growth, energy is progressively assuming a leading role in the process of economic progress. Increasing access to modern energy sources in a sustainable manner could directly help to improve livelihoods, as well as indirectly through economic advancement (IEA, 2006). As a form of energy, availability of electricity facilitates domestic and residential needs; improves capital and labour efficiency; boosts export potentials of countries; generates employment and alleviates poverty; and cumulatively promotes socio-economic development. In practice, the degree of development seems to be connected with electricity consumption as 24.84% had access to electricity in least developed countries in 2009, relative to 81.41% of middle income countries. Electricity use in European Union was more than 1,100 percent of the consumption in Sub-Saharan Africa, despite the population in Sub-Saharan Africa exceeding the population in European Union (World Bank, 2011).

In appreciation of the emerging significance of electricity, empirical scholarships emerged over the years to determine the connection of electricity use and the economy. Causality tests are frequently utilised in literature to establish the nature of the relationship between electricity and economic growth in various samples. Causation running from electricity consumption towards economic growth is inferred to mean that electric power stimulates economic activities; hence, expansionary of electric resources will stimulate the economy. Bidirectional causations between electric power and economic growth implies the economy and consumption are interrelated, which also lend credence to expansionary programmes. Causation flowing from economic activities to electricity usage indicates that the economy is not dependent on electric power; thus electricity conservation agenda is appropriate. No causality in electricity consumption and economic growth support neutrality hypothesis, which suggest limited role for electricity consumption on economic growth of a country.

Empirical literatures on causal relations between electricity use and economic growth are prevalent (see Ho and Siu, 2007; Yoo, 2006; Narayan and Smyth, 2005; Yoo, 2005; Shahbaz and Lean, 2012b; Aqeel and Butt, 2001; Jamil and Ahmad, 2010; Chen, Kuo and Chen, 2007). There is also a handful treatment of the nexus in some African countries (see Akinlo, 2008; Squalli, 2007, Wolde-Rufael, 2006; Solarin, 2011; Solarin and Bello 2011; Jumbe, 2004; Akinlo, 2009; Alinsato, 2009; Odhiambo, 2009; Odhiambo, 2010). According to our knowledge, literature on the causal relations between electricity and economic growth on Angola is virtually non-existent.

This paper explores the flow of causation linking electricity use and economic growth in Angola from 1971 to 2009. It is important to investigate the relationship in Angola because as one of the fastest rising economies in the globe; it is challenged by inadequate electric power to fulfil its mounting energy requirements. For example, the economy was in the top-3 fastest-growing countries, after achieving 17% growth rate in the intervening period of 2003 to 2008 (AFDB, 2011), although Angola's electricity provision is among the least efficient in the continent (Pushak and Foster, 2011) and the access to electric power was less than 30% in 2009 (World Bank, 2011). Urbanisation rate is included in the study, with the aim of avoiding omission of variables biasness (Lutkepohl, 1982). On the one hand, electricity use and urbanisation may independently impact economic growth. On the other hand, these variables may enter as intermediate variable in influencing the economy. Reciprocally, economic growth may also influence either urbanisation or electricity use (see Liu, 2009; Abdel-Rahman, Safarzadeh and Bottomley, 2006; Alam, Fatima and Butt, 2007; Davis and Henderson, 2003; Shahbaz and Lean, 2012a). Controlling for urbanisation is justified on the basis of territorial disparity in electricity distribution and economic activities in the country. For instance, most of the flourishing economic activities are taking place in the urban cities. Moreover, Luanda -the capital city of Angola- consumes more than 60 percent of the electricity available in the country (Pushak and Foster, 2011).

The rest of the paper is structured as follows Section 2 covers review of literature pertaining to economic growth and electricity utilization. Section 3 charts the methodology adopted in this paper while Section 4 offers empirical findings and the last section finalises the paper.

2.0 Literature Review

Scholarships on energy use and economic growth link are extensive partly due to the significance of energy in economic development. Nevertheless, energy economists are not able to reach accord on the direction of causations in energy utilisation and economic growth. Differing outcomes exist in literatures that focus on developed economies and employ energy as indicator for energy use (see Stern, 2000; Hondroyiannis, Lolos and Papapetrou, 2002; Oh and Lee, 2004; Glasure, 2002; Ho and Siu, 2007).

Conflicting findings also extend to works which emphasise on unindustrialized economies and adopt electricity use as proxy for energy consumption. Shahbaz and Lean (2012b) assess the connection in electricity consumption and economic growth for Pakistan, while providing for capital and labour for the period, 1972-2009. The study shows bidirectional relationship between electricity and economic growth and positive impact of electricity on growth. On the contrary, Jamil and Ahmad (2010) utilizing annual series for 1960-2008 period, notes single causation from economic activity to electricity utilization. Aqeel and Butt (2001) illustrate unidirectional causation actually flows from electricity utilization to economic activities in Pakistan.

Yoo (2006) examines causation in income and electricity consumption in four ASEAN (Association of Southeast Asian Nations) countries, including Singapore and Malaysia covering 1971-2002. Employing Granger causality test, the study supports dual causations in Singapore and Malaysia. Equally, Tang (2008) demonstrates two-way causation in electricity utilization and Malaysia's economy. On the contrary, Chen, Kuo and Chen (2007) conduct causality on 10 Asian countries including Malaysia and Singapore over the period 1971-2001. Findings illustrate single causality from economic growth to electricity usage in Singapore and Malaysia. Moreover, Chen et al. (2007) note lack of causality in electricity utilization and economy in Thailand, whereas Yoo (2006) show single causality flowing towards electricity utilization from economic growth in Thailand. Squalli (2007) investigates the link between electricity consumption and economic growth for OPEC (Organisation of Petroleum Exporting Countries), inclusive of Indonesia with data ranging from 1980-2003, while utilising ARDL cointegration approach. Squalli (2007) reveals one-way causation from electricity utilization to economic growth in Indonesia. The finding is identical to Chen et al. (2007), but differs from Yoo (2006) who observe one-way causation from growth to Indonesia's electricity use.

Acaravci and Qzturk (2012) examine causality in electricity consumption and economic growth for Turkey, using employment as control variable for the period 1968-2006 and conclude with unidirectional causation flowing from electricity consumption to economic growth. Similarly, Altinay and Karagol (2005), using Turkey data for 1950-2000, reveals identical observation of one-way causality towards income from electricity utilization. On the contrary, Halicioglu (2007) utilising Turkey data for 1968-2005 support causation flowing from economic growth to electricity utilization. Employing data of Turkey for the period of 1960-2002, Narayan and Prasad (2008) indicate no evidence for causal relation between electricity consumption and economic growth in Turkey. Yoo and Kwak (2010) explore causation connecting electricity utilization and economic growth among seven South American countries, which included Venezuela for the period, 1975-2006. Results support two-way causation for electricity use and economic activity in Venezuela. Conversely, Squalli (2007) reveals one-way causation flowing from electric power to growth in Venezuela.

Conflicting findings exist in studies on African countries. The most detailed research on electricity consumption and economic growth in Africa is Wolde-Rufae (2006) which focuses on 17 African economies, including Kenya. Wolde-Rufae (2006) fails to establish any causality connecting electricity consumption and the economy of Kenya. On the other hand, Odhiambo (2010) consider Kenya, with labour participation rate as an intermittent variable for the period of 1972-2006 and provide evidence for unidirectional causality flowing from electricity consumption to economic growth. Moreover, Odhiambo (2009) consider causation test for South Africa. The results support bidirectional causation between economic growth and electricity use in South Africa. Conversely, Wolde-Rufae (2006) detects no causation for South Africa.

Alinsato (2009) consider two countries in an analysis inclusive of Benin for the period 1973/1974 to 2005/2006 and reveal Granger causality runs from growth to electricity consumption. On the other hand, Wolde-Rufae (2006) demonstrates unidirectional causality from electricity consumption to the Benin's economy. Squalli (2007) observes one-way causation from economic growth to electricity utilization in Algeria, whereas Wolde-Rufae (2006) suggests no causation in electricity usage and growth in Algeria.

Ozturk and Acaravci (2011) assess the causation in electricity consumption and real GDP for 11 Middle East and North Africa (MENA) countries, inclusive of Egypt for the period 1971 to 2006. They provide evidence for unidirectional causality from electricity consumption to economic growth. On the other hand, Wolde-Rufae (2006) shows bidirectional causality in Egypt.

Solarin and Bello (2011) assess the causation linking electricity usage and income growth, with inclusion of capital and labour as intermittent variables for the period 1980-2008 for Nigeria. Using ARDL and Granger causality test, findings suggest unidirectional causality from electricity use to economic growth. Akinlo (2009) and Squalli (2007) illustrate same findings. Contrastingly, Wolde-Rufae (2006) reveals single causality from economic growth to Nigeria's electricity utilization. From the preceding literature reviews, conflicting results are observed to exist for each developing country. In these cases, policies makers in the respective energy sectors may premise their decision on which type of causation is most supported in literature. For the Angolan case, no literature exists, let alone quantum of literatures in support of a type of causation.

3.0 Methodology

3.1 Model

Literatures have shown causality may move in any direction in electricity consumption, urbanisation and economic growth. Specification in which any of the variables is entered as dependent with other variables as explanatory may therefore be questionable. The present study subjects each series to exogeneity test, in a model of double–log functional form, which produce superior outcome in comparison to linear functional specification:

$$GRO_t = f(ELE_t, URB_t) \tag{1}$$
$$ELE_t = f(GDP_t, URB_t) \tag{2}$$
$$URB_t = f(GDP_t, ELE_t) \tag{3}$$

ELE is electricity consumption per capita, URB is urbanisation rate, entered as population in urban cities divided by the country's population and GDP is the real GDP. This model is similar to those proposed by earlier scholarships including Liu (2009), Alam, Fatima and Butt (2007) and Shahbaz and Lean (2012a) that added urbanisation rate as a control variable in regressions containing economic growth and energy usage. The present study employs annual series of Angola data from 1971 to 2009. Data on Real GDP per capita data were extracted from the homepage of Angus Maddison (http://www.ggdc.net/maddison/Maddison) and *World Development Indicators* of the World Bank (World Bank, 2011). Urbanisation rate and electricity consumption per capita data were sourced from *World Development Indicators* (World Bank, 2011).

3.2 Unit Root Test

Several types of unit root tests are well documented in the literature. Most of these tests inclusive of Augmented Dickey Fuller (ADF) and Phillip and Perron Test (PP) test become less reliable in the incidence of structural break. Specifically, they tend to show biasness against rejecting the null hypothesis when series is stationary with a structural shift (Perron, 1989). Consequently, scholarships including Perron (1989) and Zivot and Andrews (1992) provide for structural breaks in their stationarity tests. The method proposed by Perron (1989)

involves arbitrary selection of break, which has been challenged on the ground of being subjective in nature. Zivot and Andrews (1992) proposed endogenous method of determining structural break. This endogenous test assumes no break(s) under the null of unit root, which tends to cause size problems such that null of hypothesis is frequently rejected. In addition, Lee and Strazicich (2001) note that the method estimates the break incorrectly, at a time after the actual break. The current paper employs Lee and Strazicich (2004), which does not suffer from the aforementioned drawbacks.

3.3 Bound Test

In order to examine the presence of long run link, the paper utilise ARDL bounds testing approach to cointegration as developed by Pesaran, Shin and Smith (2001). Several methods of cointegration have been documented in the literature inclusive of Engle and Granger (1987), Johansen (1988) and Johansen and Juselius (1990) procedures, we select bound test ahead of the other cointegration techniques due to many factors. Bound testing utilizes single equation, whereas Engle and Granger (1987) goes through two-step estimation, in which the error produced in the first step, is transferred into the second step. Critical values frequently cited for Johansen test are usually incorrect (Turner, 2009), different from bound testing, which operates on classic(s) critical values. Bound testing involves the use of ordinary test squares (OLS) approach on error correction model:

$$\Delta GRO_t = \xi_{10} + \sum_{i=1}^{p} \xi_{11} \Delta GRO_{t-i} + \sum_{i=0}^{p} \xi_{12} \Delta ELE_{t-i} + \sum_{i=0}^{p} \xi_{13} \Delta URB$$
$$+ \lambda_1 GRO_{t-1} + \lambda_2 ELE_{t-1} + \lambda_3 URB_{t-1} + \mu_{1t} \tag{4}$$

$$\Delta ELE_t = \xi_{20} + \sum_{i=1}^{p} \xi_{21} \Delta ELE_{t-i} + \sum_{i=0}^{p} \xi_{22} \Delta GRO_{t-i} + \sum_{i=0}^{p} \xi_{23} \Delta URB$$
$$+ \lambda_1 ELE_{t-1} + \lambda_2 GRO_{t-1} + \lambda_3 URB_{t-1} + \mu_{2t} \tag{5}$$

$$\Delta URB_t = \xi_{30} + \sum_{i=1}^{p} \xi_{31} \Delta URB_{t-i} + \sum_{i=0}^{p} \xi_{32} \Delta GRO_{t-i} + \sum_{i=0}^{p} \xi_{33} \Delta ELE$$
$$+ \lambda_1 URB_{t-1} + \lambda_2 GRO_{t-1} + \lambda_3 ELE_{t-1} + \mu_{3t} \tag{6}$$

Here Δ is the first difference and *t*he residuals μ_{it} fulfils classical assumptions. Pesaran et al. (2001) suggested the usage of *F-test* on lagged terms in (4) to (6) check the existence of long run link such that $\left(H_0 : \lambda_1 = \lambda_2 = \lambda_3 = 0 \right)$. Pesaran et al. (2001) produce lower bounds critical values *I*(0) and upper bounds critical values *I*(1). However, critical values suggested in Pesaran et al. (2001) are not appropriate for small sample. Narayan (2005) proposed different critical values, which are more compatible for finite sample. This paper adopts Narayan (2005) critical values. In accordance to bound testing, if the computed calculated value is smaller than the lower critical value, the null cannot be rejected, suggesting no cointegration. If the computed value is higher than the upper critical value, the null hypothesis is rejected, indicating long run relationship. The result is indecisive, if the computed value lies within the bound test critical values.

3.4 Granger Causality Test

Upon the ascertainment of long run relationship in the series, we assess possible flow of causation(s) through Granger causality test. With the establishment of long run connection, Granger causality is estimated in vector error correction model as follows:

$$(1-L)\begin{bmatrix} GRO_t \\ ELE_t \\ URB_t \end{bmatrix} = \begin{bmatrix} \gamma_{10} \\ \gamma_{20} \\ \gamma_{30} \end{bmatrix} + \sum_{i=1}^{p}(1-L)\begin{bmatrix} a_{11i}a_{12i}a_{13i} \\ b_{21i}b_{22i}b_{23i} \\ c_{31i}c_{32i}c_{33i} \end{bmatrix}\begin{bmatrix} GRO_{t-i} \\ ELE_{t-i} \\ URB_{t-i} \end{bmatrix} + \begin{bmatrix} \chi_1 \\ \chi_2 \\ \chi_3 \end{bmatrix}\begin{bmatrix} ECT_{t-1} \end{bmatrix} + \begin{bmatrix} \varepsilon_{1t} \\ \varepsilon_{2t} \\ \varepsilon_{3t} \end{bmatrix} \qquad (7)$$

Besides the variables defined above, $(1-L)$ is the difference operator, ECT_{t-1} is the lagged error correction term resulting from the long-run cointegrating association (which is excluded, if there is no evidence for cointegration among the variables). ε_{it} are assumed to fulfil classical assumptions. The regressors are the lagged terms of all the series, including the terms of the dependent variables and the error correction term (if applicable). Joint *F-test* is employed on the lag terms of each variable to prove the presence of short run causal link in the series. Incidence of long run causal link is determined by the significance *t-test* of the lagged error correction term.

4.0 Empirical Findings

In the literature, bound test for cointegration does not depend on knowing the variables integration properties. However, ARDL is inapplicable if the series attain stationarity beyond first difference. Determining the integration properties of the variable is also needed in a bid to correctly specify Granger causality test (i.e if the variables are I(0), then variables in Granger causality are specified in level, but if the variables are I(1), then the variables are specified in first difference with or without the error correction term depending on coitegration). Premised on these arguments, the findings of stationarity tests are reported in Table 1. Commencing with ADF test, it is noted that null hypothesis of unit root cannot be rejected for any of the variables in levels. When the variables are at first difference, the null of nonstationarity is rejected for all the variables. The PP test reveal similar results, indicating the series are I(1). Nevertheless, the power of ADF and PP test are impaired, when breaks are present; therefore they must be reinforced with another stationarity test. Considering Lee and Starzicich (2004), null hypothesis of unit root cannot be rejected for any of the series in levels at the 10% level. When the variables are at first difference, the null of nonstationarity is rejected for all the variables, validating earlier observation of ADF and PP tests.

Table 1: Unit Root Tests

	ADF		PP		Lee and Strazicich (2004)					
	Level	1st Diff.	Level	1st Diff.	Level			1st Diff.		
	T-stat	T-stat	T-stat	T-stat	T-stat	Break	Λ	T-stat	Break	λ
GRO_t	-0.575[5]	-3.313*[5]	-1.757[5]	-3.861**[5]	-3.527[1]	1997	(0.6)	-4.899**[4]	1992	(0.6)
ELE_t	-1.064[0]	-3.673**[5]	-2.852[0]	-8.538***[5]	-3.392[1]	1992	(0.6)	-6.996***[1]	1976	(0.2)
URB_t	-1.814[5]	-3.154[3]	2.480[5]	-7.788***[3]	-3.181[2]	1977	(0.2)	-4.402*[5]	1995	(0.6)

*, ** and *** denote significance at 10%, 5% and 1% levels, respectively. Akaike Information Criterion serves is used for calculating optimal lag size of ADF and PP tests. Critical values of ADF and PP are from MacKinnon (1996), while critical values for Lee and Starzicich one break tests are from Lee and Starzicich (2004). [] is optimal lag.

Table 2: Bounds Testing to Cointegration

ARDL cointegration test				Diagnostic tests		
Dependent Variable	Optimal lag lag length	F-Statistics		χ^2_{SERIAL}	χ^2_{ARCH}	χ^2_{NORMAL}
GRO_t	(3,4,1)	3.742*		0.680[1]	0.306[1]	0.179[1]
ELE_t	(1,1,1)	3.920*		0.846[1]	0.726[1]	0.670[2]
URB_t	(2,4,3)	5.495**		0.257[1]	0.153[1]	0.166[2]
Critical Values	10%I(0)	10%I(1)	5%I(0)	5%I(1)	1%I(0)	1%I(1)
Narayan (2005)	2.835	3.585	3.435	4.260	4.770	5.855

* and ** denote significance at 10% and 5% levels, respectively. Akaike Information Criterion serves as basis of determining optimal lag size. P-values are stated for diagnostics tests. The specification of the bound test involves restricted intercept with no trend.

Following the determination that the variables are stationarity at first difference, findings of bound test approach to cointegration is reported in Table 2. Result illustrates existence of cointegration, when *GRO* is dependent variable as the computed F-statistics (3.742) is greater than upper bound critical value (3.585) at 10% level. When *ELE* is the dependent variable, another cointegration point is noted as the computed F-statistics (3.920) is greater than upper bound critical value (3.585) at 10% level. Cointegration is also observed with URB as the dependent variable, with the computed F-statistics (5.495) is greater than upper bound critical value (4.260). Generally, this implies three cointegration vectors in economic growth, electricity consumption and urbanization rate. Nevertheless, establishment of such linkages do not suggest flow of causation between series. Hence, in the next section a causality test is investigated.

Table 3: Granger Causality Test

Dependent Variable	Short run causality			Long run Causality
	$\sum \Delta GRO_{t-i}$	$\sum \Delta ELE_{t-i}$	$\sum \Delta URB_{t-i}$	ECT_{t-1}
ΔGRO_t	-	2.082	1.493	-2.257**
ΔELE_t	0.830	-	4.594***	-1.914*
ΔURB_t	3.364**	2.116	-	-3.404***

***, ** and * denote the significance at the 10, 5 and 1 per cent level, respectively. Variables are expressed in natural logarithmic form. The t-statistic is reported for the ECT. Newey- West standard errors were utilized to circumvent hereoscedasticity and serial correlation.

In Table 3, the study presents the outcomes of Granger causality, which are very relevant to actors in the realm of environment, energy, and economic policy decisions. As the variables are cointegrated, directions of causality are divided into short- and long-run causations. Short run causality, conducted by *F-test* suggests unidirectional causality from *URB* to *ELE.* One-way causality is also noted from *GRO* to *URB* in the short run. No causation is observed for *ELE* and *URB* in the short run. Considering long run causality, while using the coefficient of *ECT* via *t-test,* we discover bidirectional causality in all the variables. For example, while causality flows from *ELE* to *GRO* at 5% level, there is a feedback from *GRO* to *ELE* at 10% level in the long run. Yoo and Kwak (2010) note identical result for Venezuela, which is a sister oil producing country and member of OPEC; and Wolde-Rufae (2006) establish identical result for Egypt, a fellow African country. Besides, causality flows from *URB* to *GRO* at % level, with feedback from *GRO* to *URB* at 1% level in the long run. Findings also show feedback causality between *ELE* and *URB* in the long run. In summary, bidirectional causation is present in the series.

5.0 Conclusion

This study assesses causation in electricity use and economic growth in Angola for the period 1971-2009. The model is supplemented with urbanisation rate as a control variable. Employing bound testing to verify existence of long run connection, Granger causality test is employed to detect causation among the variables. The findings established three cointegrating vectors, signifying the presence of long run links. The findings further demonstrate feedback causal connection between electricity use and economic growth in line with the findings of Yoo and Kwak (2010) and Wolde-Rufae (2006). Similarly, two-way causations are detected for economic growth and urbanisation, and between urbanisation and electricity usage. These foregoing results provide evidence for expansion of energy (and in particular electricity). Thus, concerted efforts must be made to improve not only electricity supply but also electricity distribution in the country. In terms of supply of electricity, the government should expand the sources of electricity generation especially natural gas, since the country is endowed with abundance of oil and gas. Beyond electricity supply, distribution of electricity must be extended throughout the economy, particularly in the rural centres as this may not only curb the speed of urbanisation, but also developed the rural sectors.

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Retirement Programs in Malaysia

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Abstract

The world wide ageing population has called for a more comprehensive retirement program to protect the elderly against loss of income during retirement. Malaysia currently has two major retirement programs available that are the pension scheme and the Employee Provident Fund for the civil servants and the private workers respectively. Another retirement program that has a limited coverage is the Army Forces Fund, that is for the armed forces of different rank. The informal sectors; workers outside the formal sector, employed in small often family-based enterprises, owner of own business (self-employed), workers affected by the informalization of labor relations with their employers, self-employed and those engaging in the primary sector (agriculture and fishery) are often not covered by any formal retirement scheme. The aim of the paper is twofold: to evaluate the coverage and benefits of the current retirement program in Malaysia and to investigate the role of the newly introduced private retirement scheme (PRS). The study finds that there Malaysia's retirement program is not a universal coverage, in which the protection does not cover the entire population. The upcoming Private Retirement Scheme is a good opportunity for the informal sector workers to save for their old ages through fully governed-mechanism. Nevertheless, the success of the program to include the informal sector include proper planning in addition to better coverage and thorough understanding of the schemes by the recipients.

Keywords: Retirement program, informal sector, private retirement scheme

1.0 Introduction

Retirement programs are basically insurance programs, which provide income security for the older workers after retirement. Retirement programs are of two types; fully funded or noncontributory and unfunded or contributory retirement programs. Fully Funded or noncontributory programs are fully funded by the government. Employees do not contribute in those programs, but the unfunded or contributory retirement programs collects contributions from employees and employer, and the benefits are paid to employee at retirement age in lump sum on in monthly installments (Feldstein, 2001).

The current fundamental problems facing many developing countries are the weak level of social protection coverage of population (Frota, 2008). In Malaysia, approximately 30 percent of the working population is not covered by any social protection scheme Ragayah (2005). It is further estimated that Employee Provident Fund[1] actively covers only 52 percent of the Malaysian labor force (Ramesh, 2005). Hence, approximately 47 percent of the labor force is not covered by any formal social protection schemes, as these are the people engaging in informal sector. We defined informal sector to include workers outside the formal sector,

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[1] Employee Provident Fund is a private workers retirement scheme program where employee and employer contributes to the fund, to be accumulated and withdrawn at retirement.

employed in small often family-based enterprises, owner of own business (self-employed), workers affected by the informalization of labor relations with their employers, self-employed and those engaging in the primary sector (agriculture and fishery).

These workers of the informal sector cannot be covered by any formal social security retirement program and are unable to get retirement benefits in their old ages (Unni et al., 2003). Therefore these workers are unable to fulfill their financial needs and face poverty in their old ages. These people do not contribute in the schemes designed for the formal sector workers for two reasons. First reason is that these schemes do not fulfill their priority needs. To fulfill their financial requirements these people have set up their own schemes on their own behalf, which are according to their needs. The second reason is contribution rates of these schemes are high and the income of informal sector workers is very low. Therefore they do not have the contribution power to contribute in these schemes (Ginneken, 1999). Unni et al. (2003) also stated in their study that day by day increasing poverty in rural population is the big hurdle in administrating retirement programs for the informal sector workers.

Nowadays most of the countries are establishing social security retirement programs for the workers. Among them are Employee Provident Fund in India, Mandatory Provident Fund in Hong Kong, Central Provident Fund in Singapore and South Africa, Employees Provident Fund in Sri Lanka, and Employees Old Age Benefit Scheme in Pakistan. Malaysia has basically two main retirement programs; Civil Services Pension Scheme and Employees Provident Fund (EPF). Now the government of Malaysia is going to introduce a social security retirement program for the informal sector workers namely Private Retirement Scheme (PRS).

The aim of the paper is twofold: to evaluate the coverage and benefits of the current retirement program in Malaysia and to investigate the role of the newly introduced private retirement scheme (PRS).

2.0 Coverage of Current Retirement Programs in Malaysia

The formal retirement programs in Malaysia covers three broad categories of workers that are civil servants, armed forces of other ranks and the private workers through the Pension Scheme, Armed Forces Fund and Employee Provident Fund.

2.1 Pension Scheme

Pension scheme is a defined benefit scheme for the civil servant. This scheme is divided into four types, compulsory pension, compulsory retirement at the instance of government, optional retirement and retirement due to privatization of government agency. The employees are eligible to receive a fixed monthly income at retirement, service gratuity and free medical treatments at government hospitals and some other benefits.

2.2 Armed Forces Fund (Lembaga Tabung Angkatan Tentera, LTAT)

LTAT is a statutory body that provides a retirement scheme for members of the other ranks[2] in the Armed Forces. LTAT is governed by the parliament act 1973, which made it

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[2] Other ranks are all military personnel below commissioned officers in rank. This include Warrant Officers, Non-Commissioned Officers, and Privates

compulsory for members of other ranks to become LTAT members. In 2000, the LTAT act was amended to include those voluntary forces or *Anggota Kerahan Angkatan Sukarela* (AKAS) as LTAT's voluntary contributors. Similar to the EPF, LTAT is funded by contributions from employees and employer. In this case, the employer is the Malaysian government.

For military officers, this scheme acts as a saving scheme where they can contribute voluntarily to the fund. The contribution starts from a minimum of RM 25 up to a maximum of RM 500, where a contribution should be in multiples of five. Previously the maximum amount was RM 200. Voluntary members will not receive any additional contribution from the government. An added advantage of being a member whether compulsorily or voluntarily is that members enjoy the disablement benefit scheme and their dependants gain from the death scheme.

A member could only withdraw the entire saving from the fund at the age of 50 and no option is given for monthly payment to be made during retirement. The payments could be divided into two different categories. Members who receive a pension from the government would only receive the employee's contribution upon retirement. Whereas, a non-pensionable[3] member would receive the employee's contribution, the government's contribution and other accumulated benefits. Payments, however, are subject to any government loans which would be deducted from the amount paid before retirement. A non-pensionable member can also withdraw the entire saving from the fund one-month after dismissal from the army. For a voluntary member, however, there is no restriction on withdrawal of money from the fund. But once saving is withdrawn, the LTAT membership is terminated.

2.3 Employees Provident Fund (EPF)

Employees provident fund is a scheme introduced for private sector employees in Malaysia. Initially this scheme was introduce in West Malaysia in 1951 under employees provident fund act. This scheme was started in East Malaysia in 1967 and was fully implemented in 1969. This scheme is designed for the private sector employees. All the informal sector employees working in the firms more than 5 employees are covered under this scheme and they are required to contribute in this scheme. The public sector employees who are not eligible for pension scheme are also eligible to contribute in employees provident fund. Employees provident fund also encourages to self-employed persons for voluntary contributions in this scheme.

Employees provident fund is a contributory scheme. Both employee and employer contribute in the scheme. Contribution by the employee is 11 percent of monthly salary and contribution by the employer is 12 percent of the monthly salary of the employee. Monthly contribution rate by the self-employed is fixed at RM 50 per month.

Employee can withdraw money from his savings to fulfill the expenses of education of his own or of his children. He can also withdraw money to redeem a housing loan or to buy a new house. The contributions collected by the employee and employers are invested in funds approved by EPF. The dividends from this investment are then paid to employees on yearly basis. Employees provident fund has fixed minimum dividend rate to 2.5 percent.

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[3] Non-pensionable members are those who have been dismissed from the army.

3.0 Private Retirement Scheme (PRS)

According to section 139A of capital market and services act 2007 Malaysia, private retirement scheme is basically a saving scheme, which is administrated by a PRS provider. it provides long term saving options to its members. The amount of benefits will only be calculated according to the contributions made to the scheme, any declared income, gains and losses in respect of such contributions. This does not include any pension fund or any retirement scheme established by the government. This scheme covers all self-employed workers, businessmen and other workers who are working in the informal sector. This scheme also encourages existing Employees Provident Fund members to contribute in this scheme as an additional saving plan for their future. This scheme will be financed by the contributions from employees and employers. All the contributions made by the members will immediately include in members accrued benefits account.

Amount collected by this scheme will be invested in some approved areas like transferable securities, cash deposits and money market instruments, shares in collective instrument schemes and real estate etc. The return from these investments then shell vest in member's accrued benefits account. A member can request for the withdrawals from private retirement scheme, payable in lump sum or in installments. These withdrawals are allowed at retirement, in case of worker's death, pre-retirement withdrawals, and if member permanently leaves Malaysia

At the time of retirement the member will get all the savings in his account in the form of lump sum or monthly payments. Member is also provided pre-retirement benefits in the form of pre-retirement withdrawals. A member can withdraw savings from the scheme after one year of first contribution. For the purpose of preserving accrued benefits of member in private retirement scheme following steps are followed

- No private retirement scheme provider or trustee shall pay or dispose any information about accrued benefits.
- No parts of accrued benefits shall be taken in execution of a debt or be the subject of any charge, pledge, lien, mortgage, transfer, assignment or alienation (section 139AZ of capital market and services act 2007 Malaysia).
- Any withdrawal under section 139X of capital market and services act 2007 Malaysia, shall not affect accrued benefits of member.

4.0 Conclusion

Civil services pension scheme is for only for public sector employees. This scheme is divided into four types, compulsory pension, compulsory retirement at the instance of government, optional retirement and retirement due to privatization of government agency. The employees are eligible to receive a fixed monthly income at retirement, service gratuity and free medical treatments at government hospitals and some other benefits. On the other hand employees provident fund is the scheme for the workers of private sector. Employees provident fund only covers the employees of the firms having more than 5 employees. Means that the Employees provident fund covers only the formal sector workers. Employees and employer contribute in this scheme and then employee gets the benefits at retirement. Benefits offered in employees provident fund are tax incentives, retirement incentives, death incentives, disability incentives, withdrawals for education and housing and dividends on investments. Employees provident fund also encourages to self-employed persons to contribute.

Both pension scheme and employees provident fund covers the public sector and the formal sector employees only. These schemes do not pay any attention at informal sector employees. Employees provident fund only pays attention on self-employed persons, other informal sector employees are ignored. The number of employees in informal sector is increasing day by day. No formal retirement program is available for the employees of informal sector therefore the employees of informal sector face poverty in their old ages.

This study concludes that currently there is no formal retirement program for the informal sector workers in Malaysia and that the coverage of the current schemes is targeted scheme rather not universal. Due to demographic changes and increase in life expectancy aging population is increasing. Most of the workers belong to the informal sector and due to the absence of any formal retirement program for informal sector workers they face poverty in their old ages. The upcoming Private Retirement Scheme is a good opportunity for the informal sector workers to save for their old ages through fully governed-mechanism. This scheme covers all the informal sector workers, which are neglected by the available retirement programs in Malaysia. Through this scheme the workers of informal sector can save for their retirement. If this scheme is successfully implemented then it will be helpful to eradicate poverty among informal sector workers in Malaysia.

For successful implementation of private retirement scheme government should consider the following steps
- Workers of informal sector should be properly informed about the scheme.
- Low-income level of the informal sector workers should also be considered during policy making for contributions and there is need for more attractive incentives for the lower and middle-income group.
- More introductory programs should be arranged to encourage and motivate workers to contribute in this scheme.

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Global Food Prices Hike, Poverty And Sustainable Economic Development: Experience of Selected Asian Transitional Economies

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Abstract

Sustainable Economic Development (SEC) is the ultimate solution to human needs in the context of scarcity of economic resources and their optimal utilization. Sustainable development is assumed to be economically viable, socially acceptable and an environmentally sound process. This paper focuses to gauge the relationship between sustainable economic development and poverty in the Asian transitional economies. The methodology of the study is designed to answer two questions. Firstly, how has the global food prices affected the level of poverty in the selected transitional economies of Asia namely: Pakistan , India, Bangladesh, Nepal, the Philippine, Bhutan, Sri Lanka and Thailand? Secondly, how increasing poverty in the region can be an obstacle to SEC? The poor are very sensitive to food prices because they spend approximately 60 percent of the total budget on food items; therefore, any change in food prices will significantly affect their livelihood. The study uses various reports of the developlopment aid agencies to investigate the socioeconomic profile of the poor in the Asian region. Based on these reports, the study reveals that 44 million people in the developing countries have been pushed into extreme poverty due to higher food prices and a further 10 percent rise in domestic food prices in developing Asia (3.3 billion people) could push an additional 64.4 million into poverty, based on the $1.25-a-day poverty line. Furthermore, the impact of higher food prices more adversely affected rural India followed by Bangladesh and Pakistan respectively, while Bhutan and Thailand are the least affected economies of the region. The findings of the study suggest that poverty adversely affects all the pillars of sustainable development, because it restricts access to the basic facilities, resulting in the social and environmental issues. Finally, the paper concludes that the objective of sustainable economic development cannot be achieved without caring the poor and the marginalized population of the transitional Asian economies.

Keywords: Sustainable economic development, Transitional Asian Economies, global food prices impact assessment.

1.0 Introduction

Sustainable Development (SD) is considered as a better measure of human material development than any other measure used in the known history of human beings(Stevens, 2005) . This concept takes into consideration multi-dimensional aspects of development as a benchmark. In general, Sustainable Development is assumed to be economically viable, socially acceptable and an environmentally sound process(Bruno Carrasco, 2012). However, sustainable development as an ultimate optimal solution of material development can lead to more to especially in the developing countries. Poverty break downs the process of SD in several ways. Firstly, the poor majorly depend on natural resources upon which all life depends. Secondly, poverty is often associated with degraded rural environments, which has

many consequences. A healthy natural environment sustains non-monetary economies and is the "social security" of the rural populations (WWF, 2011). When the productive functions of healthy rural environments degrade, or when people lose access to those productive environments, this can lead to rural-urban migration for the search of alternative livelihoods, which in turn can exacerbate urban poverty. Environmental degradation therefore undermines sustainable livelihoods and affects the rural poor by disproportionately affecting their health, livelihoods and security, and can worsen poverty in an already stressed urban environments. It is clear that weakening in any one of the pillars of Sustainable Development (SD) leads to problems in the others. Addressing any of the pillars in isolation, without considering their interactive effects, can give rise to unanticipated consequences. For example, raising energy prices significantly to reduce energy emissions may disproportionately affect the urban poor, who often spend a greater proportion of their income on energy, thus increasing income disparities (WWF, 2011). Research and policy has tended to focus on the relationship between poverty and environmental degradation in terms of pointing out that the poor are both victims and agents of environmental degradation: victims in that they are more likely to live in an ecologically vulnerable areas, agents in that they may have no option but deplete environmental resources thus contributing to environmental degradation(Leach, 1991). However, it is also acknowledged that the poor often have practices that conserve the environment. Great physical and spatial variability in natural resource endowments also seems to complicate the picture (Redclift and Skea 1997). In general terms, the underlying causes of both poverty and environmental degradation are structured by uneven processes of development operating via technologies, incentives, institutions and regulations which favor some social groups and some geographical areas over others (Leach, 1991).

"At the micro-level (individual, household, village), environmental entitlements are determined by a range of factors including natural resource tenure arrangements, labor mobilization arrangements, social relations (including gender), capital endowments and technology. At the macro-level (sub-national, national, global), wider processes operate via decisions on technologies, incentives, institutions and regulations (land rights) to favor some social groups and some geographical areas. These processes include demographic changes, environmental processes, macroeconomic policies, markets and prices, donor and development agency approaches to poverty and environment, agricultural research, governance and political conflict" (Rachel Masika, 1997).

One of the important causes of poverty in developing countries is continuous global food price hike which aggravates poverty in an already marginalized economies. This study aims to identify the indirect adverse effects of the global food price hike on Sustainable Economic Development (SEC). For this purpose, the framework of the study is designed to investigate: (i) how global food prices hike causes poverty in the selected transitional economies of Asia of Pakistan , India, Bangladesh, Nepal, Phillipine, Bhutan, Srilanka and Thailand, and (ii). how increasing poverty in the region become an obstacle to Sustaible Economic Development? The following sections focuses on the global food prices hike and brief causes of demand-supply mismatches and its effect on poverty in the selected Asian transitional economies.

2.0 Global food prices hike and its effect on poverty in developing Asia

Global food prices have increased rapidly especially in the last few years. This tendency has further intensified the misfortune of the poor Asians. The Asian Development report suggests that "if a 30 percent increase in global food prices persists throughout 2011 and extended to

2012, gross domestic product (GDP) growth for some food-importing countries in the region could be choked off by up to 0.6 percentage points and if combined with a 30 percent increase in world oil prices, GDP growth could be reduced by up to 1.5 percentage points. Higher food prices erode the purchasing power of households and undermine the recent gains from poverty reduction. A 10 percent rise in domestic food prices in developing Asia (3.3 billion people) could push an additional 64.4 million into poverty, or lead to a 1.9 percentage point increase in poverty incidence based on the $1.25-a-day poverty line. The frequency with which food price spikes have occurred in recent years suggests that long-term solutions—such as improvements in productivity, increases in agricultural investment, stronger market integration, targeting subsidies to the poor, and global and regional cooperation—need to be implemented to secure food supplies for the world's growing population" (Asian development Bank, 2011). This report sensitizes about the shocking reality of insufficient food supply for millions of the poor, the majority of whom are in Asia. The global food prices, on a year by year basis, has increased by more than 30 percent between March, 2010 and March, 2011 (Pakistan Economic Survey, 2010-11). This is due to the demand –supply mismatch of food. On the demand side, it includes a growing world population, a strong income growth in emerging economies, and changing diets away from staple foods toward increased consumption of meats and processed foods that requires much larger proportions of food as feed stock and inputs. Supply-side factors include competing use of food grains, especially corn and rapeseed oil to produce bio-fuel, urbanization and conversion of agricultural land for commercial purposes, increasing scarcity of fresh water for irrigation, low crop yields, rising input costs and the neglect of investment in agricultural technology, infrastructure, processing facilities, and agriculture research and development.

Table 1:Impact of domestic food prices on poverty for 25 Asian countries[1]

	Poverty before	Poverty after 10%	20%	Food Price 30%
Based on $1.25-a-day poverty				
Percentage of poor (%)	27.	29.0	30.	32.
Change in percentage of poor (Percentage points)		1.9	3.9	5.8
Number of poor (in millions)	903	968	1,032	1,097
Change in number of poor (in millions)		64.4	128.8	193.2
Poverty gap ratio (%)	6.79	8.15	9.51	10.86
Change in poverty gap ratio (Percentage points)		1.4	2.7	4.1

Note: The estimates of poverty impact have been derived using the price elasticity of poverty, which indicates the percentage increase in poverty when food prices increase by 1%. This elasticity was estimated for both headcount ratio and poverty gap ratio for each of the 25 countries in Asia and the Pacific using the latest POVCAL database.
Source: ADB staff calculations based on the latest POVCAL database (accessed 18 February 2011).

According to a ADB staff calculation, an average family in developing counties spends about half of its budget on food stuff. This implies that those families who are living below the

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[1] The table has been copied from Pakistan Economic Survey 2010-11

poverty line will spend more that 60 % of the total family's budget. The poor are very sensitive to changes in the food prices, which will significantly lower the purchasing power of the poor. Table-1 shows the ADB estimates of the impact of higher food prices on poverty for a group of 25 developing countries in the region, accounting for more than 3.3 billion people.

The table shows that based on $1.25 a day poverty line income, a 10 percent increase in domestic prices will result in an increase of the incidence of poverty to 29 percent. Similarly a 20 and 30 percent increase in domestic food prices will increase the number of poor to 30.9 and 32.9 percent respectively in the 25 Asian countries[2]. In terms of number of the poor, a 10 percent, 20 percent and 30 percent increase in domestic food prices will increase the number of the poor by 64.4, 128, and 193.2 million respectively in the Asian region. Similarly poverty gap ratio increase to 8.15, 9.51 and 10.86 percent respectively resulting from a 10, 20 and 30 percent increase in domestic price level.

This ADB calculations also shows that the majority of Asians, who are just above the poverty line, are vulnerable to poverty.

The following table 2 shows the effect of global food prices on selected Asian countries. The calculation used in this table is borrowed from the Asian Development Bank report.

Table 2: Impact of global food prices on selected Asian countries[3]

	Change in % of Poor with an Increase in Food			Change in Number of Poor (in millions)		
	10%	20%	30%	10%	20%	30%
Bangladesh	2.50	5.00	7.50	3.83	7.65	11.48
India Rural	2.90	5.80	8.80	22.82	45.64	69.45
India Urban	2.10	4.30	6.40	6.68	13.36	20.04
Pakistan	2.20	4.50	6.70	3.47	6.94	10.41
Bhutan	1.80	3.50	5.30	0.01	0.02	0.03
Philippines	1.60	3.20	4.90	1.37	2.75	4.12
Sri Lanka	1.20	2.40	3.60	0.24	0.47	0.71
Thailand	0.10	0.20	0.20	0.05	0.10	0.15
Viet Nam	1.90	3.70	5.60	1.55	3.10	4.65

Source: ADB staff calculations using the latest POVCAL database (accessed 18 February 2011)

The table represents the impact of food prices on poverty in selected Asian countries. Almost all the selected countries are adversely affected by the higher food prices, with as high as 45.64 million in Rural India, about 7.65 million in Bangladesh, 6.94 million in Pakistan and as low as 0.1 million in Thailand given a 20 percent increase in food price. In many Asian countries domestic food prices increase by more than 20 percent on a year to year basis. This alarming figures requires urgent attention of the United Nations and other world developing agencies to take proactive steps towards the solutions of this universal issue. The statement made by Francis (2001) that "if a free society cannot help the many who are poor then it cannot save the few who are rich" is relevant to this situation

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[2] For detail of country list see appendix-1
[3] The table has been copied from Pakistan Economic Survey 2010-11

3.0 The Impact of Poverty on Sustainable Economic Development

This section focuses how poverty can breakdown the process of Sustainable Economic Development through different channels. As mentioned earlier that poverty is often associated with degraded rural environments, which has many costs, because a healthy natural environment sustains non-monetary economies and can be viewed as the "social security" of the rural populations. When the productive functions of a healthy rural atmospheres is damaged or when people lose access to these productive environments, this can result in rural-urban migration in search of alternative livelihoods, this can exacerbate urban poverty. A sound environment alone will not alleviate poverty, but attempts at poverty alleviation in isolation of the environment will sooner or later be undermined. It is evident today that the costs of past environmental mistakes are being borne by the current generation. Recent data have shown that natural disasters, exacerbated by the mismanagement of natural systems, have the greatest human impact on the poorest countries.

Sustainable Development is an integrated process which necessitates that all pillars of SD should be simultaneously addressed. The solution of any pillar in isolation will adversely affect the rest of the pillars. For example, a significant increase in energy prices for the purpose of reduction in energy radiations may unduly affect the urban poor, who spend a large amount of their income on energy. Similarly, agricultural subsidies in food-surplus countries may weaken food production by the rural poor, who are forced to sell their crops at an unrealistically low price. Such inequities contribute to social unsustainability, which may in turn be reflected in the decreasing ability to design and implement sound environmental, economic and social policy. The end result is a failure of governance (WWF, 2011).

4.0 Conclusion

This paper focuses to determine the relationship between sustainable economic development and poverty in the Asian transitional economies. The findings of the study can be summarized as:

- There is a strong positive correlation between food prices and poverty in the selected Asian countries because more than 60percent of the total budget of poor households are allocated to food items.
- Based on the reports of developing agencies the study reveals that 44 million people in the developing countries have been pushed into extreme poverty due to higher food prices and a further 10 percent rise in domestic food prices in developing Asia (3.3 billion people) could push an additional 64.4 million into poverty, based on the $1.25-a-day poverty line.
- By taking into consideration the selected Asian countries, the study further reveals that the impact of higher food prices has more adversely affected rural India followed by Bangladesh and Pakistan respectively, while Bhutan and Thailand are the least affected economies of the region.
- The findings of the study suggest that poverty adversely affects all the pillars of sustainable development, because it restricts access to the basic facilities, resulting in the social and environmental issues.
- Finally, it can be concluded that the objective of sustainable economic development cannot be accommodated without caring the poor and the marginalized segments of the transitional Asian economies.

5.0 Policy implications

Some important policy implications are suggested in this section.

- A strong positive correlation between food prices and poverty, while a significant negative relationship between poverty and the process of Sustainable Economic Development necessitate that as a prosperous and welfare nation we must revise our priorities in the context of present scenario.
- The sensitive relationship between food prices and poverty demands that poverty reduction strategies must take into consideration this phenomenon for example in spite of allocation of million dollars to empower the poor and marginalized segments of a country by running various poverty alleviation schemes, we can achieve the same target with the relatively less budget by controlling food prices in the economy.
- As discussed earlier that Sustainable Development is an integrated process therefore, a policy measure to strengthen any pillar of SD must not be contradictory to the rest of the pillars.

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Appendix 1: Impact of Food Price Increases on Poverty for 25 Developing Asian Countries ($1.25-a-day Poverty Line)

Country's Name	Change in Percentage of Poor (in percentage points) with an Increase in Food Prices by			Change in Number of Poor (in millions) with an Increase in Food Prices by		
	10%	20%	30%	10%	20%	30%
Armenia	0.7	1.4	2.1	0.02	0.04	0.06
Azerbaijan	0	0	0	0	0	0
Bangladesh	2.5	5	7.5	3.83	7.65	11.48
Bhutan	1.8	3.5	5.3	0.01	0.02	0.03
Cambodia	2.3	4.5	6.8	0.31	0.63	0.94
China, People's Republic of Rural	2.2	4.3	6.5	16.47	32.95	49.42
China, People's Republic of Urban	0.2	0.5	0.7	1.31	2.62	3.93
Georgia	1.1	2.1	3.2	0.05	0.1	0.14
India—Rural	2.9	5.8	8.8	22.82	45.64	68.45
India—Urban	2.1	4.3	6.4	6.68	13.36	20.04
Indonesia—Rural	2.4	4.8	7.2	2.76	5.52	8.27
Indonesia—Urban	1.6	3.2	4.8	1.7	3.39	5.09
Kazakhstan	0.2	0.4	0.6	0.03	0.06	0.09
Kyrgyz Republic	1.8	3.7	5.5	0.09	0.19	0.28
Lao People's Democratic Republic	2.5	5.1	7.6	0.14	0.29	0.43
Malaysia	0.1	0.2	0.3	0.03	0.05	0.08
Mongolia	1.8	3.6	5.4	0.05	0.09	0.14
Nepal	2	4.1	6.1	0.55	1.1	1.65
Pakistan	2.2	4.5	6.7	3.47	6.94	10.41
Papua New Guinea	1.7	3.4	5.1	0.1	0.21	0.31
Philippines	1.6	3.2	4.9	1.37	2.75	4.12
Sri Lanka	1.2	2.4	3.6	0.24	0.47	0.71
Tajikistan	1.8	3.6	5.4	0.12	0.23	0.35
Thailand	0.1	0.2	0.2	0.05	0.1	0.15
Timor-Leste	2.2	4.4	6.7	0.02	0.04	0.07
Turkmenistan	1.1	2.2	3.3	0.05	0.11	0.16
Uzbekistan	2.3	4.5	6.8	0.59	1.19	1.78
Viet Nam	1.9	3.7	5.6	1.55	3.1	4.65
Developing Asia	1.9	3.9	5.8	64.41	128.83	193.24

Note: The estimates of poverty impact have been derived using the price elasticity of poverty, which indicates the percentage increase in poverty when food prices increase by 1%. This elasticity was estimated for both headcount ratio and poverty gap ratio for each of the 25 countries in Asia and the Pacific using the latest POVCAL database.
Source: ADB staff calculations using the latest POVCAL database (accessed 18 February 2011).

Appendix 2: (Asian Development Bank April,2012)

Fast Facts: Global Food Price Inflation and Developing Asia

1. In the first two months of 2011, domestic food price inflation in developing Asia averaged about 10% while international prices of food were up more than 30% year-on-year.

2. Food price inflation has a serious impact on poor families in Asia, where food accounts for more than 60% of their household budget.

3. ADB estimates that a 10% rise in domestic food prices in developing Asia could push an additional 64 million people into poverty based on the $1.25 a day poverty line. Rising food prices will also reduce the standard of living of families who were already living in poverty.

4. Food inflation has been driven by double digit increases in the international prices of wheat, corn, sugar, edible oils, dairy products, and meat since June 2010. Rice prices have been trending up and this is likely to continue as the effects of La Niña persist.

5. Pressures on world food prices are not likely to ease anytime soon.

6. The ADB study shows that if the global food and oil price hikes seen in early 2011 persist for the remainder of the year, GDP growth in developing Asia could be reduced by up to 1.5 percentage points.

7. Much of the sharp increase is due to production shortfalls caused by extreme weather events, and subsequent export bans by some food producing countries, along with market responses to fears that key food importing countries would raise demand. The weak US dollar and high oil prices exacerbated the situation.

8. Persistent structural and cyclical factors such as rising demand for food from wealthier emerging economies, changing diets, competing uses for food grains, shrinking available agricultural land, and stagnant or declining crop yields, are also causing the upward pressure.

9. Governments in Asia have been taking a range of short term steps to cushion the impacts of higher food prices. These include moves to stabilize prices such as the removal or reduction of import and VAT taxes on food, and measures to strengthen social safety net programs such as conditional cash transfers.

10. In the longer term, structural adjustments are needed to secure food supplies. These include measures to improve crop productivity, increased infrastructure investments (e.g. Irrigation and food transport/storage), stronger market integration, and closer global/regional cooperation on food production and supplies. Countries should refrain from export bans on food items.

11. ADB has provided close to $2 billion annually during 2009 and 2010 for food security-related investment operations. It is also actively engaged in food security policy dialogue and technical assistance, working with partners like FAO and IFAD.

12. ADB, in collaboration with governments in the region, is working to establish an "ASEAN+3" regional food security strategy, which would include establishing a regional emergency rice reserve, enhancing the region's rice trade, and sharing food security information.

13. ADB is also providing long-term support to national and international research centers such as the International Rice Research Institute (IRRI) and the International Food Policy Research Institute (IFPRI) to carry out high impact food security research. An important area of work with IRRI is a project designed to reduce pre/post harvest losses.

14. In the first two months of 2011, domestic food price inflation in developing Asia averaged about
    10% while international prices of food were up more than 30% year-on-year.

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Poverty in Algeria: An Institutional Crisis or Developmental Problem?

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Abstract

Algeria seems to be one of the world's largest oil and natural gas providers; although the country's national budget surplus continues to soar in recent years. But Algerians still live in an environment with no essential services and poor quality of life. Statistics reveal that more than one quarter of Algerians have been living below the poverty line. The ill-conceived economic policies of the country, heavily relying on oil exports, are no longer applicable because of their apparent failures in an accommodation of essential aspects to bring the country economic growth and development. This study will shed some lights of why these policies and programs have miserably failed to achieve their desired objectives of poverty eradication. The results of the study revealed that although poverty incidences decrease over time, but a considerable portion of Algerian still living in misery. The study findings indicated that it is no matter how much policy makers will allocate budgets for economic development, as these efforts will bring zero returns, without establishing institutional frameworks that guarantee that the process of economic reforms is going in the right way. In order to succeed in achieving sustainable economic development therefore eliminate poverty, policy makers first have to wipe out the disease that exist in the informal institutional framework (corruption, cronyism and opportunism) . This can be done by the enforcement of the rule of law and establishing effective and robust formal institutional framework.

*Keywords***:** *Poverty, institutional crisis, economic development, Algeria*

1.0 Introduction

Algeria is a rich country in light of its natural resources. It is one of the world's largest oil and natural gas providers. Its economy is heavily relying on oil exports which account for 98 percent of the economy's export. The hydrocarbon represents about 40-45 percent of total GDP and about two-thirds of budget revenues. Policies and strategies that are designed based on rent economy proved to be no longer applicable because of their apparent failures in an accommodation of essential aspects to bring the country economic growth and development. The failure of the economic strategies brought massive social problems to the society such as poverty, inequality and poor quality of life. In that aspect, the country is ranked 96 from 187 in the Human Development index in 2011 with HDI equal to 0.698.

One of the top priorities in the Algerian developmental policies is to minimise country's poverty incidences to its lower levels [1]. Although economic policies and developmental strategies being implemented in post independent Algeria have fairly succeeded in bringing

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[1] According to Laabas (2001) poverty in Algeria is deeply rooted since the days of France colonialisation.

poverty incidences to lower levels, a massive decrease of oil prices in 1986 led to increase the incidence of poverty and reduce people quality of life again. In the present study we argue that although the country's national budget surplus continues to soar in recent years[2], a real, comprehensive and balanced sustain economic development that lead to poverty eradication cannot be achieved only in a conducive environment. That is why Algeria does struggle to resume its economic revival. It is a matter of offering an appropriate environment that will promote implementation of pro-growth economic development [3] leading to poverty alleviation. In the light of the above argument, it is the obligation of the present study to answer the following question: (1) Does the failure of poverty eradication in Algeria was due to an institutional crisis or developmental problem? (2) Can it be interpreted that the failure of the existing anti-poverty programs was the result of decision choices? (3) What will be the viable approaches in a review of these development programs to respond to poor's economic grievances?

2.0 Poverty in Algeria

Algeria is one of the southern countries experiencing a problem of growing numbers of poor. Despite the availability of physical and human resources that could serve to the renaissance of economic development to cope with this phenomenon, most efforts and strategies implemented by government so far are unsuccessful in meeting its objectives. Consequently poverty incidence reaches its high level. One of the reasons that disturb implementation of these policies is the lack of sufficient measurement and assessment of the phenomenon. Literature revealed that only one prominent effort was made on the living standards of the population carried out by National Statistic Office (ONS) in collaboration with World Bank in 1995. While another good effort was made by (ANAT, 2001) which provide a closer view of the mapping and classification of poverty in Algeria[4]. Facts on poverty incidents gathered by ONS (1995) are highlighted in the (figure1). 1.6 million people, according this survey, suffering from food famine (more than one million live in rural areas), there are about four million people having income below the lower poverty line (2.7 million from rural areas) and more than 6.3 million people living below the upper poverty line (4.2 million from rural). According to these facts about 23% of populations are living on an income of less than 1.6 dollar (CNES, 1999).

The economic crisis and the adjustment policies structure had a negative impact on employment and households' incomes[5]. This resulted in the decline of their purchasing power and their living conditions. The number of poor people has augmented and poverty has worsened the degree that the number of people existing under the extreme poverty line has amplified from 3.6% in 1988 to 8.1% in 1995. Most of them are unemployed and live in rural areas engaging in agricultural activities.

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[2] The Reserves of foreign exchange and gold reached $185.9 billion (31 December 2011 est.) allowing the country to be ranked 13 globally (CIA data base, 2012)

[3] That is not depend on oil and gas resources

[4] The experts of CENEAP defined poverty as inadequate food consumption in quality and quantity, but also in poor satisfaction of basic social needs. Thus, there are three measurement of poverty: (ANAT, 2001)
1. A threshold of extreme poverty, equivalent to 10,943 Dinars per year per person in 1995.
2. A lower threshold, equivalent to 14,825 Dinars per year per person in 1995.
3. An upper poverty line, equivalent to 18,191 Dinars per year per person in 1995

[5] More critical discussion will be in section 3

Figure 1: Incidence of Poverty year 1995 in Algeria (%)

	Food Poverty line	Lower Poverty line	Upper Poverty line
□ Urban areas	3.6	8.9	14.7
■ Rural areas	7.8	19.3	30.3
▨ Total	5.7	14.1	22.6

□ Urban areas ■ Rural areas ▨ Total
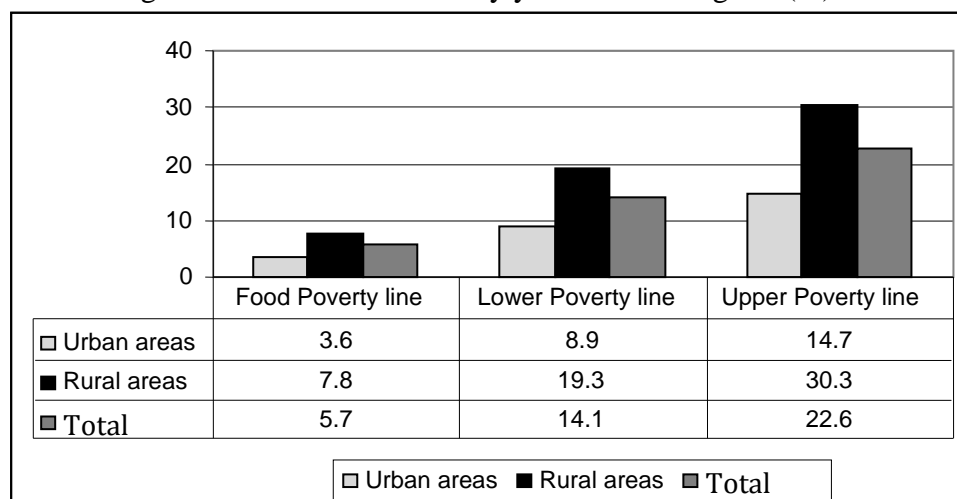
Source: CNES (1999)

While analyzing poverty in Algeria (After 1995 onward) is difficult because of updated study's absence, the study of Belkacem (2001) can give reliable information on the dynamic of poverty in Algeria and its trends[6]. Table 1 illustrates the projected incidences of poverty from 1995 to 2004. The results indicated that poverty remained very high and its level increased in 1997 and 1998.

The weak economy and the painful path of economic reform and restricting after the beginning of the economic crisis in 1986 worsened the situation and contributed to the decline of households' welfare and their standard of living. In the mean time, the political instability and the internal conflict (the war against terrorists) led to weaken the productivity of the majority of the government own and private companies and thus, many of them were bankrupted.

Table 1: Headcount Poverty in Algeria 1995-2004

Year	Real Mean Expenditure Growth	Poverty line AD	Head count poverty	Changes in head count poverty	Poverty gap	Changes in poverty gap
1995	0.60	16913.00	21.83	-	5.83	-
1996	0.60	20075.73	21.65	-0.82	5.75	-1.37
1997	-2.40	21220.05	22.59	4.34	6.2	7.82
1998	0.60	22281.05	22.33	-1.15	6.11	-1.45
1999	2.30	22860.36	21.34	-4.43	5.76	-5.72
2000	1.60	23774.77	20.68	-3.09	5.52	-4.16
2001	1.10	24488.01	20.21	-2.27	5.37	-2.71
2002	3.80	25222.66	18.69	-7.52	4.85	-9.68
2003	4.00	25979.33	17.16	-8.18	4.34	-10.51
2004	4.20	26758.71	15.61	-9.03	3.85	-11.29

Source: Belkacem Calculations (2001)
Note: changes in headcount poverty and changes in poverty gap is calculated by authors

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[6] Labbas (2001) projected future poverty (1995 to 2004) using different methods in order to measure absolute and relative poverty levels based on per capita expenditure distribution for the 1966, 1980. 1988 and 1995 consumer surveys.

Consequently, the real GNP per capita declined at 2.5 percent annually from 1985 to 1995 (Joffe, 2002) and unemployment rate increased dramatically to alarming levels[7]. In 1995, the unemployment rate among the poor was 44% in urban areas and 35% in rural areas, compared to 29% and 24% for non-poor[8]. As a results, the projected poverty gap increased by 7.82% in 1997 leading the projected head count poverty to increase by 4.43% in the same year. Although the numbers from table 1 indicated that growth patterns had a direct relation in poverty reduction[9], but this growth cannot be sustained as it is tied to the fluctuation of oil prices in international markets. Therefore it will remain vulnerable to negative shocks on oil prices and will not be able to generate enough job opportunities.

3.0 The Economic Development Policies, Reforms and Poverty Reduction

Declining the living standard of people and widening the gap between the poor and the rich led the government to think of designing policies and programs to boost a rapid economic growth to be pro-growth in nature. The top of the priorities of these policies is to achieve sustainable development to ensure an acceptable level of welfare for people and to decrease the level of inequalities in the society. In order to understand Algerian economy's current situation, an overview of previous developmental policies adopted needs to be elaborated. Since the independence, policy makers in Algeria introduced various changes and tried several concepts, ideologies and strategies to achieve sustainable economic development. Following are the most critical stages that promoted ideological economic development in Algeria:

3.1 The Economy in the Phase of Self-Management

Algeria obtained its independence at a time of its economy's virtually total devastation. The administrations and the sensitive sectors of management were handicapped. The administrative staffs (90% were foreigners) left institutions and departments were neglected. The social problems such as poverty, unemployment, marginalization and illiteracy worsened the situation as these conditions weakened all the sectors of the economy. With the absence of clear economic development model to be followed, the policy makers gave priority to the agricultural sector to drive the country economy, as well as adopting self-management policy to run the country's national economy. Unskilled workers try to fill up the gap left by foreign managers in order to maintain the continuation of the national economy and to sustain the production process of various institutions. In this era, the role of state to accomplish the economic development was absent, and due to the lack of qualified established institutions, the state intervention and planning was limited to the preparation of budgets, preparation of annual and short-term plans (financial laws). There was no clear vision of future national development. These caused a massive decline in economic growth and deteriorate the existing social problems such as unemployment, poverty and inequality. The lack of competent managers in all sectors of the economy and the shortage of experts in the field of sciences, technology and finance made the developmental process inefficient. Despite the blurred vision on the future of the national economic development in this period, the policy makers rejected the use of foreign expertise, except in some technical areas (public works,

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[7]   Unemployment appears to be a driving factor in increasing poverty, particularly in urban environment.

[8]   While it is clear that unemployment does not explain fully the status of household poverty, its impact seems dominant in urban areas.

[9]   Statistics from table 1 indicated that the projected head count poverty decreased from 21.34 % in 1999 to just 15.61 % in 2004. The increase of 4% pa in per capita expenditure is quite enough to decrease the head count poverty in Algeria by 9.03%.

communications), and this had a great cost in terms of not benefiting from professionals' expertise to construct the basis set up of future developmental strategy.

3.2 The Socialism Management

After the failure of the self management model, the policy makers adopted the socialist ideology to manage the economy. This model was based on state ownership of the public properties, state intervention and central planning to achieve the public interest. The developmental model in the era of socialization was based on tree pillars: (1) series of nationalizations[10]; (2) adoption the central planning to achieve sustainable economic development[11] and (3) adoption the model of manufactured industries. At the same time decision makers start the creation of national companies[12]. These companies and others considered as essential engines for achieving the developmental strategy. But the above companies were not able to achieve its objectives[13] that were inconsistent with the nature of its activity due to several factors including: (1) Lack of skilled labor; (2) lack of experience and (3) The political instability. In this era, the objectives of the national economy were not determined by the law of supply and demand but it was determined based on command economy style. Control and managing the manufacturing process and decision-making was handled by central planning.

The transition from self-management regime to new direction of economic development by adopting the socialist system as an option, the state had the monopoly of all economic activities. Private sector and foreign companies were not allowed to assume any type of developmental process. Policy makers had decided that economic and social development process must be based on central planning and the principle of direct state intervention in productive investments. The objectives were developed to achieve the economic independence, build robust industrial sector with comprehensive planned economic by the early eighties. Heavy industries were adopted as an engine for economic development process especially in iron and steel, energy, and hydrocarbon sector. Later the state reorganized the economic activities by forming national companies and adopted the concept of public companies as an instrument for developing the various sectors of the national economy. Public companies were given the monopoly of marketing and distribution of goods and services as well as import of inputs (raw and semi-finished). These companies were inefficient as they suffered from low productivity, obsolete equipment, inefficient management and over-staffing.

Accordingly, the state nationalised banks and financial bodies which were monopolised by the state in order to control the financial sector and the development process. The financial sector in this era had been a solely an instrument for public sector investment. *Credits to the public industrial sectors were tightly controlled. Interest rate kept constant and did not reflect the opportunity cost of such investments. Banks were refinanced by the central bank, leading to more inflationary pressures, as the monetary policy was very lax (Belkacem, 2001, p.3).* These policies created immense consequences for the entire economy. Public companies were

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[10] The Platform for self-management did not last long as Algeria knew a real change initiated by the phase of nationalizations of the banking sector and Mines in 1966, the enterprises sector between 1966 and 1970 and the hydrocarbon sector 1971.

[11] The first plan (1967-1969), second plan (1970-1973) and the third plan (1974-1977).

[12] In 1965 the national company for oil and gas, Algerian Company for Iron and Steel, the National Company for Textile Industries, National Insurance Company were established

[13] These objectives were determined by the central planning and guardianship system.

inefficient and therefore couldn't meet the needs of the society[14]. The productivity of major sectors of the economy declined leading to massive shortage in goods and services. To cover that shortage, and in order to improve the welfare of the population, government adopted a strategy based on massive imports of consumer durables. To avoid any social disturbance that could be caused by the incompetent developmental strategies, government improved social indicators to its citizens by providing employment[15], free education and health as well as generous subsidies[16]. Therefore poverty kept under control. These interventions improved people's living standards and reduced poverty incidences from 54% in 1966 to 28% in 1980 (Belkacem, 2001) [17]. But in term of economic developmental process, the results of implementing central planning model were disappointing and ended with failure and the spread of the bureaucracy.

3.3 The Capitalism Management

The crisis that hit the Algerian economy in 1986 and ill- management of the national institutions and companies in the previous two periods led policy makers in Algeria to think of an effective and to seek better ideology to build a modern national economy. In early 1988, policy makers adopted the capitalist model as a strategy that could bring a real jump to the development of the national economy. Consequently, the administration and planning of the economy in this era was based on decentralisation. National companies have the direct responsibility in managing, planning and carrying out economic and trade operations.

The collapse of oil prices in 1986 caused a substantial disequilibrium in financing the economy sectors. That forced the Algerian government to borrow from foreign financial institutions (such as IMF and World Bank) which resulted in higher external debt which jumped from 59.66% in 1992 to 83.52% in 1995 (table 2). The international financial bodies pressured the Algerian authorities to start the implementation of radical reforms and structural corrections to the present socialist model. By adopting the first stabilization program[18], "*the devaluation of the Algerian Dinar and tightening both the fiscal and monetary policies enabled to reduce the monetary overhang that was resulted from previous expansionist fiscal and lax monetary policy. Liquidity absorption allowed subsequent price liberalization and a gradual reduction of price subsidy[19]. (*Belkacem, 2001, p.6*)".* But according to IMF the outcomes of the implementation of the first stabilization reforms, were neither efficient nor could be sustained. This was due to the political instability that disturbed the completion of the institutions reforms necessary to achieve economic reconstruction (ICG, 2001). Adoption of the reforms that proposed by IMF bring serious social problems to the society. Cutting public spending, eliminating most of foodstuffs subsidies[20] and lay-offs workers[21] led to increase the incidence of poverty to its higher level again. Poverty Headcount and unemployment increased to reach 22.6% and 28% respectively in 1995 while GDP growth decreases by 2.1 in 1994 (table 2). At this era, Algeria enters a serious social and economic

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[14] This was due to lack of training for workers, lack of qualified skilled workers, as well as ineffective management in companies and institutions, and lack of experience in controlling national companies' performance.

[15] By adopting the strategy of overstaffing

[16] The boom of oil prices allowed government to provide all these generous subsidies and social welfare

[17] The success of poverty reduction was due to oil rents and not due to economic policies.

[18] That was sponsored by IMF and World Bank

[19] The authorities' subsequent relaxation of fiscal and monetary policies during 1992-1993 promoted a deterioration of the economic situation and macroeconomic imbalances widened further

[20] Price controls in Algeria were generally removed by 1996, and subsidies were removed by January 1996 for foodstuffs and by the end of 1997 for energy products (ICG, 2000).

[21] The closing down of public enterprises (over 400) with the attendant staff lay-offs (over 400,000 between 1995 and 1997) (http://www.algeria-un.org/reform.asp)

crisis as the GDP per inhabitant fell from 2590 US$ in 1986 to 1550 us$ in 1999 (Martin, 2003). In order to minimize the cost of implementing these reforms, IMF orders the Algerian authorities to adopt direct cash transfers to the poor and vulnerable households who are unable to work. These efforts did not bring a concrete outcome as poverty level remains high[22]. Statistics indicate that 23% of the population (7milliuon people) live with a daily income that is below 1US$, whereas 40% of the population (14 million people) live with a daily income that is below 2US$ (Martin, 2003).

3.4 The New Era of Economic Development

As discussed earlier, Algeria's economic crisis was a consequence of previous decade's mismanagement with the failure of the state to achieve a sustainable development. The structural adjustment and reforms as well as the political instability all together brought considerable economic and social problems to the country. But at the beginning of 1999, the election of President Abdelaziz Bouteflika, Algeria enters a new era of economic developmental policy. It is trustworthy noting that at this period (from1999 onwards) the oil prices soared to highest levels in international markets. The Bouteflika's government then found a conducive environment to finance, plan and implement programs and policies for speeding up the process of reforms.

Hydrocarbons still dominate the economy providing more than 62% of government revenue; whereas industry and agriculture sector contributed just 5.62% and 6.92% respectively in year 2009 (table 2). External dept fall from 83.52% in 1995 to 3.89% in 2009. Even though oil and gas prices showed an increasing figure since 1999, the GDP growth keep decreasing even the statistics indicated positive numbers (table 2).

Table 2: The performance of Algeria Economy 1992-2010

Year	GDP Growth	Industry Value Added	Manuf Value Added	Agriculture Value Added	External Dept (%GNI)	FDI In (%GDP)	FGI Out (%GDP)	Unemp-loyment (%)	Health Expenditure (%GDP)
1992	1.8	49.72	12.31	12.13	59.66			23.00	
1993	-2.1	48.64	13.13	12.10	54.52			23.20	
1994	-0.9	48.96	12.36	10.06	74.11			24.40	
1995	3.8	50.40	11.50	10.50	83.52	0.06		27.90	4.17
1996	4.1	51.23	9.04	11.77	75.83	0.58		27.90	3.79
1997	1.1	52.31	8.72	9.48	67.24	0.54		25.40	4.06
1998	5.1	46.15	9.91	12.53	66.45	1.26		25.40	4.06
1999	3.2	48.00	9.17	12.20	60.42	0.60		25.40	3.87
2000	2.2	58.61	7.46	8.88	48.75	0.51		29.80	3.49
2001	2.6	53.45	7.90	10.41	42.20	2.01		27.30	3.84
2002	4.7	53.09	7.82	10.00	41.65	1.87		25.90	3.65
2003	6.9	54.82	7.10	10.49	36.04	0.93		23.70	3.63
2004	5.2	56.35	6.49	10.19	27.25	1.04		20.10	3.72
2005	5.1	61.31	5.94	8.22	17.35	1.06	-0.02	15.30	3.54
2006	2	62.30	5.54	7.99	5.08	1.53	0.03	12.30	3.13
2007	3	61.28	5.28	8.03	4.41	1.22	0.22	13.80	3.53
2008	2.4	62.12	4.63	6.92	3.50	1.52	0.19	11.30	3.73
2009	2.4	62.12	5.62	6.92	3.89	2.00	0.16	10.20	4.58
2010	3.3			6.92	3.39	1.41	0.16	11.40	4.17

Source: World Bank Database

This comfortable financial situation led to stabilize the macroeconomic policy. But in the same time it failed to bring wealth to the most vulnerable population. Martin (2003, p.10)

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[22] Corruption can be identified as one of the factor that prevent from the success of these programs

pointed out that: "*...Bouteflika governments have shown themselves endemically incapable of transforming the huge oil revenues into wealth and wealth into well-being*". Consequently, the continuous rising of oil prices did not help much alleviate poverty in Algeria (Benbouziane & Benhabib, 2011).

In order to gain from the favorable economic condition, and in its effort to respond to globalization demands, the governments announced three programs (2001-2014) to build a strong and stable economy.

3.4.1   Economic Recovery Program (2001-2004)

The objectives of this program were to set up the legal framework of the state to be a facilitator to the economic development through public investment and modernization of economic structures. The program aimed to enhance the effort of poverty reduction, reduce unemployment, equal distribution of wealth and prompt social and economic development through the improvement of health, water resources, rural development and essential infrastructure, diversification of investments. Even through the program achieved considerable outcomes at both macro and micro levels (such as security, political and economic stability, and targeted housing, modernize the transport sector in different axes[23], dismantling the monopoly of the public sector and expand the field of privatization), these results remain not satisfactory as statistics showed that unemployment and poverty remain a taboo among population (unemployment and poverty incidences reached 20.10% and 15.61% in 2004 respectively)[24]. Another failure that can be an obstacle to achieve sustainable development is the dependency on the hydrocarbon sectors to finance the economy sectors as statistics showed that manufacture and agriculture sectors together contributed only about 16.68% from the total value added of the entire economy sectors (table 2).

3.4.2   Program of Support for Economic Growth (2005-2009)

A complementary program to support economic growth, this program is allocated to the south and the high plateaus, in order to break the isolation between the south and the north of Algeria. The objectives of this program are similar to the previous one as it aims to enhance the living standard of people by investing in health, education and infrastructure. Also it aims to modernize the telecommunications sector and strengthening the construction of dams and agricultural activities and land reclamation, promote SMEs to be a key factor in the success of the development process by encouraging them to adopt technology and innovation in their production process, develop and diversify the activities of Sonatrach[25] as well as find new revenues by investing outside hydrocarbon sector.

3.4.3   Third Program (2011-2014) Investment In Human Resources

A proportion of this program has devoted to the rehabilitation of human resources, where the share of human resources development was 40 percent from the total budget of the program. The aim of the program is to shift the trend of development towards knowledge-based economy through research, higher education, allocating more efforts and supports to rural development and small and medium enterprises (SMEs), establishment of industrial zones,

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[23] create renewal and restoration of roads east-west highway, rail, metro, tramway and motorway network
[24] See table 1 and table 2
[25] National oil and Gas company, the heart of Algerian Economy

further development of the infrastructure sector and encourage investors to invest in various sectors of the economy, reform and modernize the justice, taxation and customs system.

The goal of the new orientation towards the advancement of the national economy is to prepare the country to receive the investment with the creation of national institutions (private and public) and the preparation of the financial system and banking system in order to be ready to face globalization. Even though these programs recuperate the image of Algeria internationally but it couldn't attract foreign investors, especially multinational companies, to take the chance to exploit the fresh national market. At the same time even national companies (public or private except Sonatrach) failed to enter international markets and contribute to the economic development. Statistics indicated that the FDI inflow contributed only 1.41 from the total GDP, while FDI outflow contributed only 0.16% from the total GDP. Consequently, private sector is unable to create employment opportunities due to its limited capacity and "as *the private sector had traditionally been engaged in commerce rather that productive industry. As such, it had primarily been engaged in the domestic recycling of rent, rather than in generating capital formation (Joffe, 2002, p.10),* this made the project of sustainable development far away to be achieve. Another thing that made the situation worse is, as stated by Dillman (2000) is *".....the developmental contradictions arising from the relationship between a rentier state- a state that derives a large proportion of its revenues from the sale of natural resources abroad rather than through taxation of citizens- and a tributary private sector. [Algerian governments] built an enormously inefficient public sector while pursuing policies that inhibited productive growth in the private sector (cited in Joffe, 2002, p.9).* Hence, without budding and developing productive industry that can generate millions of job opportunities (such as agriculture and manufacturing), any effort to create minimum basis of social stability will be ineffective.

4.0 Institutional frameworks and economic performance

Achieving the economic developmental objectives could be challenging if there is no effective institutional framework that can guarantee the right direction of the economic developmental process. Institutional framework includes both formal and informal institutions[26]. Although government strategized a several reforms on the level of law, courts, administrations and governance systems, these reforms were found inefficient. Any reforms say it be economic or institutional in nature will not be succeed unless if the suitable environment and conditions is prepared. One of these conditions is the willingness to accept the changes from participants either they are economic agents or citizens. In the case of Algeria *...''The lack of consensus on the principal axes of these reforms is almost total....: neither workers, nor entrepreneurs and business community, nor civil servants, nor the media, nor the population in general, nor even the political parties as such, seem to identify with the economic objectives imposed by the Bouteflika governments (Martin, 2003, p.15).* The norms and behaviours of the Algerian society play significant role in the implementation of the reforms policies. But the problem is more complex. Corruption, cronyism, rent seeking and regionalism are key factors that prevent the success of reform policies in Algeria (Ghecham, 2004). Studies have shown that corruption reduces both the volume and efficiency of investment and thus economic growth (Sakar and Hasan, 2001; Campos et al., 1999; Kenney, 2009; Al-Sadig, 2009; Foloruso, 2007; Basar and Zyck, 2012; Asiedu and Freeman, 2009; Mauro, 1996). In Algeria, the basics principals of economic openness and free market are neither well established nor strongly protected. The judiciary is vulnerable to political

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[26] Formal institutional framework consists of Laws and regulations like property rights, justice and market regulationswhereas informal institutional framework consists corruption, cronyism and nepotism.

interference and corruption, and the protection of property rights remains weak, undermining sustainable economic development[27]. That's why FDI inflow contribution to the total GDP is only 1.41% in 2010. As Algeria performs very badly in term of governance indicators[28] (see graph 2) the multinational companies had no chance to invest in blur market that lack of transparency and the protection of property right is weak. As a result, the economic remains dependent on hydrocarbon sector, unemployment rate remain high and poverty alleviation efforts is far to be achieved.

Figure 2 illustrated that although all the indicators improved from 1996 to 2005, then the ranking decrease in 2010. The windfall of oil prices led to decrease all the indicators. Benbouziane and Benhabib (2011) found that there existed a high correlation between oil prices and corruption as well as higher correlation between oil prices and political stability.

Figure 2: Government indicators in Algeria

Government Indicators in Algeria

	Voive and Accountability	Political Stability	Government effectiveness	Regulatory Quality	Role of Law	Control Corruption
1996	12.50	4.33	16.10	23.04	11.48	32.68
2000	14.42	8.17	14.15	23.04	13.88	14.63
2005	26.44	17.79	40.49	37.25	30.62	40.49
2010	18.48	11.79	33.97	10.53	27.01	37.80

Source: http://info.worldbank.org/governance/wgi/index.asp
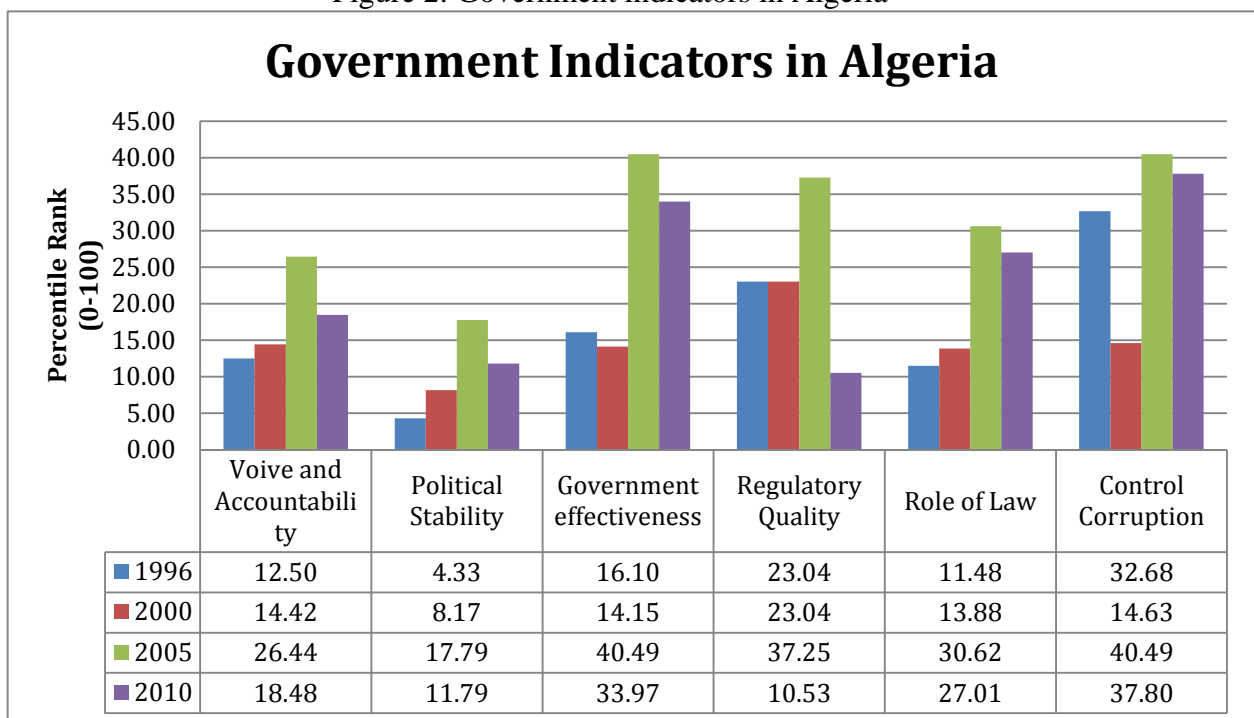
More resources led to higher level of corruption and political stability[29]. Increase of oil prices in international market led in accumulating a considerable wealth to the Algerian government. Thus, increase the number of rent seeking people who are looking for the opportunities to get special connections to accomplish their personal interest (Hodess et al., 2002). This led to the occurrence of another type of corruption which it is cronyism. To deal with these phenomenons strong and robust formal institutions reforms need to be advanced. This type of formal institutions are absent in Algeria and what made the situation worse is the absence of the role of law. The absence of the role of law contribute to the formulation of the elite group who take this opportunity and extract rent from the economy benefiting from the absence of effective linkage between private and public sectors. This gave rise to the tradition of the Algerian mafia as a parasite upon the body politic (Joffe, 2002).

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[27] http://www.heritage.org/index/country/algeria
[28] According to Transparency International's Corruption Perceptions Index, Algeria ranked 112 out of 182 countries in transparency in 2011.
[29] The case of Sonatrach last year

The achievement of sustainable economic development could be impossible unless there are fundamental institutional reforms. This could be achieved only with real democratization practices. In this respect, ICG (2001) argues that the problem arises in Algeria is not fundamentally economic but institutional and political. They emphasize that there could be only little hope of economic prosperity outside the destructive embrace of oil, when institutional and political reforms are adequately established.

4.0 Conclusion

It is well understood that as of its independence Algeria's political economy was marked by paradox, for which it is still today paying the price. In 1962 the state which is essentially public was privatized, while commercial activities, which are essentially private, were made public (Addi, 2006). Today, the economy has gone through long complex and painful path of structural adjustment and reforms. The efforts of transforming the economy from socialist orientated economy into capitalist oriented economy were not satisfactory and did not tackle the social issues such as poverty, unemployment and housing. Even though the figures show that poverty incidence decrease over time, but a considerable portion of Algerian still are living in misery. The failure of the economic development process, even with the windfalls of oil prices, made the situation worse. The question now, therefore, is not only to adopt structural adjustment or economic reforms where the country is in very healthy financial situation. It is no matter how much policy makers will allocate the budget for economic development as these efforts will bring zero returns without establishing institutional frameworks that guarantee that the process of economic reforms is going in the right way. In order to succeed in achieving sustainable economic development therefore eliminate poverty, policy makers first have to stamp out the disease that exist in the informal institutional framework (corruption, cronyism and opportunism). This can be done by the enforcement of the rule of law and establishing effective and robust formal institutional framework.

Acknowledgement

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The Impact of Hard Infrastructure on Bilateral Trade Flows in Selected ASEAN Countries

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Abstract

Trade facilitation has gained more attention in a recent trade research area and has become more important trade policy measures particularly after trade liberalization reform takes place. Trade liberalization has resulted in a significant tariff reduction in most of the countries including ASEAN countries. This has forced ASEAN countries to shift their focus of trade policy towards trade facilitation in order to reduce trade cost and remain as a highly competitive region. Trade facilitation is considered to be a tool that reduces transaction costs and the complexity of international trade and enhances the trading environment. Therefore, with the absence of direct policy barriers, other components of trade cost such as transportation costs and border related trade cost must be reduced. The development of trade-related infrastructure, which is one of the forms of trade facilitation, is therefore very important for ASEAN to capitalize the benefits of international trade. The present study examines the impact of hard infrastructure on bilateral trade flows in selected ASEAN countries over the period 1995-2010 using fixed effect estimator. Some alternative measures for hard infrastructure from transport and ICT sectors are included in this study. Results from a gravity model and bilateral trade data suggest that bilateral trade in ASEAN countries is significantly influence by hard infrastructure.

Keywords: Infrastructure, trade facilitation, panel data

1.0 Introduction

Trade facilitation has now emerged as a significant part of economic and trade policy particularly after tariff comes down. An elimination of tariff, as a result of tariff liberalisation, has forced ASEAN countries to focus on trade facilitation. Trade facilitation refers to the set of policies that ease the trade flows. ADB and UNESCAP 2009 define trade facilitation as "the systemic rationalization of customs procedures and documents", and that "it covers all the measures that affect the movement of goods between buyers and sellers, along the entire international supply chain". In the context of the World Trade Organisation (WTO), the definition of trade facilitation as defined by WTO (1998) is "the simplification and harmonization of international trade procedures, including the activities, practices, and formalities involved in collecting, presenting, communicating, and processing data and other information required for the movement of goods in international trade". Dee et al. (2008) include all factors affecting time and money costs of moving goods across international borders in the scope of trade facilitation. Thus, improvement or increase in infrastructure is one form of trade facilitation which may encompass both hard and soft infrastructure. Hard infrastructure refers to physical infrastructures that support the economy such as roads, ports,

railways, telephone and internet. Instead, soft infrastructure refers to non-physical infrastructures such as transparency, institution quality, financial systems, customs management and business environment that support the function of hard infrastructure.

Having adequate and efficient infrastructure services is one of the important factors affecting trade flows. According to a study by the World Bank (1994), inadequate and unreliable infrastructure cripples the ability of the countries to engage in international trade. NEPAD[1] (2003) adds that: "There can be no meaningful development without trade – and there can be no trade without adequate and reliable infrastructure". During the past two decades, globalisation of world trade has increased not only due to the liberalisation of trade policies in many countries but also from major advances in communications, transport and storage technologies (World Bank, 1994). Therefore, today's trade strategy has to go beyond traditional trade policy barriers of tariff and quotas if ASEAN wants to remain as a highly competitive region. With tariff barriers significantly reduced, the focus now is on non-tariff barriers and trade facilitation. Failure to address these non-tariff barriers will impede ASEAN's trade expansion and competitiveness.

It increasingly being realized that barriers to trade such as tariffs is only one component of the overall trade costs. This is because trade costs are incurred at all stages of the export or import process including freight costs, governance transparency, time costs, legal and regulatory costs, information costs, contract enforcement costs, delays in custom clearance and other costs associated with trade transaction. Therefore, trade costs can also be lowered by further improving trade facilitation through providing quality physical infrastructure and efficiency of border services or making policy reforms in areas like business environment and transparency. With the absence of direct policy barriers, other components of trade cost such as transportation costs and border related trade cost must be reduced. According to Anderson and Van Wincoop (2004), the 170%   of 'representative' trade cost in industrialised countries breaks down into 21% transportation cost, 44% border related trade barriers and 55% retail and wholesale distribution costs. This indicates that the transportation cost has become an important factor in determining a country's trade competitiveness and nowadays represents a considerably larger barrier to trade than before.

The development of trade-related infrastructure, including both hard and soft infrastructures, is therefore very important for ASEAN to capitalize the benefits of international trade. Infrastructure development has been found to be a major factor in reducing Asia's trade costs and thereby facilitating trade expansion (Brooks and Hummels (2009). Not only that, infrastructure-induced reductions in trade costs have become relatively more important than direct policy barriers as potential sources of further cost savings (Brooks, Roland-Holst and Zhai, 2005).

With the above as background, this study attempts to investigate the impact of hard infrastructure on bilateral trade flows for selected ASEAN countries. The structure of the paper is organized as follows. Reviews of the empirical evidence on infrastructure-trade nexus is presented in Section 2. Section 3 describes the data and the methodology adopted in this study. Section 4 provides the discussion of results. The last section contains the concluding remarks.

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[1] NEPAD stands for The New Partnership for Africa's Development which is designed to address the current challenges facing the African continent

2.0 Literature Review

Trade facilitation has recently emerged as critical element of trade and economic policy. Trade facilitation is considered to be a tool that reduces transaction costs and the complexity of international trade and improves the trading environment. One of the approaches that have been used to quantify the impact of trade facilitation on trade flows is gravity model. The gravity model allows estimating the impact of different trade facilitation reforms on bilateral trade flows. There are substantial evidence linking improvements in trade facilitation and trade flows. For example, in a study by Wilson et al. (2005) on a sample of 75 countries, it is found that improved trade facilitation could increase trade by 10%. They show that port efficiency and the quality of service sector infrastructure – proxied by use of internet by businesses and speed and cost of internet, among others, significantly affected trade flows in a sample of 75 countries. This study supports the earlier study by Wilson et al. (2003) on Asia Pacific region that improving trade facilitation could increase intra-APEC trade by 21%.

Shepherd and Wilson (2009) have reported that trade in the region of Southeast Asia could increase by 7.5% with trade facilitation reforms. The study found that bilateral trade flows in the Southeast Asia region are sensitive to information and communications technology (ICT) as well as to transport infrastructure, particularly port infrastructure. Portugal-Perez and Wilson (2012) assess the impact of four indicators related to trade facilitation namely physical infrastructure, information and communications technology (ICT), border and transport efficiency and the business and regulatory environment on the export performance of 101 developing countries. The first two indicators represent hard infrastructure while the last two represent soft infrastructure. They find that physical infrastructure has the greatest impact on exports in almost all specifications, and samples among four indicators. Hoekman et al. (2008) mentions poor roads and ports, poorly performing customs, weakness in regulatory capacity and limited access to finance and business services as some of the behind the border factors affecting trade.

Limao and Venables (2001) employed a gravity model similar to one developed by Bougheas et al. (1999). However, their model includes dummy variables representing landlocked countries or possibility for transit. Their study examined the determinants of transport cost and illustrated how transportation costs depend both on a country's geography and on the level of infrastructure. In their study, infrastructure is measured by using variables includes paved and unpaved roads, railways and telephone mainlines. Infrastructure is found to be an important factor in determining transportation costs especially for landlocked countries. The study showed that improving infrastructure so as to move from the median country to the top 25th percentile in the distribution of infrastructure enhances trade by 68 per cent, moving down to the bottom 75th percentile reduces trade volume by nearly 30%. They estimate that differences in infrastructure explain for 40% of transport costs for coastal countries and 60% for landlocked countries.

Adopting the study by Limao and Venables (2001), Nordås and Piermartini (2004) investigate the role of infrastructure on total bilateral trade and on trade in the three sectors: clothing, automotive and textile. Indicators of the quality of infrastructure to be estimated are road, airport, port and telecommunication, and the time required for customs clearance. On top of that, this study also incorporates bilateral tariff which has been ignored in the literature. Their study proves that infrastructure quality is a significant determinant of trade performance, with port efficiency having the largest impact on trade amongst all infrastructure quality indicators.

Clark, et al. (2004) investigated the determinants of shipping costs to the United States. Using a reduced form price equation they quantify the factors affecting transport costs on maritime transport charges paid by U.S. imports carried by liner companies from countries all over the world during the period 1995-2000. They stress the effect of port efficiency on maritime transport costs and address the problems of endogeneity and omitted variable bias associated with price equation. They find that port efficiency is an important determinant of shipping costs.

Apart from physical transport infrastructure, information and telecommunication technology (ICT) can also influence trade flows. A few studies have investigated its effect on trade flows such as Fink, et al. (2005) whose result reveled that that the cost of making a telephone call has a significant and negative effect on bilateral trade flows. The impact of ICT is relatively bigger for trade of differentiated products than on trade of homogenous products. In another study, Nicoletti et al. (2003) found that ICT is particularly important for trade in services due to its nature of highly dependent on well-developed infrastructure in both the exporting and importing countries.

Overall, the recent literature suggests that trade facilitation measures have a significant effect on trade development. However, most of past studies tend to either include one specific indicator for trade facilitation or infrastructure in their models (see Nordås and Piermartini, 2004). There are also some studies that aggregate a large number of indicators into an overall index such as Helble, et al. (2009) and Portugal-Perez and Wilson (2012).

3.0 Data and Methodology

3.1 Data

This study employs annual data from 1995 to 2010 for Indonesia, Malaysia, Thailand, Singapore and the Philippines. The selection of countries and length of study period are determined by the availability of data for all required variables. We define our dependent variable as the value of exports of country i (ASEAN country) to country j (her trading partner). The independent variables are gross domestic product (GDP), population, adjacency, landlocked, language, real exchange rate and selected hard infrastructure measures. Transport and information and communication technology (ICT) are the two sectors used in this study. The indicators used to represent hard infrastructure for transport sector are container port traffic (TEU: 20 foot equivalent units), rail lines (total route-km) and paved roads (% of total roads). Meanwhile, ICT sector are represented by fixed line and mobile phone subscribers and internet users where the data are presented per 100 people. The selected hard infrastructure indicators are regressed separately in order to avoid the problem of multi-collinearity. Source of data comes from World Development Indicator, United Nation COMTRADE, International Financial Statistics and CEPII Database.

3.2 Methodology

In empirical literature of trade studies, the gravity model has been the standard approach used for analysing the variation and determinants of trade flow. Basic gravity model posits that trade volume increases with the economic size and decrease with the distance between the two countries. This study employs gravity equations to provide an empirical examination of the impact of hard infrastructure on trade flows for selected ASEAN countries with their top 20 trading partners for the period 1995-2010. The econometric method of fixed effect model (FEM) and random effect model (REM) are applied to estimate the model.

Equation (1) provides the basic gravity model in natural logarithms form. It states that the export from country i as a function of:

$$lnX_{ijt} = \beta_0 + \beta_1 lnGDP_{it} + \beta_2 lnGDP_{jt} + \beta_3 lnPOP_{it} + \beta_4 lnPOP_{jt} + \beta_5 lnDIST_{ij} + \beta_6 dADJ_{ij}$$
$$+ \beta_7 dLOCKED_{ij} + \beta_8 dCOMLANG_{ij} + \beta_9 lnRER_{ijt}$$
$$+ \varepsilon_{ij} \tag{1}$$

where X_{ijt} denotes the value of country i exports to country j in year t; GDP_{it} and GDP_{jt} denote real gross domestic product in year t for the reporting and trading partners' market, respectively; POP_{it} and POP_{jt} are population for both countries, $DIST_{ij}$ indicates the distance in km between the capitals of countries i and j; ADJ_{ij} is a dummy variable used to denote border between i and j and is 1 when have a common border; $LOCKED_{ij}$ takes a value of one when either country i or j is a landlocked country; $COMLANG_{ij}$ is a dummy that takes value of 1 when countries i and j have the same language, or generally share the same linguistic heritage and RER_{ijt} is the ratio of real exchange rate between exporting country and her trading partner j at time t. The real gross domestic product, distance, border and common language are standard variables of the gravity model. The GDP variable is a proxy for country size (market size and production capacity). The postulated signs for β_1 and β_2 are positive as trade increases with economic size. Transport costs are captured by a measure of distance between the two countries and dummy variables for adjacency and landlocked. The distance is negatively related to trade volume between them; more trade occurs between countries with a short distance between them than a long distance. In order to capture the effects of hard infrastructure factors on trade flows, we augmented the standard gravity model in Equation (1) with a set infrastructure variables. The modified model to be estimated after we incorporate the hard infrastructure is as follows:

$$lnX_{ijt} = \beta_0 + \beta_1 lnGDP_{it} + \beta_2 lnGDP_{jt} + \beta_3 lnPOP_{it} + \beta_4 lnPOP_{jt} + \beta_5 lnDIST_{ij} + \beta_6 dADJ_{ij}$$
$$+ \beta_7 dLOCKED_{ij} + \beta_8 dCOMLANG_{ij} + \beta_9 lnRER_{ijt} + \gamma_m IH$$
$$+ \varepsilon_{ij} \tag{2}$$

Variables X, *GDP, POP, DIST, ADJ, LOCKED, COMLANG, RER* are as in Equation (1), and IH are proxy for hard infrastructure such as container port traffic (TEU: 20 foot equivalent units), rail lines (total route-km) and paved roads (% of total roads), fixed line and mobile phone subscribers per 100 people and the number of internet users per 100 people.

4.0 Results and Discussion

The regression results of Equation (2) are reported in Table 1. The unbalanced panel data is used in this study since some data for required variables are not available during the study period. In testing whether random-effect GLS regression or pooling OLS is more appropriate, the Lagrange Multiplier test, developed by Breusch and Pagan (1979) was performed. The results of the test have led us to conclude that the REM is more appropriate than the pooled model as there are country-specific effects in the data. The next step is to perform Hausman specification test (Hausman, 1978) which is commonly used in applied panel data analysis to determine whether FEM or REM is preferable. If the model is correctly specified and if the country specific-effects are uncorrelated with the regressors, the REM will deliver a consistent estimator that is also efficient. The results of the Hausman test suggest that the FEM should be used in estimating the gravity equation since the null hypothesis stating that REM is consistent and efficient is rejected.

However, the use of FEM has caused some time-invariant variables such as the distance, common language dummies to be dropped. Basic gravity model posits that trade volume increases with the economic size and decrease with the distance between the two countries. The estimation results indicate that the GDP variable is positively related with trade which implies that trade increases with market size and production capacity. With regards to the population variable, the coefficients of log population for exporters and importers are negative and significant. However, the impact of population of importing countries on trade flows only significant when ICT infrastructures are included in the regression. A possible explanation may be that the export has to be reduced in order to fulfill the domestic demand and feed the growing population and thus trade less with other countries.

In relation to the impact of hard infrastructure variables on trade flows, all five indicators are highly significant and have expected signs. This study found that total route of rail lines has the largest impact on bilateral trade followed by paved road and container port traffic. The result for rail infrastructure, a proxy for land transport infrastructure, shows that 10% increase in total route in km for rail lines, other things equal, would bring about a 4.37% increase in trade volume. The coefficients of two other indicators, which are paved roads and container port traffic, are also positive and significant at 10% level. These findings are consistent previous studies such as Nordas and Piermartini (2004), Bougheas, et al. (1999) and Limao and Venables (2001).

With regards to ICT infrastructure, which are represented by the mobile and fixed-line telephone subscribers and internet users, both variables are found to be statistically significant and positively related to bilateral trade. A 10 percent increase in the number of fixed and mobile subscribers (lnFM) would boost trade by 1.36 percent. Meanwhile, the internet users (lnIU) also found to be highly and positively significant to trade flows; a 10 percent increase in the number of internet users increases trade flows by 0.7 percent. The finding is similar to that of Freund and Weinhold (2004) who found that new technologies as proxied by internet hosts reduced the fixed costs of market entry and also consistent with the findings of Nicoletti et al., (2003).

Table 1: The impact of hard infrastructure on trade flows in selected ASEAN countries

Dependent Variable: log of exports (lnXijt)

	Random effect					Fixed effect				
lnGDPi	1.206***	1.865***	1.726***	1.463***	1.438***	2.659***	2.176***	1.839***	1.546***	1.863***
	(0.119)	(0.070)	(0.092)	(0.114)	(0.081)	(0.215)	(0.116)	(0.152)	(0.145)	(0.101)
lnGDPj	1.003***	1.049***	0.996***	1.098***	1.065***	1.366***	1.590***	1.543***	1.585***	1.614***
	(0.064)	(0.060	(0.065)	(0.058)	(0.057)	(0.101)	(0.109)	(0.144)	(0.087)	(0.084)
lnPOPi	-0.688***	-0.855***	-0.591***	-0.619***	-0.678***	-5.760***	-2.790***	-1.357***	-2.905***	-3.700***
	(0.148)	(0.128)	(0.141)	(0.133)	(0.121)	(0.464)	(0.334)	(0.423)	(0.284)	(0.293)
lnPOPj	-0.231***	-0.291***	-0.315***	-0.366***	-0.353***	0.012	-0.193	-0.460*	-0.388***	-0.354***
	(0.061)	(0.058)	(0.060)	(0.056)	(0.055)	(0.139)	(0.172)	(0.248)	(0.134)	(0.131)
lnDIST	-1.343***	-1.336***	-1.219***	-1.302***	-1.274***	-	-	-	-	-
	(0.117)	(0.108)	(0.110)	(0.112)	(0.107)					
ADJ	-0.001	-0.323	-0.245	0.116	0.098	-	-	-	-	-
	(0.419)	(0.392)	(0.392)	(0.395)	(0.385)					
LOCKED	-0.018	-0.479	-0.687	-0.422	-0.423	-	-	-	-	-
	(0.764)	(0.705)	(0.715)	(0.718)	(0.703)					
LANG	-0.433***	-0.097	-0.096	-0.502**	-0.458*	-	-	-	-	-
	(0.263)	(0.260)	(0.251)	(0.247)	(0.242)					
lnRER	0.049**	0.059***	0.030	-0.009	-0.002	-0.378***	-0.023	-0.117***	-0..256***	-0.199***
	(0.024)	(0.022)	(0.023)	(0.022)	(0.020)	(0.070)	(0.049)	(0.038)	(0.039)	(0.031)
lnCPT	0.280***					0.148**				
	(0.055)					(0.060)				
lnRL		0.180**					0.437***			
		(0.080)					(0.156)			
lnRPVD			0.157**					0.165**		
			(0.065)					(0.073)		
lnFM				0.049**					0.136***	
				(0.019)					(0.026)	
lnIU					0.039***					0.070***
					(0.007)					(0.008)
CONS	-12.821***	-23.884***	-23.447***	-16.823***	-14.614***	20.008***	-26.407***	-34.541***	-0.959	4.207***
	(2.551)	(2.079)	(2.316)	(2.489)	(2.226)	(5.422)	(3.744)	(4.794)	(4.494)	(3.932)

TIME EFFECTS	-	-	-	-	-	F(98, 875) = 91.11	F(98, 943) = 47.52	F(98, 713) = 41.25	F(98,1322) = 72.63	F(98,1322) = 71.70
BILATERAL EFFECTS	-	-	-	-	-	F(98, 884) = 89.02	F(98, 957) = 48.2	F(98, 726) = 41.20	F(98,1336) = 69	F(98,1336) =70.94
NO. OBSER-VATION	989	1062	831	1441	1441	989	1062	831	1441	1441
R-SQUARED	0.6584	0.6811	0.6828	0.6543	0.6578	0.1493	0.3595	0.2913	0.2039	0.1967

***, **, * indicate significance at the 1%, 5% and 10% level, respectively. The number in parentheses is the standard error. The Hausman Test found that FEM is preferred model (p-value=0.000).

5.0 Conclusion

Trade-related infrastructure and infrastructure services play a vital role in supporting international trade flows. Transport, energy, telecommunications and financial services, among others, are the key sectors for the development of trade. An improvement and expansion of infrastructure, through its availability, quality, cost and reliability, is expected to bring significant impact in trade cost reduction. In order to examine the impact of hard infrastructure on trade flows, this study incorporates alternative measures of hard infrastructures in a standard gravity model and estimates the model by using fixed effect estimator. Five indicators related to hard infrastructure from transport and ICT sectors were chosen for this study. Three of the five indicators represented transport sector while the other two indicators represented ICT sector. All infrastructure indicators were shown to have influence on trade flows and have the expected signs. Among the five indicators, rail infrastructure has the greatest impact on trade flows. These results suggest that the development of trade-related infrastructure, specifically hard infrastructure, is therefore very important for ASEAN to capitalize the benefits of international trade.

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The Impact of Sectoral Foreign Aid on Growth

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Abstract

Since donors started providing foreign assistance to developing countries, a broad empirical literature has emerged to investigate the effectiveness of foreign aid on growth of the recipient countries. This substantial and growing body of research in theoretical and empirical literature has increased the knowledge about the effectiveness of foreign aid in promoting growth. This study contributed to the empirics of growing debate on foreign aid-growth nexus by investigating the impact of foreign aid on growth in recipient countries based on disaggregated foreign aid figures. We disaggregated foreign aid into four main sector, which are; (i) aid to social infrastructure and services sector, (ii) aid to economic infrastructure and services sector, (iii) aid to production sector and (iv) aid to multi sector. Then we estimate these sectoral aid disaggregation on growth by utilized the System Generalized Method of Moments (GMM) method. We use a panel data of 83 aid's recipient countries covering the period of 1995-2009. The results indicated that different sectoral foreign aid exerted different impact on growth. Aid to multi sectors has significant impact in increasing the growth, while aid to economic infrastructure and services sectors was found to decrease growth. In addition, aid to social infrastructure and services and aid to production sectors were positively insignificant and negatively insignificant affected the growth respectively.

Keywords: Disaggregate foreign aid, growth, panel data approach.

1.0 Introduction

In the history of development economics, foreign aid has been thought of as a key factor in fostering economic development of developing countries. Generally, foreign aid is known as an international transfer of capital, goods, or services from a country or international organization for the benefit of the recipient country or its population for development purposes. Aid can be social, economic, military, or emergency humanitarian (e.g., aid given following natural disasters). Specifically, the terms "(foreign) aid" and "assistance" both refer to flows which qualify either as ODA (Official Development Assistance) or as Official Aid (OA). This concept was introduced in the early 1970s by the Development Assistance Committee (DAC) of the Organization for Economic Cooperation and Development (OECD).

According to OECD, ODA is defined as a flow to developing countries and multilateral institutions provided by official agencies, including state and local governments, or by their executive agencies, each transaction of which meets the following test; (i) it is administered with the promotion of the economic development and welfare of developing countries as its main objective, and (ii) it is concessional in character and contains a grant element of at least 25% (calculated as the ratio of the equivalent part of the loan to the face value of concessional loan and discount rate of 10%). The ODA also includes grants for technical cooperation, such as capacity development, providing policy advice and training. However, it excludes military assistance, political development programs, trade credits, and debt forgiveness for military loans. The main objective of foreign aid is to promote economic growth in poor countries and thereby lift people out of poverty. According to Nelson (1956), Erikson (2005) and Sachs, et al. (2005), poor countries have low incomes and savings which caught them in a "vicious circle of poverty" or "poverty trap". In other words, they experience a "low-level equilibrium trap" where higher income does not lead to increase saving but only results in higher population growth. Thus, theoretically, investment financed by foreign aid able to dissolve this vicious circle and connect LDCs to the virtuous circle of productivity and growth.

However, over the past decade, literature has emerged that offers contradictory findings about the impact of aggregate foreign aid on economic growth in the recipient countries. This argument was supported by the ample of empirical literatures that indicated little evidence that foreign aid promoted economic growth. For example, Cassen (1994), Papanek (1973), Mosley (1980), Mosley, et al. (1987) and Boone (1994) found inconclusive result between aid and growth. In contrast, Burnside and Dollar (hereafter BD, 2000) found positive impact of aid on growth conditional with good fiscal, monetary and trade policies of the recipient countries. The important policy recommendation of this, which has been embraced by aid agencies, is that aid should only be allocated to countries with a sound policy environment. However, subsequent literature (see Hansen and Tarp, 2001; Dalgaard and Hansen, 2001; Lensink and White, 2001; Easterly, Levine and Roodman (hereafter ELR), 2003) has demonstrated the fragility of BD's findings.

Nevertheless, a problem with the existing studies is that they only examine the effects of aggregate aid, although it is well documented that different categories of aid are likely to exert different macroeconomic effects. (Cassen, 1994; White, 1992 and 1998; Mavrotas, 2002a; Mavrotas, 2002b; Mavrotas and Ouattar,a 2006a; and Ouattara, 2004). For instance Mavrotas (2002a) disaggregates aid to India into program aid, project aid, and technical assistance, while Mavrotas (2005) analyze the impact of development aid (project aid, programme aid, technical assistance and food aid) on the fiscal sector for Uganda. In addition, Clemens et al. (2004) divide aid into three categories: (i) emergency and humanitarian aid, (ii) aid to support democracy, the environment, health, or education, and (iii) aid for budget and balance of payment support, investments and infrastructure, and for the reproductive sector such as agriculture and industry. They classifies the second group have long run effect on growth and the third category tends to affect growth in the short run. However, it is important to note that, the findings for the impact of disaggregate aid on growth from the specific country studies is misleading. As pointed by Mavrotas (2005), and Mavrotas and Ouattara (2006a), there are different conditions relating to each of the aid categories in different countries (for example, the state of aid coordination may differ in each country); thus it makes sense to expect aid to exert a different effect in each country.

There is clearly a need to substantiate this finding on a more comprehensive cross-country basis. This paper attempts to investigate the impact of aid disaggregation on growth using a panel data approach using a distinctive aid disaggregation. In particular this paper seeks to investigate how; (i) aid to social   infrastructure and services, (ii) aid to economic infrastructure and services, (iii) aid to production sector and (iv) aid to multi sector effecting growth.

This paper is organized as follows. The next section reviews the empirical evidence on the impact of ODA disaggregated on growth. Then, the model specification, econometric methodology conducted in this study will derive in Section 3. Section 4 describes the results and discussions and finally, Section 5 concludes.

2.0 Literature Review

Due to the failure to get conclusive finding from the previous study which almost using the aggregate data of foreign aid, there are several studies started looking at the disaggregate data of foreign aid. The rational of disaggregate aid data is enable to disentangling the individual effect of the foreign aid to economic growth and thereby leading to an aggregation bias in the findings. Thus, there are several studies focus on the disaggregate aid on growth in order to get more appropriate findings and conclusions. For example Cordella and Dell'Aricicia (2003) examine the effect of disaggregated aid commitments (in the form of budget support and project aid) on growth in the context of panel studies and find that both types of aid do not exert a significant impact on growth, while it is only when interacted with the policy variable that the impact of program aid on growth becomes positive and significant and the impact of project aid remains insignificant. While Mavrotas (2003) disaggregates aid to Uganda into program, project, technical assistance, and food aid. He then uses a time-series error-correction model to test the growth impact of aid and finds a significantly positive impact of program aid much larger than of project aid. He also finds significantly negative impacts of technical cooperation and food aid. Moreover, Clemens, et al. (2004) divide aid into three categories: (i) emergency and humanitarian aid, (ii) aid to support democracy, the environment, health, or education, and (iii) aid for budget and balance of payment support, investments and infrastructure, and for the reproductive sector such as agriculture and industry. They find that the last category of aid exerts a significant impact on economic growth (with diminishing returns). The rationale for classifying aid components under these headings, according to the authors, is that the first type of aid tends to be negatively correlated with growth, the second group tends to affect growth in the long run, and the third category tends to affect growth in the short run.

Also, using a different disaggregation approach, Rajan and Subramanian (2005b) examine the effect of aid (net of technical assistance) and technical assistance on labour-intensive industries for a panel of countries over the period 1960–2000. Their findings show that aid (net of technical assistance) exerts a negative and statistically significant impact on labour-intensive industries. When they use technical assistance as the aid measure the negative and significant impact still remains (although the estimated coefficient for aid becomes smaller in absolute value). In this paper we thus explicitly examine the impact of different sectoral disaggregation of aid disbursements on growth. Our disaggregation criteria was based on the way donors disbursed their funds. Put differently, our aim is to investigate whether the different sectoral aid

disaggregation will exert different effects on growth. And if they do, which sector appears to be more effective in promoting growth.

3.0 Data and Methodology

3.1 Model Specification

This study follows the neoclassical growth model augmented by human capital drawing by Mankiw, Romer, and Weil (1992) and Barro (1996). The per capita output equation is assumed to take the following form:

$$y = (k, h, Aid, X) \tag{1}$$

where y is real per capita gross domestic product; k denotes as investment; h is human capital; and Aid denotes four sectoral disaggregated of ODA variables and X denotes the set of other variables that may affect real per capita GDP. The latter may include sectoral disaggregated of aid variables along with population growth, inflation, trade openness, and financial depth that further augment the neoclassical growth model with human capital. As a result, this study will estimate the per capita growth equation as follows:

$$\ln Y_{i,t} = \beta_0 + \beta_1 \ln(Y_{i,t-1}) + \beta_2 \, k_{i,t} + \beta_3 h_{i,t} + \beta_4 \, (pop)_{i,t} + \sum_{j=5}^{8} \beta_j \, Aid_{i,t}$$

$$+ \sum_{j=9}^{12} \beta_j \, X_{i,t} + \eta_i + \mu_t + \xi_{i,t} \tag{2}$$

Where
- $\ln(Y_{i,t-1})$ denotes the logarithm of per capita income at the beginning of each period that controls for the expected diminishing growth rates as per capita income rise, thus, its coefficient is expected to be negative.
- $k_{i,t}$ is the ratio of gross capital formation (investment) to GDP, its coefficient expected to be positive since higher investment ratio leads to higher stock of physical capita.
- $h_{i,t}$ denote the stock of human capital which is proxies by labor force. The economic theory suggests that stock of human capital promote economic growth via innovations and productivity growth while changes in human capital likely affect growth via adjustments in the level of productive (educated labor) input. Obviously, most of developing countries are less likely to have a capacity to create innovative technologies suited to domestic production. However, levels of human capital may affect the speed of technological catch-up. Therefore, the expected impact of lagged stock of human capital on per capita GDP growth is ambiguous. It can be positive or negative.
- $(pop)_{i,t}$ refers to the population growth rate, this controls for potential changes in labor.
- $X_{i,t}$ consists of three macro variables, including trade openness (*trade*) and financial depth (*money*). These variables are often identified as key macroeconomic determinants of growth. Trade openness is identified as the ratio of total trade (exports plus imports) to GDP. The ratio of broad (M2) money, to GDP was use as an indicator of financial depth. Obviously, trade openness and financial depth should have positive impact on growth.

- η_i and m μ_t refer to the time-invariant country-specific fixed effects and period-specific country-invariant fixed effects, respectively.

3.2 Econometric Methodology

This study follows the General Method of Moments (GMM) estimation procedure. This technique allows us to purge time invariant country-specific effects and to control for the endogeneity of the explanatory variables. We assume that all explanatory variables are potentially endogenous. One should also note that all time-invariant variables are purged from (1) since under our estimator the data is first differenced. The GMM approach adopted here is the GMM system, developed by Blundell and Bond (1998). The consistency of the GMM estimator depends on whether lagged values of the explanatory variables are valid instruments in the regression.

3.2.1 System Generalized Method of Moment (GMM-System)

This study employed GMM-System method in estimating the impact of sectoral foreign aid on growth by estimating the following equation:

$$y_{i,t} - y_{i,t-1} = (\alpha - 1)y_{i,t-1} + \beta_1 Aid_{it} + \beta_2 X_{it} + \eta_i + \varepsilon_{i,t} \tag{3}$$

where η_i is an observed country specific effects.
A basic outline of the GMM-System method is presented below. For ease of exposition, each section of the system is presented separately although, as mentioned above, the entire system is estimated jointly.

3.2.1.1 System in First Differences

This study eliminated the unobserved country-specific effects by specifying the regression equation (3) in first differences:

$$y_{i,t} - y_{i,t-1} = \alpha \left(y_{i,t-1} - y_{i,t-2}\right) + \beta_1\left(Aid_{i,t} - Aid_{i,t-1}\right) + \beta_2\left(X_{i,t} - X_{i,t-1}\right)$$
$$+ \left(\varepsilon_{i,t} - \varepsilon_{i,t-1}\right) \tag{4}$$

For this specification, the choice of instruments requires to deal with two problems. First, the possible endogeneity of the explanatory variables, $Z = [Aid'X']'$, which is reflected in the correlation between these variables and the error term. Second, the new error term, $\left(\varepsilon_{i,\tau} - \varepsilon_{i,\tau-1}\right)$, is correlated by construction with the differenced lagged dependent variable, $\left(y_{i,t-1} - y_{i,t-2}\right)$.

According to this procedure, this study allow for the possibility of simultaneity and reverse causation, instead of assuming *strict exogeneity* (i.e. no correlation between the explanatory variables and the error term at all leads and lags). We adopt the more flexible assumption of *weak exogeneity*, with the current explanatory variables being affected by past and current realizations of the dependent variable but not by its future innovations. Under the assumptions that (a) the error term, ε, does not exhibit serial correlation, and (b) the explanatory variables are weakly exogenous, the following moment conditions apply:

$$E\left[y_{i,t-s} \cdot \left(\varepsilon_{i,t} - \varepsilon_{i,t-1}\right)\right] = 0; \text{ for } s \geq 2, \text{ and } t = 3,\dots,T \text{ and}$$
$$E\left[Z_{i,\tau-s} \cdot \left(\varepsilon_{i,\tau} - \varepsilon_{i,\tau-1}\right)\right] = 0; \text{ for } s \geq 2, \text{ and } t = 3,\dots,T. \tag{5}$$

The GMM-IV estimator based on the moment conditions and is known as the *differences* estimator. Although asymptotically consistent, this estimator has low asymptotic precision and large biases in small samples, which leads to the need to complement it with the regression equation in levels.

3.2.1.2 System in Levels

For this part of the system, the country-specific factor is not directly eliminated but must be controlled for by the use of instrumental variables. The appropriate instruments for the regression in levels are the lagged *differences* of the corresponding variables if the following assumption holds. Although there may be correlation between the levels of the right hand side variables and the country-specific effect, there is no correlation between the *differences* of these variables and the country-specific effect. This assumption results from the following stationarity property;

$$E[y_{i,t+p} \cdot \eta i] = E[y_{i,t+q} \cdot \eta i] \text{ and } E[Z_{i,\tau+p} \cdot \eta i] = E[Z_{i,\tau+q} \cdot \eta i]; \text{ in all } p \text{ and } q. \tag{6}$$

Therefore, the additional moment conditions for the second part of the system (the regression in levels) are given by the following equations:

$$E\big[(y_{i,t-s} - y_{i,t-s-1}) \cdot (\eta i + \varepsilon_{i,t})\big] = 0; \text{ for } s = 1$$
$$E[(Z_{i,t-s} - Z_{i,t-s-1}) \cdot (\eta i + \varepsilon_{i,t})] = 0; \text{ for } s = 1 \tag{7}$$

In overall, the GMM system estimator is obtained using the moment conditions in Equation (4), (5), (6), and (7). Following Blundell and Bond (1998), the validity of the instruments used in these regressions is examined via two different statistics. The first is a Hansen test of over-identifying restrictions, which tests the overall validity of the instruments by analyzing the sample analog of the moment conditions used in the estimation process. Failure to reject the null hypothesis gives support to the model. The second test, proposed by Arellano and Bond (1991), examines the hypothesis that the residuals from the estimated regressions are first-order correlated but not second-order correlated.

3.3 Data Sources

This study utilized a panel 3 year moving average data set of 83 aid recipient countries for the period 1995-2009. The sectoral aid data was collected from OECD in Development Assistance Committee (DAC) and Credit Reporting System (CRS). The data covered both bilateral and multilateral donors. The sectoral ODA data was listed in terms of commitments starting 1995-2009 and the disbursements of sectoral ODA available starting 2002 until 2009. In overall, ODA can be divided into five main sectors; (i) social infrastructure and services, (ii) economic infrastructure and services, (iii) production sectors, (iv) multi sectors and (v) other sectors. This study focuses on the first four main sectors and excluded the other sector. The detailed of sub-sectors of these ODA is shown in the following table.

Table 1:Sectoral ODA Disaggregation

Total Sector	Sub-sectors
Social Infrastructure and Services	Education, Health, Population /Program and Reproductive Health, Water supply and sanitation, Government and Civil Society, and Other Social Infrastructure and Services.
Economic Infrastructure and Services	Transport and Storage, Communications, Energy, Banking and Financial Services, Business and Other Services.
Production Sectors	Agriculture, Forestry, Fishing, Industry and mining, Construction, Trade Policies and Regulations
Multi Sectors	General Environment Protection, and Other Multi sectors.
Other Sectors	Commodity Aid/general Program Assistance, Action Relating to Debt, Humanitarian Aid, Administrative Cost of Donors, Refugees in Donor Countries and Unallocated/Unspecified.

Source: OECD, CRS.

We calculated the sectoral disbursement for the period 1995-2001 data base on the commitments data using Clement *et al*. (2004) approach. In this approach, we assume that the fraction of disbursements in each of aid category in given period is equal to the fraction of commitments in each category in that period. The real rate of GDP per capita, the ratio of gross capital formation to GDP, population growth, trade openness, the ratio of broad (M2) money to GDP and labor force were derived from the World Development Indicator online database.

4.0 Results and Discussions

This study estimated the impact of aggregate ODA and sectoral disaggregated of ODA on growth using one and two step system GMM. The estimated results are summarized in Table 2.
Before discussing the results on the estimated coefficients, it is crucial to analyze our diagnostic tests. The first test concerns the validity of the instruments. The Hansen p-value for all models were greater than 5 percent significance level, in which is 0.776 for one-step and 0.901 for two-step system GMM analysis of sectoral disaggregated of ODA on growth. It implies that we failed to reject the null hypothesis of no over-identifying restrictions. The second test concerns the question of 1st and 2nd order serial correlation. The estimated result shows the residuals are not correlated at 2nd order conditions when p-values of the Arellano and Bond test for AR (2) are greater than 5 percent significance level, which are 0.992 for both one-step and two-step system GMM analysis. As we can see, both Hansen and Arrelano-Bond statistics confirm that the instruments used have no-over-identifying restriction and residuals are independent.

Now, we turn to discuss the estimated coefficients of sectoral disaggregated of ODA on growth. The estimated coefficient of aid to economic sector exhibit a negative and significant impact on growth at 1 percent significant level, which is -0.026. Meaning that 1 percent increase in aid to

economic sector is actually reduced growth by 2.6 percent. This finding in line with the findings of the study done by Rajan and Subramaniam (2005 and 2005a). They found the negative impact of aid to economic sector on growth. They indicated that aid can hurt growth by exchange rate regime. In a flexible exchange regime, aid inflows push up the nominal exchange rate rendering the traded goods sector uncompetitive if wages in that sector do not adjust downwards. Second, in a fixed exchange rate regime, when aid inflows are spent on domestic goods, they will push up the price of other critical resources that are in limited supply domestically; such as skilled workers or coastal land, thus rendering industries that face international competition and depend on that resource uncompetitive. While the channels are different, the ultimate effect of aid inflows is the same, namely they result in an overvalued real exchange rate, and hence have adverse consequences on the growth of the traded goods sector in recipient countries.

Table 2: Impact of Foreign Aid on Growth, 1995-2009.

Independent Variable	Sectoral Disaggregated of ODA	
	One-Step	Two-Step
Method	System Gmm	System Gmm
Initial Real GDP per capita	0.958	0.958
	(38.12)	(37.29)
Aid to Social Sector	0.0004	0.009
	(0.03)	(0.56)
Aid to Economic Sector	-0.026	-0.031
	(-3.20)***	(-2.83)***
Aid to Production Sector	-0.001	-0.007
	(-0.13)	(-0.55)
Aid to Multi Sector	0.023	0.023
	(1.96) **	(1.78)*
Money	-0.039	-0.054
	(-1.57)	(-1.82)*
Trade Openness	0.070	0.078
	(2.94)***	(2.65)***
Capital	0.131	0.137
	(4.05)***	(3.53)***
Population Growth	-0.038	-0.035
	(-3.06)***	(-2.69)***
Labor Force	0.012	0.011
	(1.51)	(1.13)
Constant	-.355219	-.3602328
	(-1.55)	(-1.53)
Number of Observations	292	292
Number of Countries	83	83
Arrelano-Bond AR (2) (p-value)	0.776	0.901
Hansen test (p-value)	0.992	0.992

Note: Dependent variable is *GDP per capita*. The figures in parentheses are Robust t-statistic.
*The coefficient is significant at 10%. ** The coefficient is significant at 5% and *** The coefficient is significant at 1%.

In contrast, aid to multi sector has positive significant impact on growth at 5 percent and 1 percent significant level for one-step and two-step system GMM respectively. However the estimated coefficient using both methods is similar, which is 0.023. This number implies that 1 percent increase in aid to multi sector will tend to increase growth by 2.3 percent. Major of aid to

multi sector subcategories are general environment protection and other multi sectors. Subsector of other multi sectors consist of aid for urban development and management, rural development, non-agricultural alternative development, multi sector education or training and research or scientific institution. It is clear that aid to multi sector increase growth because aid to this sector focus on the urban and rural development of the recipient countries.

Even though aid to social sector and production sector do not appear to exert any statistically significant effect on growth, but they affected the growth by the opposite direction. Aid to social sector has a negative effect on growth and aid to production sector is positively affected the growth. Aid social sector include aid for education, health, population or program and reproductive, water supply and sanitation, government and civil society, and other social and services. Besides, aid to production sector goes to primary economic sector such as agriculture, forestry, fishing, industry and mining, construction, trade policies and regulations. Aid to these sectors seems to have long term effect on growth. In addition, the control variables like capital, population growth and trade openness were positively and statistically significant in effecting the growth at 1 percent significant level.

5.0 Conclusion

This paper has contributed to the recent empirical literature on impact of disaggregated aid on growth. We estimated the impact of sectoral disaggregated of aid (social sectors, economic sectors, production sectors and multi sectors) on growth using the one-step and two-step system GMM approach to dynamic panel estimator for a sample of aid recipient countries over the period 1995–2009. This study provides additional information about the impact of disaggregated aid on growth. Our findings suggest that aid to multi sector play a significant role in promoting growth in aid recipient countries. In contrast, aid to economic sector seems to decrease the growth because aid to these sectors was decrease the growth by exchange rate regime effect. Thus, policy maker and aid donors should manage and look properly into the impact of different sector of aid on growth in recipient countries before giving aid to developing countries. According to the finding of this study, policy maker should allocate more aid to multi sector in order to increase growth in recipient countries. Hopefully these findings can be additional information for policy makers to design more appropriate and better aid allocation policy to make aid more effective in promoting growth and better standard of living of the aid recipient countries.

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Multidimensional Poverty in Malaysia

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Abstract

As postulated in literature, different concepts of poverty result into different people being identified as poor. The traditional poverty measures that rely on material inadequacy based on income or consumption is now claimed not to be inadequate to reflect wellbeing. Nowadays, a multidimensional poverty based on capability and functioning approach has been getting a wider attention with different kinds of measure introduced to gauge the phenomena. We test the multidimensional poverty phenomena in Malaysia based on Alkire and Foster (2007) method for five dimensions of wellbeing: finance, education, health, standard of living and environment using data from Household Income Survey and Basic Amenities Survey for the year 2009. The results provide us the insights into what really constitutes poverty in Malaysia. We found that the contribution of income is only marginal and household in Malaysia are actually deprived more in health and standard of living. We propose that policy makers take into consideration the insights from these multidimensional phenomena in the endeavor to achieve inclusive growth in Malaysia.

Keywords: Multidimensional poverty, capability and functioning, Malaysia

1.0 Introduction

Nowadays, a multidimensional poverty based on capability and functionings approach has been getting a wider attention with different kinds of measure introduced to gauge the phenomena. The approach is partly dates from Sen's work on social justice and inequalities (Sen, 1985, Sen, 1992). According to Be`renger and Verdier-Chouchane (2007) Sen's work contributed to the formation of the Human Development Index (HDI). Since then, multidimensional poverty index (MPI) was first introduced in Human Development Report 2010 from the work of Alkire and Foster (2011a). This work covers the index of acute poverty for over 100 developing countries all over the world. However, there are critics of MPI that the dimensions and indicators used might not be suitable to gauge the phenomena in the more advanced developing countries.

This study aims to develop a Multidimensional Index of Poverty (MIP) by exploring five dimensions and indicators that are more suited to the level of development in Malaysia based on Sen's "capability and functionings" approach (Sen, 1976). The purpose of this measure is to fill a significant gap that arises from theoretical and practical aspects in evaluating poverty and wellbeing in Malaysia. It also serves to demonstrate the practical usefulness of the framework in line with the evaluation requirement of NEM. Additionally, this study contributes in providing a greater scope of poverty analysis parallel with the initial proposal by Economic Planning Unit (EPU) and United Nation Development Programme (UNDP) Malaysia to create a multidimensional index of poverty in Malaysia.

The background of the study will be provided next in part 2. It will be followed by literature review in part 3. Part 4 discusses the method we employ for this study. We present the results and some discussion in part 5. A brief discussion for policy implication is provided in part 6. This paper ends with some conclusions in part 7.

2.0 Poverty and Economic Policy in Malaysia

Malaysia is acknowledged for her success story not only in achieving remarkable economic growth but also in handling distributional issues, particularly in eradicating poverty and addressing income inequality and regional gap (Ragayah and Krongkaew (2008) and Leete (2008)). Through the four decades of growth, strategies to reduce poverty, and disparities between rural and urban population and among states and regions focus on provision of sustainable income-generating avenues; improvement in access to basic needs such as housing, education, healthcare, utilities and transportation; and development of less developed regions through regional growth centres. In addition, ethnic disparities are addressed by raising incomes through the enhancement of skills and capabilities; and promoting equal opportunities in employment.

The overall incidence of income poverty reduced tremendously from almost 50% in 1970 to less than 4% in 2009, as shown in Figure 1. The incidence of poverty in rural area which was almost comprised of two third of the population in 1970 was reduced to less than one tenth in 2009. Poverty in the urban areas that comprised about a quarter of the urban population reduced to less than two per cent in the same period.

Figure 1: Malaysia: Incidence of Poverty, 1970-2009

	1970	1980	1990	1999	2004	2007	2009
Total	49.3	37.4	17.1	8.5	5.7	3.6	3.8
Rural	58.6	45.8	21.8	14.8	11.9	7.1	8.4
Urban	24.6	17.5	7.5	3.3	2.5	2.0	1.7
Hardcore			3.9	1.9	1.2	0.7	0.7
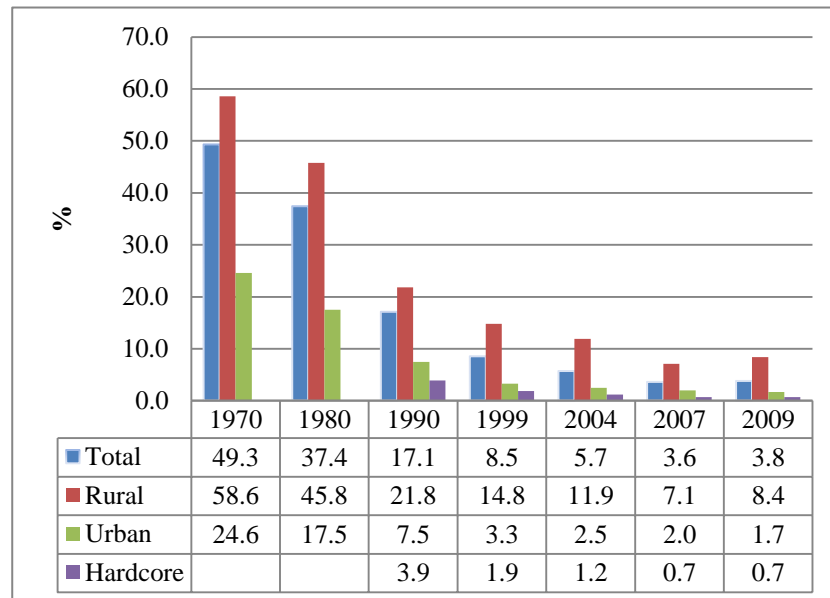
The country is now facing a risk of middle income trap that imposed challenges for the country towards achieving a developed nation status by 2020. The country's income per capita in 2010 was USD6,700 and to be a developed nation in 2010 the income should reach USD15, 000

(PEMANDU, 2010). The economic growth was sluggish since the financial crisis of 1997. The average growth was about 4.3 percent for the period 2001 to 2009 compare to the average of nine percent from 1991 to 1997. At the same time, social performance in certain areas is not at a satisfactory level (PEMANDU, 2010). These areas are crime, corruption, education and income distribution.

The New Economic Model (NEM) was introduced in 2010 as a catalyst in transforming the country's economy to high income economy. In relation to distribution, the socio-economic planning of the country is tailored within the 'inclusive development' framework to ensure equitable access to economic participation among all Malaysians in moving towards a fair and socially just society"(EPU, 2010). As a first step toward transformation, specific focus is given for six critical areas for wellbeing improvement: reducing crime, fighting corruption, improving student outcomes, raising living standards of low income households, improving rural basic infrastructure and improving urban public transport. The introduction of NEM brings about new challenges not only in the delivery system but also monitoring and evaluation. In particular, its framework that is multidimensional in nature requires a cohesive synergy between measurement tools monitoring and evaluation and policy design.

3. 0 Literature Review

Measurement of poverty in Malaysia is based on absolute notion using basic need approach. This approach identifies the consumption bundle deemed to be sufficient in meeting the household needs (UNDP, 2007). The amount of income needed to purchase this bundle is set as a benchmark to determine the status of a household, known as the poverty line income (PLI). Thus, PLI is defined as the minimum monthly household income that enables a household to achieve an adequate standard of living.

There are inadequacies in measurement of poverty for Malaysia from both theoretical and practical perspectives. The inadequacy in theory rises from criticism of the utilitarian concept in measuring wellbeing and in the inadequacy of income approach to measure poverty. According to Sen (1985), utility concept involves a maximand in choice behavior and only concern about one simple measure of individual's interest and fulfillment. Sen (1992), (Sen, 1999) argues that assessment of wellbeing should be looked from the perspective of functionings - what a person is succeeds in doing with the commodities and the characteristic of those commodities that he or she actually acquired.

In relation to inadequacy of income, one strong view is that "poverty is not only about not having enough money" (Jenkins and Micklewright, 2007); and income does not provide all the necessary information for a comprehensive picture of poverty with poor correlations between income and other dimensions (Laderchi, 1997). Income is inappropriate in case of non-existence or imperfect market for non-monetary attributes and should be supplemented by other attributes (Bourguignon and Chakravarty, 2003). A genuine measure of poverty should have income as well as non-income indicators in identifying aspects of welfare.

From practical perspective, the inadequacy in measurement creates two problems in Malaysia. The first relates to evaluating the real state of welfare of the citizens and the second links to

inappropriateness of the income as a cut-off point to provide non-income types of assistances. The status of overall deprivation has never been clearly determined in Malaysia. So far, the measurement of well-being takes item-by item approach. It is clear that income poverty has been successfully reduced to less than four percent in 2009 while other areas like health, education and access to basic infrastructure showed improvement. But, the more critical question is how to assess the overall welfare and standard of living of each household, taking income and non-income attributes together. The NEM has laid out a holistic approach to socio-economic development for inclusivity and thus a holistic approach of evaluation is also needed.

Broad estimate show that deprivation in non-income indicators are still rampant even among the non-poor household. Information from the Household Income and Basic Amenities Survey (HIS/BA) 2009 reveals that non-poor makes up about 50 percent of those that does not have garbage disposal facility, which is very important for health and cleanliness, in their dwelling area; about 72 percent of those that did not have 24-hour supply of electricity, which is life-sustaining necessity in this modern world; and close to 83 percent of the those living in dwelling that has two or less rooms. Lastly, about half of household that reported they have school age children not going to school due to financial difficulty is non-poor.

Concerning the inappropriateness of cut-off point, the PLI are widely used to identify the target groups for programmes that are multidimensional in nature. These various programmes to eradicate poverty include welfare and direct transfer; credit facilities; supports for agricultural projects; basic amenities; and social services. The inappropriateness of indicators leads to over- or under estimation of allocation for the programmes and resulted into inefficiency.

In addressing the inadequacy in measuring poverty in Malaysia, we propose to conceptualize poverty under a multidimensional framework. Sen (1985) conceptualized poverty as a lack of various capabilities to achieve functionings of individuals in life. The multidimensional aspects of poverty arise based on the arguments that poverty should be measured in other dimensions that access capabilities more directly while maintaining income as important instrumentally since some of these capabilities can be bought (Maltzahn and Durrheim (2008) and Tsui (2002)).

The empirical studies of multidimensional poverty measurements utilize different approaches such as fuzzy set, information theory, latent class analysis, counting and axiomatic approach. Some of those studies are by Berenger and Celestini (2006), Betti et al. (2006), Luzzi et al. (2008) and Miceli (2006), Dekkers (2008), Dewilde (2004), Fusco and Dickes (2008), Krishnakumar (2007) and Chakravarty and Silber (2008). The current development in this area produces studies that combine approaches such as axiomatic with counting technique (Alkire and Santos, 2010); information with axiomatic (Maasoumi and Lugo, 2008) and axiomatic with fuzzy set (Chakravarty, 2006).

The work by Alkire and Santos (2010) based on Alkire and Foster (2011a) method is perhaps the most complete work on multidimensional poverty measure at the world level. They use ten indicators of deprivation for 3 dimensions of poverty that are a mirror image of Human Development Index (HDI), namely education, health and standard of living. The purpose of the work is more in portraying acute poverty in the developing economies. As such the dimensional cut-off points that are chosen focus on basic needs for survival. Similar work has been undertaken by Alkire and Roche (2011) focusing on child poverty. They apply six indicators, namely

nutrients, water, sanitation, health, shelter and information. In case of Malaysia, Mat et al. (2012) has come up with analysis of a multidimensional poverty for the district of Baling in the state of Kedah. They use a total of 14 indicators related to health, basic amenities, housing, income and agriculture asset.

The method used is claimed "to provide the general methodology for measuring poverty in the sense of Sen (1976) that first identifies who is poor, then aggregates to obtain overall measures of poverty that reflect the multiple deprivations experienced by the poor" (Alkire and Foster, 2011b).   As the method is the general one, it is the task of researchers to determine key decisions that include the selection of dimensions to be considered; dimensional cut-offs to determine when a household is deprived in a dimension; dimensional weights to show the relative importance of the dimensions; and poverty cut-off to decide how many deprivation the household must experience to be considered poor.

4.0 Data and Methodology

4.1 Sources of Data

The data for this study is sourced from Household Income and Basic Amenities Survey (HIS/BA) undertaken by Department of Statistic Malaysia. The HIS/BA is done twice in every five years, stratified based on state and strata. The main components of the data include income; demographic characteristic of the head of the households such as age, gender, educational level and marital status; basic amenities own; and basic infrastructure accessible to households. The basic amenities include availability of electricity, water and sanitation facilities, as well types of cooking fuel. Housing characteristics are focused on physical elements such as soundness of the house, housing materials and ownership, and rooms for sleeping. It also collects information about school enrolment together with reasons for no enrollment. This survey also assesses ownership of various durable goods, such as radio, television, refrigerator, bicycle, car and telephone.

The HIS/BA 2009 has a total of 42,596 households. About 56 percent of the households reside in the urban area while another 44 percent is in the rural area. Of the total household, about 85 percent are headed by male. The regional decomposition of the household shows that about 79.8 percent are from Peninsular Malaysia, 11.6 percent from Sabah and Labuan, and the balance 8 .6 percent is from Sarawak.

4.2 Dimensions of Poverty

The selection of the dimensions for this study is guided on three justifications. First, the dimension is context dependence to instrumentally reflect the real and current needs of the society in Malaysia based on Alkire (2007). Second, the dimensions should meet the practical need of policies specific for Malaysia. The attributes under each dimension should be utilized as a valid measure in the implementation of development programmes laid out in the NEM. Third, and perhaps the most important reason is data availability. The study by Alkire and Santos (2010), for example limit the dimensions to three due to inability to get full set of micro data for

104 countries. We are also constrained by the availability of suitable data to encompass a wider coverage for Malaysia.

In this exploratory study, we have five dimensions, namely *finance, education, health, standard of living* and *environment*. The *financial* dimension is a duplicate of the existing government income poverty indicator. The deprivation based on raw head count ratio at national level gives a figure of 3.8 percent for this indicator in 2009. The role of *education* is not only to promote productivity that contributes to economic growth, but it also important in the aspect functioning as a human being. One of the main aims of the Millennium Development Goals for Malaysia is to achieve universal primary and secondary education (UN, 2011). The household is regarded as deprived in education if the household has at least one school going children age 7-18 not currently going to school. It is reasonable to consider this dimensional cut-off point since access to education is almost free with primary school net enrolment of 98 percent in 2009 (UN 2011).

The *health* dimension is included due to its relationship with both financial aspect and human wellbeing. Unhealthy individuals not only lack capability to work for living, but also lack capability to achieve functionings in life. For the lack of better data, the health dimension is derived from health risk that might arise due to improper garbage disposal of the living quarters. For the dimensional cut-off point, the household is considered exposed to health risk if garbage collection facility does not reach living quarters or the area of the living quarters. The dimension *standard of living* is included due to its well recognized role in fulfilling basic needs and has been identified as one of the indicators to monitor socio-economic progress under the Malaysia Quality of Life Index (MQLI). The household is considered deprived if any of these conditions are met: absent supply of treated water in the dwelling; less than 24 hour electricity supply; absent of flush/pour toilet; absent of gas stove; absent of refrigerator, or absent of washing machine. It is quite reasonable to consider this cut-off for having a comfort life in this country since they reflect the basic things that an average household in Malaysia should have.

The *environment* dimension focuses on the surrounding environment and the condition of the living quarters. These two conditions are linked to functioning of individual that are related to mortality and health risk. For example, lack of available housing will cause overcrowding which is defined in the form of high density within the neighborhood as well as within the home (Taylor et al., 1997). The association between high densities with higher all-cause mortality has long been recognized in the literature (Levy and Herzog, 1974, Levy and Herzog, 1978). This dimension is related to problem of squatters that continues to be one of the urban development issues in Malaysia. The household is considered deprived in neighborhood environment if the living quarters are located in squatters' areas, regardless of whether they own or rent the house.
In the literature, there are several ways to determine the *weights* of the dimensions. Some of the ways include frequency based weight; cluster analysis; principle component analysis; and factor analysis. These methods completely rely on statistical technique and hence free from subjective judgment. Nonetheless, it lacks transparency and there is no *a priori* that the data represents true trade-off as what weight is supposed to represent. Another method, normative judgment, uses public opinion or reference groups to get ranking of dimensions. This method is most suitable for qualitative study and can really reflect trade-off but has draw-backs since it can produce bias results and unrepresentative preferences. Equal weight, despite its simplicity has been widely used in multidimensional poverty studies. These include the UNDP Human Poverty Index and the

MPI by Alkire and Santos (2010). Similar to their models we apply equal weight for each of the dimension in our study.

4.3 Methodology

This study adopts a combination approach of counting and axiom methods based on Alkire and Foster (2011a) to construct the multidimensional Poverty Index (MPI). The MPI is defined as an index of poverty originated from the various states of deprivation in the chosen dimensions. The basic MPI to be calculated for this study is expressed with the following formula in (1):

$$MPI = \mu\big(g(k)\big) \tag{1}$$

Where *MPI* measures poverty in *d* dimensions across a population of *n* households *i*. Both dimension *d* and household *i* are positive numbers with *d*>0 (1…*j*) and *i*>0(1.. *n*). The term on the right side is the mean (μ) of the aggregate deprivation of all poor households $g(k)$. The parameter *k* is the dimensional cut-off point of household which determine the numbers of dimension to be considered. This *k* value is the second threshold in this method and used to determine whether to consider a household is multidimensional poor or not.

 The MPI can also represent the adjusted headcount ratio. The headcount ratio is simply a ratio of total poor over total population. Here, the adjusted headcount ratio takes into account the mean value of the deprivation and not simply the number of household that experience multidimensional deprivation. As such the MPI is the product of the headcount ratio (H), representing the incidence of multidimensional poverty, and the average deprivation share among the poor household (*A*). The expression for H is given as H=q/n, where q is the number of poor household and n is the total household. The expression for *A* is given as $A = \sum_{i=1}^{n} c_i(k)\big/dq$ and

it represents the intensity of multidimensional poverty. The term $c_i(k)$ is a censored vector of deprivation counts based on the value of *k* and is constructed based on the matrix $g^0(k)$.

The index MPI can be further disaggregated by column-wise or row- wise to inspect the decomposition of multidimensional poverty by sub-group or sub-population. Firstly, our analysis will also be undertaken with regard to difference in strata and regional breakdown. This will be done by applying disaggregating formula as in (2):

$$MPI(x, y; z) = \frac{n(x)}{n(x,y)} MPI(x, z) + \frac{n(y)}{n(x,y)} MPI(y, z) \tag{2}$$

Where x and y refers to distribution of two subpopulations, with population size *n(x)* and *n(y)*, respectively; *n(x,y)* refers to total population.
Secondly, the contribution of the five dimensions to the index of multidimensional poverty will be derived by applying formula (3) as follows:

$$Conrt_j = \big(\mu\big(g^0_{*j}(k)\big)/d\big)/MPI \tag{3}$$

This technique of decomposition is very useful, particularly in analyzing government policy related to the chosen dimension. The decomposition provides insight into the level and structure of well-being and we would be able to identify the dimensions that contribute most to deprivation

and under-development. As such it provides valuable information for policymakers in designing structural socio-economic policies to eradicate the main causes of under-development.

5.0 Results and Discussions

5.1 Deprivation by Dimension

The level of deprivation for each of the dimension is as shown in Table 1 below. In the overall, these figures support the stand-alone socio economic status as reported in the various government documents. As reported earlier in Figure 1, we also record the finance deprivation of 3.8 percent. The rural areas experience higher deprivation in all the dimensions except environment. In terms of regional distribution, Sabah and Labuan as one region also experience the highest level of deprivation in all the dimensions compared to Peninsular Malaysia and its neighbor Sarawak.

Table 1: Household Deprivation by Dimension, 2009

Dimension	Urban	Rural	Peninsular Malaysia	Sabah and Labuan	Sarawak	Malaysia
Finance	0.017	0.083	0.020	0.191	0.053	0.038
Education	0.014	0.035	0.014	0.057	0.048	0.020
Health	0.088	0.562	0.201	0.566	0.269	0.238
Standard of living	0.132	0.349	0.146	0.493	0.441	0.201
Environment	0.010	0.005	0.005	0.033	0.021	0.009

At the national level, the households are deprived the most in health dimension where 23 percent of the household are deprived in health. Going down to strata level, half of the rural population are living in this condition. This trend is quite similar to the study by Mat et al. (2012) that focus on the rural area. In their study, health and education are the two dimensions that people experience deprivation the most. This item-by item approach uncovers to us that there are various degree of deprivation faced by the household in Malaysia. Nevertheless, this figure is still short from providing us the clear picture about the intensity of poverty experienced by each household from all these dimensions.

5.2 The Headcount Ratio and Average Intensity of Ratio

In Figure 2 we present the results of the headcount ratio (H) and the average intensity of poverty or deprivation share among the poor household (A). Intuitively, under the headcount, when we consider one dimensional cut-off, about 29 percent of the household are in poverty in 2009. As the value of k increases, the values of H drop faster from 35 percent to 12 percent at k of 40 percent and to less than one percent at k of 80 percent. The values of A started to increase gradually from 29 percent to about 82 percent at k of 80 percent. This reflects that the share on deprivation among the households or intensity of poverty among the poor is higher when the cut-off is increased.

Figure 2: Headcount Ratio (H) and Average Intensity of Poverty (A), 2009
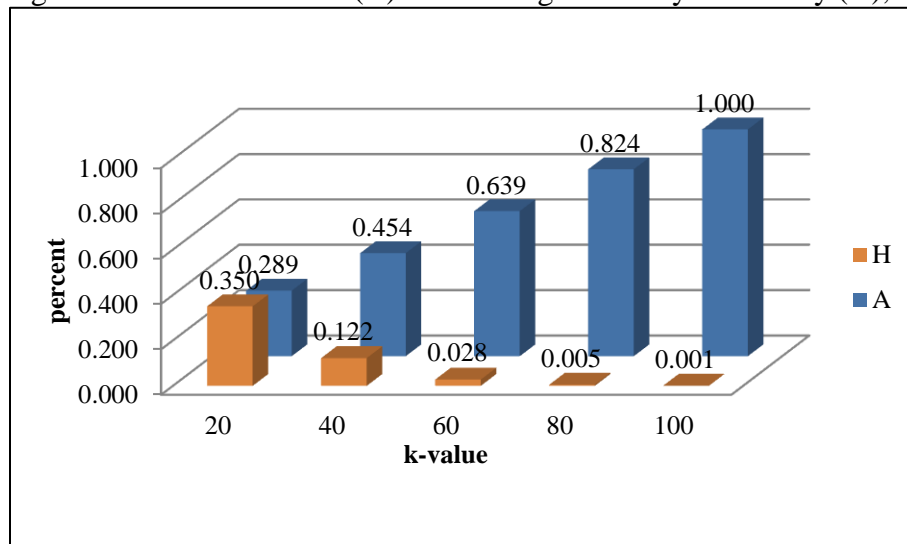
5.3 The Multidimensional Poverty Index

The MPI of the country for the year 2009 according to different value of *k* is as presented in Table 2 below. Malaysia recorded an MPI of about 10 percent if we consider household to be in poverty when it is deprived in at least one dimension. The poverty is only about 0.1 percent if we consider the households to be poor when they are totally deprived in all the dimensions. As we add more dimensions, less and less people will be excluded from the group.

Table 2: Multidimensional Index of Poverty (MPI) by Strata and Region, 2009

	Urban	Rural	Peninsular Malaysia	Sabah and Labuan	Sarawak	Malaysia
MPI_20p	0.052	0.207	0.077	0.268	0.166	0.101
MPI_40p	0.019	0.134	0.032	0.220	0.121	0.055
MPI_60p	0.006	0.043	0.006	0.119	0.031	0.018
MPI_80p	0.002	0.008	0.001	0.033	0.007	0.004
MPI_100p	0.001	0.000	0.000	0.006	0.001	0.001

According to these figures, on average, households in Malaysia have made advancement in their well-being. With the MPI that ranges from 0.1 percent to ten percent, it is safe to say that the deprivation in Malaysia is not widespread. The government policy and economic development not only brings about income growth, but also improves the wellbeing of the population. Among the relevant policies are the various education policies that focus on providing school infrastructure to promote enrolment at both primary and secondary levels; health related policies to provide greater access to health services through better and affordable health infrastructure; and housing and community services programmes to enhance wellbeing of community. The importance of those policies is evidence from the development budgetary allocation for social services each year that range from 50 percent to 24 percent of total development expenditure. In

2008 for example, within the social services, the education sector share is about 15 percent, health 4 percent, housing 4 percent and other community services about 7 percent.

 The decompositions at sub-levels reflect that poverty incidence is more acute in certain locations. This result supports the arguments on continuous gaps in regional development. The decomposition of the MPI by strata depicts that rural areas have higher index of poverty than the urban areas. At one dimensional cut-off point, the incidence of poverty reaches as high as 20.7 percent for the rural areas while it is only about 5.2 percent in the urban areas. This trend is parallel with continuous income gap between these two strata. The mean monthly gross household income of rural area in 1970 was RM200, about half of the urban income of RM424. The wide gap continue to exist in 2009 whereby mean income of rural the household was RM2,547 compared to the urban counterpart at RM4,705. The decomposition by region also reflects similar picture. The region of Sabah and Labuan has the highest incidence of poverty, at almost 30 percent with one dimensional cut-off point, while Sarawak is lower at about 17 percent, and Peninsular Malaysia the least at 7.8 percent. The share contribution to Gross Domestic Products (GDP) from the two regions of Sabah and Labuan, and Sarawak was about 15 percent from the period of 2006 to 2010 (EPU 2012). In her study about income inequality in Malaysia, Zain (2008) for example suggest that the regional and rural-urban divide might be due to the formation of clusters and agglomeration effects. Together with trade and globalization, as well as impediments to the process of internal migration, this divide leads to the rise in income inequality after the 1990s period.

We show the decomposition of MPI by dimension in Figure 3 to examine the contribution of each dimension in the index. Here we assign the *k*-value as 20 percent that considers household to be multidimensional poor if there are deprived in one out of five dimensions. It is interesting to note that similar pattern appears for all the sub-levels considered. Financial deprivation is only a small part of the MPI which is only about seven percent for the country. At regional level, the finance dimension contributes less than ten percent, except for Sabah and Labuan where the share is 14 percent. The highest contribution is observed from health and standard of living dimensions.
The health dimension ranges from 54 to 32 percent. It contributes the highest at 54 percent in rural areas compare to 34 percent for its urban counterpart. The lowest score of 32 percent is for the region of Sarawak in contrast to other regions. The standard of living dimension contributes the highest share in Sarawak at 53 percent. The results of the decomposition by the sub-levels and dimensions signals to us that more and immediate initiatives are needed to address this imbalance as it will continue to hinder further development.

Figure 3: Contribution of dimensions to MPI at Sub-level Decomposition, 2009
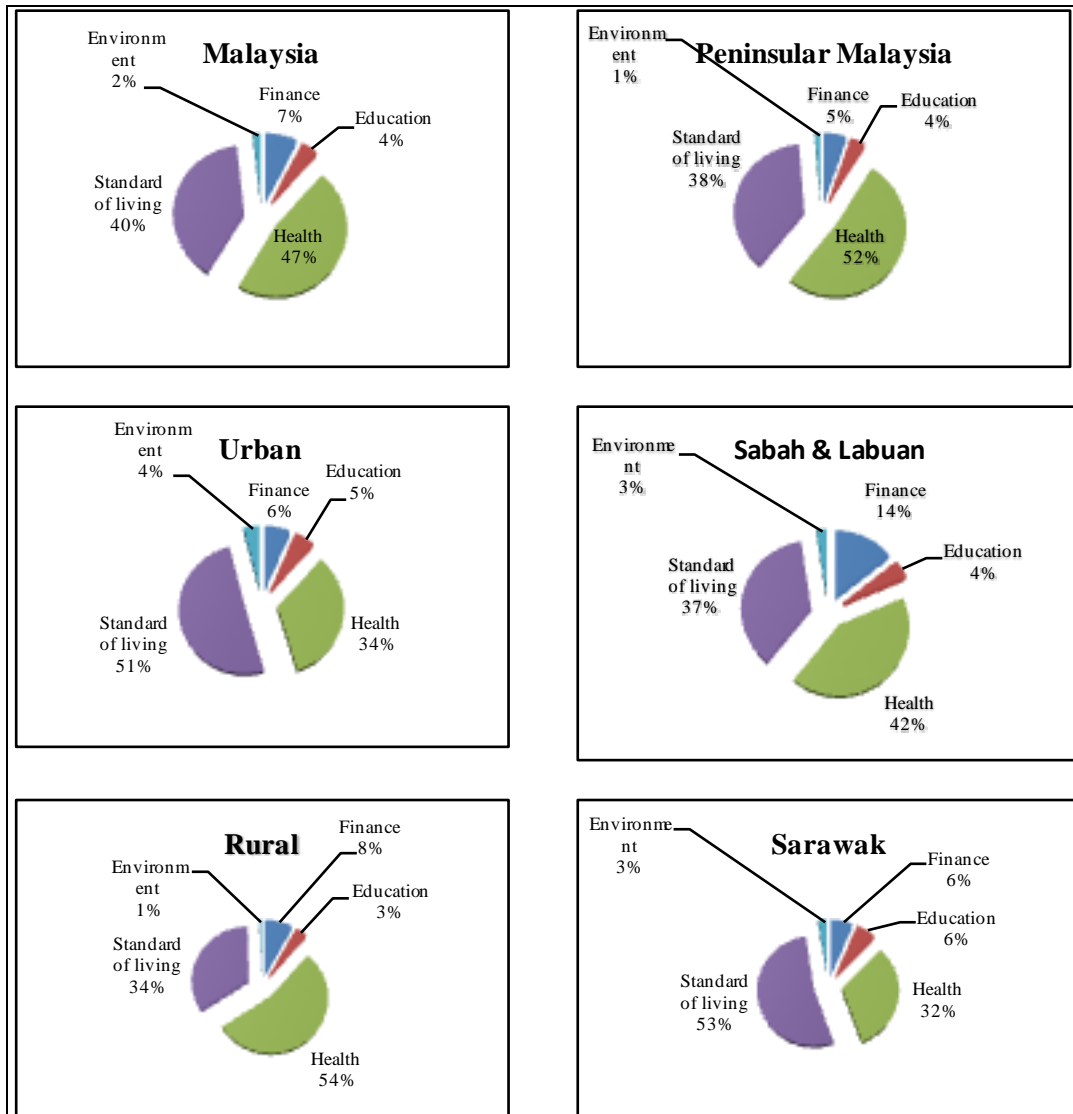
6.0 Policy Implications

The results of this study clearly uncover that poverty in Malaysia portrays quite a different phenomena when evaluated under the multidimensional concept. Thus, this gives raise to different policy implications that should be considered by the government to achieve inclusive growth for all. First, we want to suggest that government make use of the multidimensional framework in evaluating the socio-economic progress of the population under NEP. The MPI, in particular, can be one of the measurement tools for this purpose. This study has demonstrated that we can narrow down our identification of poverty based on different sub-groups and dimensions chosen. For example, in implementing the housing program, agency can simultaneously identified qualified candidates that are deprived in the standard of living and income.

Second, we propose that more resources should be allocated for improvement in standard of living and health. Among the initiatives that could be immediately implemented is to increase the coverage of supply of treated water in the dwelling unit. More efforts should be given on quality aspect besides the quantity aspects. The government should also improve the quality of electricity supply to ensure people in the remote areas get 24 hours supply all year round. Continuous supply of electricity is definitely needed if the household is cooking with electric stove, washing with machine, and keeping their food in the refrigerator. In terms of health, more focus should be given not only in the curative part, but also in the preventive part. Lastly, we proposed that the future policy design for poverty eradication should move from top-to-bottom approach to bottom-to-top approach. In other word, identification of specific needs of the target group based on the dimensions has to precede any program design to address the overall regional gaps.

7.0 Conclusion

The aim of this study is to construct a multidimensional poverty in Malaysia by taking into consideration the country's level of development. Throughout the last part of this paper, we have presented the level of deprivation in each of the five dimension selected; the headcount ratio of multidimensional poverty and the index of multidimensional poverty at aggregate and sub-national levels. The results reveal to us that analyzing the phenomena of poverty from multidimensional approach enhances and enriches our understanding about human development. In particular, the decompositions by strata and region reflect that there are still development gaps in certain areas such as rural areas and the region of east Malaysia that covers Sabah, Labuan and Sarawak. The decomposition by dimension uncovers to us that deprivation from financial aspect is only a small part of the phenomena. In fact, a bigger hindrance to development rooted in health and standard of living. These insights are useful for government to further refine its strategies to make further progress in human development. Examples of such refinement include focusing more on the quality aspects in addition to strengthening the infrastructural development to improve access to health services, basic amenities and better housing.

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Measuring the Border Trade Competitiveness of Thailand: Application of Refined Index of Revealed Comparative Advantage (RCA)

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Abstract

The opened economy and economic policy in the Greater Mekong Sub region (GMS), this will attract trade and investment from other countries. In addition, GMS is a member of FTAs, which is a channel to support exporting, also trade's privilege as developing countries. However; there are differences in some aspects among GMS countries: administration, geography and economic potential. These should be considered as crucial factors to drive GMS economy. Therefore, the study of competitive advantage to develop cross border trade of Thailand policy in GMS, this study adopts revealed comparative advantage (RCA) index formula based on these crucial factors to analyze competitive advantage. There are three points of conception. Firstly, Trade Balance Index (TBI) can indicate clearly whether a country as a net-exporter or net-importer product groups in five industries. Second, the trade balance is usually decomposed by product and by country (bilateral trade balances). Relevance is the degree of concentration of the imbalance in trade caused by one or few commodities. The long-term trends of trade imbalances are widespread throughout the world and persistent over time, thus it requires an appropriate dynamic method to measure revealed trade balance comparative advantage (DRTCA). Thirdly, the Gravity Trade Model and panel data analysis can be utilized to estimate export value (Adams et. al, 2003). The model takes into agent to input variable of potential effect and geographical effects. The results of DRTCA provide the analysis of differences aspects in geographic and economic potentials among GMS countries. This study may contribute crucial insights to developing Thailand economic policies on cross border trade.

Keywords: GMS, RCA, DRTCA, Trade Balance Index, panel data analysis

1.0 Introduction

Improving the value of exports is the primary goal of Thailand's international trade policy. The forming cooperation in the ASEAN Economic Community is an effective strategy to gain more from regional market integration. Thailand is looking for opportunities and takes advantage of trade agreements, such as networking and partnership with neighboring countries. Currently, Thailand's trade with Greater Mekong Sub region (GMS) neighboring countries at the present plays a more important role as the globalization brings about the much faster and more convenient trading and investing. Each country tries to find the new exportation market to scatter domestic risk of concentration much as the case of the economic recession faced by major areas, developed countries like USA, Japan, China, and member countries of EU. It will effect on the world economy; Thus, Thailand has to adjust by searching new market in order to increase

investment and stimulus economy. Moreover, the GMS market can be production source and channel for product distribution.

Recently, the Thai government is very interested in its border market wherewithal the value of Thai border market grows continuously. There are five countries adjacent to Thailand and have divided by the Mekong River, i.e., Lao, Cambodia, Vietnam, Myanmar, and China. Trade value in GMS has highly expanded because of the opened economy and economic policy. This will attract trade and investment from other countries. In addition, GMS is a member of Free Trade Agreements (FTAs), which is a channel to support exporting, also trade's privilege as developing countries. However, there are some differences in perspective among GMS countries and management of geography and economic potential. This is supposed has existed considered as a key factor in the Mekong Region economy. With the geographical features that bring about the similarities in ethnics, religions, and cultures, the significance of the enormous annual value trade of Thailand with neighboring countries in GMS has very promising tendency of the huge increase in the future. Thus, Thailand should be considered the benefit and differences in some aspects among GMS countries to drive GMS economy in order exactly direction focuses on the competitive GMS market.

This study is aimed to answer the empirical questions: Would are the most dynamic markets for Thailand exports? How intense is Thailand's trade with your (regional) trading partners? A modified revealed comparative advantage index (RCA) developed from the gravity model will be applied to measure the Thailand's competitiveness resulted from its border trade policy. Adoption of the RCA index formula is usually associated with three points of conception: *Firstly*, Trade Balance Index (TBI) can indicate clearly whether a country as a net-exporter or net-importer of GMS country. *Second*, the trade balance is usually decomposed by product and by country (bilateral trade balances). Relevance is the degree of concentration of the imbalance in trade caused by one or a few commodities (Piana, 2006). The Long-term trends of trade imbalances are widespread throughout the world and persistent over time. Thus, it requires an appropriated dynamic method to measure revealed the trade balance comparative advantage (DRTCA). *Thirdly,* the Gravity Trade Model and panel data analysis can be utilized for estimating the export value (Adams et. al., 2003).

The potential effects such as exchange rate, GDP, Tariffs and trade barriers, PTA, FDI and geographical effect will be included in the model important variables. Analysis based on estimated results of DRTCA would provide us the differences aspects in geographic and economic potentials among GMS countries. This study may contribute crucial insights in examining Thailand's economic policies on cross border trade.

2.0 Literature Reviews

2.1 Modification RCA Index

The most popular RCA index is Balassa's RCA index (Balassa, 1965). While Balassa's RCA index is useful in assessing whether or not a country has a comparative advantage in a commodity, its utility in comparative studies is limited and problematic (Hillman, 1980; Bowen 1983; 1985; 1986; Balance, et al. 1985; 1986, Deardorff, 1994; Hoen and Oosterhaven, 2006; Run Yu, et al., 2008). Most studies use Balassa's RCA index only to signify a country's relative

ranking of comparative advantage in different commodities, even though this relative order in general remains problematic (Yeats, 1985). Because the RCA index is not a perfect index and has the following shortcomings. Deardorffs (1980) theoretical result that this observation is an "on average" indication of "true" comparative advantage. Moreover, empirically they found such indices to be more consistent among themselves and with other indices than any of the alternative RCA measures. They found little support for RCA indices based on only one side of the market, i.e., demand indices. For comment adds in the use and spread of technology, in their employment content, in the capacity to foster economic growth, etc. In particular on the relationship between trade and technological specialization, Uchida and Cook (2005) found that The patterns of the specialization have been transformed by both the activities of multinational corporations and through the influence of progressive government policies aimed at improving competitiveness and the number of patents, export values, and corresponding TCA and RCA indices themselves cannot fully capture such influences.

Chien (2010) suggests conducting the advantage of RCA value is to take each country's economic scale into account for each industry's export market share that enables the use of the same index to represent the comparative competitiveness of the same product between each country or of different products in the same country. For the new knowledge about improving RCA measures found from Balance, et.al (2012), the results would support two approaches. First, researchers might modify their empirical models to incorporate ordinal (or dichotomous) measures of RCA. The much higher degree of consistency among alternative measures should significantly reduce the sensitivity of empirical results to the particular RCA index chosen. Second, researchers could adopt an RCA measure based upon net exports (appropriately normalized for product significance and country size).

2.2 The Gravity Model

The development in theories that supported the gravity model of bilateral trade. Anderson (1979) makes the initial formal endeavor derive a gravity model of bilateral trade based on product differentiation. Anderson and Wincoop (2003) argue that the major feature of the gravity model of bilateral trade is the dependence of trade flows on a trade resistance factor. On a quest, to prove the strength of the theoretical foundation of the gravity model of bilateral trade. Thus, a subsequent step is needed in order to link the characteristics of the Balassa index *(BI)* distribution as the ones we have just discussed to other macroeconomic aspects of the economies that the researcher is interested in analyzing (De Benedictis and Tamberi, 2004). In terms of data for measures comparative advantage we reference from Adams et. al., (2003) their studies to emphasize three mutually related causal factors: (1) geography (2) openness to international trade as a channel of technology diffusion and the gains through exchange and specialization and (3) the rules and norms prevailing in a society that shape an individual's productive behavior. These three determinants ultimately exert a fundamental influence on the well-known channels that promote economic growth.

3.0 Empirical Study

3.1 Refinement of RCA

Reorganize revealed comparative advantage (RCA) index: three points of conception. *Firstly*, from the based macroeconomic theory identity Y=C+I+G+(X-M), where Y, C, I, G, X and M are output, consumption, investment, government expenditure, exports and imports, respectively, it is clearly shown that trade-balance (X-M) is one of sources of output growth (Y). From this point of conception, the higher the share of a specific product of the total domestic exports, the more significant the contribution of the exported product to the domestic economy becomes.

The Trade Balance Index can indicate (TBI) clearly whether a country as a net-exporter or net-importer. TBI (Lafay, 1992) is employed to analyze whether a country has specialization in export (as a net - exporter) or in import (as a net - importer) for GMS country. TBI is simply formulated as follows

$$TBI_{ij}^{p} = \frac{(X_{ij}^{p} - M_{ij}^{p})}{(X_{ij}^{p} + M_{ij}^{p})} \tag{1}$$

Where

TBI_{ij} Denotes trade balance index of country i and country j in product (p);

X_{ij}^{p} and M_{ij}^{p} represent value of exports and imports from country *i* to country *j* in product *p*, respectively. Values of the index range from -1 to +1. Extremely, the TBI equals -1 if country only imports in product *p*, in contrast, the TBI equals +1 if a country only exports in product *p*. A country is referred to as "net-importer" in a group of product of GMS country where the value of TBI is negative, and as "net-exporter" where the value of TBI is positive.

Second, the trade balance is usually decomposed by product and by country (bilateral trade balances). Relevance is the degree of concentration of the imbalance in trade caused by one or few commodities. If the concentration is high, a targeted industrial policy could improve the balance (e.g. Reduce the imbalance). On the other hand, if a deficit is due only to fewer partners, proactive and consensus-based trade negotiations with them could fairly quickly set the problem. Although less general than trade balance, which includes both goods and services, the "merchandise balance", which includes only goods and not services, is sometimes used because of better data availability (Piana, 1998). Applied revealed comparative advantage (RCA) index from above two problems as follows*;*

3.1.1 Standard Balassa's RCA index

$$RCA_{ij}^{p} = \frac{\left(\dfrac{X_{ij}^{p}}{\sum\limits_{p} X_{ij}^{p}}\right)}{\left(\dfrac{X_{g}^{p}}{\sum\limits_{p} X_{g}^{p}}\right)} \tag{2}$$

Where

X_{ij}^{p} Represent   value   of   exports   product p from   country i to   country j;

X_{g}^{p} Represent value of exports product p from set of countries considered in the analysis g not include country i.

$RCA_{ij} \rangle 1$ Indicates country i has a comparative advantage in product p; the greater the index, country i stronger advantage than country j.

$RCA_{ij} \langle 1$ Indicates country i has a comparative disadvantage in product p; the smaller the index, country j stronger advantage than country i.

3.1.2 Revealed Trade Balance Comparative Advantage (RTCA) Index

Instead of introducing X_{ij}^{p} in equation (1) in the standard Balassa's RCA formulary, we can get the RTCA index as follows

$$RTCA_{ij}^{p} = \left(\frac{(X-M)_{ij}^{p} / (X+M)_{ij}^{p}}{(X-M)_{g}^{p} / (X+M)_{g}^{p}} \right) \times \left(\frac{\sum_{p} \left((X-M)_{g}^{p} / (X+M)_{g}^{p} \right)}{\sum_{p} \left((X-M)_{ij}^{p} / (X+M)_{ij}^{p} \right)} \right) \tag{3}$$

Where

X_{ij}^{p} And M_{ij}^{p} are the value of exports and imports product p from country i to country j;

X_{g}^{p} and M_{g}^{p} are the value of exports and imports product p from set of countries considered in the analysis g not include country i.

The definite of RTCA index as same as on RCA index; value of $RCA = [-\infty, \infty]$. A country is referred to as "net-importer" in a group of product of GMS country where the value of RTCA is negative, and as "net-exporter" where the value of RTCA is positive. From the Long-term trends, trade imbalances are widespread throughout the world and persistent over time. For business cycle behavior, trade balance tend to be strongly anti-cyclical: in boom periods it usually exhibits deficits, whereas in recessions a trade surplus can help inverting the business cycle (Piana, 1998)

3.1.3 The Dynamic of Revealed Trade Balance Comparative Advantage (DRTCA) Index

$$DRTCA_{ijt}^{p} = \left(\frac{(X-M)_{ijt}^{p} / (X+M)_{ijt}^{p}}{(X-M)_{gt}^{p} / (X+M)_{gt}^{p}} \right) \times \left(\frac{\sum_{p=1}^{m} \left((X-M)_{gt}^{p} / (X+M)_{gt}^{p} \right)}{\sum_{p=1}^{m} \left((X-M)_{ijt}^{p} / (X+M)_{ijt}^{p} \right)} \right) \tag{4}$$

Third, we use the Gravity Trade Model and panel data analysis for calculating the export value (Adams et. al, 2003). The model takes into agent to input variable of potential effect and geographical effects, the issues conduct to exchange rates, GDP, FDI, Tariffs and trade barriers, PTA and geographical effect. So, we have point of concept find new of export and import value from the multiple regression function by panel analysis.

3.1.4 Improve Gravity Model from Limitation of RCA Index

The basic functional form of the gravity model of bilateral trade is as follows:

$$X_{ij} = \frac{kY_i^\alpha Y_j^\beta}{D_{ij}^\gamma} \tag{5}$$

Where

X_{ij} is bilateral trade flows (usually exports)

Y_i is GDP of country i (exporter to country j)

Y_j is GDP of country j (importer from country i)

D_{ij} is Distance between country i and j

The stochastic log-linear version of the basic gravity model of bilateral trade is as follows:

$$\log X_{ij} = \log k + \alpha \log Y_i + \beta \log Y_j - \gamma \log D_{ij} + \varepsilon_{ij} \tag{6}$$

Jordaan and Kanda (2011) add a vector of dummy variables in gravity model, with a set of dummies can also be added in the specification of the model to account for factors enhancing or restraining the trade flow.

$$\log X_{ij} = \log k + \alpha \log Y_i + \beta \log Y_j - \gamma \log D_{ij} + \sum \phi A_{ij} + \varepsilon_{ij} \tag{7}$$

A_{ij} is the dummy function

In this study we would to improve A_{ij} function from Adams et.al (2003) to more enhancing for solving differences on some aspects among GMS countries: administration, geography and economic potential. So, the dummy function in this study as

$$A_{ij} = f(lin^{\beta_1}, Bor^{\beta_2}, PTA_{ij}^{\gamma_1}, PTA_i^{\gamma_2})$$

Log - linear version for estimate export and import value is:

$$\log(X)_{ijt}^p = \alpha_0 + \alpha_1 \log GDP_{it} + \alpha_2 \log GDP_{jt} + \alpha_3 D_{ij} + \alpha_4 \log rer_{ijt} + \alpha_5 \log FDI_{it} + \alpha_6 \log FDI_{jt}$$
$$+ \alpha_7 \log POP_{it} + \alpha_8 \log POP_{jt} + \alpha_8 \log tar_{ijt} + + \beta_1 lin_{ij} + \beta_2 Bor_{ij} + \gamma_1 PTA_{ij} + \gamma_2 PTA_i + v_{ij} \tag{8}$$

Where:

$(X)_{ijt}^p$ is the export value of product p from country i to country j in year t;

GDP_{it} is the GDP (economic mass of country i (reporter) in year t;

GDP_{jt} is the GDP (economic mass of country j (partner) in year t;

D_{ij} is the distance between the two largest or capital cities of countries i and j;

rer_{ijt} is the bilateral real exchange rate between i and j in year t;

tar_{ijt} is an average tariff rate in importing country j on goods from country i in year t;

lin_{ij} is a dummy that takes a value 1 if i and j linguistic similarity between i and j and 0 otherwise;

Bor_{ij} is a dummy that takes a value 1 if i and j share a land border and 0 otherwise;

PTA_{ij} is a dummy that take a value 1 if i and j both belong to the same preferential trade agreement and 0 otherwise;

PTA_i is a dummy that take a value 1 if only i is a member of preferential trade agreement and 0 otherwise;

$FDI_{i,t+i}$ is the stock of FDI (in 2000 US dollars) in country I;

$FDI_{j,j+i}$ is the stock of FDI (in 2000 US dollars) in country I;

POP_{it} is the number of population of country i in year t;

POP_{jt} is the number of population of country j in year t;

ε_{ijt} is an error term.

3.1.5 Expected Signs

The relationship between exports and import with both GDP measuring is expected to be positive. A higher GDP in Thailand higher production capacity which in turn transform into the ability of the Thailand economy to export more (supply side). On the other hand, a higher GDP for a trading partner country means a higher absorption capacity, i.e. the trading partner country is able to import more (demand side) (Jordaan and Kanda, (2011). According to Martinez-Zarzoso and Nowak-Lehmann (2003), argue that a negative relationship between exports and population is an indication of an absorption effect. This means that a country with a large population would indicate that the domestic market is large enough to 'absorb' a considerable portion of domestically produced goods and thereby reducing the amount of domestically produced goods that could be exported. Exports and the exchange rate are expected to be positively related as higher rates of exchange would mean that it is cheaper for the trading partner country to source the required amount of rounds to effect payments for imports, resulting in higher demand for Thailand exports. The distance is normally expected to be negatively related to the flow of exports, i.e. the higher the distance, the higher the costs involved in trading and therefore a negative effect on trade flow.

4.0 Estimation

The studies comparative advantage of Thailand's border trade and this study has two stages of the estimate RCA index.

Stage one: Estimates of the gravity model from the equation (8) calculate export of the country – pair (Thailand and GMS country). Martinez-Zarzoso and Nowak-Lehmann (2003:298), panel data estimation of the gravity model of bilateral trade has many advantages over cross-section analysis. For example, the role trading cycle of Thailand and the GMS over a long period of time can be appropriate by using panel data analysis. In addition, country-specific effects that do not change over time can be unraveled. Another welfare of using panel data analysis is that the risk of

receiving biased estimates is lowered. The gravity model of bilateral trade in this study is the estimated by panel data estimate.

Stage two: Replace export and import value from the equation (8) in the dynamic of revealed trade balance comparative advantage (DRTCA) index (equation (4)).

4.1. Data Source

The data set in this study comprises 80 observations which include 16 annual observations (1995-2010) for five countries representing GMS country's major trading partners are Cambodia, Laos, Vietnam, Myanmar and China, The analysis in five of industries; mufactures with medium skill and technology intensive, crude rubber, petroleum, plastics in primary form, iron and steel.

Dependent variables were bilateral export data and import data between 1996 and 2010 was obtained from WITS database.

Explanatory variables were sourced from World Bank's World Development Indicators database (WDI). The remaining data were sourced from similar gravity model studies. The details are as follows:

The GDP data and the populations were sourced from the World Bank's World Development Indicators (WDI 2005). GDP data measures gross domestic product at purchasing power parity (PPP). The primary source of the distance data, linguistic similarity, was from CEPII2 (2004). Distance between the two largest cities in measured in kilometers. A dummy variable with a value one when the two countries share a currency, and zero otherwise. Exchange rate data were sourced from WDI (2005). The exchange rate is measured as the period average exchange rate — the number of local currency units that can be traded for one US dollar. A bilateral exchange rate (the value of a unit of the exporter's currency in terms of the importer's currency) was calculated by dividing the importers \$US exchange rate by the exporters \$US exchange rate.

The tariff data were sourced from the WITS database. The variable is measured as the weighted average tariff rate — total value divided by the number of tariff lines and weighted by trading partners. The source of the preferential trade agreement (PTA) data was from an intra bloc trade of world trade organization. PTA is a dummy variable capturing whether Thailand and GMS country partner. The FDI stock levels were obtained from OECD Statistics and Printed issues of UNCTAD's World Investment Report (WIR).

4.2 Panel Data Analysis

The gravity model for estimate export value using panel data regression, the individual effects that were modeled by fixed coefficients in fixed effects models are treated as random draws from a larger population in the random effect model (Baltagi, 2005). For estimate purpose of this study, also estimation of random effects models takes into account variation between individual as well as variation within individuals. For the data set, this mean it is possible to include dummy variables in the model, the dummy variables are constant over time for each individual.

The ability of the random effect model to take into account variation between individuals as variation within individuals makes it an attractive alternative to fixed effects estimation. However, for the random effect estimate to be unbiased in large samples the effects must be uncorrelated with the explanatory variable, an assumption that assumption can be tested using a Hausman test. The Hausman test is a test of significance of the difference between the fixed effects and the random effect estimates. Correlation between the random effects and the explanatory variable will cause these estimates to diverge; their difference will be significant. If the difference is not significant, there is no evidence of the offending correlation; cannot reject the null hypothesis: $H_0 : E\left[\mu_{ij} / X_{ij}\right] = 0$. The difference between the two sets of estimates can be tested separately using *t-tests,* or as a block using a χ^2 - *test* (Griffiths, et. al, 2008).

5.0 The Results

5.1 The Effect of Crucial Variable to Export

The results for the stage one estimate reported in Table 1. Estimates of the gravity model from equation (8) for estimate export value of country – pair (Thailand and GMS country). The panel data estimation of the gravity model of bilateral trade with restrictions specifies models contain with effect a random effect in the period dimension. For the random effect, estimate to be unbiased can be tested using a Hausman test. Correlation between the random effects and the explanatory variable are not significant; they are no evidence of the offending correlation; cannot reject the null hypothesis. The results of the gravity model in five industries, the direction of GDP measuring between Thailand and trading partner were differencing sign in each industry, and most of significant positive effect on export. The population has a significant was a positive effect on exports. Jordaan and Kanda (2011) argue that a negative relationship between exports and population is an indication of an absorption effect. This means that a country with a big population would indicate that the domestic market is large enough to absorb' a considerable share of domestically produced goods and thereby reducing the amount of domestically produced goods that could be exported. In this case, increases in the population size would result in increase exports. As a priori of the expectations in Table 1 also shows that, a weaker rank (higher exchange rate) enhances exports from Thailand to its trading partners. The tariff rate has a significant negative effect in manufactures with medium skill and technology, and the both FDI measures (for Thailand and the trading partner) have strong significant positive in manufactures with medium skill and technology of Thailand and weakly significant negative effect on crude rubber and iron and steel industry of partner trading.

On the other hand, it was found that the geographic effect to export is in part of manufactures with medium skill and technology intensity, and crude rubber has a negative effect with dummy border variable. In this case, increases in the border size would result in lower exports due to Thailand has higher import value than its trading partners (GMS countries) of the medium material for producing the final product. The distance between capital cities has a significant negative effect to export in only crude rubber industry. The meaning is Thailand is an exporter in crude rubber market with trading partner, increasing with the distance between capital cities of Thailand and trading partner would result in lower exports. Thailand and partner trading, they belong both to the same preferential trade agreement have a significant positive effect in Iron and

steel industries and a significant was the negative effect. In this case, iron and steel industries were trade diversion.

5.2. The Comparative Advantage of Thailand to the GMS Countries

The result of comparative advantage measures has aims for support and its database for international trade policy in developed border trade of Thailand. Thus, the dynamics of border trade advantage of the selected five industries can be captured by the estimates of the DRTCA index as shown in Table 2. In table 2 shows the results of comparative advantage trade and Thailand's role in GMS market each period of five industries.

Table1: Stage one (random effect model) regression results

Variable and Statistics	Manufactures with medium skill and technology intensity	Crude rubber (including synthetic and reclaimed)	Petroleum, petroleum products and related materials	Plastics in primary forms	Iron and steel
C	-103.1361	-688.7904	-288.9351	-148.7693	-262.2355
	(-4.3650)***	(-.3.4931)***	(-4.4976)***	(-2.8269)***	(-3.8835)***
BOR_TH	-3.166372	-20.40636	0.409020	1.441437	-1.717601
	(-3.522)***	(-2.8097)***	(0.1468)	(0.7541)	(-1.1151)
DIS_TH	6.17E-06	-0.000740	0.000178	0.000110	7.08E-05
	(0.1573)	(-2.4321)**	(1.2265)	(1.1238)	(1.1846)
LOG(FDII_TH)	0.258955	-1.321331	-0.647996	-0.262200	-0.086494
	(2.0351)**	(-1.1751)	(-1.7654)*	(-0.9811)	(-0.2345)
LOG(FDIJ_TH)	0.156866	-1.813641	-0.245052	0.283037	-0.380781
	(1.3460)	(-1.7287)*	(-0.4722)	(1.1261)	(-1.9022)*
LOG(GDPI_TH)	0.629600	4.553233	-0.432514	-0.218326	0.899560
	(3.791)***	(3.3397)***	(-0.8148)	(0.5209)	(2.7321)***
LOG(GDPJ_TH)	0.095133	-1.778790	1.304723	0.428919	-0.596325
	(0.467)	(-1.0142)	(2.5591)***	(0.8761)	(-1.7202)*
LIN_TH	-0.280683	-1.419153	-0.289973	1.389637	0.266675
	(-1.7823)	(-1.0855)	(-0.6044)	(3.8402)***	(0.9375)
LOG(POPI_TH)	11.30350	62.96065	29.64210	13.83209	24.31081
	(5.1891)***	(3.4193)***	(4.9095)***	(2.9204)***	(3.8275)***
LOG(POPJ_TH)	-1.249086	2.309110	-1.851582	0.447945	0.561248
	(-10.1154)***	(2.2822)**	(-4.2889)***	(1.5178)	(1.8304)*
PTAI_TH	-0.039200	-0.194999	-0.067432	0.260545	-0.322815
	(-0.6756)	(-0.3929)	(-0.4572)	(1.9173)*	(-2.6326)***
PTAIJ_TH	0.042770	-0.100669	0.045705	-0.139840	0.421976
	(0.8029)	(-0.2376)	(0.2787)	(-1.1029)	(3.8910)***
LOG(TAR_TH)	-0.455801	0.211991	-0.474869	-0.548246	-0.381382
	(-6.8651)***	(1.3642)	(0.0253)	(-1.5181)	(1.4435)
LOG(RER_TH)	-0.337557	0.929874	0.010652	0.114866	0.363462
	(-2.8816)***	(0.3476)	(-2.1559)**	(0.7568)	(-2.9130)***
Effects Specification					
Period random effects					
R-squared	0.9746	0.8855	0.8827	0.9606	0.8475
F-statistic	194.6144***	39.2559***	38.2236***	123.794***	28.2117***
Hausman Test	Not reject: Ho	Not reject: Ho	Not reject: Ho	Not reject: Ho	Not reject: Ho

*, **, ***: statistically significant at the 10%, 5% and 1% levels respectively. Estimations done by Eviews.

During the years 1995 – 1998, Thailand has an advantage in manufacturing with medium skill and technology intensive, crude rubber, petroleum, and plastic, Thailand can play both roles but, the iron and steel industry of Thailand has a disadvantage in the GMS market as well as the role of exporter and importer. At this time, Thailand's trade policy has still not drives of the manufacturing sector develop and has political instability due to, the democracy of the people of the government of the revolution, the uprising in the capital of the country, and The majority of the nation business sector cannot operations. As results, the policy had driven slowdown. After the events mentioned above, during the years 1999-2002, the new government and, trade policies that lead to the battlefield to a field with the development of trade with neighboring countries in terms of investment and technology collaboration. Including, an agreement to protect the taken advantage of the developed countries. The Thai government's policy of financial liberalization to lead to excessive investment in 1999-2000. It has investment products to meet demand and speculation. Consistent with the results of the DRTCA index in 1999, Thailand has an advantage in the role of importer in Laos, Cambodia, Viet Nam and Myanmar and Thailand's role as an exporter in China and has advantages in the petroleum, iron and steel industry.

In 2000-2002, Thailand's economic crisis of the monetary policy caused by the real estate industry, the business is relevant to contraction of exports and imports. Resulted, Thailand has the disadvantage in the role of the importer, and exporter in the GMS countries in iron, and steel industry. Thailand also has the advantage in the crude rubber, petroleum, and plastic, but there is a disadvantage in manufactures with medium skill and technology intensity.

The DRTCA index in 2003-2006, it shows that Thailand has a stronger advantage than Laos, Cambodia, and Myanmar for Thailand's role as an exporter in the crude rubber, petroleum, and plastic industries. Thailand has a stronger advantage than Viet Nam and China for Thailand's role as importer in the petroleum, plastic, iron and steel industry. With support from Department of Export Promotion, Ministry of Commerce, Thailand, between 2005 and 2008, the import value of Thailand from the GMS countries increases of about 50%. During the same period, Thailand also increased its exports to the GMS countries about 55.23%. The relevant product items exported from Thailand to the GMS countries are computer and components, finished oil, natural rubber, plastic pellet, chemical product, iron and steel product. Especially in the iron and steel industry has changed from a disadvantage into an advantage in the trade as an importer. As a result of the year 2005, the Thai government provided the "ASEAN Integration System of Preferences" with one-way free trade of importing 850 product items exported from Myanmar to Thailand.

In 2007-2010, there were many investments in Laos, Cambodia and Myanmar with foreign investors in the GMS countries and other countries, including Thailand, China, India, Japan, Viet Nam, Malaysia, Republic of Korea, and The People Republic of China (PRC). Result of growth in both exports and imports of the GMS market and benefit from regional trade agreements (RTA). The DRTCA index during this period, Thailand has a stronger advantage than the GMS in petroleum, crude rubber, plastic, iron and steel industries in the role of both exporter and importer. The GMS countries possessed a stronger advantage than Thailand, Thailand's role as an exporter in manufactures with medium skill and technology intensively.

Table 2: Thailand's role and the dynamic of revealed trade balance comparative advantage (DRTCA) index of the GMS countries

Country- pair / Industry	Thailand's role in the GMS market and DRTCA index				
	Manufactures	Crude rubber	Petroleum	Plastic	Iron and steel
1995-1998					
Thai-Laos			>1(+)	>1(+)	<1 (+)
Thai-		>1(+)	>1(+)	>1(+)	<1 (+)
Cambodia	>1(-)		>1 (-)	>1(+)	<1 (-)
Thai-Viet Nam			>1(+)	>1(+)	<1 (+)
Thai-			>1(-)	>1(-)	<1 (-)
Myanmar					
Thai- China					
1999-2002					
Thai-Laos			>1(+)*	>1(+)	<1 (-)*
Thai-	<1(+)	>1(+)	>1(+)*	>1(+)	<1 (-)*
Cambodia			>1(-)	>1(-)	>1 (-), >1 (+)
Thai-Viet Nam			>1(+)*	>1(+)	<1 (-)*
Thai-			>1(-)*	>1(-)	<1 (+)*
Myanmar					
Thai- China					
2003-2006					
Thai-Laos			>1(+)	>1(+)	<1 (-), >1(+)
Thai-	<1(+)	>1(+)	>1(+)	>1(+)	>1 (+)
Cambodia			>1(-)	>1(-)	>1 (-), <1 (+)
Thai-Viet Nam			>1(+)	>1(+)	>1(-)
Thai-			>1(-)	>1(-)	<1 (+), >1(-)
Myanmar					
Thai- China					
2007-2010					
Thai-Laos			>1(+)	>1(+), >1(-)	>1 (-)
Thai-	<1(+)	>1(+)	>1(+)	>1(+), >1(-)	>1 (-), >1 (+)
Cambodia			>1 (-)	>1(-)	>1 (+), >1(-)
Thai-Viet Nam	<1(+)		>1(-)	>1(-)	>1 (-), >1(+)
Thai- China			>1(+)	>1(+)	>1 (+)
Thai-					
Myanmar					

* Only in 1999, Petroleum industry of Thailand has a DRTCA index as >1 (-) in Laos, Cambodia, Viet Nam and Myanmar market, in the China market has a DRTCA index as >1(+). For the Iron and steel industry, Thailand has a DRTCA index as >1 (-) in Laos, Cambodia, and Myanmar market. And the China market has a DRTCA index as >1 (+). (-) Thailand's role as importer in the GMS market, (+) Thailand's role as exporter in the GMS market.

6.0 Conclusion

This paper empirically measured the competitiveness of business in five industries between Thailand and the GMS countries with the DRTCA index; the DRTCA indication that reflects changing the role of trade in Thailand with a group the GMS and also has the results of the advantage of trade consistent with the economic situation in each period. This is evidence to support the study of comparative advantage by measuring the formation DRTCA index to review all the impact of the economic environment, trade and development policies that affect how a trade advantage.

In terms of the influence of the GMS market, Thailand has stronger advantage than the GMS countries for the role as an exporter in crude rubber. Thailand has stronger advantage than Laos, Cambodia and Myanmar for the role as an exporter of petroleum, plastic, iron and steel industries. Thailand's role as importer has a stronger advantage than China and Viet Nam in petroleum, plastic, iron and steel industries. Has the support of the Thai Board of Investment (BOI) that the trade volume between Thailand and China to increase during the years 2003-2010, the Chinese trade surplus with Thailand. The growth rate of imports from China to Thailand Up to 22% but the growth rate of exports from Thailand to China at the level lower than the 21% per year.

This is the data source for the international trade position of Thailand and looking for opportunities for cooperation in the ASEAN Economic Community (AEC). The strategies in developing this part of Thailand in taking advantage of trade agreements, such as networking and collaboration with neighboring countries. Thailand adjusts improving the ASEAN production base on Labor and technology together. Also, include the development of distribution channels through the transportation and logistics security in the sample used in the setting of the new jointly in the GMS countries to promote the participation of all sectors involved in a visible and tangible to the joint study the feasibility and benefits.

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An Analysis of the Millennium Development Goal 1 in Bangladesh

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Abstract

More than a decade has been passed since the United Nations (UN) adopted the Millennium Development Goals (MDGs). In September 2000, world leaders have approved the Millennium Declaration, a commitment to work together for a safer, more successful and a just world. Since then, countries around the world have been working vigorously to reach these goals. The deadline in achieving MDGs is approaching. Few countries in Asia have been very successful in implementing these goals. This article raises four questions: what progress has been made to achieve the Millennium Development Goal No.1 (MDG1) targets in Bangladesh? What are the reasons for success, if any? What challenges remain? And what more should be done? To examine these questions, the article assesses the progress of Bangladesh based on different indicators of MDG1. This article also uses the Poverty and Hunger Index (PHI) to measure the net static and dynamic progress towards its own goal. It argues that the country is on track to achieve MDG1 targets. Social safety nets (SSNs) programs, per capita GDP growth, structural change, remittance earning have been contributing to achieve MDG1 targets. However, some significant challenges such as a number of poor, inflation, high unemployment rate and inequality are still prevailing. Thus, the country might give more attention on the expansion of SSNs for quick protection and promotion for the poor and vulnerable, the creation of local value chain and the inflation control.

Keywords: Poverty and Hunger Index, social safety nets, remittances, local value chain

1.0 Introduction

More than a decade has already been passed since the United Nations (UN) adopted the Millennium Development Goals (MDGs). In September 2000, world influential leaders approved the Millennium Declaration as a commitment to work together for a safer, more successful and more equitable world. Since then, countries around the world have been working vigorously to reach these goals. The main eight goals are to eradicate extreme poverty and hunger, to achieve universal primary education, to promote gender equality and empower women, to reduce child mortality, to improve maternal health, to combat HIV/AIDS, malaria and others diseases, to ensure environmental sustainability and to develop a global partnership for development. The deadline in achieving these goals is approaching. Few countries in Asia such as Singapore and Brunei have been very successful in implementing these goals, others have made reasonable

progress and a few such as Myanmar and Cambodia are still lagging behind the rest (Renwick, 2011).

Bangladesh has made a remarkable progress in achieving MDG1. In fact, poverty reduction rate increased significantly in the last two decades. The head count index of poverty measured by upper poverty line has declined to 40 percent in 2005 and to 31.5 percent in 2010 from 56.6 percent in 1991 (BBS, 2010). All human development index like life expectancy at birth, infant mortality, adult literacy rate and population having access to drinking water and improved sanitation etc., have improved (UNDP, 2009).

This was possible due to robust growth in GDP about 6 percent. And that was accompanied by gradual transformation of the sectoral compositions of the GDP including greater share of the manufacturing and services followed by declining share of agriculture. GDP growth was primarily driven by increasing consumption expenditure in the 1990's and accumulations in capital stock, investment and remittances in the 2000s. The economy has exhibited rigidity in the face of the recent global financial and economic crises mainly due to the strength of remittances (UNDP, 2009).

Several limitations have restricted the capacity of the country to provide employment opportunity for its large population. Labor force participation rate among the active people is very low and it has declined in recent times because of the general lack of available opportunities for productive work, massive skill lacking of the labor force and skill mismatch with market demand both in domestic and abroad labor market. The country is also facing the weave of the global financial crisis and high inflation. In spite of these problems, Bangladesh has demonstrated the ability to achieve the goal of poverty reduction within the target timeframe. It is recognized that poverty reduction and progress in MDGs is embedded in a process of economic development (Oya, 2011). The main objective of this article is to assess the country's net performance of MDG1. In this regard, eight indicators of MDG1 are considered and PHI is used.

This article is organized as follow: Section two describes the indicators stating the targets and progress separately. Section third describes the statistical methodology of PHI to estimate the net progress. Empirical results, static and dynamic, are presented in the fourth section. Reasons of success are explained in fifth section. Challenges to achieve the rest of the target are explained in sixth section. The article is concluded with policy and conclusion.

2.0 Targets and Indicators under Millennium Development Goal 1

Eradicate extreme poverty and hunger is the first and the heart of goal among the eight MDGs. The MDG 1 has set three targets and nine indicators after revised. The progress of Bangladesh achieving MDG1 has been evaluated examining these targets and indicators. Target 1 is to halve the proportion of people whose income is less than one dollar a day between 1990 and 2015. Target 2 is to achieve full and productive employment and decent work for all, including women and young people. Target 3 is to halve, between 1990 and 2015, the proportion of people who suffer from hunger. To achieve these three targets, nine indicators have been set (UNDP, 2009).

First indicator is the proportion of population below the national upper-poverty line (2,122kcal/day). Bangladesh Bureau of Statistics (BBS) uses the Cost of Basic Needs (CBN)

method to estimate the poverty incidence. By the CBN method, cost of a basket of goods consisting of food and non-food items is set at which household members are expected to meet basic needs. The cost of fixed food bundle consisting of eleven items which provides minimum nutritional requirements corresponding to 2,122kcal per day per person is estimated. This cost represents the food poverty line. Then lower and upper non-food allowance is included for upper and lower poverty line, respectively.

The incident of poverty, using CBN method, at national level declined from 58.50 percent in 1990 to 48.90 percent in 2000 based on upper poverty line. During this period, the compound poverty reduction rate per year is recorded at 1.8%. On the other hand, from 2000 to 2005, poverty rate reduced from 48.90 to 40 percent and the compound reduction rate is 3.9 percent. Household Income Expenditure Survey (HIES) - 2010 shows that poverty rate is now 31.5 percent and compound reduction rate is about 4.25 percent. Similar reduction trend is also found in the lower poverty line. However, targeted poverty rate by 2015 in Bangladesh is 29.4 percent.

So Bangladesh is now very close to its targeted rate as shown in Table 1.

Second indicator, another poverty measurement index, is Poverty Gap Ratio (PGR). It measures the average shortfall of the total population from the poverty line. This measurement is used to reflect the intensity of poverty. This measure also shows the decreasing trend at national and regional level. In 1991, PGR was 17.2 percent and it decreased to 12.8 and 9.0 percent in 2000 and 2005 respectively. But in 2010, it was 6.5 percent though the targeted rate by 2015 is 8.0 at national level (BBS, 2010). The country has already reached at the targeted rate as shown in Table1.

Table1: Indicators and Progress of Millennium Development Goal 1.

Indicators	1990	2000	2005	2010	Target by 2015
1. Proportion of population below national upper poverty line(2122kcal)%	58.84	48.90	40.00	31.50	29.40
2. Poverty Gape Ratio (%)	17.20	12.80	9.0	6.50	8.00
3. Share of poorest quintile in national consumption (%)	6.50	8.60	8.76	8.85	20.00*
4. Growth rate of GDP per person employed	3.10	3.59	3.63	3.76	10.00*
5. Employment-to-population ratio (%)	51.20	57.30	58.5	59.30	100
6. Proportion of employed people living below $1 (ppp) per day	NA	56.10	50.10	NA	NA
7. Prevalence of underweight children under-five years of age (%)	66.00	51.00	48.00	45.00	33.00
8. Proportion of population below minimum level of dietary energy consumption (%)	47.50	44.30	40.40	31.50	24.00
9. Proportion of own-account and contributing family workers in total employment (%)	NA	NA	NA	NA	NA

Source: MDGs Bangladesh Progress Report (UNDP, 2009) * it is assumption for calculation.

Third indicator is share of poorest quintile in national consumption. This indicator shows the consumption inequality. It measures how much national consumption is accumulated in the poorest group of the population. This indicator is the focal point of inequality at the bottom end of the poverty distribution. After adapting MDGs, consumption inequality has remained almost unchanged below 9 percent since 2000 according to the HIES (2010) in national level as shown in Table 1.

Fourth indicator is growth rate of GDP per person employed. The growth rate of GDP per person employed (labor productivity) is defined as the growth rate of output per unit of labor input in a year. In Bangladesh, this rate was 3.1 percent in 1990 and increased to 3.76 percent in 2010.

Fifth indicator is employment-to-population ratio. In Bangladesh the employment to population ratio was 50.2 percent in 1990 and increased to 58.5 percent in 2005 as shown in Table 1. The latest available data reveals that only 59.3 percent of the population over 15 years of age was economically active in 2010. Among them, the participation rate of woman is lower than male.

Sixth indicator is proportion of employed people living below \$1 (PPP) per day. The proportion of employed persons living below \$1 (PPP) per day is the share of individuals who are employed, but live in a household whose members are estimated to be living below the international poverty line. This rate in Bangladesh was 56.1 percent in 2000 and it dropped to 50.1 percent in 2005.

Seventh indicator is proportion of own-account and contributing family workers in total employment. Own-account workers refer to those workers who hold the type of jobs defined as a self-employment job; have not engaged any employees to work for them on a continuous basis during specific period of time. This ratio in Bangladesh is about 85 percent in 2005. Basically data of this indicator are not available on regular basis. For this reason, this indicator is excluded from the estimation of PHI.

Eighth indicator is prevalence of underweight children under-five years of age. About 66 percent children below five years of age were underweight in 1990. After 1990, this rate gradually cut down to 51 in 2000, 48 in 2005 and 45 percent in 2010. This indicates that considerable progress has been achieved during the last two decades. But since 2000 the declining trend has been quite slow. Unlikely, it seems that Bangladesh will achieve the MDG target of 33 percent prevalence rate by 2015.

Ninth indicator is proportion of population below minimum level of dietary energy consumption. This indictor refers to undernourishment developed by Food and Agriculture Organization (FAO). Two caloric thresholds, the 2,122kcals/day and 1.805kcals/day, are generally used to show less and more severity in Bangladesh. Between 1990 and 2005, there was a modest decrease in the population not obtaining the minimum level of dietary energy consumption (2,122kcals/day) from 47.5 to 40 percent and between 2005 and 2010 from 40 to 31.5 percent (BBS, 2010). Despite of this achievement, Bangladesh may not meet its targets by 2015. This is due to income inequality, social insecurity; regional disparities exist regarding the proportion of the population with access to less than 2,122kcals/day. But considering the other minimum threshold value, 1.805kcals/day, the country has already met this goal.

3.0 Poverty and Hunger Index

From the above discussion, the eight indicators of MDG1 provide a fragmented and paradoxical representation. So these show little about net progress to achieve the overall goal. To understand the net progress towards MDG1 as a whole, Gentilini and Webb (2008) calculated the PHI based on the UNDP's Human Development Index (HDI). Following the same statistical formation, here the PHI combines the eight official indicators out of nine of MDG1 for Bangladesh. As no hierarchy was envisaged by the founders, the every indicator was weighted equally. Maximum and minimum values were taken for each fundamental indicator as shown in Table 2. For PHI estimation, we can use the following equation in modified form:

$$PHI = \sum_{i=1}^{8}[(I_i - \min_i)/(\max_i - \min_i)]1/8 \tag{1}$$

Where, i presents the PHI indicators, I is the actual value of the indicator, and max and min its goalpost. Eight indicators are considered among the nine indicators of MDG1 due to not available data of Proportion of own-account and contributing family workers in total employment (%) indicator. The value of index in equation (1) lies between 0 and 1. Value 1 means reaching the goals. The PHI shows the static assessment and net performance. Here we can use the PHI as dynamic measure of progress (D-PHI). The D-PHI involves scaling the eight PHI indicators in terms of targets set for 2015, based on the MDG baseline year of 1990. The scaling of indicator (D_{Ti}) is obtained by applying the formula involving an observation value and maximum (2015i) and minimum (1990i) value respectively. Here 2015i means targeted or maximum value of indicators in 2015 and 1990i means minimum or baseline value of indicators in 1990. So we can use the following equation:

$$D_{Ti} = (T_i - 1990_i)/(2015_i - 1990_i) \tag{2}$$

Here, T refers to the considered year. If data of any indicators is not available in 1990, indicator of the closest year to1990 will be considered as base year indicator. In this way we can relate the change between 1990 and 2000, or 1990 and 2005, or 1990 and 2010 and so on, to the desired change between 1990 and 2015. Value range of D is between 1 to -∞. A value of 1 means reaching the ultimate goal halving poverty according to 1990 level by 2015, 0.5 means being on track, and 0 means no progress and negative numbers indicate a reversing trend. So the corresponding D-PHI$_T$ is calculated as an average of the scaled indicators using the following equation:

$$\text{D-PHI}_T = \sum_{i=1}^{8}(D_{Ti})1/8 \tag{3}$$

Table 2: PHI Dimensional Goalpost

		Max	Min
1.	Proportion of population below national upper poverty line(2122kcal)%	100	0
2.	Poverty Gape Ratio (%)	100	0
3.	Share of poorest quintile in national consumption (%)	20	0
4.	Growth rate of GDP per person employed (%)	10	0
5.	Employment-to-population ratio (%)	100	0
6.	Proportion of employed people living below $1 (ppp) per day	100	0
7.	Prevalence of underweight children under-five years of age (%)	100	0
8.	Proportion of population below minimum level of dietary energy consumption (%)	100	0

Thus, we can quantify the progress of MDG1. The value 1 indicates reaching MDG1, 0.5 indicates being on track to fulfill MDG1, 0 represent no progress, and negative number indicates a reversing trend.

4.0 Results

The results presented in this section are calculated using data from various sources such as Bangladesh Economic Review (BER), UNDP's progress report and World Bank. The results are presented in three different forms such as PHI score of individual indicator over the year, average PHI score in a particular year using equation (1), dynamic change in an indicator and dynamic change in overall PHI scores using equation (2) and (3), respectively. Table 3 shows the individual and average score of PHI of 1990, 2000, 2005, and 2010. In 1990, average PHI score was 0.458 but in 2000 it increased to 0.525. Then in 2005 it increased to 0.564. It indicates that all indicators were moving towards the expected direction. But in 2010, the result shows the same increasing trend which is about 0.6.

Table 3: Calculating the PHI for Bangladesh[1]

Indicators	1990	2000	2005	2010
1. Proportion of population below national upper poverty line(2122kcal)%	0.412	0.511	0.600	0.685
2. Poverty Gap Ratio (%)	0.828	0.872	0.910	0.935
3. Share of poorest quintile in national consumption (%)	0.325	0.43	0.438	0.442
4. Growth rate of GDP per person employed (%)	0.310	0.359	0.363	0.376
5. Employment-to-population ratio (%)	0.512	0.549	0.585	0.585
6. Proportion of employed people living below $1 (ppp) per day	0.42	0.439	0.499	0.499
7. Prevalence of underweight children under-five years of age (%)	0.340	0.490	0.520	0.570
8. Proportion of population below minimum level of dietary energy consumption (%)	0.525	0.557	0.596	0.685
Overall PHI	**0.458**	**0.525**	**0.564**	**0.597**

Source: Authors' calculations.

A common matter is that all average PHI from year 2000 are more than 0.5. This indicates that Bangladesh is in low PHI group countries. Gentilini and Webb (2008) mentioned that PHI of

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[1] Values of some indicators are decreasing except 3 and 4. Conceptually, these values are inversely related to PHI. The ratio was subtracted from 1 so that the higher value indicates better status as suggested by Gentilini and Webb (2008).

Bangladesh is 0.628 considering only five indicators. But in this article, eight factors are considered. The results of dynamic measure of progress (D- PHI) show that Bangladesh is on track to achieve the expected goals shown in Table 4.

In period 1990-2000, the overall D-PHI was 0.2758 and it increased to 0.3818 in period 1990-2005 and to 0.5232 in 1990-2010. Another feature is that during 2000-05, the value of D-PHI was 0.2248. It is less compare to period 1990-2000. But the highest changed has been occurred in period 2005-10 compare to other period even the longest period 1990-2010. Considering the all dynamic score, it can be said that country is on track to achieve the MDG1.

Correlations among the indicators of MDG1 are estimated to show the interlinked. Poverty rate is highly positively correlated with poverty gape ratio, undernourishment and underweight. And poverty rate is also negatively correlated with employment to the population ratio as shown in Table 5. Though poverty rate is negatively correlated with share of the poorest quintile in the national consumption and growth rate of GDP per person employed, it is not significant. This means that inequality exists in the economy as mentioned Gentilini and Webb (2008) and Renwick (2011). Another important finding is that employment to the population ratio is significantly negatively related to proportion of employed people living below \$1(PPP) day and underweight. That means if employment to population ratio increases then employed people living below \$1 a day and underweight children fall. One explanation is that opportunities to generate income or higher income make a way to get rid of poverty and malnutrition.

Table 4: Dynamic Measure of Progress

Indicators	Change between 1990-2000	Change between 1990-2005	Change between 1990-2010	Change between 2000-05	Change between 2005-10
1. Proportion of population below national upper poverty line(2122kcal)%	0.3331	0.6314	0.9162	0.4472	0.7727
2. Poverty Gape Ratio (%)	0.4782	0.8913	1.1630	0.7916	2.5000
3. Share of poorest quintile in national consumption (%)	0.6000	0.6457	0.0714	0.1142	0.0725
4. Growth rate of GDP per person employed (%)	0.0710	0.0768	0.0956	0.0062	0.0204
5. Employment-to-population ratio (%)	0.0758	0.1496	0.1496	0.0798	0.00
6. Proportion of employed people living below \$1 (ppp) per day	0.0575	-0.1881	-0.1881	0.00	0.00
7. Prevalence of underweight children under-five years of age (%)	0.4545	0.5455	0.6970	0.1666	0.3333
8. Proportion of population below minimum level of dietary energy consumption (%)	0.1361	0.3021	0.6808	0.1921	0.5426
Overall D-PHI	**0.2758**	**0.3818**	**0.5232**	**0.2248**	**0.5302**

Source: Authors' calculations.

Table 5: PHI and PHI Component Nonparametric Correlation

	Poverty	Poverty gap	Share of the poorest quintile	Growth rate of GDP per person employed	Employment to population ratio	Employed people living<$1 per day	Under weight	Undernou rishment
Poverty	1	0.996**	-0.523	-0.390	-0.951*	0.940	0.950	0.967*
Sig. (2-tailed)	-	0.004	0.477	0.610	0.049	0.060	0.050	0.033
Poverty gap	0.996**	1	-0.505	-0.365	-0.974*	0.953*	0.963*	0.942
Sig. (2-tailed)	0.004	-	0.495	0.635	0.026	0.047	0.037	0.058
Share of the poorest quintile	-0.523	-0.505	1	0.987*	0.466	-0.687	-0.255	-0.564
Sig. (2-tailed)	0.477	0.495	-	0.013	0.534	0.313	0.745	0.436
Growth rate of GDP per person employed	-0.390	-0.365	0.987*	1	0.317	-0.561	-0.101	-0.454
Sig. (2-tailed)	0.610	0.635	0.013	-	0.683	0.439	0.899	0.546
Employment to population ratio	-0.951*	-0.974*	0.466	0.317	1	-0.963*	-0.954*	-0.843
Sig. (2-tailed)	0.049	0.026	0.534	0.683	-	0.037	0.046	0.157
Employed people living<$1 per day	0.940	0.953*	-0.687	-0.561	-0.963*	1	0.861	0.862
Sig. (2-tailed)	0.060	0.047	0.313	0.439	0.037	-	0.139	0.138
Underweight	0.950	0.963*	-0.255	-0.101	-0.954*	0.861	1	0.868
Sig. (2-tailed)	0.050	0.037	0.745	0.899	0.046	0.139	-	0.132
Undernourishment	0.967*	0.942	-0.564	-0.454	-0.843	0.862	0.868	1
Sig. (2-tailed)	0.033	0.058	0.436	0.546	0.157	0.138	0.132	-

Source: Authors' calculations.
** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

5.0 Possible Causes of Success

Some indicators of MDG1 have made potential progress, i.e. they are on track such as poverty rate, PGR, underweight children. But other indicators demand more concentration. Poverty rate and PGR have been declining rapidly since last decade. These factors are also highly and significantly correlated with underweight of children and undernourishment of poor. Despite the lack of sufficient information, we can say that the country is successful for reducing its poverty rate. The main reasons of this success are that Social Safety Nets (SSN) programs, per capita income and remittance earning which increased more than double during the last two decades.

5.1 Social Safety Nets Programs

Most important reason is that government has taken large and various SSNs programs. Because it has protection and promotion effect (Devereux, 2002). Expenditure on SSN is negatively associated with poverty rate (Devereux, 2002; Pradhan, et al., 2011; Slater, 2011). Figure 1 also shows that expenditure on SSN is negatively associated with poverty rate. For this reason the government gives out resources more every year from its non-development budget to implement a number of SSNs programs. While continuing with the on-going programs, the government also

adopts new programs that would contribute to the welfare of the poor and also the deprived community. The main form of SSNs is cash transfer programs, special poverty alleviation programs, food transfer programs, micro-credit programs for self-employment and other special poverty alleviation activities. More than 10 million people are getting benefit from public sources.

Vulnerable Group Development (VGD) program is the largest program in the country and yearly beneficiary is about 5 million. Ahmed, et al., (2009) found that VGD program transfers reduced extreme poverty by 20 percent and played a significant role to increase productive assets such as livestock and poultry. Second largest program is Old Age Allowance and beneficiary number is about 2.5 million yearly.

Figure1: Relation between Poverty Rates and Expenditure on SSN as % of Budget.
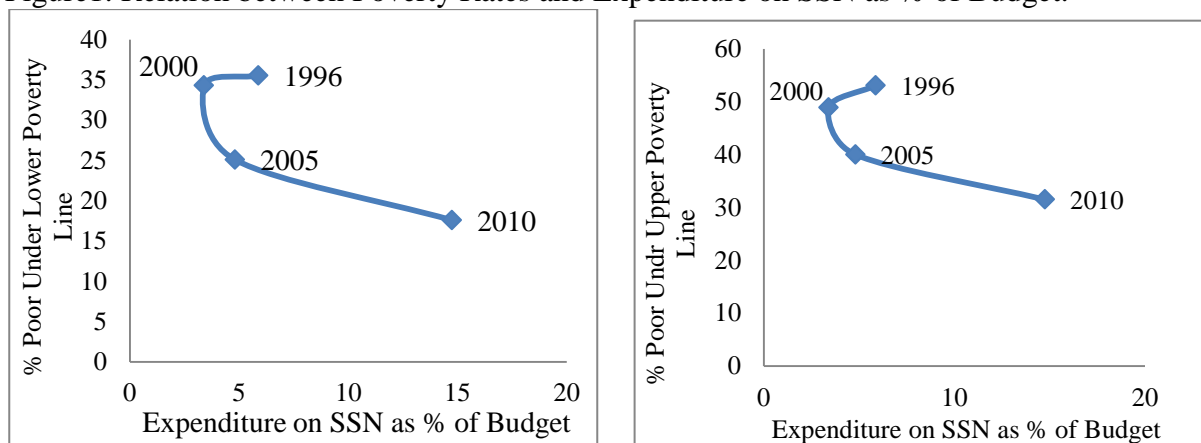
Table 7**:** Expenditure on SSN, Poverty, and GDP Growth Rate in Bangladesh

Year	Expenditure on SSN($m)	Expenditure on SSN as % of budget	Expenditure on SSN as % of GDP	Upper poverty rate (%)	Lower poverty rate (%)	GDP growth rate (%)
1996-97	331.44	5.88	0.78	53.08	35.55	2.75
2000-01	439.24	3.40	0.93	48.90	34.30	4.00
2005-06	433.48*	4.82	0.71	40.00	25.10	4.48
2006-07	471.24	4.93	0.70	NA	NA	5.30
2007-08	2468.22	13.32	2.14	NA	NA	5.24
2009-10	1939.39	15.22	2.52	NA	NA	4.62
2010-11	2752.44	14.75	2.64	31.50	17.60	4.65

Source: WB, (2006).Social Safety Nets in Bangladesh: An assessment.
* For 2005-2009, data are collected from Bangladesh Economic Review (various issues)

The Government has been increasing unconditional cash transfer programs, including old age pensions, widow allowances and disability allowances. In 2007-2008 there has been a 33 per cent increase in payments on safety net programs over the previous year's budget, as well as increases in coverage and in the amounts of transfers (MOF, 2011). However, expenditure on SSN as % of budget has been increased more than five times in 2010 compare to 2000. And expenditure on SSN as % of GDP also has been increased four times in 2010 compare to 2000 (MOF, 2011).

More over any kind of transfer increases the poor households' current income and investment in petty trading for further income generation (Hulme & Moore, 2008, Ahmed et al., 2009)

5.2 Per Capita Income

Another important reason of success is to increase per capita income. In 19995, per capita income was $322 and it increased to $673 in 2010, almost more than double. In 1995 per capita GDP growth rate was 2.75 but it increased to 4.0 in 2000 and to 4.65 percent in 2010. As growth rate is a precondition of development, it helps to eradicate poverty. With the increase of growth rate if poverty rate does not reduce, then there are some problems such as GDP growth did not sufficiently reflect actual income growth or the responsiveness of poverty to income growth was weak or inequality may have increased (Fosu, 2011). But in Bangladesh, there is clear negative relation between GDP growth rate and poverty reduction as shown in Figure 2.

Figure 2: Relation between Per Capita GDP Growth Rate and Poverty Rate
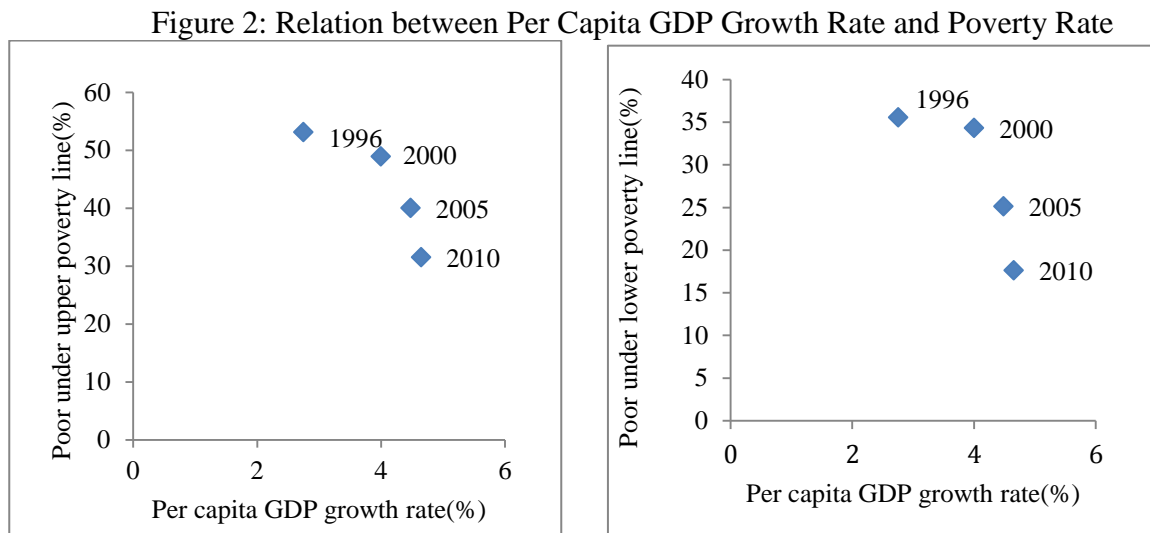
5.3 Remittance Earnings

Bangladesh is one of the top remittance recipient countries by exporting of its labor services to the Middle East and South East Asian countries since the early 1970s. About 70% laborers are unskilled and semi-skilled (Chowdhury, 2011). Most of them are from the bottom of the society. So their remittance income that is transferred to the county increase directly their family well being (Gupta, et al., 2009). As a result, poverty rate falls rapidly

6.0 Challenges

6.1 Population

Main constraints such as a large number of population, high density and growing population are still significant challenges. Its total population is about 150 million and growth rate of population is 1.36 percent. Current population is about more than double when it became independent in 1971. A large population is depended on the agriculture sector not only because of food but also because of livelihood options. For this reason the agriculture sector is one of the driving forces of

the economy and the life-blood of rural economy of Bangladesh. Therefore, any change in agriculture sector affects the livelihood of mass people both directly and indirectly. Every year a large part of land go out from agriculture sector such as house building, urbanization etc. due to a large population. As a result per capita land utilization, employment opportunity, moreover food production decreases over the year. As a result, to achieve MDG1 is becoming more challenging.

6.2 Number of Poor

In the 2011, two major reports came out of the Bangladesh Bureau of Statistics (BBS) which let us know a story about the state of the nation. The first one was the Household Income and expenditure Survey (BBS) 2010 and the second one was the Population and Housing Census 2011. The BBS (2010) told that 17.6 percent people lives in extreme poverty. That means 25 million people are extremely poor in Bangladesh. If all this extreme poor people of Bangladesh are put as a separate country, it would be the 53rd largest country by population in the world. According to the upper poverty line, there are almost 45 million people still under this threshold. These huge numbers, 45 and 25 millions, tell us that there is a long way still to go. It also tells us that we should keep pressure on those in power to make the strongest possible efforts to improve the lives of those who are under poverty line. Otherwise, the country can achieve its desired goals.

6.3 Inflation

Another challenge is high inflation. According to MOF 2012, general inflation rate was 7.17, 9.93 and 8.80 percent and food inflation was 7.91, 12.28 and 11.34 percent in 2005, 2007 and 2010 respectively. As the poor people expend their income largely on food, expenditure is positively associated with food inflation as well as general inflation, and finally with poverty and inequality. With the increasing of food inflation, a large number of people may go under the poverty line newly. In 2000 when food inflation rate was 2.68 percent, about 55.8 million people were under poverty line. In 2005 when food inflation rate increased to 7.91 percent total number of poor people increased to about 56 million. Based on this trend, Rahman (2011) projected that with 1 percent increase in food inflation, additional about 0.04 million people may go under poverty line. A recent study conducted by Shakib (2012) found that the prices of everything ranging from essential daily commodities have been increasing. As a result of the price hike, the about 97.7 percent of the people in Dhaka metropolitan city and in other parts of the country are facing deep trouble in coping with the situation (Shakib, 2012). So the poorer part of the society or the net food buyers is likely to suffer from such rising prices. Another recent study concluded that inflation at 10 percent and above negatively impacts assets, liability and private sector credit flows from the banking sector, putting a detrimental effect on the development of the overall financial sector (Wahid, et al., 2011). Moreover the people think that because of price increase of almost everything, poor are encountering economic hardship.

6.4 Natural Shocks

Bangladesh is a natural shock prone country for its geographical location. Every year most of the people face more than one shock among a lot. They can be classified into a number of broad categories: economic, climatic, health and asset. Households affected by the shocks may land into

hardship within a short time. Santos, et al., (2011) showed that more than half of the households experienced one or more shocks over a one year recall period and the average number of shocks across all households was 1.6. Rural households were more likely to experience shocks and more vulnerable.

7.0 Policy and Conclusion

This article combines eight official indicators of MDG1 out of nine to provide insights on the separate situation of poverty and hunger at a point in time and relative rates of change. Considering available all information of individual indicators, it found that some factors are on track such as poverty rate, PGR, underweight children and rest of the factors are lag behind. In term of dynamic change, a big change was occurred between 2005 - 2010 year and overall performance is on track. For poverty and PGR reduction, SSNs programs and per capita growth rate play a vital role. But a large number of people about 150 million live in a small country and about half of them are unemployed and underemployed. Though as a percent of population poverty rate is small, total poor is about 45 million. Various shocks and inflation rate are another two main challenges for the development. But its domestic market is not so small. So there is a great opportunity to extend Local Value Chain (LVC). The capacity of poor farmers to upgrade their position in the value chain is needed so that they can get appropriate to increase employment and a greater share of the returns accruing from the chain. Then Global value chain can be adapted by coordination and collaboration; investment in information technology and in industry; flexible jobs and adaptable, capable employees.

Farmers may concern themselves only with production; they prepare the land, grow the crop, and harvest the crop when it is mature. But they may also be involved in other chain activities for example, procuring inputs, drying their crop, sorting and grading, processing, transporting and trading. Being involved in various activities in the chain is known as vertical integration. So the vertical integration should be started from the rural area. Target based social safety nets, such as for old age benefit, child benefit, regional targeted, beggars, destitute, victim of various shocks; have to be increased so that local demand increases. Then most of the benefits are accrue by the bottom of the society and development will be sustainable.

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Is Gold a Good Hedge against Inflation? Empirical Evidence in Malaysia

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Abstract

This paper studies the role of gold quoted in domestic currency as an inflation hedge in Malaysia over the period July 2001 to November 2011. With a Malaysian monthly data of domestic gold and consumer price index, we test for the relationships between gold return and inflation in Malaysia via correlation coefficients and linear regression models. Previous research has shown in the long-run that ex-post inflation tends to appropriately increase the price of gold in many develop countries, leading to gold's popularity as an asset in portfolios to reduce the risk against sudden inflation. Nevertheless, while there are substantial empirical evidence regarding the relationship between gold returns and ex-post inflation, the relationship between gold return and expected inflation in the short-run, particularly in emerging market is still less clear. This research found that no significant relationship between the gold returns and inflation, gold returns and expected inflation and gold returns with unexpected inflation. This leads to the conclusion that in the short-run, domestic gold is not a good hedge against inflation in Malaysia. Therefore, gold is not an excellent store of value over relatively short periods of time since this precious metal cannot retain it stable purchasing power.

Keywords: Gold, inflation, hedging.

1.0 Introduction

In recent years, the issue of gold has received considerable critical attention; since it is a major precious metal class, even considered the leader of the precious metal pack as increases in its prices seem to lead to parallel movements in the prices of other precious metals (Sari, et al., 2010). It is durable, divisible, and for many years was indeed the ultimate standard of value. Not only that, it was a standard which held steady its purchasing power in terms of goods over a very long period of years (Capie, et al., 2005).

The high prices of gold can be linked to a "fear" trade, to wit, the price of gold increases due to investors' fears of weak future stock market or economic performance. The latter may include higher expected inflation due to lax central bank policies, and purchases of gold motivated by the "fear" can happen anytime. Since year 2000 until April 2011, the world gold price has shown a dramatic growth about 441.8%. The performance of gold is more impressive given the losses suffered in other asset classes during the 2007/2008 financial crisis. Therefore, since the start of the financial crisis triggered by poorly performing sub-prime mortgages and subsequent failures

of large investment banks, investment funds have poured into precious metals, suggests that investment in precious metals driven by inflation hedge consideration as mentioned for instance by Kat and Oomen (2006) and Jensen, et al. (2002). This is in sharp contrast to the 1990's and before the burst of dot-com bubble when opposite was the case, where investors are optimistic about the future of the stock market.

The view that gold provides an effective inflation hedge is the focus of this study. Inflation hedge is a defensive investment that protects against the risk of loss caused by inflation. Inflation can be divided into expected inflation and unexpected inflation. Expected inflation is a result that economists and consumers plan on year to year. If the rate of inflation from one year to the next differs from what economists and consumers expected, then unexpected inflation is said to have occurred. If inflation is expected, people are less likely to hold cash since, over time; this money loses value due to inflation. Instead, people will put cash into interest earning investments and precious metals like gold to combat the effects of inflation. Unlike expected inflation, unexpected inflation can have serious consequences for consumers ranging well beyond inconvenience. The major effect of unexpected inflation is a redistribution of wealth either from lenders to borrowers, or vice versa.

This study contributes and fills the gap in the literature by several aspects. First, while there are extensive studies on the role of gold as an inflationary hedge in develop markets; there has been little discussion about this issue in emerging country, like Malaysia. We add to the previous studies by looking at a smaller emerging market. Second, most studies in this issue have only been carried out from an international perspective, while far too little attention has been paid from a domestic point of view. All the aforementioned studies employ gold price in the U.S. dollar in their analysis. Instead of using the dollar-denominated gold price and converting it into domestic currency unit as in Chua and Woodward (1982), Baur and Lucey (2010) and Baur and McDermott (2010), this study use the domestic gold price instead. Since the price of Malaysian gold is determined by the international gold market price, the use of gold price quoted domestically in ringgit screens out potential confounding effect of exchange rate movement and currency conversion (Ibrahim, 2011). It is not cost effective payment option for supplier or buyer party that has to convert dollar into local currency, since exchange rate fee and volatility costs are passed on in the form of the higher prices. Third, research has been carried out by the previous literature only use one or sometimes two proxies for expected inflation. No single study exists which use multiple proxies of expected inflation, indicating that the empirical evidence on the regarding the relationship between gold returns and expected inflation is still in its infancy. This study improves on other work by addressing multiple proxies and look for the best way to forecast inflation. Finally, previous studies combine period of bull market and bear market in their analysis (see for example, Jaffe (1989), Larsen and McQueen (1995), Blose (2010)) that could cause an inconsistent conclusion in the relationship between gold return and inflation. In contrast, this study investigate the relationship during the current bull market, from June 2001 through November 2011, where domestic gold return has gained 443.69 per cent, while inflation has totalled 27.69 per cent.

2.0 Literature Review

In recent years, there has been an increasing amount of literature on gold as an inflationary hedge against inflation. The large volume of published studies is mainly due to the gold price has been

rise steadily since more than the last decade. Many academics and practitioners have argued that gold is an inflationary hedge using ex-post inflation by the data of United States and United Kingdom. Among others, are Jastram (1977), Michaud, et al. (2006), Worthington and Pahlavani (2007), Dempster and Artigas (2010) and Narayan, et al. (2010). In contrast, Brown (1987) and Tully and Lucey (2007) found that gold is unable to hedge against inflation in the said countries.

While there are substantial empirical evidence regarding the relationship between gold returns and ex-post inflation, the relationship between gold return and expected inflation, particularly in emerging market is still less clear. The first serious discussions and analyses of the relationship between ex-ante inflation and asset return emerged during the 1930s, with Fisher (1930) provides the theoretical basis for this study. Fisher (1930) demonstrated that expected nominal asset return comprises expected return and expected inflation rate. In other words, when expected inflation rises, asset return will rise. Later, Fama and Schwert (1977) conducted the relation between asset returns and the expected and unexpected inflation rate using least square method from January 1953 through July 1971 period. They test the hedging effectiveness of treasury bills, government bonds, residential real estate, corporate bonds, labour income and common stocks against expected and unexpected inflation. Interest rate on a treasury bill rates are used as the expected inflation rate. They opined that private residential estates were the only form of investment that provided a complete hedge against expected and unexpected inflation.

Basing on the concept of Fama and Schwert (1977), the first study of the gold as a hedge against inflation and expected inflation was carried out by Chua and Woodward (1982). They have investigated this issue in Canada, Germany, Japan, Switzerland, the United States and United Kingdom from January 1975 until January 1980. London gold prices was used as the base value and converted to individual country currencies, while consumer price index (CPI) of the six countries was used to represent inflation. Using least square method they found that gold has not offered consistent protection against inflation to individuals over the five years since the inflationary characteristics of the major industrialised countries differ considerably. With the exception of the United States, gold as an investment has been neither a complete nor partial hedge against domestic inflation whether using one or six month investment holding period. Using autoregressive model to estimate expected inflation rates, gold appears to have been a perfect hedge against both expected and unexpected inflation in the United States, while no statistical significant relationship was found between the said variables for the remaining five countries. However, these results were based upon data from over 30 years ago and it is unclear if these differences still persist. Moreover, the authors have investigated this issue within a short period.

Comparative study by Chua and Woodward (1982) in the United States has been supported by Sherman (1983) and Christie-David, et al. (2000). Sherman (1983) calculates of inflation expectation using eighteen moving average CPI from 1970 through 1980. He regressed annual gold prices against unexpected inflation and found a significant ($t = 2.06$) positive relationship. Christie-David, et al. (2000), on the other hand, identify the effect of macroeconomics news releases on gold. In their study, twenty three monthly macroeconomic news announcements over four year period (January 3, 1992 to December 29, 1995) in the United States were used, while the forecasted values for the announcements are taken from Money Market Services (MMS). Using non-parametric method they showed that CPI has significant effects on gold. Gold Futures

reaction to unexpected changes in CPI is significant in the 15-min time period following the announcement.

Some research findings found contradictory results, among others are Froot (1995), Blose (2005), and Blose (2010). Froot (1995) measured expected inflation rate by taking the past inflation rate and the United States treasury bill interest rate and points out that gold exhibit weak hedges. Blose (2005) questions whether interest rates and gold prices react to changes in expected inflation using least square simple regression. He analysed the data of gold price from London Afternoon (PM) Gold Fix with span of study from March 1988 to February 2005 and concluded that strong and significantly positive relationship between unexpected inflation rate and interest rate. Nevertheless, inflation rate and unexpected inflation rate not significant in explaining gold return. Blose (2010) performed a similar study by extending in a number of important ways. First, the author extended the period of study from March 1988 through February 2008. Second, instead of using linear regression, this study investigated this issue using non-linear relationship with squared terms in the regressors. Data for expected inflation are taken from a consensus estimate obtained from a survey of $12 - 16$ economists published by Wall Street Journal. Blose (2010) claims that expected inflation has no impact on gold prices, thus supporting the carrying cost hypothesis, where higher expected inflation will cause higher interest rate (the Fisher effect). The higher interest rates will, in turn, cause a higher cost of carry of gold investment, which will offset any speculative profit from investing in gold over the inflationary period. The study also found that unexpected changes in the CPI did not affect the price of gold on the day of the announcement.

Several studies found mixed evidence, for example, Jaffe (1989) and Larsen and McQueen (1995). Jaffe (1989) estimates the relationship between inflation and gold returns using monthly data for the period September 1971 to June 1987. Based on the ordinary least square estimator, he finds that on average a 1 per cent increase in the price level is significantly explain a 2.95 per cent change in the return of gold. He also examines the relationship between current gold returns to changes in the CPI one month, two months and three months in the future. Although all the coefficients are uniformly positive, none is statistically significant. Subsequently, the author estimate gold returns on contemporaneous anticipated inflation using yield of one month Treasury bill and surprisingly he found that the relationship is negative. On the other hand, empirical results for return on gold and unanticipated inflation show a significant positive relation. Jaffe (1989) then concludes that short time intervals within only 17 year period are the reason why gold is not a good hedge against inflation. Previous study by Jastram (1977) using annual data from the United States from 1808 to 1976 and United Kingdom from 1560 through 1976 found that gold does not effectively hedge yearly commodity price increases because gold does not match commodity prices in their cyclical swings. Nevertheless, over the long-run, gold maintains its purchasing power due to the retrieval phenomenon, that is, gold prices do not chase after commodities. Larsen and McQueen (1995) applied three different expected inflation measurements, namely Treasury bill, univariate time series autoregressive integrated moving average (ARIMA), and naive model from January 1972 until August 1992 and concludes that the relationship between gold and unexpected inflation is weak. They found that while coefficient of unexpected inflation is significant and positive, F-statistic is not significant.

The findings of prior studies have proved that the effective inflation hedge of gold against inflation and expected inflation is inconsistent and contradictory, suggesting further studies are

needed to shed light on the issue. Moreover, there is a constraint on proxies for expected inflation, since the above studies utilize only one or two proxies for expected inflation.

Beside Chua and Woodward (1982), research in this area using different data sets also has been conducted by Cai, et al. (2001), Kutan and Aksoy (2004), Artigas (2010), Wang, et al. (2011) and Hoang (2012). Cai, et al. (2001) investigated the effect of macroeconomics announcements on the future price of gold in New York (Comex) from 1983 through 1997 with intraday data. They found that announcement about inflation in the United States and Japan had significant impacts on the gold price. Wang, et al. (2011) have recently applied a methodology for long-run and short-run relationship between gold and inflation from January 1971 until January 2010 for Japan and the United States. They found that gold only partially effective in hedging against inflation in Japan in the long-run, while gold is unable to hedge against inflation in Japan and the United States in the short-run, in the periods of low momentum regimes. In contrast, gold is able to hedge against inflation in the United States, but not Japan in the periods of high momentum regimes.

Recently, Artigas (2010) highlights the link between global money supply to gold in the United States, Euro zone and United Kingdom, India and Turkey. Gold is measured by year-over-year percentage changes in the spot price of gold (US$/oz), at 5PM in New York and showed that money supply growth in each country was positively correlated to percentage changes in the price of gold, ranging from 0.1 to 0.35, while six month to nine month lag in money supply growth increased the correlation to a range of 0.15 to 0.4. In other words, there is evidence that money supply growth has an impact on future gold performance. Artigas (2010) demonstrated that change in the United States money supply has the largest impact in the price of gold, while changes in money supply in countries where gold has a preeminent cultural role like India, is very important.

Kutan and Aksoy (2004) examined how public information arrival affects gold market returns in Turkey using daily data (Jan 2, 1996 to February 14, 2001). Based on the mean equation, they argued that the Istanbul gold market does not serve as a hedge against inflation, but it is sensitive to developments only in real sector such as balance of trade and gross national product, indicating that the gold market movements in Turkey are driven by real factors. Kutan and Aksoy (2004) concludes that the traditional role of gold as a store of value in high-inflation countries like Turkey has been disappearing with the development of alternative financial markets, such as stock market.

A recent study by Hoang (2012) involved short-run and long-run hedging of gold against inflation using France data. The author found that in the short-run, correlation coefficients are very low and insignificant, while beta coefficients in the regression analysis are not significant with lower R^2. These results are consistent with the long-run research findings, where the study identified that no cointegration between gold prices listed in Paris and French CPI. Failure of gold image as a store of value in France is due to the currency is different, namely the franc or euro in Paris and the U.S. dollar in London and New York. The U.S. dollar was equivalent to gold during the Bretton Woods system, thus it still has a strong link with gold price and is even one of the fundamental determinant of gold price. Therefore, the inflation of the U.S. dollar has direct impacts on gold prices in so far as they expressed in U.S. dollars. Second, when the value of the

U.S. dollar is devalued, people lose confidence with the currency and turn to gold which is considered as a safe haven.

In summary, the role of gold in the inflationary hedge was confirmed by most of the studies using gold quoted in London and New York where the price is in the U.S. dollar. Nevertheless, some studies have showed that the relationship between gold and inflation was not stable over time and was not significant everywhere (not in Japan, Turkey, France), suggesting that the role of gold in the hedge against inflation was not always guaranteed. Moreover, our sample at 2001 - 2011 is also the most up-to-date and takes into account the recent period of significant growth in gold prices.

3.0 Methodology and Data

3.1 Methodology

Most studies of the inflation hedging attributes of gold have followed the methodology of Fama and Schwert (1977). The form of regression used to determine if an asset is a hedge against inflation is:

$$R_{G,t} = \beta_1 + \beta_2 \pi_t + e_t \tag{1}$$

where, $R_{G,t}$ is gold return during period t, π_t is inflation rate during period t and e_t is a disturbance term. β_1 is the constant term, β_2 is the hedging coefficient that denotes how well gold investment could hedge against inflation or the cross-price elasticity between gold return and inflation. If gold return is a perfect hedge against inflation, then the β_2 should be equal to one. This would be classified as a full Fisher relationship. When the β_2 is larger than one, the hedge is more than complete. Gold returns which provide an incomplete hedge or partial hedge will yield a β_2 between zero and one. A negative β_2 suggests that gold acts as a perverse hedge against inflation. A coefficient which is not significantly different from zero would be indicative of no relationship. Based on equation (1), we further decompose inflation into expected and unexpected components. To this end, we adapt the framework used by Wurtzebach, et al. (1991) in their analysis of real estate returns by modifying equation (1) as:

$$R_{G,t} = \beta_1 + \beta_2 E\pi_t + e_t \tag{2}$$

$$R_{G,t} = \beta_1 + \beta_2 E\pi_t + \beta_3 U\pi_t + e_t \tag{3}$$

where $E\pi_t$ is expected inflation in time t and $U\pi_t$ unexpected inflation for time t. β_2 and β_3 are the hedging coefficient that denotes how well gold investment could hedge against expected inflation and unexpected inflation, respectively. Gold is said to be a perfect hedge against expected inflation when β_2 in equation (2) equal to one. Equation 3 presents the model of disaggregating the inflation into its two components, the expected and unexpected inflation. Gold is a perfect hedge against unexpected inflation when β_3 in equation (3) equal to one. When $\beta_2 = \beta_3 = 1$, gold is said to provide a complete hedge against inflation.

3.2 Data

Data were gathered from various sources during the July 2001 to November 2011. The selling prices of one troy ounce of Kijang Emas are used to represent domestic gold prices, while the domestic CPI is used to represent inflation rate. Kijang Emas were collected from central bank of Malaysia and CPI from International Financial Statistics. Gold return and inflation rate were computed using continuous compounded return. Table 1 presents the descriptive statistics, while Figure 1 and Figure 2 shows plot of both series in level and first-differenced forms, respectively. The simple statistics presented in Table 1 indicate how much, on average, the return on gold is above the average inflation rate. Gold mean monthly returns approximately 1.3655 per cent a month.

This finding is also represented by the minimum and maximum values of the gold returns and inflation. Gold exhibits more extreme positive value (12.7675) than the inflation (3.8656) and also more extreme negative values (-18.2382) compared to inflation (-1.1455). The volatility of gold prices are also highlighted in the table, with the monthly mean return on gold being less than a third of the computed standard deviation. It must be emphasised that although the return on gold is, on average higher than the mean inflation rate, this is not sufficient for gold to be considered an effective hedge against inflation. The quality of an inflation hedging asset is determined by the extent to which the returns on the particular asset move systematically with the inflation rate. Therefore Table 1 gives little information as to the inflation hedging value of gold in the country being considered.

Figure 1 shows that the domestic gold price increased from around RM1,000 in 2001 to RM5,800 in 2011, driven by the weak dollar, strong oil prices, global inflationary fears and investors shift from stocks to gold throughout the period. The graph also shows that that the domestic gold price and the CPI co-move for most of the period, except in 2008. Obviously when gold price and CPI move in tandem is consistent with gold as a hedge against inflation. In contrast, the period 2008 is not consistent with a hedge since there is an opposite direction between the two prices. The main reason for the surge in inflation is the substantial rise in the price of petrol and diesel announced by the Malaysian government in early June 2008. While Figure 1 shows that gold price and CPI in Malaysia might exist in the same long-run trends, Figure 2 provides the possibility of different short-run adjustments between gold price and CPI, where this is the scope of this study. It presents return of gold and inflation rate in Malaysia, where domestic gold price has been on upward tendency, particularly since 2008.

Table 1: Descriptive Statistics

Variable	Mean (%)	Max.	Min.	Std. Dev.
$R_{G, t}$	1.3655	12.7675	-18.2382	4.7382
π_t	0.1971	3.8656	-1.1455	0.4546

Figure 1: Trend of Gold Price and CPI
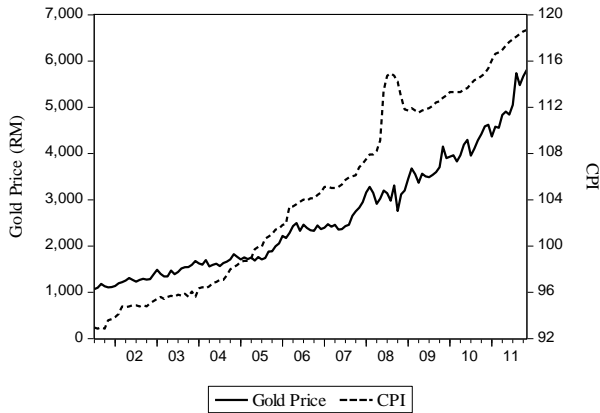
Figure 2: Gold Returns and Inflation Rate
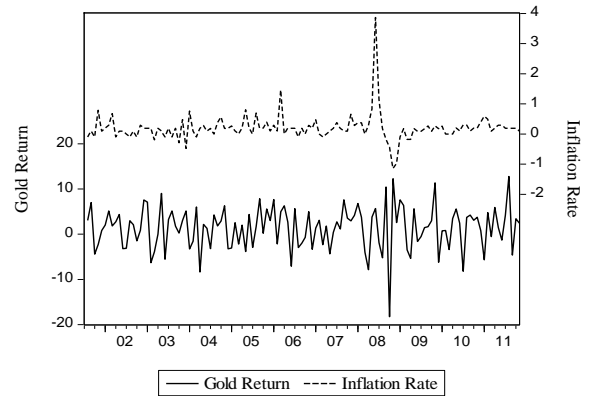
4.0 Forecasting Expected Inflation and Empirical Results

4.1 Forecasting Expected Inflation

In order to get the best-fitting model to forecast inflation, this study applies seven different models to forecast inflation. Table 2 presents the optimal lags for autoregressive model (AR) and moving average model (MA). For AR model, one lag seems to be optimal since it provides the lowest Akaike Information Criterion (AIC) and Schwartz Information Criterion (SIC). For MA model, the lowest value using AIC is six and one for SIC. Table 3 on the other hand compares autoregressive moving average models (ARMA) of the inflation rates and found that AIC selects an ARMA (4,3), while SIC selects the smaller ARMA(1,0) model – that is an AR(1).

Table 2: Information Criteria for AR and MA models of the Inflation Rate

Model	AR		MA	
Lags	AIC	SIC	AIC	SIC
1	**1.1863**	**1.2320**	1.1971	**1.2425**
2	1.2108	1.2797	1.1906	1.2588
3	1.2224	1.3148	1.2012	1.2921
4	1.2285	1.3447	1.2076	1.3214
5	1.2039	1.3440	1.2027	1.3392
6	1.2298	1.3941	**1.1713**	1.3305
7	1.2408	1.4297	1.1873	1.3693
8	1.2534	1.4670	1.1991	1.4038
9	1.2583	1.4970	1.2040	1.4314
10	1.2858	1.5499	1.1801	1.4302
11	1.3118	1.6015	1.1895	1.4624
12	1.3382	1.6537	1.2069	1.5025

Table 3: Information Criteria for ARMA models of the Inflation Rate

AIC							
AR/MA	0	1	2	3	4	5	6
0	1.2691	1.1971	1.1906	1.2012	1.2076	1.2027	1.1713
1	1.1863	1.2023	1.1964	1.1780	1.2271	NI	1.1930
2	1.2108	1.1703	1.2121	NI	1.2094	1.1712	1.1869
3	1.2224	1.2160	1.1977	1.1950	1.1887	1.1793	NI
4	1.2285	1.2377	1.1865	**1.1628**	1.1993	1.2217	1.1858
5	1.2039	1.2206	1.2096	1.1832	1.2079	1.1698	NI
6	1.2298	1.2413	1.2291	1.1903	NI	1.1911	1.2203
SIC							
AR/MA	0	1	2	3	4	5	6
0	1.2918	1.2425	1.2588	1.2921	1.3214	1.3392	1.3305
1	**1.2320**	1.2709	1.2879	1.2923	1.3642	NI	1.3759
2	1.2797	1.2623	1.3270	NI	1.3703	1.3551	1.3937
3	1.3148	1.3316	1.3364	1.3567	1.3735	1.3872	NI
4	1.3447	1.3770	1.3491	1.3487	1.4084	1.4539	1.4413
5	1.3440	1.3840	1.3964	1.3934	1.4414	1.4267	NI
6	1.3941	1.4292	1.4404	1.4251	NI	1.4728	1.5255

Note: NI is estimated MA process is non-invertible. These models should be avoided for forecasting purposes.

To compare the relative accuracy of the models, we compared two measures of predictive performance that is root mean square error (RMSE) and mean absolute error (MAE). The RMSE and MAE provide an indicator how good the model performs against the true inflation rate. Model with a smallest RMSE and MAE would be preferred. As can be seen from Table 4, the ARMA (4,3) model reported lowest error and thus perform the best if compare with the other models.[1] Based on the RMSE and MAE, it indicates that all models perform better than the random walk model. From the Figure 3 we can see that monthly data for inflation rate quite volatile, especially in 2008. On the other hand, expected inflation rate based on ARMA (4,3) behaves less volatile, causing the unexpected inflation rate to be quite large, especially in 2008.

Table 4: Root Mean Square Error (RMSE) and Mean Absolute Error (MAE)

Model	RMSE	MAE
Random Walk (Naive)	0.5319	0.3082
AR(1)	0.4308	0.2277
MA(1)	0.4332	0.2249
MA(6)	0.4108	0.2264
ARMA (4,3)	**0.4049**	**0.2234**
Past Inflation + Interest Rate	0.4306	0.2281
Interest Rate	0.4519	0.2247
Exponential Smoothing	0.4531	0.2211

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[1] Expected monthly inflation averaged 0.50 percent (approximately 6 percent a year). Unanticipated inflation's average is zero to the second decimal place, suggesting the measure of expected inflation is unbiased.

Figure 3: Plot of Inflation and Expected Inflation (ARMA (4,3)

Inflation Rate
---- Expected Inflation Rate (ARMA(4,3))
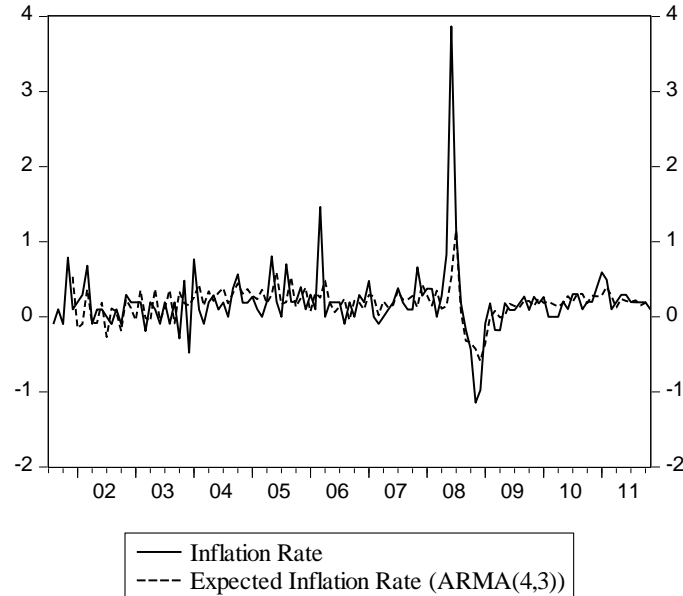
4.2 Estimated Correlation

Gold can be considered as an instrument to hedge against actual, expected and unexpected inflation if it returns moves in the same direction as inflation. Therefore, the gold return has to be positively correlated against the three measurement of inflation. Table 5 shows that although the correlation coefficients are positive, but it is very low and not significantly different from zero, suggesting that there is no correlation between gold returns and the three inflation measures in Malaysia from 2001 until 2011.

Table 5: The Correlation between Gold Return, Inflation Rate, Expected Inflation and Unexpected Inflation

	Gold Return	Inflation	Expected Inflation	Unexpected Inflation
Gold Return	1	-	-	-
Inflation	0.0544 (0.6017)	1	-	-
Expected Inflation	0.0003 (0.0036)	0.4594*** (5.6185)	1	-
Unexpected Inflation	0.0691 (0.7520)	0.8831*** (20.4509)	-0.0109 (-0.1188)	1

Notes: Values in parentheses are t-statistics. Asterisk (***) denotes that a test statistic is significant at the 1% significance level. The unexpected inflation is calculated by subtracting the expected inflation from the actual inflation.

4.3 Estimated Regression

The regression analysis with the OLS estimation between inflation and its components with gold returns are reported Table 6. The coefficient of the β_2 in model 1, model 2 and model 3 as well as

β_3 in model 3 are positive but not significantly difference from zero. The *F*-statistic indicates insignificance and the R^2 for all of the regressions are negligible. Wald statistics test the null hypothesis that β_2 and β_3 for all models each equals to one as well as the null hypothesis that both expected and unexpected inflation equal one was rejected, indicating that gold is not a perfect hedge against inflation, expected inflation an unexpected inflation. According to Ramsey Reset test, there is no functional form misspecified. Chow breakpoint test for model 1 and 3 suggest that the null hypothesis that the parameters are constant across the two sub-samples is not rejected, while we found weak evidence of parameter instability for model 2. To determine whether the model can predict the last twelve observations Chow forecast test is implemented and found that the model can adequately predict the said observation. Therefore, the conclusion from both forms of the test is that there is no evidence of parameter instability with respect to this break date.

Table 6: Estimation Results

Model	$R_{G,t} = \beta_1 + \beta_2\pi_t + e_t$	$R_{G,t} = \beta_1 + \beta_2 E\pi_t + e_t$	$R_{G,t} = \beta_1 + \beta_2 E\pi_t + \beta_3 U\pi_t + e_t$
R^2	0.0030	0.0000	0.0048
F-value	0.3620	1.28E-05	0.2804
β_1 (*t*-statistic)	1.2537*** (2.6945)	1.3813** (2.4257)	1.3642** (2.3892)
β_2 (*t*-statistic)	0.5670 (0.6017)	0.0073 (0.0036)	0.0240 (0.0118)
β_3 (*t*-statistic)	-	-	0.8071 (0.7489)
Wald Statistics (Prob.) $\beta_2 = 1$	0.2112 (0.6467)	0.2376 (0.6269)	0.2288 (0.6333)
Wald Statistics (Prob.) $\beta_3 = 1$	-	-	0.0321 (0.8582)
Wald Statistics (Prob.) $\beta_2 = \beta_3 = 1$	-	-	0.1295 (0.8787)
Ramsey RESET Test (*F*-Statistic)	0.8862 (0.3484)	0.0170 (0.8964)	0.8184 (0.3675)
Chow Breakpoint Test (2008:11)(*F*- statistic)[2]	2.2962 (0.1050)	2.6435* (0.0754)	1.9953 (0.1187)
Chow Forecast Test (2010:11 - 2011:11) (*F*-statistic)	0.9527 (0.5024)	0.9347 (0.5205)	0.9474 (0.5079)

Notes: Asterisk (***), (**) and (*) denote that a test statistic is significant at the 1%, 5% and 10% significance level, respectively.

5.0 Conclusion

This study empirically investigates whether domestic gold can serve as a hedge against inflation, expected inflation and unexpected inflation in Malaysia using monthly data from July 2001 to November 2011. Although they are positively correlated and positive beta in regression equation with inflation, expected inflation and unexpected inflation, we found no significant results.

Therefore, we can conclude that although in many studies gold listed in New York and London may earn high enough returns to overcome the erosion in purchasing power caused by inflation, domestic gold price does not allow Malaysian investors to hedge against inflation since there is no systematic relationship between the said variables over shorter, more realistic time frames over which the typical investor is more likely to hold the asset. This indicated that gold as a hedge against inflation is not justified in Malaysia at least in the short-run. Although its value increases in times of crisis and can be used as a hoarding vehicle, gold is not a store of value in Malaysia. In addition, even if an investor has perfect foresight and knows that future inflation will be substantially different than market expectations, investor could not set up a speculation

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[2] Since we do not know the exact break date, Chow test was conducted repeatedly with different break dates. The result reported in the table is the break date that gives the highest *F*-statistic.

strategy in the gold market that would profit from that information. Therefore, holding a well-diversified portfolio such as stock, bond or property can help to provide reasonable returns and some protection from inflation.

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The Composition of Malaysian Government Expenditure and Economic Growth

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Abstract

The purpose of this study is to investigate the effect of Malaysian government expenditure toward different sectors on growth. This study covers six sectors of government expenditure which are the spending on health, security, education and training, trade and industry, transport, general administration. Johansen co-integration test and Granger Causality test will be used in this study to find the long run relationship between variables, from year 1970 to 2010. Result shows that government expenditure on health, transport, trade and industry are positively and significantly contribute to economic growth while spending on education and training, security, general administration are negatively related to growth in Malaysia. Besides that, gross domestic product per capita is Granger Cause every composition of government expenditure. This study could contribute in a way by searching the actual effect of government spending, hence policy makers can have a better planning on how the money should be used, with the main objective is to ensure sustainable economic growth.

Keywords: Government expenditure, economic growth

1.0 Introduction

The relationship between government expenditure and economic growth has been an important topic to be studied in economic field. However, there is no much consensus on the effect of government expenditure on different sectors. The Solow model (1956) says there is no long-run relationship between government expenditure and economic growth because in that model, long-run growth rate is determined by exogenous effect, rather than endogenously. On the other hand, Barro (1990) categorised government expenditure into productive government expenditure and non-productive government expenditure, he argues that productive government expenditure such as education and infrastructure should give positives effect on economic growth while non-productive government expenditure such as consumption service should give negatives effect on economic growth.

However, there is little contradiction about the government expenditure whether it should be productive or non-productive (Barro and Sala-i-Martin, 1995, Devarajan, Swaroop, and Zou, 1996). Some studies argue that increase in the productive public expenditures must not necessary increase the output of an economy; in fact it depends on the efficiency of the money spending. If money that spends on productive government expenditure is not used efficiently, it could become "non-productive". In contrast with other studies, this study does not categorise government expenditure into productive and non-productive. Instead, we will look at the effect of Malaysian

government expenditure on different sector: security, education and training, health, agriculture and rural development, trade and industry, transport, and general administration.

Economic growth is an important ingredient for sustainable development. Economic growth ensures a better standard of living of the citizen by the improvement of education, infrastructure, health, housing, transport, communication and others. Most of these sectors are for economic welfare but not profit headed, therefore, government plays a role in developing such sectors. Indeed, development in education is crucial to provide high skill labour in the particular country. Spending on transport bring benefit to people by saving their time when there are about to move from a place to another, which is very important to smoothen the economy activities. All of these sectors are the important factors to enhance economic growth by addressing the countrys foremost needs, thus bring us to a sustainable development.

1.1 Positive Impact of Government Expenditure to Economic Growth

Government expenditure can affect the employment, productivity, mortal rates, price level, consumption, investment, exchange rate, interest rate in a country. There are several theories that support positive relationship between government expenditure and economic growth. For instance, government with good law enforcement, better bureaucracy system, and higher quality of governance tends to have better economic growth. In contrast, economy without law enforcement is unlikely to receive high amount of investment. Moreover, if a country is without government intervention, growth of income per capita in that country will be unbalance (Imen and Kuehnel, 2009).

The other theory that supports positive impact of government expenditure to economic growth is Keynesian multiplier effect. Economist of the Keynesian persuasion believes that when economy is facing a recession, government should increase their expenditure, the money that government spent will be rotated in the economy, thus give the multiplier effect. For example, government spends RM1 millions for road facilities, that RM1 millions could become the income for contractor, then contractor might use RM900 thousands to hire workers, the money become salaries of workers; workers will spend money to purchase goods and services, and so on. Conventional wisdom, then, the more money the government spent in the economy, the more it does to boost the economy. Beetsma, Giuliodori and Klaassen (2008) finds that every 1% increase in government spending; it produces a 1.2% impact in GDP and a 1.6% peak increase.

Besides that, government spending on health, education and training increase the quality of human capital in that country. Studies show that government expenditure increase life expectancy and lower the child mortality rates (Gupta, Clements, Tiongson, 1998; Musgrove, 1999; Rajkuar and Swaroop, 2008). Such spending helps a country to have better supply of workers, and also increases the supply of workers, thus it gives a positive impact to economic growth. While a better quality of education increases labour skills, competitiveness of the labour, also improves the productivity of labour, this also turns of a positive impact that stimulate economic growth.

1.2 Negative Impact of Government Expenditure to Economic Growth

There are many ways that government might affect economic growth negatively. Mitchell (2005) suggests eight reasons that government expenditure might slow economic growth, which are the

extraction cost, the displacement cost, the negative multiplier cost, the behavioural subsidy cost, the behavioural penalty cost, the market distortion cost, the inefficiency cost, and the stagnation cost.

Government welfare programmes such as unemployment scheme, insurances benefits, sickness benefits, and medical benefits actually decrease the willingness to work of private sector, because some people might feel that they still get some money that can afford their daily expanses even they do not work. Hence, a question rose- what is the reason for them to work? Besides that, study shows that government expenditure could give negative impact to economic growth when there is corruption in that economy, because it decreases the efficiency of money that is spent.

Many studies argue that government expenditure will slow down economic growth because the crowd-out effect of government expenditure. This is because high proportion of government financial is financed by taxes, when government wants to increase their expenditure; they have to increase tax rates, which decrease the disposable income. Increase in government spending cause private spending to decrease in most of the cases (Ramey, 2012).

1.3 Malaysian Government Expenditure

Malaysian government spends billions of Ringgit to develop and maintain the nation development; with a higher proportion goes to operating expenditure. In 1970s, government invests most of the money in security, education and training. For example, 23.09% (RM 667 millions) of total government expenditure spend on security while 18.04% (RM 521 millions) spend on education and training in 1970. Particularly in the year of 2010 Malaysian government allocated most proportion of government expenditure to education and training sector. In 2010, government allocate RM 49867 million (24.39%) for education and training sector. On the other hand, security, health, trade and industry, transport, and general administration are the other important sectors that receive more budgets from government.

In 2010, the percentage of Malaysian government debt to GDP has exceeded 50%, which is 55.4% of total GDP. Although expansionary fiscal policy is one of the way for government to ensure economic growth, but the sustainability of growth will be a question. If the government debt increases from year to year, there will be very difficult for government to execute expansionary fiscal policy anymore; in contrast, they might need to increase taxes to cover their debt.

Therefore, it is important for government or policy maker to be very clear about which is the correct direction that they should pump money into it. With that, government can decrease the amount of borrowing and also the amount of debt. Thus, both expansionary fiscal policy and also economic growth can be sustainable.

Even though there are a lot of studies which have been done with regard to the relationship between government expenditure and economic growth, however there is no consensus on it. Moreover, result from literature that concern about the government expenditure in Malaysia is unclear or insignificant. Question arising include whether the composition of government spending in Malaysia do helps economic growth? Answer to this question is important for a

better policy making that leads to a higher growth/economic welfare. Having documented these concerns, Malaysian government may then take the appropriate action for better allocation of public financial resources.

Figure 1: Malaysian Government Budget 1999-2011 (Percentage of GDP)
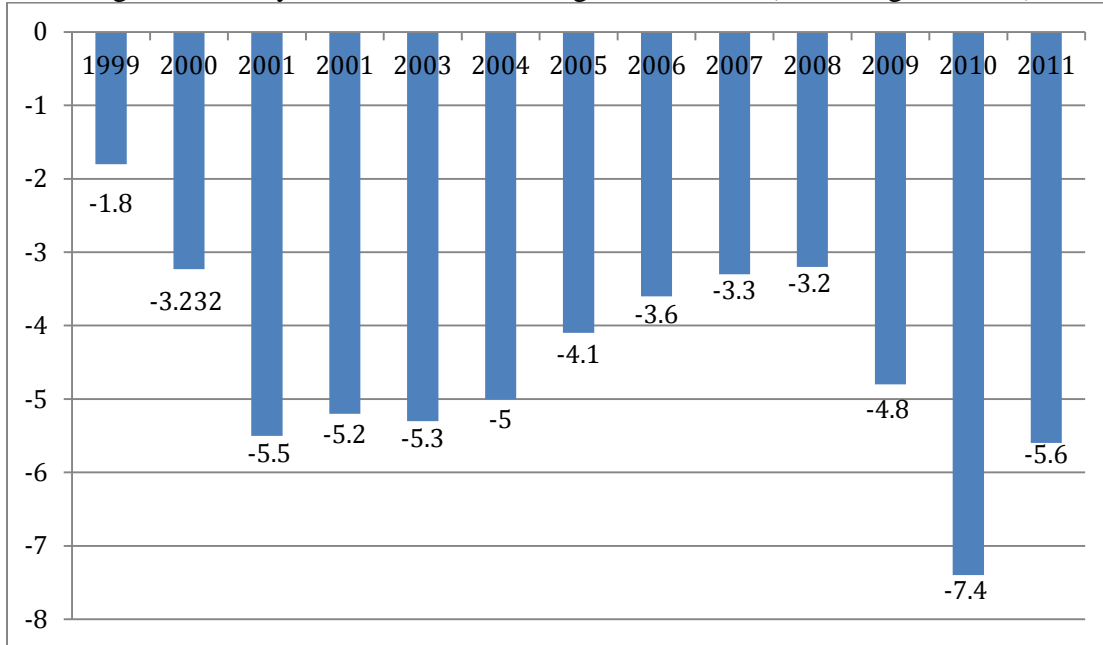
Source: www.tradingeconomics.com| Ministry of Finance, Government of Malaysia

The main objective in this study is to investigate the effect of government expenditure on different sectors, on economic growth. The tests that will be used in this study are Johansen Co-integration test and Granger Causality test, by using time series data, from 1970 to 2010. The remainder of the paper is organized as follows: The next section discuss the review of literature. Section 3 describes the Methodology in this study. Section 4 discuss about the empirical findings, and finally the conclusion and policy implication in the last section.

2.0 Literature Review

Effect of government expenditure is widely studied in all over the world. For a brief overview, Solow (1956) has discuss that government expenditure does not encourage growth, Solow argues that in the long-run, economic growth can only affected by exogenous variable, while government does not really play a role in that. Consequently, most of the study during that period focused on the effects of public spending on the steady-state. Most of the conclusions show that effect of government expenditure will be neutralized in the long-run.

Until 1986, Romer started to bring some argument on that with the discussion of endogenous growth model. After that, more and more studies were being approached in order to shed light the effect of endogenous variable, such as government expenditure. Aschauer (1989) shows a positive relationship between public spending and economic growth. The reliability of neoclassical theory once again being doubted when Barro (1990) derives a model with productive

and unproductive public spending. His model argues that some of the government expenditure is productive and will contribute to economic growth. Hence, the consensus on the effect of government expenditure still does not exist, yet.

2.1 Effect of Government Expenditure on Economic Growth

Result of the relationship between government expenditure and economic growth are one of the most controversial results of academic studies. Devarajan, Swaroop and Zou (1996) say that increase in the share of current government expenditure has positive and significant growth effects. The rational of government to provide goods and services is based on the market failure in provide public good, internalize externalities, and cover costs when there are significant economies of scale. That study shows a positive and statistically significant relationship between real GDP growth per-capita and the ratio of current total expenditure. A unit increase in the ratio increases the real GDP per capita by 0.05 percent. However, relation between capital component of public expenditure (mainly infrastructure) and per-capita growth is negative and significant. Besides that, the level effect of total government expenditure on per-capita growth is positive but statistically insignificant. They argue that in order to increase the level of government spending, higher distortionary taxes are needed, and the steady-state of economy will only growth if the government spending exceeds the deadweight loss associated with the increase of taxes.

Barro (1990) conduct a study by using a cross country regression from 1970 to 1985. He divides government spending into two categories, which is productive spending and non-productive spending, his study shows that government spending on consumption service (non-productive) has a negative relationship with growth. On the other hand, government spending on productive services, such as infrastructure, has a positive relationship with economy growth. Barro suggest that productive government expenditure in GDP will affect the growth and saving rates in the economy, productive government expenditure include spending that helps property rights enforcement and also activities that affect production function directly. This is because theory suggests that when property rights enforcement is good in an economy, people are more willing to invest. In contrast, increase in unproductive government expenditure lowers the growth and saving rates because it has no direct effect on private sector, moreover, more taxes are needed to fulfil the expenditure. Since the income tax rate increased, peoples has less money to invest, and their returns relatively become smaller, hence, they have less incentive to invest, economic growth become slower.

From a research by Mitchell (2005), there are several reasons for the negative relationship between economic growth and the size of government. First, the extraction cost, government needs take money from someone before they can spend, when government size is bigger, they need more finance resources from people, which address to high taxes. Second, the displacement cost, within an economy, every single dollar that the government spends means that there is one dollar less in the private productive sector in the economy. Therefore, high government expenditure displaces private sector activities.

Third, the negative multiplier cost, some of the government budget are used to finance activities that negatively related to economic growth. For instance, many regulatory agencies impose large costs on the economys productive sector even they actually only have comparatively small

budget. Fourth, the behavioural subsidy cost, government expenditure helps to increasing welfare in an economy; however, welfare encourages people to choose leisure. Mitchell gives an example that unemployment insurance programs provide an incentive to remain unemployed.

Fifth, the behavioural penalty cost, some of the government programs that subsidize retirement, education, and housing often discourage people to save money. As savings is an important variable that enhances economic growth, such government expenditure might give a negative impact on growth. Sixth, the market distortion cost, government spending on some program creates the failure of efficient allocation in resources, such as spending on health care and education.

Seventh, the inefficiency cost, government expenditure is a less effective way to deliver services. Even though government often provides many goods and services such as airports, health care, education, and postal operations directly, Mitchell argues that private sector could be able to provide these important goods and services at higher quality and lower costs. Finally, the stagnation cost, huge competitive and desire to increase income and wealth drives individuals in private sector often search for new options or opportunities. However, government programs inhibits innovation, there is less desire for peoples to change when they can get something free. At last, Mitchell concludes that government spending could give negative impact on economic growth at some point; either because of government sizes is too large or because of resources is misallocated. When such situation occurs, the cost of government spending exceeds the benefit, it is reasonable for government to reduce their expenses.

Wu, Tang and Lin (2010) prove that government expenditure and economic growth are Granger cause each other, which is support by the Wagners law. Regardless the countries are categorized by income levels, degrees of corruption, the results still hold except for the low income countries. Wu, Tang and Lin (2010) study a rich panel data which includes 182 countries from 1950 to 2004 and find that their result strongly supports Wagners law and the government do plays a role in economic growth. Government expenditure leads to economic growth regardless the measurement of government size and economic growth. They find a bi-directional causality relationship between government expenditure and economic growth, when they categorize those countries according to income level, low income countries is an exception for the results. This means that government expenditure in low income countries might not stimulate economic growth, but gives negative effect to it.

Moreover, the causal relation of economic growth to government size in low income countries actually depends on the measurement of economic growth. When government spending is measured in aggregate or per capita levels, data supports the hypothesis that economic growth leads to a larger government, but not so if government expenditure is measured by GDP shares. Wu, Tang and Lin argue that when per capita income in a country is as low as $935, it is less feasible for government to take limited economy resources away from the private sector. Therefore, although government of low income countries may grow along with the economy, but its GDP share tends to increase insignificantly.

Dogan and Tang (2006) study the causal relationship between national income and government expenditures for Indonesia, Malaysia, the Philippines, Singapore, and Thailand. They use annual data from 1960 to 2002, and found no evidence for the causality between government

expenditure and economic growth, except for the Philippines. By using Johansen Co-integration Test, they detect a long run relationship between real capita national income and real per capita government expenditure in all sample countries except for Indonesia. However, by using Granger Causality Test via Error Correction Model, that study shows that there is no causal relationship, one-way or two-way between the variable, except for the case of Philippines. The explained their result might be due to the problem of data and methodological problems.

2.2 Composition of Government Expenditure

Several studies categorize government expenditure into productive and non-productive expenditure. Kneller, Bleaney and Gemmell (1999) categorize government taxes and expenditure in a detail way, based from the Barro model (1990), they study a panel data from 22 OECD countries, covered the period from 1970 to 1995. Basically they divided government taxes, revenue and expenditure into distortionary taxation, non-distortionary taxation, other revenues, productive expenditures, unproductive expenditures and other expenditures.

Distortionary taxation includes taxation on income and profit, social security contributions, taxation on payroll and manpower, taxation on property. Non-distortionary taxation includes taxation on domestic goods and services while other revenues include taxation on international trade, non-tax revenues and other tax revenues. General public services expenditure, defence expenditure, educational expenditure, housing expenditure, transport and communication expenditure is categorized as productive expenditure. Social security and welfare expenditure, expenditure on recreation, expenditure on economic services is in the category of unproductive expenditures. Finally, other expenditures are unclassified.

They analyse the data with pooled OLS method, with fixed and random effects models. Results show that distortionary taxation reduces economic growth, while non-distortionary taxation does not reduce economic growth. Productive government expenditure stimulates economic growth, while non-productive government expenditure does not enhance economic growth.

Aschauer (1989) says that public investment in non-military structures such as airports, mass transit, highways, streets, water systems and sewers has a positive relationship to economic growth by productivity improvement. The empirical study focuses on the period 1949 to 1985, Aschauer concludes that government budget deficits is important to determine the level of real interest rates, economys dynamic performance and private investment decisions.

Glomm and Ravikumar (1997) review some studies on endogenous growth models and use a simple overlapping generation model to examine the role of taxes and spending. By using a Cobb Douglas production function, they suggest that economic output is depends on public capital, private capital and labour. Results shows that public expenditure on infrastructure, education and health are productive expenditure where spending on infrastructure enter as inputs into the production function for final output while spending on education enter as inputs in investment technologies. However, the effect might varies among countries, for example, education is only stimulate growth by 0.8% in Mexico between 1950 and 1964 but 16.6% in Argentina between 1950 to 1962, other factors such as distribution of years of schooling, quality of education, type of education are also important in determine the actual effect of spending on education.

Alexiou (2009) says that governments spending on capital formation, development assistance, private investment and trade-openness have positive and significant effect on economic growth. That study use two different panel data econometric approach to analyse data from seven countries in the South East Europe region spanning from 1995 to 2005. Results also show that population growth has positive effect on growth but it is statistically insignificant. Alexiou suggest that policy makers should create an appropriate environment conductive to nurturing government expenditure on private investment, trade and capital formation, based on the results.

Using data from 91 developed and developing countries covering 1990, 1997 and 2003, Rajkumar and Swaroop (2008) found that government expenditure on health has a stronger negative impact on child mortality, if the country has good governance. If the level of corruption decreases or the quality of bureaucracy increases, government expenditure on health will become more effective in lowering child mortality. Of course, if a country suffering high corruption problem or have a very ineffective bureaucracy, government expenditure on health might become a waste of resources.

Similar result also obtained for the case of education, increase in government expenditure on education tends be more effective if the country is with good governance. Rajkumar and Swaroop conclude that simply increase the spending on health or education is unlikely to give positive impact of a country has poor governance. Therefore, level of governance becomes an important factor that determines the effect of government expenditure.

Musgrove (1999) says that there are at least nine different criteria to justify government expenditure on health care policies. In his study about public spending on health care, Musgrove divided the nine criteria into 3 groups, 4 of them as being primarily about equity, 4 of them as being about efficiency, and the last one is neither of the 2 group. Government should spend their money on public and semi-public goods when the goods are cost-effective, on the same time, government should make sure the demand of those goods is inadequate. With this, government expenditure on health can give a positive effect to economy. This study fill in the gap of literature by searching the effect of Malaysian government expenditure, which is not been found yet, and also contribute in searching the result for the controversy effect of public spending.

3.0 Data and Methodology

3.1 Model

In this study, we will use a time series multivariate regression model to examine the effect of government expenditure on growth. Our dependent variable is Gross Domestic Product per capita , and independent variables are government expenditure on different sectors include security, education and training, health, agriculture and rural development, trade and industry, transport and general administration. Our model derives from a simple endogenous growth model; this model is widely used in literatures that study economic growth (Mehrara, Firouzjaee, Gholami, 2012, Ramey, 2012) which is:

$$Y = C + I + G \tag{1}$$

where Y denotes the output of an economy, C denotes private consumption, I denotes investment and G denotes government consumption. Since the purpose of our study is to investigate the effect of government expenditure on different sectors, in order to avoid multi co-linearity problem in our model, we treat private consumption and investment as other variables that might affect economic growth. On the other hand, we expand government expenditure into 7 sectors:

$$GDPPC_t = \beta_0 + \beta_1 SECURITY_t + \beta_2 EDU_t + \beta_3 HEALTH_t + \beta_4 AGRI_t + \beta_5 TRADE_t + \beta_6 TRANSPORT_t + \beta_7 ADMIN_t + \varepsilon_t \tag{2}$$

where $GDPPC_t$ is the gross domestic product per capita over different year, t, $SECURITY_t$, EDU_t, $HEALTH_t$, $AGRI_t$, $TRADE_t$, $TRANSPORT_t$, $ADMIN_t$, each denote government consumption on security, education and training, agriculture and rural development, trade and industry, transport, and general administration, over different year, t. ε_t denotes other variables that might affect gross domestic product per capita but not included in this model. This study uses Johansen co-integration test and Granger causality test to examine the effect of government expenditure on economic growth.

3.2 Variable of Interest

Security

Spending on security is important for the safety and it is the maintenance of peace. It is divided into two parts, which are the defence and internal security. Spending on this defence include the expansion on armed forces, which include army, navy and air force, purchase new equipment and weapons, additional training facilities. On the other hand, examples for spending on internal security is on programmes include police, anti-drugs, civil defence, RELA, and other organisation that played an important role in maintaining law and order. Knellar, Bleaney and Gemmell (1999) categorised defence expenditure as productive expenditure and found that it is positively related to economic growth. This result also support by some other studies (Pieroni, 2009; Loto, 2011,).

However, Pieroni (2009) argues that military expenditure has positive relationship with economic growth if the expenditure is not a high burden for government. Since Malaysian government expenditure on security is about 15% or less from total government expenditure, it is not considered as a high burden, therefore security expenditure is expected to be positive sign rather than negative in this study.

Education and Training

Spending on education and training is the largest component of total government expenditure. Education expenditure covers primary education, secondary education, higher education, teacher education and also other education and training programmes. Government spends a lot of money on education is to expand the development of human resources in the country. Evans and Karras (1994) suggest that government spending on education should be positively related to economic growth as it is a kind of investment in human capital. However there are other studies that found public investment on education does not have significant relationship with economic growth (Easterly and Rebelo, 1993; Devarajan, Swaroop and Zou, 1996).

Besides that, effect of public spending on education is also depends on other factors, such as the quality of governance, year of schooling, quality of education and type of education (Glomm and Ravikumar 1997; Rajkumar and Swaroop, 2008). Hence, if education and training expenditure show positive sign, it indicates the quality of both governance and educations are in good condition and vice versa.

Health

Spending on health include salary of doctors and nurses, hospitals facilities, training programmes and others. It is suggested that government expenditure should be positively related with economic growth as it improve the quality of health condition. Besides that, there are a vast number of studies that show a positive relationship between public spending on health (Belgrave and Craigwell, 1995; Glomm and Ravikumar, 1997; Gupta, Clements and Tiongson, 1998; Rajkumar and Swaroop, 2008; Sennoga and Matovu, 2010; Babalola and Aminu, 2011; Loto, 2011, Mehrara, Firouzjaee and Gholami, 2012). Therefore, expenditure on health is strongly believed to have a positive sign.

Agriculture and Rural Development

Spending on agriculture development include the development on rubber, palm oil, cocoa, fisheries and other agriculture industry. Agriculture is one of the most important sectors for Malaysia economic as it not only provide raw material for other sector, but also food production. Studies show that expenditure found to be productive expenditure and therefroe it should stimulate growth (Belgrave and Craigwell, 1995; Sennoga and Matovu 2010). However, Malaysia has pass through structural change from agriculture to manufacture, and currently service sector generates highest income for Malaysia, therefore the effect of agriculture spending is uncertain.

Transport

Government expenditures on transport covers road, rail, water and air transport. Most of the studies suggest that expenditure on transport improve the productivity of private sector and also improve economic growth (Aschauer, 1989; Barro, 1990; Easterly and Rebelo, 1993). Although the issue about the efficiency of the expenditure remained unsolved, the variable is still to be expected remained as positive based on the previous studies.

Trade and Industry

On the other hand, expenditure on trade and industry are majorly focused on the development of manufacturing sector, small and medium enterprises. Since the major export and import goods of Malaysia is manufacturing product, it is reasonable to predict that government expenditure on trade and industry will give positive effect to economic growth.

General Administration

Lastly, expenditure on general administration which covers mainly for additional office accommodation and public buildings also require quite a big portion of government expenditure.

More specifically, large usage of general administration is more on government buildings or the maintenance of it. It can be possible that expenditure on law and legal activities encourage growth because it can protect property rights. However the relation might also be negative because it does not have direct impact towards the economic activities.

3.3 Data Description

Data that will be used in this study is time series data from 1980 to 2010. The time series data is obtained from two different sources; GDP per capita is obtained from Department of Statistics Malaysia, while compositions of government expenditure are obtained from Ministry of Finance Malaysia.

4.0 Result and Discussion

We will start to test the data by identifying the stationary of our data; Augmented Dickey-Fuller unit root test approach will be used for this purpose. Eight variables include dependent and independent variable will be test with the same null hypothesis, which is a variable has unit root. Table 1 reports the results for Augmented Dickey-Fuller unit root test.

By using 5% significant level, variable GDPPC, SECURITY, EDU, HEALTH, TRADE, TRANSPORT and ADMIN are all stationary at first difference, while AGRI is stationary at second difference. To perform Johansen co-integration test, all variables needs to be stationary at same level, in this case, AGRI have to be omitted, thus left 6 independent variables.

Table 1: Augmented Dickey-Fuller unit root test result

	Level		First Difference	
Variable	Intercept	Trend and Intercept	Intercept	Trend and Intercept
GDPPC	4.301168	1.540722	-6.009920***	-4.184531**
SECURITY	1.520292	-0.872583	-4.345853***	-4.585782***
EDU	4.945740	1.994616	-0.062472	-7.027042***
HEALTH	3.895705	1.188451	-4.472441***	-5.857380***
AGRI	0.544459	-3.344858	-2.116488	-2.366862
TRADE	0.390338	-1.706526	-6.716925***	-6.989814***
TRANSPORT	0.932648	-1.299530	-5.065884***	-5.303118***
ADMIN	3.525925	0.715478	-0.562714	-3.731442**

Note: *** denotes significant at the 1% level, ** at the 5% level.

Since gross domestic product per capita and also government expenditure on 6 different sectors are all stationary at first difference, this mean that a long-run relationship existed among them. To study the relationship between our variables, we proceed to Johansen co-integration test to determine the presence of any co-integration or long run relationship between the variables.

Table 2: Johansen co-integration test results based on trace statistic

Hypothesized No. of CE(s)	Eigen-value	Trace Statistic	0.05 Critical Value	Probability
None *	0.993860	538.2676	134.6780	0.0001
At most 1 *	0.966845	349.8319	103.8473	0.0000
At most 2 *	0.938896	223.7893	76.97277	0.0000
At most 3 *	0.754095	120.3679	54.07904	0.0000
At most 4 *	0.635154	68.46385	35.19275	0.0000
At most 5 *	0.473418	31.15746	20.26184	0.0011
At most 6	0.181879	7.427568	9.164546	0.1056

Trace test indicates 6 co-integrating equation(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level

The co-integration results are sensitive to lag length. Therefore, before running the co-to the next stage of analysis, which is Johansen co-integration test, we run the VAR model first in order to determine the optimal lag length, based on the minimum SC and AIC value. In this case, the optimal lag length for our model is lag 3. Table 2 and Table 3 reports the result of Johansen co-integration test based on trace and maximum Eigen-value statistic.

Table 3: Johansen co-integration test results based on maximum Eigen-value statistic

Hypothesized No. of CE(s)	Eigen-value	Max-Eigen Statistic	0.05 Critical Value	Probability
None *	0.993860	188.4357	47.07897	0.0000
At most 1 *	0.966845	126.0425	40.95680	0.0000
At most 2 *	0.938896	103.4214	34.80587	0.0000
At most 3 *	0.754095	51.90403	28.58808	0.0000
At most 4 *	0.635154	37.30639	22.29962	0.0002
At most 5 *	0.473418	23.72989	15.89210	0.0024
At most 6	0.181879	7.427568	9.164546	0.1056

Max Eigen-value test indicates 6 co-integrating equation(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level

Both tests give the same result which indicates there are 6 co-integrating equation in our model based on 5% significant level. Besides that, our result is very significant, even at 0.01 levels. After determine the co-integration relationship between variables in our model, we use the normalized co-integrating coefficients to check whether there is a positive or negative relationship between public spending on different sector with economic growth.

From the Table 4 the linear form of GDPPC model can be written as:
$$GDPPC = 1636.96 - 1.17EDU + 0.70HEALTH - 0.85SECURITY + 0.88TRADE + 6.21TRANSPORT - 0.56ADMIN \tag{3}$$

Government expenditure on health, trade and industry, transport is positively related with gross domestic product per capita while spending on education and training, security, general administration have negative effect on growth, in Malaysia. The positive relation of health, trade and industry, transport are consistent which most of the findings (Aschauer, 1989; Barro, 1990;

Easterly and Rebelo, 1993; Glomm and Ravikumar, 1997; Rajkumar and Swaroop, 2008; Babalola and Aminu, 2011; Loto, 2011, Mehrara, Firouzjaee and Gholami, 2012).

Table 4: Normalized Co-integrating Vector

GDPPC	C	EDU	HEALTH	SECURITY	TRADE	TRANSPORT	ADMIN
Normalized co-integrating coefficients (standard error in parentheses)							
1.00	-1636.962	1.172147	-0.704001	0.852142	-0.878664	6.212247	0.559578
Standard deviation	(53.373)	(0.0277)	(0.0656)	(0.0453)	(0.0336)	(0.1854)	(0.0939)

Expenditure on health is able to improve the health condition and quality of human capital; hence the quality of labour can be improved, even when compared by foreign workers. Spending on trade and industry are crucial for Malaysia because manufacturing sector is one of the most important sectors, export of electronic and electrical product is the major contributor to total export of Malaysia. Expenditure on trade and industry helps Malaysia to stay competitive in international market. Expenditure on transport improves the convenience to travel from one place to another, it is suggested by many studies that expenditure on transport can improve the productivity on private sector and increase economic activities.

The negative relation on government expenditure on education, security and general administration is partially explained by some literature. Firstly, Musgrave (1997) argued that government expenditure on productive sector might not necessary contribute to economic growth, what purpose is whether government spend the money efficiently. If the money do not used correctly, "productive" sectors might also give negative effect on growth. Besides that, corruption is the other problem that might influence the effect of government expenditure, because corruption can easily affect the efficiency of money spent by government. Devarajan, Swaroop and Zou (1996) argues that, effect of government spending

Table 6: Pair wise Granger Causality Tests (10% significant levels)

Null hypothesis	F-Statistic	Prob.	Conclusion
GDPPC does not Granger Cause ADMIN	15.9216	0.0000	Causality exist
GDPPC does not Granger Cause EDU	12.0936	0.0001	Causality exist
GDPPC does not Granger Cause HEALTH	3.76491	0.0333	Causality exist
GDPPC does not Granger Cause SECURITY	3.28923	0.0494	Causality exist
GDPPC does not Granger Cause TRADE	15.4874	0.0000	Causality exist
GDPPC does not Granger Cause TRANSPORT	3.21347	0.0527	Causality exist

are not only depends on the physical productivity but also on the shares of government expenditure allocated to different sector.

This finding also shows that GDP per capita is Granger Cause all the independent variable, while independent variable did not Granger Cause GDP per capita. This result indicates that pervious

growth on GDP per capita will affect government consumption on different sector. Besides that, most of the independent variables are also Granger Cause each other, which indicates the previous government spending on certain sector might affect the current spending on the other sector.

5.0 Conclusion

This study examines the long-run relationship between Malaysian government expenditure on different sector with economic growth. Using Johansen co-integration test and Granger Causality test, this study found that there are 6 co-integrating equation in our model, and the result is highly significant. Our result is contrast with study of Dogan and Tang (2006), who found no evidence for the causality between government expenditure and economic growth in Malaysia because of methodological and data problem. This study shows a better result by using different type of methodology and longer period of data. Besides that, this study shows gross domestic product per capita granger cause government expenditure on every sector. In contrast with Dogan and Tang (2006), that study shows that there is no causal relationship, one-way or two-way between the variable in Malaysia.

Malaysian government expenditure on transport, trade and industry, health are able to increase gross domestic product per capita where spending on transport shows greatest effect among them. This result is supported and can be explained by most of the existing studies. Meanwhile, Malaysian government expenditure on education, security and general administration have negative effect on growth. This result contribute to Malaysian economic by determine the actual effect of Malaysian government spending on different sector. Thus, policy maker could be able to take action for better allocation of public finance resources.

Besides that, the effect of Malaysian government expenditure might also be affected by several reasons such as quality of governance (Cooray, 2009) and efficiency (Devarajan, Swaroop, and Zou, 1996). Good governance, for example, by good bureaucracy system and better law enforcement might be the pre-condition for economic growth for both developed and developing countries. Every ringgit that Malaysian government spends means there is a ringgit less in private sector activities; therefore the efficiency use of government finance is also important. If corruption is remained high in Malaysia, public spending will not contribute to economic growth.

It cannot be denied that government expenditure on every sector that we discussed is needed. Some government spending might not be able to generate revenue or contribute to economic growth, but government spending such as on education and health is needed to ensure the welfare in Malaysia. However, by understanding the actual effect on every composition of government expenditure, they can reduce the spending on sectors which give negative effect on growth, on the other hand, increase the spending on sectors which give positive effect on growth. Besides that, government needs to ensure the money that pumped in to every sector is used efficiently. With this, Malaysian governments debt can be reduced and provide sustainable economic growth.

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Human Capital and Economic Growth: Does Gender Matter?

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Abstract

This study is set out to investigate the linkages between Economic Growth and Human Capital by Gender and Level of Education. The panel data was averaged at 7 points based on a sample of 62 countries spanning over the years 1970 to 1999. The Dynamic Panel System Generalized Method of Moments (SGMM) was employed on an Autoregressive Distributed Lag Model (ARDL) to analyze the effect of gender on the economic growth, which is the best method given the short time period and large cross sectional characteristic. Control variables such as gross capital formation, export volume, population and year effects were also decoded in order to obtain a more accurate and robust result trend. The data relating to economic variables of interest was extracted from the World Development Index 2007 and the data relating to human capital was taken from the study done by Barro and Lee (2000). The indicators for human capital include number of secondary school graduates and high school graduates according to gender. Findings reveal that females with high school as their highest education level, significantly contributed towards the economic growth, contributing approximately 3.35%. However the results also point out that the male secondary school graduates contributed to the countries' development more significantly as compared to the female, whereby the formers' contribution towards the economic development is approximately 5%, ceteris paribus. These results further strengthens the ideology that human capital is indeed an important component, at different levels, and it is this vital component which drives economic growth. An adequate and efficient form of funding or investment is required in order to improve the education industry, which will consequently benefit every other industry thus strengthening the economy.

Keywords: Human capital, economic growth, dynamic panel system GMM estimator

1.0 Introduction

The increasing effort towards achieving a high income nation has brought the attention to center around education. By increasing the focus on knowledge input, countries will be able to transform their input-driven growth into a productivity-driven growth (Mahathir, 2001). Due to poverty and gender discrimination in some countries, formal education is not easily accessible to all, although these groups may still contribute towards the economic development. It is a strong belief that appropriate education without gender discrimination would help in a country's economic growth, and it is this belief that has motivated the conduct of this study.

Evident as it is, education improves the quality of one's life, apart from raising the individual's productivity by promoting creativity leading to inventions and revolutions. Additionally, education holds a catalytic factor in economical progress and in improving a nation's income distribution. Education, in a nutshell, is one of the fundamental determinant and the driving force towards a sustainable economic growth. Ascending into a high income economy, it is important to put continuous effort in improving the education outcome in order to ensure an ever improving economic landscape. The core of every educational level needs to be identified, strengthened and applied with a holistic approach, even more so now with 'knowledge-based economy' being the central focus.

The well known term in economic development, human capital, is essentially the value-added skill presumably attained by one. It can be gauged in many ways, and education is none the less an indicator. There are many studies done with the aim to investigate the relationship between human capital and economic growth. (Petrakis and Stamakis (2002); Krueger and Lindahl (2001); Mankiw et al. (1992); Barro (1993); Bertocchi and Spagat (1998)).

The human capital indicators vary from one study to another. Early studies by Barro (1991), Levine and Renelt (1992) and Levine and Zervos (1993) use the enrollment rate in a particular level of education as an indicator for human capital. The measure resulting from such an indicator was said to be rather vague as the enrolment rates do not justify the completion or the acquisition of relevant knowledge and skill. Hanushek and Kimko (2000) and Lerner (1982) used the test scores as a measure of human capital which concluded that the test scores do have an impact on economic growth. Although there are no reviews that criticize the use of test scores, this method of measuring is still arguable. Such findings of the different indicators and measures used, has motivated the focus of using the number of graduates as an indicator for human capital, as it may provide better information on the direct impact towards development.

Touching on the level of education, it is an indefinite factor since different reviews have found that different levels of education effect different level of influences. Some early researchers, like Barro (1991), have found that the secondary education has the largest effect on economic growth among other variables. Some studies have proven that tertiary level education has a stronger impact on growth (Stephan 1997; Chatterji 1998; Kwabena, et al., 2006). A later research done by Tsen (2006) investigates the causality between human capital accumulation and economic Growth in China between 1952 and 1999. In this research, the human capital data was compiled using the number of school graduates. The study provides evidence that throughout 1952 to 1999, there was a bidirectional Granger causal relationship between human capital accumulation and economic growth. However, the human capital in this study is not split by level of education as done by Tsai (2010). Tsai (2010) analyzed the various components of human capital, namely the effect of Secondary education and Tertiary education, on economic growth by employing the Ordinary Least Squares (OLS) and System-Generalized Method of Moments (SGMM). The result shows evidence that secondary education is highly important to the economic growth especially in developing countries. However, the influence of higher school education, which is meant to be a mediatory level between secondary & tertiary level, is not reflected in that study, which serves as yet another motivation for this study. The concern here is that, if higher school education is not important in serving as a mediator of secondary and tertiary education, then government funds in sustaining and growing this particular level of education is of no value. It is therefore crucial to investigate the need and the effectiveness of the higher school education.

There are several effects of gender against the relationship between human capital and economic development. Knowledge on the magnitude of educational impact by gender is as interesting as investigating the causality. Certain points of view suggests that education attainment should not be a privilege of the fairer gender, while there are many who argue that female with formal education is a determinant of the economic growth (Fatima; 2011). In her study, using the OLS on the data on Pakistan, spanning from 1980 to 2006, Fatima revealed that males with formal education had a positive impact on growth just as the females did. The early empirical works by the popular, Barro and Lee (1993) on the level of schooling of the adult population (aged 25 and above) and real GDP using the Panel data (random effects) estimation, Seemingly Unrelated Regressions (SUR) and Instrumental Variables (IV) revealed that every additional year of male secondary education raises a country's rate of growth by 1.4 percentage points while every additional year of female secondary education reduces a country's rate of growth by 0.9%. Another review, on Japan, by Self and Grabowski (2008), studied the influence of education of females in the national development process. Employing the Vector Correction Method (VEM), she concluded that secondary and tertiary educated females play a vital role in the economy. As for the males, those with tertiary education are the ones seemingly more significant to the growth.

In the case of Turkey, findings show that there is a strong relationship between women's education and the socioeconomic development (Nezahat, et al., 2010). In Egypt between 1988 and 2005, a study demonstrated that contributions from the male did not change much however the contribution from females substantially increased (Cupito and Langsten, 2010). At the primary school level, in less developed countries, females had more impact on the growth. (Aaron, 1989). Thanasis and Aurangzeb (2008) studied the impact of education on the growth in Pakistan using time series and findings related to primary school education revealed that females have a stronger impact on growth when compared to male, while the findings related to the secondary and higher education show no difference in terms of influence relating to gender.

With various studies establishing the relationship between human capital and growth with diverse conclusions, it is the researchers' observation that most literatures focus on a single country. This study undertakes the challenge of investigating a panel of countries ranging from under developed to highly developed countries by focusing on these countries' higher school education and the gender of students involved. We seek to investigate whether or not high school is an important level of education and whether it is necessary to improve or time to remove this level of education in the system. Apart from that, this study seeks to establish the grounds justifying that education for the female is just as important as it is for the male, in contributing to the economic development. This study also strives to avoid the use of traditional Pool OLS which is incomparable to the System Generalized Method of Moments (SGMM). The human capital proxies that are of interest in this study are the number of secondary school graduates and the number of high school graduates with accordance to gender.

2.0 Model and Econometric Methodology

2.1 Data and Source

This tudy investigates data of 62 countries from year 1970 to 1999, which was extracted from the study done by Barro and Lee. The data was averaged top 7 points with several control variables

such as population, export and gross capital formation. Economic growth is measured by the real Gross Domestic Product (GDP) with year 2000 as the base year. The table 1 depicts the variables used in this study and its descriptions and Table 2 show the measures of central tendency and variability for each variable selected in this study.

Table 1: Variables and Description

Variables	Description (Natural Log)	Source
LGDP	Gross Domestic Production per capita	World Development Index
LHC	Human Capital	World Development Index
LPOP	Population	World Development Index
LGCF	Gross Domestic Formation	World Development Index
LEXP	Export	World Development Index
LTHCM	Total Male who Completed Secondary Education.	Barro & Lee
LTHCF	Total Female who Completed Secondary Education.	Barro & Lee
LTSCM	Total Male who Completed Secondary Education.	Barro & Lee
LTSCF	Total Female who Completed Secondary Education.	Barro & Lee

From table 2, it can be seen that there is a huge gap in the GDP, LTHCF, LTHCM, LTSCM and LTSCF among the countries owing it to the distinct difference in the growth of the less developed country to the developed. Female education, in both secondary and high school, is larger than male although for many years the female to male ratio in the world is approximately one to one. (http://www.geohive.com, retrieved 20th July 2012).

Table 2: Measures of Central Tendency and Variability

Statistics	LGDP	LPOP	LEXP	LGCF	LTSCM	LTSCF	LTHCM	LTHCF
Mean	7.60	16.15	22.36	22.22	13.31	13.07	12.79	11.94
Standard Deviation	1.50	1.61	2.11	2.30	2.12	2.28	2.27	2.43
Sample Variance	2.26	2.60	4.47	5.29	4.49	5.20	5.14	5.90
Minimum	4.80	12.23	16.69	15.76	8.60	7.54	6.84	6.04
Maximum	10.50	20.95	27.64	28.27	19.23	18.66	18.34	18.16

2.2 Model and Econometric Methodology

The empirical model which is employed in this study is the Auto-Regressive Distributed Lag model (ARDL):-

$$y_{it} = \alpha + \sum_{j=1}^{m} \delta_j \, y_{i,t-j} + \sum_{l=0}^{n} \beta_l \, x_{i,t-l} + \sum_{k=0}^{r} \gamma_k \, z_{i,t-k} + u_{it} , \qquad (1)$$

where
$t = 1,2, \dots, T$ is the time,
$i = 1,2, \dots, N$ is the cross sectional frame while the highest lags are denoted as m, n, and r,

y_{it} is the growth of real GDP per capita in country i,

$y_{i,t-j}$ is the growth of real GDP per capital in country i of previous periods with lags of j periods,

$x_{i,t-l}$ represents a set of education variables for human capital with lags of l periods,

$z_{i,t-k}$ represents the control variables which are the matrix of population, export and gross capital formation with lags of k period,

α represents the constant term or the intercept,

δ_j represents the coefficients for the growth of real GDP per capital in country i of previous periods with lags of j periods,

β_l represents the coefficients for a set of education variables for human capital with lags of l periods,

γ_k represents the coefficients for the control variables with lags of k period,

u_{it} represents the error term.

It is assumed that the error term, u_{it} , is one way error component model.

$u_{it} = \gamma_i + v_{it}$,

where γ_i is the unobserved country specific effect and v_{it} is the idiosyncratic error term for each observation. It is assumed that the distributions for each specific effect in the error component model are $\gamma_i \sim iid(0, \sigma_\gamma^2)$, and $v_{it} \sim iid(0, \sigma_v^2)$.

In this study, the time effect is also controlled to produce robust results as the human capital and economic growth may vary from year to year. The diagnostic test employed in determining the suitable selection of the model is the AR(1), AR(2) and Sargan Test.

The Pool OLS estimates tend to suffer from biasness due to the unobserved heterogeneity from the cross sectional data. To overcome this problem the system GMM (SGMM) is employed. The system GMM is a dynamic model popularized by Arellano and Bover (1991, 1995) and also Blundell and Bond (1998). This econometric technique merges in a system the regression expressed in first differences.

The GMM panel estimator based on first differencing of equation is as follows:-

$$y_{it} - y_{it-1} = \rho + \sum_{j=1}^{m} \delta_j (y_{i,t-j} - y_{i,t-j-1}) + \sum_{l=0}^{n} \beta_l (x_{i,t-l} - x_{i,t-l-1}) + \sum_{k=0}^{r} \gamma_k (z_{i,t-k} - z_{i,t-k-1})$$
$$+ (u_{it} - u_{it-1}) \tag{2}$$

Considering that the model employed is the Auto-Regressive Distributed Lag (ARDL), the residuals for the first order difference in the SGMM would be autocorrelated. As such the AR(1) model duly should reject the null hypothesis of no autocorrelation. This is expected because of the difference of two consecutive equation has the residual of the previous. The following computations will explain. The first difference in residual is computed as follows:-

$$\Delta u_{it} = v_{it} - v_{it-1} \tag{3}$$
$$\Delta u_{it-1} = v_{it-1} - v_{it-2} \tag{4}$$

It is noticed that both the differenced residuals are correlated because both the equation contains v_{it-1}.

The AR(2) model is used to examine the null hypothesis of no second order serial correlation of the differenced residuals. Thus AR(2) results should accept the null hypothesis of no autocorrelation. Sargan test is used to test the over-identifying of instruments in the model specification (Arellano, 2003). The null hypothesis of over-identifying restriction should be accepted. The instrumental variables are the year and the levels equation. All models were estimated using the Arellano and Bond dynamic panel system GMM using Stata Software.

3.0 Analysis and Discussion

The significance of education level by gender on growth was analyzed in two parts:-
i) effect of high school graduates on economic growth by gender.
ii) effect of secondary school graduates on economic growth by gender.

The p-values for coefficients, AR(1), AR(2) and Sargan Test are presented in Table 4.1 and 4.2.

3.1 Effect of High School Graduates by Gender on Economic Growth

The empirical results represented by Table 3 shows the effect of male high school graduates and female high school graduates on growth with time effect. Model (1) is the ARDL model with growth as the dependent while population, gross domestic production, export , number of male with high school education and years as the independent. Model (2) is the ARDL model with growth as the dependent while population, gross domestic production, export, number of female with high school education and years as the independent.

In both models, the variable of interest is the growth and human capital. The instrumental variables are the year and the level equation as other variables are not strictly exogenous. The diagnostic tests for Model (1) and Model (2) are satisfied AR(1) and Sargan rejected while AR(2) accepted at 5% significance level. The acceptable lag for the dependent growth and human capital is lag 1.

It is found that female with high school as the highest level of education significantly affects the growth of the country. The same cannot be concluded for the males with high school as the highest level of education. The results indicate that for every percent increase in human capital, the county development in terms of GDP will increase by 3.35 percent, considering all other variables are left constant. This may seem like a small contribution, nevertheless, it is among the many factors that affect the growth. It is also important to note that the female tend to affect the growth more than male, consistent to the study done in Japan by Self (2008).

This is contradicting to the initial hypothesis that high schools immaterial of the gender would contribute to the growth. One consideration to note is that the countries that are being studied comprise of more less developed countries as opposed to developed. High school education in the less developed country may not be accessible to many, especially the suburban areas. Another note to highlight is that, high school is an optional education, thus more females tend to enroll rather than males. In Malaysia education, the 2012 statistics show the ratio of female is twice as more as compared the male (Thanusha and Nurdalila, 2012). This pattern is also found to be common among the developing countries.

Table 3: Effect of High School Graduates by Gender on Economic Growth

HC	Male High School (Model 1)	Female High School (Model 2)
Dependent: LGDP	**Coefficient**	**Coefficient**
$LGDP_{t-1}$	0.5209***	0.6379***
$LPOP_t$	-0.4513***	-0.3855***
$LEXP_t$	0.1949***	-0.005
$LGCF_t$	0.2887***	0.3558***
HC_t	-0.0090	0.0335**
Year2	0.084**	0.0465*
Year3	0.0686**	0.0338
Year4	0.0439*	0.0028
Year5	0.0415**	0.0146
Year6	-0.0067	-0.0059
Diagnostic Tests: p-values:		
AR(1)	0.000	0.000
AR(2)	0.431	0.557
Sargan	0.955	0.000

Notes: All models were estimated using the Arellano and Bond dynamic panel system GMM estimations (STATA xtabond command). Figures without parentheses are the coefficient value while figures with parentheses are the t-statistics. *** indicates significance at 1%, **indicates significance at 5% and *indicates significance at 10%.

3.2 Effect of Secondary School Graduates by Gender on Economic Growth

The empirical results represented by Table 4 shows the effect of male and female with   as   the highest qualification on growth with time effect. Model (3) is the ARDL   model with growth as the dependent while population, gross domestic production, export, number of male with secondary school education and years as the independent. Model (4) is the ARDL model with growth as the dependent while population, gross domestic   production, export, number of female with secondary school education and years as the independent.

Table 4: Effect of Secondary School Graduates by Gender on Economic Growth

HC	Male Secondary School (Model 3)	Female Secondary School (Model 2)
Dependent: LGDP	**Coefficient**	**Coefficient**
$LGDP_{t-1}$	0.1129***	0.5479***
$LPOP_t$	0.0996***	-0.4114***
$LEXP_t$	0.0542***	0.2091***
$LGCF_t$	0.2845***	0.2526***
HC_t	0.0503*	0.0006
Year2	0.0852***	0.1129***
Year3	0.0697***	0.0996***
Year4	0.0507**	0.0542**
Year5	0.0480**	0.0399**
Year6	0.0033	-0.0113
Diagnostic Tests: p-values:		
AR(1)	0.0000	0.0000
AR(2)	0.4970	0.3960
Sargan	0.4730	0.3860

Notes: All models were estimated using the Arellano and Bond dynamic panel system GMM estimations (STATA xtabond command). Figures without parentheses are the coefficient value while figures with parentheses are the t-statistics. *** indicates significance at 1%, **indicates significance at 5% and *indicates significance at 10%.

In both models, the variable of interest is the growth and human capital. The instrumental variables are the year and the level equation, as the other variables are deemed weakly exogenous. The diagnostic tests for Model (3) and Model (4) are satisfied as the null hypotheses for AR(1) and Sargan were rejected while for AR(2) is accepted at 5% significance level. The acceptable lags for the dependent growth and human capital is lag one.

Human capital in model (3) of table 4 is significant at 1% while in model (4) it is not significant. This indicates that among the secondary school graduates that venture into the workforce, the males contribute significantly towards the growth as compared to the females. One percent increase in human capital, which represents the male secondary school graduates, increases the economic growth by 5%, ceteris paribus. On average, across the countries, the secondary school numbers by gender are at equity. The   understanding that secondary school is a compulsory education in most countries would   probably be skewing to the idea that equal contribution should also be seen. Most females, in the less developed countries, are bound to not join the workforce, due to family constraints and conservatism. Traditionally the masculine of the gender are the ones encouraged to enter the workforce. This outcome is in support with the early empirical study by Barro and Lee (1993) where the direction of the coefficient is similar but this study failed to establish significance in the negative impact of female education   on growth.

However, this is still in line with the study by Barro (1993) that suggested that secondary school has an impact on the economic development. It also supports the study done by Tsai (2010) suggesting that secondary school is one of the drive force of the economy.

The control variables in all specification are all significant at 1% at level. The coefficients for gross domestic product and export have a positive impact on growth. This is supported by literature by Dao (2012), Olowenso (2006), Begum & Shamsudin (1998), Vohra (2001), Jordan & Eita (2007), Maneschiold (2008), Tsen (2010) and Logan (2009). Population has a negative impact to the economic growth. As the population rises, more income would need to be distributed in developing other areas to accommodate the growing population. (Julian Simon, 1986)

4.0 Conclusion, Limitation and Policy Implication

This whole study points towards the conception that gender and levels of education play a joint role in its contribution to the economic development of the country.

The empirical result of this study implies that high school education does have an impact on the growth, but a startling discovery shows that this impact is constrained to the fairer gender only. This establishes evidence that the high school education is important and focus on improving the quality of education is absolutely required. More outreach programmes must be in place to educate the female youth to embark on high school education at the minimum, and move on into the workforce.

The secondary education evidently plays a crucial role in uplifting the economy, as apparent in this study and many other studies (Barro, 1991; Barro and Lee, 1993, Self and Gebrowski, 2008; Tsai, 2010). Males completing secondary school have a greater role in the economic growth. Contradicting to the study by Self (2008), this study finds that female secondary graduates do not contribute to the growth. Females tend to pursue a higher education after the secondary level education as opposed to males in most countries who join the workforce after secondary education. This however is rarely seen in developed countries, and hence this phenomenon was stated as a challenge in the education workforce policy. (Jones, T.R., http://www.educationworkforcepolicy.com/papers.html, retrieved 24th September 2012).

Aligning the transformational programmes within countries to promote and educate the citizen to pusue a minimum of secondary school education is an effort worth every penny. Theoretically, education is important for both male and female. In most nations, especially the under developed ones and some of the developing ones, many still have the conservative ideology that females need not get formal education to the same extent as male. Continuous effort is needed within the country to educate people on the importance of education regardless of gender.

Layers in education such as primary, secondary, tertiary and more are segregated based on the learning outcomes, which clearly stand at different levels. Merely having this segregation without a proper guidance to standards may lead to graduates having not far better quality than that of the preceding level of education. Quality of the education levels must be monitored by proper governance and wherever necessary, enforcement should be in place. It must also be

acknowledged that this process may require time & effort, nevertheless for some countries; the transformation towards quality education is already in the pipeline.

In view of the data, the existence ratio of developed countries against the less developed countries is approximately one to six. In the less developed countries, there may be lower enrolment rates at high school since secondary education is deemed as sufficient.

It is an irrefutable fact that education is the driving force for growth. Regardless of the development status of the country, the education sector stands an inevitable chance to catapult the economy and the nation. Each country should develop programs to scale up and improve every level of education and strive to achieve a higher literacy level among citizens. Investing in education would be in favor of the country in every good way.

A possible viewpoint to be investigated in future research is a comparison which is able to distinguish between the developed and the less developed nations with the effect of year in place.

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Macroeconomic Fluctuations and Its Impact on Economic Growth: A Case Study in Malaysia

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Abstract

The aim of this research is to analyze the relationships between money supply, government expenditure, foreign direct investment and gross domestic product as determinants of the economic growth in Malaysia over a 35-year period between 1975 and 2010. In order to achieve the objective of this research, various econometric analyses such as the Augmented Dickey-Fuller (ADF) test, Granger Causality test, Cointegration and Vector Error Correction Model (VECM) were implemented on the time series data. The ADF unit root test showed that all variables were stationary at first difference. From the Johansen Cointegration Analysis, it was found that long-term relationships existed between gross domestic product, foreign direct investment, government expenditure and money supply. The Granger Causality test was also conducted to investigate short-term relationships and ascertain the direction of causality between the variables. The results suggested that there was a unidirectional Granger causality. The finding showed that gross domestic product can affect money supply in the short-run. Based on the Ordinary Least Square, significant relationships between money supply and foreign direct investment with the economic growth were found, but government expenditure has been considered as an insignificant variable. The study concluded that money supply and foreign direct investment play important roles as determinants of the economic growth in Malaysia.

Keywords: Economic growth, money supply, foreign direct investment

1.0 Introduction

The Malaysia's economy has undergone rapid structural changes since its Independence in 1957. Her economy has gradually turned from being trade-oriented based on agricultural commodities to a more diversified export-oriented economy. This change came as a result of placing the importance on the manufacturing sectors in the late 1960s and the establishment of a Free Trade Zone in the early 1970s. The past three decades had not only witnessed considerable structural changes in the nation, but also recorded four episodes of crises in the country (Sayed & Ming Yu, 2003). After facing all these crises, presently Malaysia has been classified as a newly industrialized developing country and is looking forward to being classified as a developed country by the year 2020.

Malaysia's ranking of Economic Performance has improved to the 7th place out of 59 economies last year as compared to being in the 12th position in 2007. Economists and policy makers have been entrusted to find ways to sustain economic growth in order to guarantee a higher and stable standard of living. An economy is said to experience growth when its real output increases and creates job opportunities as well as improves livelihoods. Malaysia's unemployment rate averaged 3.4 percent from 1998 until 2012 with a recorded low rate of 2.8 percent in March of 2012. Macroeconomic stability is important to maintain this low rate of unemployment and to have a sustained economic growth. Three macroeconomic variables have been identified as independent variables in this research which consisted of money supply, government expenditure and foreign direct investment (FDI). Changes in these three variables will lead to changes in aggregate demand that further causes fluctuations in economic activity. For example, an increase in government spending as well as an increase in money supply and investments will cause aggregate demand to go up. Therefore, this research was carried out in order to investigate macroeconomic fluctuations and its impact on the economic growth in Malaysia.

2.0 Research Objectives

General Objective:

To measure and analyze the economic growth scenario which will affect macroeconomic fluctuations.

Specific objectives:
I. To measure the long-term relationships between macroeconomic fluctuations and the Gross Domestic Product (GDP) of Malaysia.
II. To measure the short-term causality between GDP and the determinants of macroeconomic fluctuations by using Granger causality test.

3.0 Literature Review

A study on money supply and economic growth in Nexus, Nigeria was conducted by M. S. Ogunmuyiwa and A. Francis Ekone (2010). Based on their findings, they have indicated that aggregate money supply was positively related to economic growth and development. The scope of the study spanned between the years 1980 until 2006. In this study, both the descriptive and inferential analyses of the Ordinary Least Square (OLS) were used. The Vector Auto regression (VAR) and Granger causality test were also included and the researchers found that money supply did not have a significant predictive power in explaining the growth of real GDP.

Another research performed by Ahmed Elsheikh M. Ahmed and Suliman Zakaria Suliman (2011) investigated the long–term relationships between money supply, real GDP and price level. The long-term relationships between these three macroeconomic variables have been examined for the Sudan economy using their annual data over a period of 45 years, from 1960 till 2005. This research had also applied Granger Causality test and Cointegration test and the results obtained were in agreement with the previous researchers. It showed that an increase in money supply did not affect the output of the traditional sector which constituted a large share in the GDP. For the co-integration analyses, money supply, real GDP and price level were found to be co-integrated

and these findings proved the existence of long-term relationships between these macroeconomic variables.

John Loizides and George Vamvaukas (2005) conducted a research on government expenditure and economic growth. They examined the effect of the size of a government's budget on the economic growth of Ireland and United Kingdom in the short- and the long-term. The data used were collected from the year 1960 until 1995 and all the data were expressed in natural logarithms. In order to examine the collected data, a co-integrated test was used. Their research showed that government expenditure can affect the growth in national income either in the short-term or long-term and it can also generate the economic growth.

Fatimah, et al. (2010) had also conducted a study in Malaysia, investigating the effect of government expenditure and FDI on economic growth. This study applied the OLS technique to examine this effect covering the period from 1978 to 2005. After conducting the OLS analysis, the results showed that government expenditure and GDP were the driving forces in enhancing Malaysia's economic growth while FDI also have a positive impact.

A research by Jarita (2007) tried to accomplish an objective, which was to review the Malaysian FDI and growth to determine whether a causal relationship existed between them. Secondly, the study aimed to look at the impact of FDI on the stability of the economic growth using Generalized Autoregressive Conditional Heteroskedasticity model and the impact of growth on FDI. The sample period data were collected from the first quarter of 1990 to the fourth quarter of 2002. The results from the relationship showed no proof of causality and another outcome from the study was that it showed that FDI contributed to keeping the economic growth stabile, and vice versa. So, in the context of Malaysian economy, FDI did not promote economic growth but it did contribute to the stability of the economic growth.

Adeolu B. Ayanwale (2007) investigated the relationship and determinants between FDI and economic growth in Nigeria. The determinants suggested in this research were market size, infrastructure development and stable macroeconomic policy. The results from this study were in agreement with the Malaysian situation, which was that FDI was not significant in affecting the economic growth. But the components or determinants did have positive impacts. These estimations were conducted using the OLS and the period of analysis was from 1970 until 2002.

In another case study based in Malaysia, Koi Nyen Wong (2010) attempted to explore the causality relationship between outward foreign direct investment (OFDI) and home country's economic growth. The time series used in this research was from the first quarter of the year 1999 to the fourth quarter of 2008. After performing Granger non-causality test in a vector autoregressive framework, the results showed that there was no evidence of causality running from OFDI of Malaysia to home country's GDP growth or vice versa.

4.0 Research Methodology

This study attempted to analyze the relationships between money supply, government expenditure, FDI and GDP as determinants of the economic growth in Malaysia over a 35-year period starting from 1975 to 2010. In this research, the Keynesian theory of economic growth

was used as a foundation in determining the relationship between the variables. In the Keynesian theory, consumption is a factor that affects the economic growth but in this research, the researcher tried to look at consumption in terms of money supply while the other factor is government expenditure. It is used by the government sector to undertake key functions, such as national defense and education. These expenditures are financed with a combination of taxes and borrowing. The next variable is investment which is the amount purchased per unit time of goods which are not consumed but are to be used for future productions. For this scope, the researcher used FDI to measure economic growth. FDI is direct investment by a company in distribution located in another country, either by sharing a company in the country or by expanding operations of an existing business in the country.

All data have been gathered from the Department of Statistics Malaysia, the Economy Planning Unit (EPU), various journals, as well as from the World Statistics. These data were secondary data and they were time-series data. A few tests such as the Granger Causality Test, Johansen Cointegration Test and the OLS were conducted with regards to economic growth aspects in Malaysia. All of the results were taken from the output of the E-Views 6.0.

5.0 Model Specification

OLS was used in estimating the coefficients of the econometric model.
The result of the linear form is as follows:
$$GDP = 1.44E + 10 + 1.3983 \text{ GOV} + 3.8485 \text{ FDI} + 0.5811 \text{ M} + \mu$$

where
GOV = government expenditure
FDI = foreign direct investment
M = money supply
μ = error term
The coefficients of all explanatory variables exhibited positive signs. The interpretation of the coefficients for government expenditure would be that a one unit increase of government expenditure will cause the economic growth to increase by 1.398 units. As for the FDI, an increase of one unit will increase the economic growth by 3.849 units. For the money supply, an increase of one unit will lead to an increase of 0.581 units in the economic growth. This suggested that foreign direct investment has a greater impact in stimulating Malaysia's economic growth as compared to money supply and government expenditure.

The value of R^2 from the estimated equation was 0.993241. This value implied that about 99% of the variations in the dependent variable (GDP) can be explained by the independent variables included in the model (GOV, FDI, M). The other 1% is explained by other variables that have not been included in the model such as exchange rate. Therefore, it can be said that this model showed an excellent overall fitness.

From the t-Statistic, it is apparent that both the FDI and money supply are significant with values of >1.690, however, GOV was found to be insignificant. Based on a previous study by Kogid et al. (2010), they found that government expenditure may be considered to be less important and may be viewed as a catalyst and a complementary factor on economic growth.

It was found that the model did not have any serial correlation but there was a homocedasticity and out of the 3 variables, 2 variables had no multicollinearity problem. Even though FDI has a multicollinearity problem, there was no reason for worry because the coefficient was powerful and the t-score remained significant for FDI (Studenmund, 2006). A Normality test was also conducted and it showed that the data was normal since the Jarque-Bera value was < 5.99. Normal distribution means the data is not biased and acceptable.

6.0 Results and Discussion

Augmented Dickey-Fuller (ADF) Unit-Root Test was employed to determine whether the independent variables are stationary or not by comparing their probability with the significant levels of 95% or 99%. From Table 1, it is apparent that all the variables were not stationary when the unit root in level was tested since it showed a value of more than 0.05 at 95% significant level. All of the independent variables were stationary when the unit root was tested for 1st difference since it was valued at less than 0.05 at 95% significant level. Stationary time series are those whose basic properties such as mean and variance remain constant over time.

Table 1: Results of ADF Tests for Unit-Roots in GOV, FDI and M

Independent Variables	Levels	
Government Expenditure (GOV)	(4.696771) [1.0000]	(-4.112398)* [0.0137]
Foreign Direct Investment (FDI)	(-2.391106) [0.3775]	(-4.580138)* [0.0044]
Money Supply (M)	(1.362479) [0.9999]	(-5.265451)* [0.0008]

Note: t-statistics in ( ) and p-value in [ ]. The * denotes significance at 5% significance level. All tests were conducted at intercept and trend.

Table 2 shows the results for Johansen Cointegration test for linear deterministic trend. From the table, the results showed that trace indicated 2 cointegrating equations at 5% and one cointegrating equation at 1% level. In this analysis, the max–eigenvalue test indicated one cointegrating equation at 5% level and no cointegrating equation at 1% level. Therefore, the results for the cointegration test showed that a long-term relationship existed because the calculated cointegrating value was r = 1. In Table 3, the empirical results showed the Vector Error Correction Model's (VECM) long-run equation to be as follows:

$$GDP = -3.70E+10 + 0.53411 \text{ GOV}_{t-1} + 5.0558 \text{ FDI}_{t-1} + 0.6951 \text{ M}_{t-1}$$

s.e	(0.8193)	(1.2861)	(0.0758)
t-stat	[0.6519]	[3.9312]	[9.1702]

All variables are positively significant at 5% significance level.

Table 2: Cointegration Tests

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	5 Percent Critical Value	1 Percent Critical Value
None **	0.566175	59.66608	47.21	54.46
At most 1 *	0.383151	31.27223	29.68	35.65
At most 2	0.294694	14.84578	15.41	20.04
At most 3	0.083796	2.975569	3.76	6.65

Note: Trace test indicates 2 cointegrating equation(s) at the 5% level. Trace test indicates 1 cointegratingequation(s) at the 1% level. *(**) denotes rejection of the hypothesis at the 5%(1%) level

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	5 Percent Critical Value	1 Percent Critical Value
None *	0.566175	28.39385	27.07	32.24
At most 1	0.383151	16.42645	20.97	25.52
At most 2	0.294694	11.87021	14.07	18.63
At most 3	0.083796	2.975569	3.76	6.65

Note: Max-eigenvalue test indicates 1 cointegrating equation(s) at the 5% level. Max-eigenvalue test indicates no cointegration at the 1% level. *(**) denotes rejection of the hypothesis at the 5%(1%) level.

Table 3: Vector Error Correction Standard errors in ( ) & t-statistics in []

Cointegrating Eq:	CointEq1
GDP(-1)	1.000000
GOV(-1)	0.534113
	(0.81926)
	[0.65195]
FDI(-1)	-5.055783
	(1.28608)
	[-3.93115]
M(-1)	-0.695087
	(0.07580)
	[-9.17017]
C	-3.70E+10

With cointegration, the dynamic causal interactions among the variables should be phrased in a vector error correction form. This would allow the researcher to assess both long-run and short-run causality based, respectively on the χ^2-test of the lagged first differenced terms for each right –hand-side and the t-test of the error correction term. The results of the test are presented in Table 4. The results suggested that there was a unidirectional Granger causality. The finding showed that GDP increases money supply in the short-term.

Table 4: Granger Causality

Independent Variables				
Dependent Variables	X^2- statistics of lagged 1st difference term			ECT (t-ratio)
GDP	---	0.524 [0.469]	2.491 [0.115]	2.908 [0.089]	0.453 (1.198)
GOV	0.031 [0.860]	---	4.677* [0.031]	0.363 [0.547]	0.064 (1.949)
FDI	0.150 [0.699]	0.013 [0.9096]	---	1.328 [0.2491]	0.029 (1.403)
M	7.604* [0.0058]	0.387 [0.534]	0.306 [0.5802]	---	1.353 (5.203)

Note: Figures in parentheses ( ) denote the t-statistics and figures in squared brackets [ ] represented the p-values.

7.0 Conclusion

In this study, it has been determined that there were long-term relationships between the independent and the dependent variables by using the Johansen test. In addition to the long-term relationships, some variables also have short-term relationships such as the relationship between FDI with government expenditure and money supply with GDP. Therefore, it is important to examine the relationships that exist between GDP, FDI, government expenditure and money supply in order to explain their importance in determining the economic growth.

It is recommended that investment should be included as a term of foreign and domestic investment. According to Fatimah, et al. (2010), priorities have to be given to undertake government projects which are highly productive and continuously upgrading leadership capacities and initiatives in managing and organizing scarce resources in the public sector. According to Har, et al., (2008), FDI has direct positive impact on Real GDP and it creates more employment in the country, bringing in capital investments, technology and management knowledge needed for economic development. With all the variables such as money supply, government expenditure and FDI having positive relationships in the long-term, implementation of government policies should try to reduce the effect of the variables that may trigger fluctuations in economic growth. In doing so, the government can still maintain a high standard of living for its citizen. As addressed by Arthur J. Altmeyer, the Chairman of American Social Security Board in 1943, it is true that a nation with a high standard of living is more efficient than a nation with a low standard of living.

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Time Series Analysis of the Impact of Consumption and Energy Use on Environmental Degradation: Evidence from Malaysia

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Abstract

This study uses time-series analysis to investigate the long-run relationships and short-run dynamic interactions between environmental degradation (proxied by CO2 emissions) and the independent variables of consumption (proxied by income level or Gross Domestic Product per capita) and energy consumption in Malaysia over the period 1971 to 2008. The study applies the multivariate cointegration methodology to establish the possible causal relations between these variables. The cointegration test and the vector error correction model demonstrate the evidence of a positive long-run relationship between consumption and environmental degradation while energy consumption is negatively related to environmental degradation. The long-term elasticity coefficients of the independent variables on environmental degradation display relationships that are theoretically grounded. Further innovations analysis using variance decompositions lends evidence of the dominant influence of consumption and energy consumption in forecasting environmental degradation variance. The study concludes with an examination of policy implications of the findings.

Keywords: Consumption, carbon dioxide emissions, energy consumption, EKC

1.0 Introduction

One of the most pressing global issues faced by societies today is that of the over-indulging behavior of consumers and the over-zealous conduct of producers, who stop short of nothing to feed the needs of these consumers. This is especially the case in many affluent countries as reflected by Ger (1997, p.112) who wrote that ''*Consumption and production patterns of affluent countries are responsible for most transboundary problems, such as ozone layer depletion, ocean pollution, and chemicalization of the habita*t.'' The relentless pursuit to maximize profits often sees these producers not taking into account the resulting damage that their production processes have on the environment. Clearly, the environmental implications of the global spread of mass consumption for resource use and environmental waste absorption are staggering.

Global warming, which refers to the rise in temperature and the drastic changes in the climatic conditions, has always been synonymous with environmental degradation. Davis and Caldeira (2010) reflected that "*The primary cause of global warming is the CO2 emissions from the burning of fossil fuels*". Environmental degradation and the resultant global warming are major hazards to mankind and have been issues of contention for several decades. We have, over the last few decades, also witnessed rapid economic growth especially in the developing nations like China, India, Russia and a host of other emerging countries. Economic development is often associated with higher energy consumption. It has been observed that the unsustainable consumption and development patterns have wrecked havoc on the environment. Increased energy consumption to fuel production, and the resulting enhanced greenhouse effect is thought to have led to a series of environmental disasters. This problem is further aggravated by the ever increasing CO_2 emissions and its impact on global warming. As such, it is not uncommon to relate environmental issues like global warming to national and regional levels of output.

One of the most pressing issues faced by nations is the damage caused to the environment as a result of incessant consumption spending. Among the burning global issues faced by societies today are those of the over-indulging behavior of consumers and the resulting damage to the environment. Malaysia's rapidly growing economy and energy consumption could potentially be damaging to the environment if left unchecked. This study is timely as it investigates the long run relationship between consumption (proxied by per-capita Gross Domestic Product), energy consumption and environmental degradation (proxied by carbon dioxide emissions). The use of GDP per capita as a proxy for consumption stems from various macroeconomic models which maintain that private consumption for all nations is the main component of Gross Domestic Product (GDP). At lower levels of income, the average propensity to consume rises and therefore, it is safe to assume that for most nations, GDP is an accurate proxy for consumption.

Several studies have investigated the relationship between CO2 emissions, income and energy consumption and have found conflicting results. One of the reasons for the conflicting results is the differences in the approaches and testing procedures employed in the previous studies. A number of these studies employed simple log-linear models estimated by ordinary least squares (OLS). There are studies that have employed time-series analysis, while others have used cross-sectional analysis. Some of the recent studies have employed panel data analysis.

This study attempts to investigate the dynamics of consumption, energy use and environmental degradation in Malaysia over a period of thirty eight years from 1971 to 2008. The Vector Error Correction Model is used to analyze the impact of consumption spending on the environment. The results of the unit root tests show that all variables are non-stationary at level but stationary at first difference while the cointegration analysis, analyzed through Johansen-Juselius (1990), shows that there is evidence of cointegration among the tested variables.

The study is organized as follows. Firstly, the literature review is briefly discussed. The next section describes the data and methodology and this is followed by a discussion of the findings. The final section concludes.

2.0 Literature Review

Several studies have investigated the impact of consumption on environmental degradation (Jorgenson, 2003; Adrangi, et al., 2004; Brulle and Young, 2007; Peters, et al., 2007). Ordway (1953) had pointed out that the continued use of limited resources would eventually deplete mother earth of its resources, thus initiating the collapse of our society.

Globalization has brought an onslaught of materialistic goods and services to consumers. This is re-iterated in the book by Ozanne, et al. (1998, p. 185) who mentioned, ''*Open any glossy magazine, and see pictures of sumptuous foods, beautiful people, glamorous fashions, and possessions too many to mention. Turn to any television channel, and an unending series of consumption images pulse before the eye*s.'' The continued expansion of consumption has been a major contributor to global environmental change. Marketers, advertisers and the mass media have significantly contributed to the awakening of a generation of consumers with ferocious appetites and materialistic attitudes and desires. Many consumers from the emerging economies have discovered and emulated western consumption patterns and this is further exacerbated by the millions of dollars spent on advertisement and promotion campaigns carried out by the well established multinational corporations which carry well-known global brands. While the purchasing decisions of present-day consumers are very aligned to status and brand loyalty, few are aware or even bother, that these contemporary MNCs' economic power and their revenues frequently exceed the GDP of entire countries. The sheer size of these MNCs wield ample power to leverage and control the desperate governments of the less-developed and developing countries into allowing business practices that could contribute to higher profits at the expense of the environment. The rise of the consumerist society in countries like China and India is the result of rapid economic growth that these countries enjoyed, fuelled by a significant level of natural resources. China is the second-largest contributor to CO_2 emissions, emitting 15.2% of global CO_2 in 2011 (International Energy Outlook, 2012). The rise in urban household consumption, driven by urbanization and lifestyle changes, has outpaced efficiency improvements in the growth of CO_2 emissions (Peters, et al. 2007).

Theoretically, according to Kuznets, pollution rises as income increases in the intial stage of economic growth, until it reaches a certain level of development or threshold point after which pollution declines with further increases in per capita income (Dasgupta, et al., 2002; Yandle, et al., 2002; Song, et al., 2009; Lean and Smyth, 2010). It appears that there is an inverted U-shaped relationship between pollution and per capita income. However, Lopez (1994) argued that Kuznets relationship depends on other factors such as society's changing preferences[1]. There have been many studies that have tested the nexus of output-energy and output-environmental degradation. Chebbi and Boujelbene (2008) found that CO_2 emissions and energy consumption are positively related in the long-run. This is supported by the results of a study by Mouez and Zaghdoud (2010) on Tunisia, a small and developing economy (that could draw some parallels with Malaysia). It is difficult to pinpoint whether energy consumption drives economic growth or the other around, as both can be simultaneously determined. Bidirectional co-integration effects

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[1] the effect of growth on the elasticity of substitution between factors of production and Frisch coefficient of preference. The inverted U shape may occur because the value of Frisch coefficient is likely to rise as income increases or if the elasticity of substitution increases with income.

were found between total energy consumption and economic performance (Belke, Dobnik and Dreger, 2011; Loganathan and Thirunaukarasu, 2010). Several studies (Kraft and Kraft, 1978; Al-Iriani, 2006; Huang, et al., 2008 and Ang 2008) showed the evidence of causality from economic growth to energy consumption growth. Others such as Lee and Chang (2008) who studied sixteen Asian countries; Narayan and Smyth (2008) who covered the G-7 countries and Apergis and Payne (2009) who researched six Central American countries, inferred that causality ran from energy consumption to economic growth. Studies have shown that greater usage of energy leads to higher volumes of pollutants. Ang (2008) indicated that pollution and energy use were positively related to output in the long-run, while Shafik (1994) and Holtz-Eakin and Selden (1995) found that pollutant emissions were increasing monotonically with income levels. In a study done on the ASEAN-5 economies, Lean and Smythe (2009) confirmed the existence of a non-linear relationship between emissions and real output, consistent with the Environmental Kuznets Curve.

Kuznets inverted U income-pollution relationship is further justified by the assumption that the governments in developing countries are equally committed and effective in controlling pollution. It is a general consensus that institutions in developing countries are weaker and more prone to graft than in developed countries. As such, an increase in pollution may be, among other things, attributable to the corrupt and rent-seeking behavior of authorities. Lopez and Mitra (2000) showed that for any level of per-capita income, the pollution levels corresponding to corrupt behavior are always above the socially optimal level.

In terms of efficiency of energy consumption, while some countries enjoy a greater level of consumption, it is interesting to note that they are able to keep their CO_2 emissions at proportionately lower levels. In a study covering the Middle East and North Africa, Ramanathan (2005) discovered that countries had varying degrees of emission efficiency as a result of the differences in terms of the size of its operating scale. Besides the GDP size, the severity of emission is also driven by how well the countries manage its usage efficiency. This begs the question of whether a long run relationship exists between energy use and the level of consumption or national income. The more appropriate test would be to explore this relationship amongst the major oil producing countries. Sari and Soytas (2008) found that cointegration between the variables occurred only for Saudi Arabia whereas none is found in the other major oil producing countries[2]. As evidenced in the literature, the link between consumption and environmental degradation is inconclusive and as such, there is ample room for further research in order to acquire a greater understanding of the output-energy and output-environmental degradation nexus.

3.0 Data and Methodology

3.1 Data

The following analysis uses annual data from 1971 to 2008 of the variables of carbon emissions (CO_2), gross domestic product per capita (GDPC) and energy use (EC) for Malaysia, which were obtained from the World Development Indicator (http://databank.worldbank.org), to examine the impact of consumption and energy use on environmental degradation.

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[2] Indonesia, Algeria, Nigeria and Venezuela

The carbon emission (CO_2) data is used to represent environmental degradation, while gross domestic product per capita (GDPC) is a proxy for consumption. The use of gross domestic product per capita (GDPC) as a proxy for consumption is supported by the findings of Adrangi, Dhanda and Hill (2004) on the accuracy of GDPC as proxy for consumption.

3.2 Model Specification

The model for CO2 emissions is written in the following form:
$$Ln(CO_2)_t = \beta_0 + \beta_1 ln(GDP)_t + \beta_2 ln(EC)_t + e_t \tag{0}$$

Where CO_2 is CO_2 emissions (metric tons per capita), GDP is real GDP per capita (constant LCU) and EC is energy use (kg of oil equivalent per capita).

3.3 Methodology

To test for stationarity, we employed augmented Dickey-fuller (ADF) and Phillips-Perron (PP) unit root tests. Then we apply the maximum likelihood approach to cointegration test developed by Johansen (1988) and Johansen and Juselius (1990), henceforth the JJ cointegration test. This test provides us information on whether the set of non-stationary variables under consideration is tied together by the long-run equilibrium path. Denote X as a vector of the variables under study, the JJ test is based on the following vector error correction (VECM) representation:

$$\Delta X_t = \alpha + \Gamma_1 \Delta X_{t-1} + \Gamma_2 \Delta X_{t-2} + ... + \Gamma_p \Delta X_{t-p} + \Pi X_{t-1} + u_t \tag{1}$$

where α is an n × 1 vector of constant terms, Γ_i (i = 1, 2,..,p) and Π are n × n matrices of coefficients, p is the optimal lag order and n is the number of variables in the model.

The JJ test is based on determining the rank of Π, which depends on the number of its characteristics root (eigenvalue) that differ from zero. Johansen (1988) and Johansen and Juselius (1990) develop two test statistics – the trace test and the maximal eigenvalue test statistics – to determine the number of cointegrating vectors that govern the long run co-movements of the variables. The trace test statistics tests the null hypothesis that there are at most r cointegrating vectors against a general alternative. Meanwhile, the maximal eigenvalue test is based on the null hypothesis that the number of cointegrating vectors is r against the alternative hypothesis that it is r + 1.

Since our task is to determine the causal direction between the two variables in question, we proceed to estimate the following vector error correction model and for a two variable case, we specify the following bi-variate vector error correction models (VECM) as

$$\Delta y_t = a_0 + \sum_{i=1}^{k} \alpha_i \Delta y_{t-i} + \sum_{j=1}^{k} \alpha_j \Delta x_{t-j} + \gamma_1 ecm_{t-1} + \varepsilon_{1t} \tag{2}$$

$$\Delta x_t = b_0 + \sum_{i=1}^{k} \beta_i \Delta y_{t-i} + \sum_{j=1}^{k} \beta_j \Delta x_{t-j} + \gamma_2 ecm_{t-1} + \varepsilon_{2t} \tag{3}$$

where ecm_{t-1} is the lagged residual from the cointegration between y_t and x_t in level. Granger (1988) points out that based on equation (1), the null hypothesis that x_t does not *Granger* cause y_t is rejected not only if the coefficients on the x_{t-j}, are jointly significantly different from zero, but also if the coefficient on ecm_{t-1} is significant.

The VECM also provides for the finding that x_{t-j} *Granger* cause y_t, if ecm_{t-1} is significant even though the coefficients on x_{t-j} are not jointly significantly different from zero. Furthermore, the importance of $\alpha's$ and $\beta's$ and represent the short-run causal impact, while $\gamma's$ gives the long-run impact. In determining whether y_t *Granger* cause x_t, the same principle applies with respect to equation (2). Above all, the significance of the error correction term indicates cointegration, and the negative value for $\gamma's$ suggest that the model is stable and any deviation from equilibrium will be corrected in the long-run.

The study applies the multivariate cointegration methodology of Johansen (1988) and Johansen-Juselius (1990) to establish the possible causal relations between environmental degradation and the variables of consumption and energy use. The cointegration test and the vector error correction model are used to find out whether there is evidence of long-run relationships between environmental degradation and the variables of consumption and energy use. Alternative approaches include employing autoregressive distributed lag (ARDL) approach (Sari and Soytas, 2008) and panel data methodology (Dinda and Condoo, 2006) to determine the cointegrating relationship between the relevant variables. The study further investigates the dynamic properties of the system through the generalized variance decomposition analysis based on the unrestricted VAR model, to establish whether or not the consumption and energy use display explanatory power in forecasting environmental degradation variance. In Tiwari's (2011) analysis, the structural VAR approach indicated that consumption of renewal energy source increases GDP and decreases CO_2 emissions. A positive shock on GDP was found to have a very high positive impact on the CO_2 emissions. The study was given a dynamic specification when Loganathan and Thirunaukarasu (2010) used combination of OLS-EG, DOLS, ARDL and ECM to identify the short-run elasticity between total energy consumption and economic performance for Malaysia. Belke, Dobnik and Dreger (2011) offered new insights by distinguishing effects of the national and international developments as drivers of the long-run relationship. Unlike other studies, this study hopes to further contribute to the existing literature by using econometric modeling with VAR, ECM and variance decomposition approaches to identify the short-run and long run relationship between consumption and environmental degradation through CO_2 emissions.

4.0 Discussion of Findings

In this section the findings are discussed. First, the results of the Unit Root test are presented. This is followed by the discussions of the results of Johansen's Cointegration test. Thereafter, the results of the Vector Error Correction model are discussed and finally, the results of the Variance Decomposition analysis are presented.

4.1 Unit Root Test Results (Order of Integration)

Since time series data was used, certain appropriate preliminary analysis was conducted. The first step needed was to validate the presence of equation (1). If equation (1) was found to be present, the next step would be to estimate the long-run relation as shown in equation (1) by employing the Johansen-Juselius approach and the Vector Error Correction Model (VECM).

The ADF and PP Unit Root tests were performed on data for 38 years from 1971 to 2008 to check whether the 3 variables in equation (1) were stationary in level or in first-difference. The results of this test are shown in Table 1. The constant without trend and the constant, linear trend specification were included in this test equation. The lag length used is represented in the brackets as shown in Table 1. The order of integration of the relevant variables was determined prior to performing a cointegration test as only integrated variables of the same order could be co-integrated. The test for unit roots in the variables of the system was calculated through the Augmented Dickey-Fuller (ADF) test and further supported by the Phillips-Perron (PP) test as shown in the results in Table 1 for both level and first-differenced series. Table 1 confirms the stationarity of the variables when they are first-differenced, that is; all variables used in this time series are $I(1)$.

Table 1: ADF and PP Unit Root Tests

LEVEL	ADF		PP	
	Constant Without Trend	Constant With Trend	Constant Without Trend	Constant With Trend
LCO2	-1.674452 (0)	-4.379551 (0)	-1.507568 [1]	-4.702793 [4]***
LGDP	-1.365293 (0)	-2.184544 (0)	-1.330345 [2]	-2.397939 [3]
LEC	-0.933340 (1)	-2.665706 (0)	-0.730847 [8]	-2.621410 [1]

1st DIFFERENCE	ADF		PP	
	Constant Without Trend	Constant With Trend	Constant Without Trend	Constant With Trend
LCO2	-13.37548 (0) ***	-13.12915 (0)***	-13.37548 [0]***	-13.12915 [1]***
LGDP	-5.041948 (0)***	-5.064201 (0)***	-4.998868 [2]***	-5.023425 [2]***
LEC	-7.470421 (0)***	-7.425852 (0)***	-7.699403 [5]***	-8.383731 [7]***

Note: *** and ** denotes significant at 1%, and 5% significance level, respectively. The figure in parenthesis (…) represents optimum lag length selected based on Schwatz Info Criterion. The figure in bracket […] represents the Bandwidth used in the Phillips-Perron test selected based on Newey-West Bandwidth criterion.

4.2 Johansen's Jusaelius Cointegration Test Results

The Johansen-Juselius Cointegration test was performed using non-correlated errors as the lag selection criterion. Since all variables in this time series are $I(1)$, there is a likelihood of an equilibrium relationship between them. The cointegration test of Johansen (1988) and Johansen-Juselius (1990) was applied to investigate the presence of a long-run equilibrium relationship among the variables in study. Table 2 estimates the number of long run relationships that exist between environmental degradation (proxied by CO2 emissions) and it determinants comprising of consumer behaviour (proxied by GDP per capita) and Energy consumption (EC). After performing the Johansen cointegration test, the Vector Error-correction Model (VECM) was

estimated and the optimal lag length was obtained. A model with the optimum lag of 1 was chosen based on the Ljung-Box-Q statistics as the error terms of all equations in the system were found to be serially uncorrelated.

Table 2: Results from Johansen's Cointegration Test- Unrestricted Cointegration Rank Test (Trace and Maximum Eigenvalue)

NULL	Test Statistics		Critical Value (5%)	
	Trace	Max Eigenvalue	Trace	Max Eigenvalue
r = 0	44.98541***	38.00977***	29.79707	21.13162
r ≤ 1	6.975635	6.599763	15.49471	14.26460
r ≤ 2	0.375872	0.375872	3.841466	3.841466

This table shows the results from Johansen's Cointegration Test for both Trace and Maximum Eigenvalue which shows the presence of cointegration for this system of variables. Note: *** denote significance at 1 percent.

The results in Table 2 show that both the trace statistics as well as the maximum-eigenvalue statistics indicates the presence of a unique cointegrating vector at 1% level. Therefore, the empirical results suggest the presence of a long run cointegration relationship between environmental degradation (proxied by CO2 emissions) and it determinants comprising of consumer behaviour (proxied by GDP per capita) and Energy consumption (EC).

4.3 Vector Error-Correction Model (VECM)

The vector error-correction model is used to capture the long-run equilibrium dynamics in the time series. Since there is evidence of cointegration, the dynamic relationships between the cointegrated variables can be studied using an error-correction model. The cointegrating vector (normalized on the CO_2 emissions) representing the long-run relationship (with lag 1) is shown as follows:

$$Ln(CO_2)_t = -24.46877 + 5.388227ln(GDP)_t*** - 3.365872ln(EC)_t*** + e_t \qquad (4)$$
$$\text{t-stat} \qquad\qquad\qquad [9.44280] \qquad\qquad [7.07742]$$

The coefficients found in the normalized cointegrating vector in Equation 2 are long-term elasticity measures because the variables have undergone logarithmic transformation. Equation (2) shows that both LNGDP and LNEC are significant at 1% significance level. In the long run, there seems to be a positive and significant relationship between consumption (proxied by real GDP per capita) and environmental degradation (proxied by CO_2 emission), while energy consumption has a negative and significant impact on environmental degradation in Malaysia. The positive relationship between consumption (proxied by real GDP per capita) and environmental degradation (proxied by CO_2 emission) are consistent with the empirical evidence of Tucker (1995); Adrangi el at. (2004) and Halicioglu (2008).

It is interesting to note that energy consumption in Malaysia has a negative relationship with CO2 emissions. It is believed that when there is improved energy efficiency, this is likely to reduce

CO2 emissions as shown in our results. However, this result contradicts with the findings of Ang (2007, 2009) and Jalil and Mahmud (2009).

It must be noted that the estimated coefficients of the cointegrating vector shown above only represents the long-term relationship that exists as it does not reflect the short-term dynamics that these variables could possibly share. In order to study the short-term dynamic relationships amongst the variables, the variance decompositions are generated based on the unrestricted VAR model.

4.4 Variance Decomposition

The study further investigates the dynamic properties of the system through the generalized variance decomposition analysis which is presented and discussed in this subsection. The variance decomposition displays the explanatory power or relative importance of each variable in accounting for fluctuations in other variables. The study illustrates the contribution of the regressors in forecasting the variance of environmental degradation and of each other. Table 3 represents the results of the generalized variance decomposition at different time periods: one year (short term), five to eight years (medium to long term).

It can be seen that the bulk of the variations in the CO_2 emissions is attributed to its own variations. Even after 10 years, almost 98% of the variation in CO_2 emissions is explained by its own shock implying that it is relatively exogenous to other variables. However, it is imperative to note the insignificant role played by energy consumption and GDP per capita in forecasting the variance of CO_2 emissions.

It can be seen that over the longer time horizon (10 years), energy consumption forecasts only approximately 1.632% of the variance of CO_2 emissions, whereas GDP per capita innovations do not seem to generate much fluctuation in CO_2 emissions.

Table 3 also shows that energy consumption (EC) is the most explained variable because almost 81% of its variance has been explained by innovations in the other variables. Almost 74% of variances in GDP per capita are explained by shocks in the other two variables. The results also point towards the dominant role of CO_2 emissions in generating fluctuations on GDP per capita. On the other hand, shocks in GDP per capita significantly impacted the forecast error variances of energy consumption in Malaysia. This concurs with the findings of Tiwari (2011) who found that the consumption of renewable energy source explained a significant part of the forecast error variance of GDP.

5.0 Policy Implications

The findings have policy implications as the Malaysian government would need to carefully plan projects to ensure sustainable growth is achieved by putting into place regulatory measures and strict enforcement of green laws that will reduce carbon emission. It is important that policies on energy conservation be implemented and enforced as this would entail a more efficient use of energy that would reduce greenhouse gas emissions. The empirical evidence shown in our study and those of others, implies that higher consumption is positively associated with worsening

environmental degradation in the long run. The policy makers should take cognizance that higher consumption and income level inevitably leads to deteriorating environmental conditions. Therefore, policies should be made based on the presumption that policymakers should manage the environmental degradation instead of reducing it outright through legal regulation and restrictive taxation. Environmental regulation shall not come at the expense of higher national income.

Table 3: Generalised Variance Decomposition

Variance Decomposition of LCO2:

Period	S.E.	LCO2	LGDP	LEC
1	0.148904	100.0000	0.000000	0.000000
2	0.186621	93.15505	1.387680	5.457271
3	0.243952	94.02599	1.003965	4.970046
4	0.286730	95.50663	0.797338	3.696031
5	0.325127	96.36135	0.694202	2.944449
6	0.360702	96.62497	0.856901	2.518132
7	0.396582	96.97993	0.811031	2.209035
8	0.428891	97.29177	0.746070	1.962158
9	0.458727	97.49114	0.728629	1.780236
10	0.487122	97.64514	0.723122	1.631741

Variance Decomposition of LGDP:

Period	S.E.	LCO2	LGDP	LEC
1	0.032161	20.80555	79.19445	0.000000
2	0.050891	46.03050	53.69089	0.278614
3	0.067982	61.01589	37.27972	1.704392
4	0.082363	63.83988	34.05952	2.100596
5	0.097031	65.66329	32.18501	2.151708
6	0.110382	67.89408	29.81029	2.295635
7	0.122429	69.26755	28.30694	2.425509
8	0.133643	69.99500	27.51093	2.494077
9	0.144233	70.65558	26.79839	2.546030
10	0.154127	71.20781	26.19514	2.597055

Variance Decomposition of LEC:

Period	S.E.	LCO2	LGDP	LEC
1	0.061736	3.242883	33.39232	63.36479
2	0.079407	6.805471	52.48888	40.70565
3	0.095836	13.11201	56.81340	30.07459
4	0.105316	18.06007	55.83147	26.10846
5	0.115450	20.60377	54.68971	24.70652
6	0.125366	21.76098	55.18784	23.05119
7	0.135328	23.11005	55.30318	21.58678
8	0.144149	24.37182	55.17886	20.44932
9	0.152485	25.33855	55.04344	19.61801
10	0.160409	26.06753	54.97949	18.95298

Cholesky Ordering: LCO2 LGDP LEC

Table 3 represents the results of the generalized variance decomposition ion at different time periods: one month, six months, one year (short term), eighteen months and two years (medium to long term).

To achieve the best of both worlds, education plays an important role. People in developed countries tend to have greater environmental awareness due to their higher literacy rates. The authorities in Malaysia may take a cue from the developed nations, to incorporate environmental-related education into the national education blueprint. Hence, appropriate awareness-creating public policies could be used as opportunities to achieve the objective without causing a fall in the national income. In the similar context, usage of technology, such as the state-of-art waste management technology, could be used to curb degradation on a substantial scale.

The rise in environmental degradation may only be confined to certain sectors of the economy. As such, imposing a blanket approach in taxation on all sectors in order to deter carbon emission, may not be effective. Disaggregation of data on environmental degradation should be sector-based as the sectors that inflict greater environmental damage should be taxed more than those that do not inflict as much damage. This selective approach may deter the 'culprits' and coerce them to undertake measures that will reduce pollution whilst the cleaner sectors will justifiably be rewarded for the efforts taken. However, the disaggregated data may not be easily available and the collection process may be time- consuming.

6.0 Conclusion

The study was conducted to investigate whether consumption (proxied by GDP per capita) and energy consumption have explanatory power over environmental degradation (proxied by CO_2 emissions) in Malaysia. The use of the vector error-correction model gives evidence that environmental degradation is cointegrated with a pair of independent variables; namely, GDP per capita and energy consumption. The empirical results suggest the presence of a long-run and equilibrium relations between these variables and environmental degradation. The results lend evidence of the existence of a positive relationship between environmental degradation and consumption and a negative relationship between environmental degradation and energy consumption.

The study further analyzes the short-term dynamic relationships that exist amongst the variables by generating variance decompositions based on the unrestricted VAR model. The generalized variance decomposition analysis demonstrates the dominant influence of environmental degradation and energy consumption on the consumption variance in Malaysia. The results also show evidence of the dominant role of environmental degradation in generating fluctuations on consumption. On the other hand, shocks in consumption significantly impact the forecast error variances of energy consumption in Malaysia.

Therefore, it can be concluded based on the empirical evidence of this study, that consumption does have an impact on environmental degradation in Malaysia.
The study does have some limitations. Firstly, it only investigates the relationship between two independent variables and environmental degradation in Malaysia. Additional work can be done on different countries and include various other important economic variables that can contribute further to existing literature. The study could also consider the use of monthly data.

Acknowledgement

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Innovation among SMEs in Malaysian Manufacturing: An Analysis Using Firm-Level Data[1]

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Abstract

SMEs are important in Malaysia because they form the bulk of all establishments in the country and they are predominantly domestically owned and managed. The objective of this paper is to examine the characteristics of SMEs that innovate and their level of innovation by applying ordered probit approach. The results suggesting that for SMEs competition is a key driver of innovation. Younger firms and medium sized firms tend to be more innovative than older smaller firms.

Keyword: Innovation, manufacturing, firm level analysis, ordered probit, Malaysia

1.0 Introduction

The 2005 Census of Establishments and Enterprises indicated that 99 per cent of the 519,000 business establishments in Malaysia were small and medium-sized enterprises (SMEs) (MIER, 2000). Of this 412, 000 were micro enterprises or those that employed less than 5 workers (UNDP, 2007:1). SMEs are defined in various ways but a common definition based on employment size classifies any establishment with 150 employees or less as SMEs (UNDP, 2007, p.2). SMEs are important in Malaysia because they form the bulk of all establishments in the country and they are predominantly domestically owned and managed (Abdullah: 2002; Rasiah, Malakolunthu, 2010).

Innovation has been identified as being critical in leading Malaysia out of the middle income trap (NEM, 2010) but innovative activity in the country is not only low but confined to foreign – owned firms located in the electronics and electrical sector (NEM, 2010, p.53). However, this does not imply that there is no innovation among SMEs but very little is known about the nature of their innovation and the industrial subsectors that support innovative SMEs (Lee and Lee, 2007).

For the purposes of this paper innovation is defined as new or significant changes to goods or services; production or delivery methods; marketing methods and organizational methods (OECD, 2005). But no attempt is made in the paper to distinguish between these innovations.

2.0 Objective

The objective of this paper is to examine the characteristics of SMEs that innovate and their level of innovation (divided into three stages: non-innovative, moderately innovative and highly

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[1] This paper is based on data being analyzed for my PhD thesis. I thank my supervisor, Prof. Suresh Narayanan, for his advice and guidance in preparing this paper. Without his assistance this paper would not have been possible.

innovative). This will hopefully provide some policy implications to increase innovative activity among SMEs.

3.0 Data and Methods

SME level data were obtained from *the Productivity and Investment Climate Survey 2*—a nationally representative collaborative effort undertaken by Economic Planning Unit of the Prime Minister's Department, the Malaysian Department of Statistics and the World Bank in 2007 with data for the reference year 2006. SMEs were divided into two groups: small firms (10 to 49 employees) and medium sized firms (50 to 150 employees)

The firm-level survey covered a broad range of topics but 20 questions pertained directly or indirectly to innovation. These were used to classify firms into one of the three stages of innovation: non-innovative, moderately innovative and highly innovative. Firms replying in the affirmative to question 19 or 20 or both were classified as being 'highly innovative'. These were firms that had dedicated R&D staff in 2006 and/or had filed for patents, utility models or copyright protected materials. On the other hand, firms that failed to answer in the affirmative to *any* of the twenty questions were considered as being non-innovative. All remaining firms were grouped as being 'moderately innovative'. The stage of innovation, the dependent variable, was therefore ordered from 'none' to 'moderate' and 'high'.

Table 1 presents the summary statistics. Of the total sample of 746 SMEs, only 18 per cent were highly innovative, 39 per cent were moderately innovative and 43 per cent were not innovating. It indicates that more than half the firms (57 per cent) were involved in innovation even if it may not be in a sophisticated form. SMEs therefore are beginning to innovate. By subsector, it is difficult to clearly see from the data where innovative firms. The majority of firms at all three levels of innovation were to be found in two subsectors: food and rubber and plastics.

There were a bigger proportion of older firms in the non-innovation group (56%) as compared to the other two levels. In contrast, there was a larger concentration of export-oriented firms, medium size and foreign-owned firms as well as firms with government participation in the moderate and highly innovative group.

A firm's stage of innovation may not be observable directly. The only data we have is categorical in nature with a 0 for non-innovative firms, 1 for moderately innovative firms and 2 for highly innovative firms. Since the stage of innovation was ordered, the ordered probit model was used for the analysis (See Greene, 2004 for further details). In general the model can be specified as

$$y_n^* = y_n \, \beta z_n + \varepsilon_n$$

where
y_n^* = is an exact but latent measure of the stage of innovation of firm *n*
z_n = a vector of explanatory variables likely to influence innovation
β = a vector of regression coefficients (parameters) to be estimated
ε_n = a random error term assumed to be normally distributed *N(0,1)*

While y_n^* cannot be observed, the categories of response can be determined from the model as assuming y takes on one of the values of 0, 1 or 2 depending on the value of y_n^* as follows:

No innovation $y = \quad 0$ if $y_n^* \leq \mu_1$

Moderately innovative $y = \quad 1$ if $\mu_1 \leq y_n^* \leq \mu_2$

Highly innovative $y = \quad 2$ if $\mu_2 \leq y_n^*$

Note that μ_i's are thresholds that separate the innovation stages and were estimated along with the vector of parameters.

They firm-level covariates were age of firm, export orientation, firm ownership, firm size and subsector of activity. The choice was guided by empirical evidence drawn from similar or broadly related studies elsewhere.

Age of firm was found to influence innovation though the direction is not always clear. Jefferson, et al. (2004) argued that age proxies firm's experience and is therefore positively related to innovation. Export orientation too has been positively associated with innovation (Criscuolo, et al., 2005) since export markets are competitive. Firm ownership (private or public) may influence innovation though the direction is unclear. SMEs tend to find financing a setback.Smaller firms within the SMEs may find even greater difficulty (UNDP, 2007: Lee and Lee, 2007) Rajah Rasiah (2011) opines among Malaysian firms the probability of larger firms participating in RandD activities is higher. Finally, eleven industrial subsector dummies were included to capture sectorial differences in technology and innovation, if any.

The covariates were defined as follows: Age of establishment = 1 if the firm was in operation for more than 15 years and zero if otherwise. Export orientation = 1 if exports comprised more than 10per cent of sales and zero if otherwise. Government participation =1 if the public sector holds any shares in the firm and zero if otherwise. The hypothesis is that SMEs with public participation will be more innovative since they have better access to financial and other resources. Foreign ownership = 1 if foreign (more than 30 %) and Joint venture firms own (less than 30 per cent) of the share and zero if otherwise. Similar to government ownership, foreign affiliated SMEs may have better access to resources and talent to conduct innovation. Medium sized firm=1 if number of employees is more than 50 and less than 150 workers and zero if number of employees is less than 50 and more than 10 workers. Note that according to the definition adopted in UNDP (2007: 2) and the National Survey of Innovation (2000) firms with more than 150 workers are considering as large firms and are not included in this study. Similarly dummies were created for 11 manufacturing subsectors: Food (processing); Textiles; Garments; Wood (and wood products); Chemical (and chemical products); Rubber and plastic; Machinery (and equipment); Office (accounting and computing) machines; Electrical (machinery and apparatus); Electronics (equipment and components); Furniture;

4.0 Results

The results of the ordered probit analysis are shown in Table 2. The estimated coefficients have no direct interpretation. But two variables are positive and significantly associated with innovation: export-orientation, and firm size. Significant negative sign for age of establishment shows older firms less likely to be innovative. Although not significant, among industry subsectors only the coefficient of rubber is positively related to innovation.

The marginal effects shown in Table 3 are more revealing. Older established firms are less likely to be moderately or highly innovative rather they more likely to have no innovation (0.7 percent). Export oriented SMEs have a higher probability of being highly innovative (11.5 per cent) than moderately innovative (0.6 per cent). Competing in export markets is therefore a strong driver of innovation. Medium size firms also increases the probability of being highly innovative by 13.2 per cent and being moderately innovative by 6.4 per cent. Again, medium firms tend to find financing easier for their innovative activities compared to small firms. Finally, though not statistically significant, the results suggest that being located in rubber subsector or being a foreign owned or government owned firms does reduce the probability of being non-innovative.

5.0 Conclusion

The findings indicate that although innovation among SMEs may be low relative to larger companies, innovation is taking root among them (Abdullah, 2002; UNDP, 1994). About 57 per cent of the sample of 746 SMEs was innovating, either highly or moderately (MASTIC, (2008). It should be noted that based on the definition in the paper, the former results in patents and new products while the latter involves changes or modifications in products, processes or both.

The findings suggest competition is a key driver to innovation. SMEs in the export market are more likely to be highly innovative and, to a lesser extent, moderately innovative. Encouraging SMEs to export will also drive them to innovate. Policies designed to open more export markets to SMEs and encourage them to penetrate these markets may be an indirect way of encouraging innovation. SMEs are more likely to react positively to incentives that open new markets than they are to incentives directly tied to innovation.

That medium sized firms tend to be highly innovative is not surprising. The probability of being a moderately or highly innovative firm increased with firm size since larger firms tend to invest more in RandD than do small ones (Shefer, and Frenkel, 2005).

Government participation and foreign ownership was positively associated with innovation but not in a significant manner. This may be because public participation in SMEs facilitates their access to the many incentives that are being offered to SMEs in general. However, it is important to emphasize that similar ease of access must be given to private SMEs as well. Although SMEs with public participation are less likely to be non-innovative the data does not show any significant innovative activity among them. This suggests that they must be driven harder to upgrade their innovation. Any policy aimed at encouraging private SMEs to innovate needs to simplify the procedures that must be met before they can access the many incentives already in place.

The results also suggest that among SMEs there is no statistically significant difference in level of innovation by industrial subsectors. Finally, SMEs in rubber sector show very weak promise of being more innovative than SMEs in other subsectors. Without neglecting efforts to upgrade innovation in the other sectors, the findings suggest that giving this sector some priority might help the SMEs here too.

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Appendix

Table 1 : Descriptive statistics of our sample data

Independent Variables	No innovation	Moderately innovative	Highly innovative	Total
Food processing	86 (26.88)	62 (21.23)	35 (26.12)	183 (24.53)
Textiles	12 (3.75)	12 (4.11)	5 (3.73)	29 (3.89)
Garments	35 (10.94)	13 (4.45)	11 (8.21)	59 (7.91)
Wood and Wood Products	13 (4.06)	9 (3.08)	2 (1.49)	24 (3.22)
Chemicals and Chemical Products	20 (6.25)	19 (6.51)	11 (8.21)	50 (6.70)
Rubber and Plastic	67 (20.94)	93 (31.85)	40 (29.85)	200 (26.81)
Machinery and equipment	28 (8.75)	28 (9.59)	9 (6.72)	65 (8.71)
Electrical Machinery and Apparatus, Office, Accounting, and Computing Machines	6 (1.88)	6 (2.05)	4 (2.99)	16 (2.14)
Electronics (Equipment and Components)	8 (2.50)	12 (4.11)	6 (4.48)	26 (3.49)
Furniture	36 (11.25)	29 (9.93)	8 (5.97)	73 (9.79)
Other	9 (2.81)	9 (3.08)	3 (2.24)	21 (2.82)
Age of establishment (x>15)	181 (56.56)	162 (55.48)	64 (47.76)	407 (54.56)
Export orientation More than 10% of sales exported= 1 and zero otherwise	91 (28.44)	133 (45.55)	82 (61.19)	306 (41.02)
Foreign-Owned and Joint venture firms =1 and zero otherwise	48 (15.00)	78 (26.71)	29 (21.64)	155 (20.78)
If government owns 30% or more of share of the company =1 and Zero if otherwise	1 (0.31)	4 (1.37)	2 (1.49)	7 (0.94)
Medium size dummy if number of employees are more than 50 and less than 150 =1 and zero if otherwise	73 (22.81)	144 (49.32)	71 (52.99)	288 (38.61)
Sample size (pooled)	320 (42.90)	292 (39.14)	134 (17.96)	746 (100.00)
Note: Number in quotations ( ) are in percentage				

Table 2 Results of the ordered probit estimation

Dependent variable (level of innovation)	Coefficients	Std. Error	P>z
Food Processing	-0.0480	0.2649	0.856
Textiles	-0.0296	0.3317	0.929
Garments	-0.1815	0.2967	0.541
Wood and Wood Products	-0.4186	0.3501	0.232
Chemicals and Chemical Products	-0.1062	0.3001	0.724
Rubber and Plastic	0.0092	0.2654	0.972
Machinery and Equipment	-0.1282	0.2903	0.659
Electrical Machinery and Apparatus and Office, Accounting, Computing Machines	-0.0387	0.3833	0.920
Electronics (Equipment and Components)	-0.0468	0.3374	0.890
Furniture	-0.3087	0.2885	0.285
Age of establishment more than 15 years	-0.1903**	0.0866**	0.028
Export more than 10 % of sales	0.4567***	0.0918***	0.000
Government owns (30% or more share of the company)	0.5926	0.4239	0.162
Foreign firms and joint ventures	0.0111	0.1086	0.918
Medium size dummy if number of employees are more than 50 and less than 150 =1 and zero if otherwise	0.5158***	0.0902***	0.000
cut point 1	0.0087	0.2609	
cut point 2	1.1968	0.2638	
Observations	746		
LR chi2(15)	93.62		
Prob > chi2	0.0000		
Pseudo R^2	0.0604		
Log likelihood	-727.99		

*Significant at the 10% level; **Significant at the 5% level; ***Significant at the 1% level.

(*) dP/dx is for discrete change of dummy variable from 0 to 1

Table 3: Marginal effects (for a discrete change of dummy variables from 0 to 1)

Dependent variable (level of innovation)	No innovation	Moderately innovative	Highly innovative
Food Processing	0.0188	-0.0073	-0.0115
	(0.857)	(0.857)	(0.857)
Textiles	0.0116	-0.0045	-0.0071
	(0.928)	(0.928)	(0.928)
Garments	0.0718	-0.0310	-0.0408
	(0.542)	(0.589)	(0.503)
Wood and Wood Products	0.1658	-0.0834	-0.0824
	(0.226)	(0.317)	(0.124)
Chemicals and Chemical Products	0.0419	-0.0173	-0.0246
	(0.726)	(0.741)	(0.711)
Rubber and Plastic	-0.0036	0.0014	0.0022
	(0.976)	(0.976)	(0.976)
Machinery and Equipment	0.0506	-0.0211	-0.0295
	(0.66)	(0.689)	(0.638)
Electrical Machinery and Apparatus and Office, Accounting, Computing Machine	0.0152	-0.0060	-0.0092
	(0.92)	(0.92)	(0.92)
Electronics (Equipment and Components)	0.0184	-0.0073	-0.0111
	(0.889)	(0.897)	(0.889)
Furniture	0.1224	-0.0565	-0.0659
	(0.285)	(0.358)	(0.215)
Age of establishment more than 15	0.0743	-0.0276	-0.0467
	(0.027)***	(0.029)***	(0.03)***
Export more than 10 % of sales	-0.1758	0.0604	0.1154
	(0)***	(0)***	(0)***
Government owns (30% or more share of the company)	-0.2080*	0.0249	0.1830
	(0.097)	(0.424)	(0.238)
Foreign and joint venture firms	-0.0043	0.0016	0.0027
	(0.92)	(0.92)	(0.92)
Medium size dummy if number of employees are more than 50 and less than 150 =1 and zero if otherwise	-0.1973	0.0648	0.1325
	(0)***	(0)***	(0)***

Characteristics of Learning Organizations Implementing Sustainable Development: A Case Study of the Malaysian Electricity Generation Industry

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Abstract

Sustainable development is required to be implemented by organizations. The role of organizations to do so is not neutral. Organizational systems are also in need of development for a sustainable future, just as technologies are. To enable a sustainable future requires organizations to be considered learning systems, whereby adaptive organizational structures emerge to operationalize adapting sustainable technological developments. A general introduction to theoretical principles of a learning system meta-structure is the main aim of the paper. Adaptive environmental management and human resource management both contribute. The research is empirically based on the case study of the Malaysian electricity generation industry. The meta-structure that has emerged is driven by the need for life-enhancing creative co-evolution with the total (ecological, social, economic and cultural) environment of the organization. There are vertical and horizontal dimensions to this. The vertical dimension is concerned with strategic adaptability to balance the needs of the multiple stakeholders constituting the total environment. The horizontal dimension is the requirement for facilitation of innovative synergistic teams to achieve the continually adapting strategic goals of the organization in its co-evolutionary trajectory. A secondary aim of the paper is to cross reference the above generally accepted meta-structure for learning organizations, with the political science discipline's analysis of the roles of social capital and civil society, along with the recognition in postcolonial theory of the need for mutual acculturation to maintain and enhance healthy global cultural diversity in rejection of attempted forced assimilation into a global cultural hegemony. A key point here is that political science recognizes the need for loose coupling of semi-autonomous cultural grouping (social capital) both within organizations and those making up the total environment (civil society). Another key point is that social capital and civil society recursively nurture each other as a self-regulating learning system.

Keywords: Learning organization, culture, resilience, sustainable development, human resource management, civil society, social capital

1.0 Introduction

Sustainable development is generally recognized as involving three or four facets, namely, environmental, social and economic, and often also cultural aspects. The challenge is how to integrate the various facets. This is a well-known issue in the discipline of human ecology attempting to develop rigorous analytics for sustainable development (Morrison and Singh, 2009). The approach taken here is a realist one of considering the interactions and processes known to involve and to occur between the various facets. It is therefore an interdisciplinary

approach. It is however an inter-disciplinary approach from a particular entry point, which is that of the role of organizations in attempts to implement sustainable development agendas (McGuire, 2010). Due to this particular inter-disciplinary flavor, a particular trans-disciplinary framework has been developed with which to analyze the ways in which the integration of the multiple facets occurs. The framework is based on the trans-disciplinary frameworks utilized within management theory.

Management is itself a broad discipline covering all three facets of the environment, the social and the economic through the fields of environmental management and human resource management, with both the fields of management also showing interest in considering the role of culture. Here in this research the focus has been on human resource management (HRM) approaches, with however cross reference to environmental management, mainly through the use of the same trans-disciplinary learning-system theories.

The research approach taken has not only assumed the need for greater sophistication in how the integration of the various facets of sustainable development is conceptualized. The approach has also assumed that there is a need to base the development of more sophisticated conceptualizations on empirical study of what is being learnt by organizations actually already charged with the implementation of sustainable development. Given that conceptual and theoretical frameworks are already involved to guide attempts by organizations through their HRM to achieve the goals of sustainable development, attention to what has been learnt, or at least adaptations that have emerged, are potentially informative.

This research has attempted to take up both research prongs and has done so by considering how a major resource user and provider (the electricity generation industry in Malaysia) has developed, as it has sought to achieve sustainable development. The research is part of a larger project to compare the development of the Malaysian electricity industry and New Zealand electricity industry. Here tentative results from the Malaysian case are presented.

2.0 Literature Review

A review is carried out of the general theoretical issues that allowed critical synthesis of a plausible research framework. Through this there is also an introductory review of the specific issues found in how HRM has attempted to address the issues.

2.1 Theoretical Issues

Contemporary issues in systems science provide trans-disciplinary conceptual threads with which to develop possible inter-disciplinary syntheses. The particular conceptual threads introduced here include: complexity and emergence; the relationship between development and adaptation; and social learning involving double and triple-loop learning. Following the review of systems science threads, political science contributions to understand the significance of civil society and social capital as a means by which to integrate the various facets of sustainable development are reviewed.

2.1.1 Complexity and Emergence

Complex systems science refers to explicit recognition that natural systems, including social systems, involve non-linear relationships that inevitably result in forever changing recursive co-evolutionary relationships (Morrison and Singh; 2009) The consequence of this is that fixed goal-seeking behavior, or "hard" system analysis is only possible for the relatively short term, and even less during periods of rapid change (Geels, 2002; Foxon, et al., 2008). This is highly pertinent for management theory. Ultimately it means that enforced performance management (PM) is intrinsically limited in its scope and efficacy (Bouckaert and Peters, 2002).

Associated with the concept of complexity is the notion of emergence. Due to the inability beyond the relatively short term to achieve goals based on "hard" system analysis and design, realistically what has to be focused on are the possible and likely emergent co-evolutionary system features. At this point a very important principle appears, which is that emergence provides opportunities as well as risks. Emergence is the indeterminacy that allows the possibility of creative participation to enhance life. This is the key to the spirit of entrepreneurship in business, and innovation generally in organizations, and so is embraced by HRM. Innovative synergies emerge and are possible due to complexity, and arise precisely because of the intrinsic inability of management to have certainty in their goal-seeking behaviour. Once enforced PM became recognized as impossible and counter-productive in the long term, opportunities for innovative synergies are instead sought and become strategically managed for.

Prior to the PM paradigm revolution associated with the globalization of the "New Economy" in the mid-1980s (Falk, 2000; Bryne and Gerdes, 2005) it was already recognized that there were opportunities in accepting the "softness" of systems (Checkland, 1981). It was accepted that only by avoiding attempts to define systems according to "hard" frames of defined goals and system pathways enforced due to imposed top-down management, can actual innovative solutions in an ever changing complex environment requiring compromises and balance be sought. Moreover, "soft system" methodologies recognized that the solutions that emerge are known to only ever be contingent and needing continuous revisiting. Within a complex recursive reality, management also has to be recursive and that only this enables innovative synergies to emerge. Moreover, "soft system" methodologies recognized that the analysis of the complex, recursive and co-evolutionary process can take one or both of two forms, a cultural stream of analysis and a political stream of analysis (Checkland and Scholes, 1990). In other words, it can and needs to be analyzed in terms of subjective norms, values and beliefs as well as in terms of objective forces and power.

2.1.2 Development and Adaptation

Recognition of complexity and emergence enable opportunities to be discovered and taken up. Therefore complexity and emergence and hence the "softness" of systems is necessary for development. It is only through recognition of this that sustainable development becomes possible, and not a contradiction in terms (Morrison and Singh, 2009). Sustainability is essentially the ability to creatively adapt to the ever-changing recursive and co-evolutionary natural reality. Recognizing this, the issue becomes one of what the significant features of the ever changing natural reality recursively engaged with? Technically this concern is that of

"requisite variety (Ashby, 1956; Morrison and Singh, 2009), and practically seen in the plethora of intersecting circle diagrams, four pillar, and triple or quadruple bottom-line models for sustainable development consisting of the three or four key features; that of the (ecological) environment, the economic, the social and the cultural (Agenda 21 1993). Coming to relative practical agreement that these are the significant features begs the question however of how these three or four significant features can be integrated in a decision-making process. The various features have incommensurable indicators and so metrics are intrinsically frustrated (Costanza and Daly, 1992; Gustavson et al., 1999; Hediger 2000; Munda, 2005; Reed et al., 2005). There are two main approaches taken. One is to adopt heuristics that propose various pseudo-commensurable metrics, for example cost-benefit analyses. The other approach is the realist one of modeling the actual interactions between the three or four significant features. Quickly however it is then concluded that if the interactions are non-linear that the results will be chaotic and complex. This has been found to generally be the case. So an objective scientific analysis has remained frustrated, except for the ability to provide fuzzy of constraints (Reed, et al., 2006; Morrison and Singh, 2009). What remain scientifically possible is consideration of the objective boundaries for pro-active social activity and learning. This is the realm of management. The point is that different organizations can be constructed to force and/or enable different social activities, which have different effects. So organization matters for sustainable development. Organization is not neutral. It is the very important issue for sustainable development, that of transition management (Geels, 2002; Foxon, et al., 2008; Morison and Singh, 2009).

2.1.3 Social Learning

Management literature has kept abreast with the developments of systems theory and applied them to real-world practical situations. This has occurred through the definition of the meta-structure of organizations in terms of learning (Argyris and Schon, 1978; Senge, 1990). Senge (1990) coined the term "learning organization" to emphasize the point. The need for "soft" recursive management can therefore be summarized as the need for management to see an organization as a learning system engaged in social learning (Checkland, 1981; Checkland and Scholes, 1990; Morrison and Singh, 2009). The processes involved have been analyzed clearly and taken to involve three nested loops of learning (Flood and Romm, 1996; Keen and Mahanty, 2006; Morrison and Singh, 2009; Morrison, 2012).

Single-loop learning refers to what can be achieved by hard (enforced) systems analysis. Double loop learning refers to the ability to plan strategically and adaptively to the objective complex environment of multiple stakeholders. This has also become well recognized in the field of environmental management (Plummer and Armitage, 2007; Rammel, et al, 2007; Armitage, et al., 2008; Cundil and Fabricius, 2009; Pahl-Wostl, 2009). Triple-loop learning refers to the ability to maintain motivation and innovation due to relationships of trust and autonomy within the complex of cultural norms, values and beliefs. It is triple-loop learning that enables authenticity to be maintained, and enables "transformational" leadership-by-example, which empowers others also to innovation (Barr, 1999; Gardner and Scheuerhorn, 2004; Mazulis and Slawinski, 2008). The role of and necessity for triple-loop learning to incorporate cultural reality has also begun to be recognized in environmental management, as it pertains to global inter-cultural issues (Pahl-Wostl, 2009; Morrison, 2012). Figures 1 is based on recent research on how to deal with global inter-cultural human ecological issues, by explicitly considering how to integrate cultural traditions within management.

Figure 1: The three loops of learning (adapted from Morrison 2012, p.184)
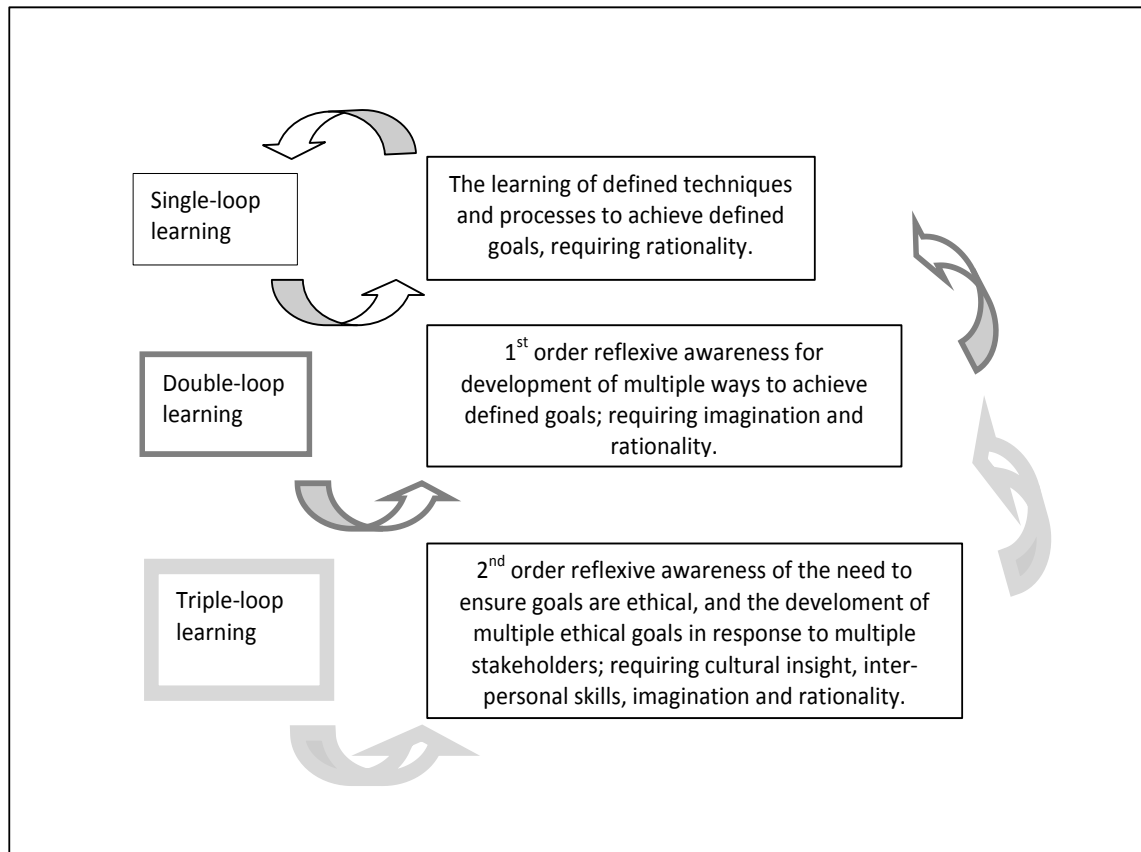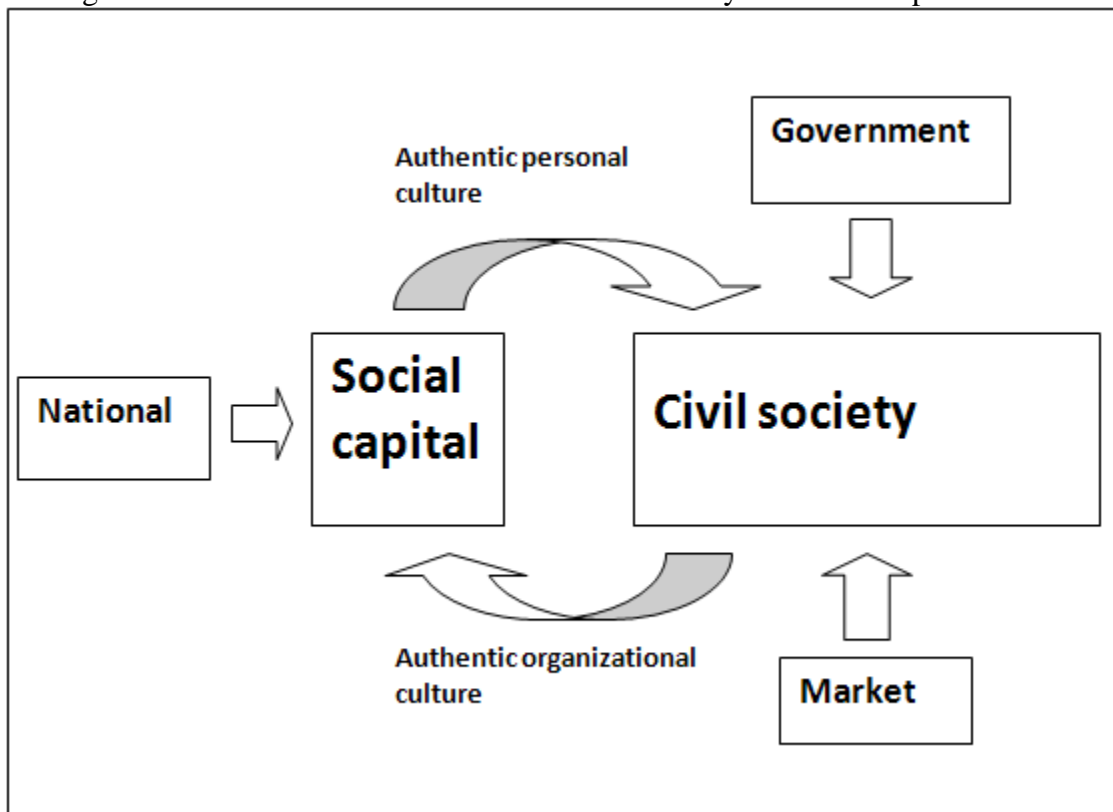

2.1.4 Civil Society

Civil society is generally defined as the public space between the state and individuals, formed between the market and governmental organizations (Hadenius and Uggla, 1996). So civil society is very relevant for the "New public sector" whereby previously public institutions have been privatized, for example the electricity generation sector (Bignall and Modell, 2000, Boland and Fowler, 2000; Kloot and Martin, 2000). But the definitions of civil society also point to the cultural context of the public space. For example, Gellner (1996, p.5) defines civil society as "the set of diverse non-governmental institutions, which are strong enough to counterbalance the state". Clearly a normative and ideal multi-stakeholder situation is recognized, with the dynamic features also being explicitly referred to. Civil society is held to be a "shining emblem" (Gellner, 1996) that contains a "wave of global citizen action" (Edwards, 2004), and is the centre of "globalization from below" out of which "alternative ideologies are growing in its space" (Falk, 2004). Moreover, civil society has become especially relevant since the neoliberal ideology that became dominant simultaneously to the emergence of the "New economy" of globalized knowledge workers. In face of the global hegemony of neoliberal ideology promoted by groups of powerful state and international organizations (Falk, 2004), there has been recognition of the significance of ideas and concerns about how civil society can potentially limit the hegemonic power of both the modern state and globalized economy, which can otherwise destroy the older forms of mutual life (Bates, 1975, Cohen and Arato, 1992). Thereby, civil society also prevents

and counterbalances such monopolistic power by using an idea of institutional pluralism, whereby national cultures and their multiple institutions are respected (Gellner, 1996). According to the originator of the theory of hegemony, Gramsci, civil society is located between state and market and family/tribal/ethnic grouping, which imply its identity as a diverse whole of institutions with non-state and non-market structures and activities (Bates, 1975; Warren, 1999). But civil society is also recognized as the arena where balance is achieved, and can be considered to be a part of society that opposes the national cultural political structures of states (Gellner, 1996) in order to provide channels to combine both market efficiency with cooperative values (Edwards, 2004).

Due to the role of culture in civil society, including the operation of hegemony, the subjective facet of civil society has been given a lot of attention. It is termed social capital. There are however opposing perspectives on whether social capital is caused by civil society or whether civil society is the cause of social capital. The issue is related to the role of institutions in civil society and whether or not they are formal or informal. Putnam (2000) emphasizes that social capital is produced by civil society, and so implicitly focuses on the role of formal institutions in civil society, including the possibility of its establishment by the external institutions of the state and that of commerce, and hence through policy initiatives. By contrast, other scholars emphasize how civil society emerges due to the presence of social capital (Foley and Edwards, 1998). In this perspective the role of culture and hence informal institutions of civil society are considered important. So civil society and social capital can be best considered to be recursively related. The relationship goes both ways (Heinrich, 2010). It is social capital, or the interpersonal aspect of the concern for what is termed "human capital management" in the HRM literature, that initiates civil society. But when civil society is then established, it serves recursively to nurture social capital by a type of positive feedback. Also, when civil society fails to be maintained, social capital is destroyed, by a type of negative feedback. This is extremely pertinent to the proposed research, as one summary interpretation that can be made from the literature about the hegemonic globalization of industry and the implementation of enforced PM according to what came to be called the "Three E's" of efficiency, effectiveness and economy (Boland and Fowler, 2000) found in neo-Liberal ideology, is that authentic organizational culture is being destroyed, and so civil society and hence social capital are also being destroyed (Cohen and Arato, 1992). This apparent dynamic emphasizes why culture has now become so central to management agendas. Figure 2 summarizes the civil society and social capital literature, by emphasizing the recursive relationship between civil society and social capital and role of culture.

Figure 2: The recursive relation between civil society and social capital

National cultures are recognized as being the key exogenous source of social capital, and hence of civil society. Moreover, organizational culture is authentic when it nurtures social capital, and it is authentic personal culture that nurtures civil society to create a balance between the market and governmental agencies. All this points to the necessity for PM to recognize and to have as part of its organizational culture, "transformational leadership" that empowers authentic culture and employees to be able to live their own particular national culture, of which normally there are multiple that co-exist/overlap with/ in the one organization.

Another key feature of civil society is that it involves multiple overlapping formal and informal organizations, including cultural, religious, educational, sport as well as business organizations, and family and tribal associations that range from formal to informal (Hadenius and Uggla,1996; Putnam, 2000). Indeed it is recognized that too tightly an integrated organization interferes with civil society, for example exclusive cultural or familial groups or organizations that seek to be all-encompassing in the integration of objectives (Hadenius and Uggla, 1996). This is in accord with systems theory that requires loose coupling between sub-systems to enable system adaptation to occur (Gunderson and Holling, 2002). The difference between a particular culture and civil society, and why civil society is relevant for study of organizations and sustainable development, is that civil society is intercultural. This is also recognized in the study of living (sustainably adapting) traditional cultures, which are similarly also always adapting with their environments. The ability to hybridize is recognized as a feature of indigenous knowledge (Morrison and Singh, 2009).

Haddenius and Uggla (1996) also point out that there are both vertical and horizontal dimensions to the requisite integration of organizations forming civil society. The vertical dimension of integration refers to interactions between management and employees, and also between management and the environment. The horizontal dimension refers to the interactions between employees. But systems-based approaches also emphasize the *recursive* relationship between managers, employees and the environment (customers) (Dobbins, et al., 1991; Delery and Doty, 1996; Chen and Gurd, 2003). They influence each other. The influences are however never in equilibrium, but rather form a dynamic process of continual reevaluation, and so a continual co-evolution and adaptation by both the organization and the environment. The process is one of continual learning about how to adapt to an ever changing environment, namely double-loop learning. The point is however that for an organization to adapt to its environment there has to also be a triple-loop learning by the members (employees) of the organization, which refers to the internalization of authority to provide inspiration or "transformational' leadership (Flood and Rom, 1996; Delaney, 1996; Luthans and Somner, 2005). Thus triple-loop learning is associated with social capital, which in turn is associated recursively with double-loop learning associated with civil society. They support each other.

It means that if an organization is to realistically contextualize itself as part of civil society, priority has to be given to the employee in an organization as a unique adaptive and developing person rather than as a social role. Moreover, this is what best enables an organization to optimize its performance by creating synergies to innovatively discover and to take up opportunities the environment provides.

In other words, human capital management for social capital development has to have a certain priority in PM. This is actually also just another way of saying that trust and autonomy matter as well as PM (Barr, 1999; Gardner and Scheuerhorn, 2004; Mazulis and Slawinski, 2008, Platts and Sobotka, 2010). It has also led to the rise is the prominence of the field of human resource development (HRD), which emphasizes personal development and learning over PM (Lee, 2007).

Recognizing that the need for integration into the complex real-world involves flexibility, diversity, resilience and adaptation, brings into sharp relief the contrast between a pluralistic civil organization and an organizational culture that uses PM to enforce the "Three Es" and hence conformity of personal cultures to that of a particular organizational culture. The relief is sharpened further when strategy is mistakenly and counter-productively also assumed to be single focused with the purpose of achieving competitive advantage over and against other organizations.

So the authentic integration of the complex interaction of facets of sustainable development, with the necessary loose coupling, occurs if organizations focus on providing services for civil society, whilst simultaneously providing a supportive work place for employees so that the workplace is also part of civil society. This overcomes the issues of how to aggregate incommensurable data pertaining to the triple or quadruple bottom lines of sustainable development. It is solved by the realization that the most successful strategy is not to become too strategic, but rather to focus on what is truly best for civil society – for those who are being served. Similarly, it means that employees perform best when they are trusted and authentically valued as persons as part of civil society, and not merely as means to an end for the organization.

3.0 Research Framework

An inter-disciplinary research framework was synthesized from research literature in the fields of HRM and environmental management. The strong inter-disciplinary nature of environmental management was exploited to include concepts initiating from political science and human ecology. The key features were synthesized into a theoretical inter-disciplinary framework. Three features were derived directly from literature, and the three were logical consequences derived from the first three features.

3.1 Key Features

To model and potentially to manage the complex emergent organizational structures due to optimal learning processes, requires a type of balance between *configurational* strategic adptive management systems on the one hand, and trust between the personnel in an organization, along with their autonomy, on the other (Delaney and Huselid, 1996; Guest, 1997; Lillis, 2002; Bouckaert and Peters, 2002; Larkin et al., 2010; Platts and Sobotka, 2010).

The balance required in management between impersonal accounting techniques and inter-personal skills is gained from attentiveness by the leaders in an organization to the needs of both the personnel of the organization and the environment of the organization (Doyle, 1994; Johnston, 2004; Brough et al., 2008; Bhanugopan and Fish, 2008; Xiao and Cooke, 2012).

The environment of an organization is influenced by the organization, as well as the organization being influenced by its environment. The organization and its environment form a *recursive* and hence are continually mutually adapting or co-evolving together. So, from the point of view of the management of an organization, to integrate a concern for both the personnel of an organization and its environment requires an overarching pro-active intent to enhance the *emergent civil society* of the environment (Denizen and Mishara, 1995; Barr, 1999; Gardner and Scheuerhorn, 2004; Mazulis and Slawinski, 2008; Ramfall, 2008; Ketola, 2010). And, from the point of view of management of the environment, the integration requires an organization that is seeking to develop sustainably.

Sustainable development and civil society are therefore reflexes of each other. Therefore the principles that lead to sustainable development carried out by the strategic management of an organization need to be continually developed and adapted, so as to best maintain the conditions for civil society to emerge and develop in the environment to the organization being managed. Furthermore, the guiding accounting principles for performance management are therefore required to be measures of how well the conditions for the various processes of civil society are being met, rather than output-income ratios (efficiencies). The processes of civil society are essentially learning processes, and so the necessary conditions can be summarized as the need for both double-loop learning and triple-loop learning.

Moreover, the conditions for the processes of civil society are found both externally in between the institutions of the environment, as well as internally within all institutions, including of the organization itself. So an organization has to be strategically orientated toward respecting both governmental regulatory processes as well as market process. Also, management of an

organization has to explicitly seek to enhance the social capital of the personnel of the organization, which requires the organization to respect all of the cultural traditions of the social environment.

3.2.1 Synthetic Model

Figure 3 below synthesizes the above six points, to represent the research framework as a model. The framework and model is an attempt to define (a proposal of) what needs to be explicitly incorporated into an adequate PM system for electricity generation organizations. It refers to what has been deductively determined as the necessary general features and relationships, which for each particular organization and context/environment will have unique and co-evolving expression.

Figure 3: Research Framework
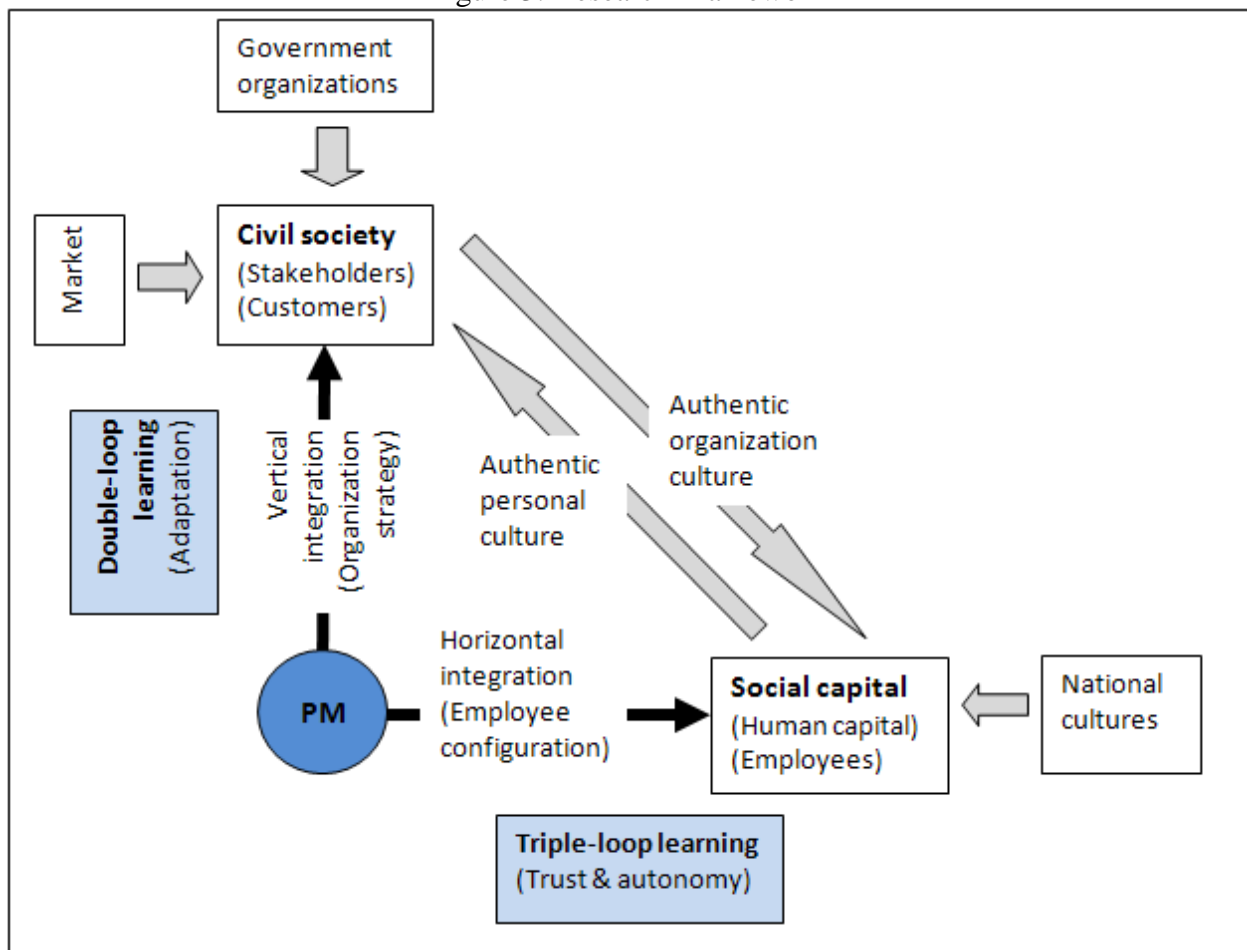
There are two key and unique features of the research framework. One is the explicit reference to the need for vertical integration with all the stakeholders making up civil society, and that this requires double-loop learning. This is recognized as especially pertinent for providers of public goods like electricity (Brignall and Modell, 2000; Boland and Fowler, 2000; Kloot and Martin, 2000; Heinrich, 2002; Johnston, 2004). The second is the explicit point that the necessary double-loop learning and consequent strategic adaptation also requires triple-loop learning to enhance

social capital, which is only provided by explicit appreciation of the role of culture (personal, organizational and national).

4.0 Methodology

The content of learning, ideas, are structured by discourse in a community. This is why discourse analysis is pertinent for the research of an organization. A 'discourse community' creates discourse representing the particular knowledge, interests, goals, cultural belief systems, trust and norms of the civil institution. In this research the 'discourse community' is an electricity generator company. The understanding of the discourse however depends on different cultures, and can depend on whether the discourse benefits or disadvantages the people. A discourse analysis approach examines how discourse is constructed in the 'discourse community'. Such an approach provides a critical and rigorous analysis of the role of the social and cultural facets of sustainable development, particularly relevant for the study of organizations, whilst able to incorporate the environmental, economic facets as particular discourses. So a discourse analysis approach is in keeping with the entry point to the inter-disciplinary approach adopted by this research.

The specific detail about a particular kind of discourse is however the social situation and practice in which the discourse is a part. Therefore, when applied to research projects, discourse analysis must first look at forms of social practice and their relations to social structures. The disciplines of sociology, political science and history are typically used, and have all been used in this research. The ideal analysis of discourse is however interdisciplinary, and is also how it is used here (Fairclough, 1992).

Fairclough (1992) provides a summary of the three dimensions of analysis used in the practices of discourse analysis. The three dimensions are:
1) Discourse Practice at the macro-level looks at the relationship between texts and the relationship between discourses in terms of interpretation
2) Text at the micro-aspect is the analysis of individual texts in terms of description;
3) Social Practice is the analysis of the situation in which the discourse is embedded or set in terms of the interpretation of both of the above dimensions.

The macro-level analysis is of context and critically extends literature review study of the context of the case, drawing upon contextual data provided by the key documents. An historical approach is taken.

The micro-aspect is content analysis and is structured according to key themes. The themes have been determined through a close study of key documents in light of the research framework as well as the critical context analysis. The data was analyzed according to both the frequency of occurrence terms as well as position within system structures. Sheer frequency of terms was not considered significant, but repeated terms that formed consistent patterns within the PM system were considered significant. The determination of the actual themes then involved a further interpretation and grouping to ensure that the themes that were constructed provide a critical perspective with which to engage with the research framework. The themes were constructed in a

mainly deductive way, in reference to the research framework; however it is also inductive as it was open to data that challenged the research framework.

The social practice is analysis of how the discourse is applied in practice, and carried out in relation to both the context and content analysis. There are four facets to this. The first is consideration of the internal coherency of key themes carried out in the content analysis of the key document. The second is consideration of the fit of the key themes determined by the content analysis in relation to the context analysis. The third is elucidation of tensions that arise within and between key themes due to lack of internal coherency. The fourth is elucidation of tensions that arise due to lack of fit between the themes of the content analysis and the context analysis.
The interpretation of the meaning of the themes is however only started in the interpretation of the discourse in practice, and only completed in discussion of the results, where further literature is brought to bear with which to help interpret the challenges to the research framework and how they relate to the aims of the research.

5.0 Results

The overall aim of the analysis is to look for what has been learnt by the organization in relation to the implementation of sustainable development goals and ideals. First however the actual PM systems and processes have to be constructed through analysis of the discourse, as they are products of the discourse. This involves not only the organization but also what constitutes the organization, in short, governmental regulation, markets and the environment generally. The results are summarized according to the three steps of discourse analysis, as three respective sections. Various key documents related to *the company being researched* (referred as *"the company")* were analyzed.

5.1 Context Analysis

The documents are from two different contexts. One is the company/organization itself. The other is the guidelines to which all Government Link Corporation (GLC) must adhere to. The company/organization being researched falls under the GLC category.

Even though all PM systems are required to strictly follow the guidelines set by the *Relevant Committee*, the individual GLC companies can however slightly modify their PM system according to their own vision, mission & objectives. So there are two contextual levels occurring simultaneously in the analysis. One is the context in which the government operates, and the other is the company, which includes as one aspect of its context, the guidelines provided by the *Relevant Committee* of the government's GLC.

A facet of the context for the GLC is that it used international experts in the *Relevant Committee* to produce two of the documents. A probable consequence of this is that they are written completely in English language. Another consequence is that the documents explicitly refer to international literature and best practice.
The documents from *the company* refer to aspects of the evolution of the PM systems in the organization as historical introductions, starting from when the original government ministry was privatised in 1990. Other aspects of the evolution have been constructed by compiling the documents historically. Four stages can be defined:

1. 1990-2002

Originally using a company name, but after privatization in 1990/1991 *the company's* name was changed. A PM system was introduced in early 1991. In this system, it was done manually when whereby all employees will be appraised together between the supervisor and the employees. The employee were then categorized in the five (5) levels of achievement indicator, taking into account the target work achievement and the attitude and ability of the employee.

2. 2002- 2003

A new PMS was created whereby they were divided into four main processes, emphasizing not only on assessment, but also on other aspects of managing the performance, including planning, monitoring, teaching and learning and career development.

3. 2004 – 2005

A new PM manual was developed with a focus on rewarding competent employees to ensure the creation of talent management.

4. 2006 – 2018

A new competency based performance management system is being introduced, with new Key Performance Indicators and Key Result Areas. The system is continuously being improved to achieve the best results for the benefit of the employees and the overall company.

5.2 Content Analysis

Six themes were constructed: (i) the use of multiple national languages; (ii) international benchmarking; (iii) multi-rater evaluation; (iv) use of the balanced scorecard; (v) human capital development, and (vi) executive and non-executive distinction.

5.2.1 The Use of Multiple National Languages

Unlike the other themes this theme did into focus on significant phrases, but rather on what type of language was used where. There was a mix of English & Malay, the two official languages of Malaysia. Both of the Govt documents are fully in English, possibly, because as already mentioned, the committee responsible included international HR experts.

Company documents are a mixture of Malay and English. Technical terminology in the company documents is in English. Thus discourse associated with international literature and benchmarking is in English, wherever it is mentioned. It is not translated into Malay. Details of the PM manual for implementation of policies and procedures are partly in Malay and partly in English. The details pertaining to "executive"[1] staffs are in English and details pertaining to "non-executive"[2] staffs are in Malay.

5.2.2 International Benchmarking

Technical terminology pertaining to HRM is all in English (eg. Key Performance Indicators, Balanced Scorecard). Terms used in the Government manuals are directly translated into use in the company documents and kept in English.

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[1] Executive staff usually refers to those with a paper qualification, but upgrading can occur through internal courses.
[2] Non-executive staff refers to those without a paper qualification.

Significant phrases associated with the theme *international benchmarking* are outlined in pg 2 of document 3, outlining the Government's objective to "...make Malaysia a comprehensive developed country, developed economically, developed politically, and developed socially and culturally. This statement is clearly stated in the Background and Objectives of this book, which is the guiding principle to all Government Link Corporations on the Intensifying Performance Management issue.

5.2.3 Multi-Rater Evaluation

Significant phrases associated with this theme are to do with who does the evaluation – peer review, teams, pekerja/penyelia (employer / supervisor) discussion, subordinates, immediate manager, multi-rater selection. In terms of employees' level, they are divided in non-executives and executives. Non-executives are not be appraised on Leadership Competency, except for the non-executive supervisors only.

5.2.4 Use of the Balanced Scorecard

Significant phrases associated with this theme include the explicit use of the term *Balanced Scorecard*, but also, *Corporate Social Responsibility*, *stakeholders*, *customers*, *key performance indicators* (*KPI)*, and *environment*. Adaptation learning is found on Section 3 in document 1. This is based on the four different perspectives of "Balanced Scorecard', which are divided into four categories Customer, Finance, Learning and Development, and the Internal Process.

5.2.5 Human Capital Development

Significant phrases associated with this theme include *value creation*, which is to attract, develop, motivate and retain outstanding talent. This is stated in the third paragraph, page 1 of document 3.

5.2.6 Executive and Non-Executive Distinction

As already mentioned, the executive manual is in English and the non-executive manual is in Malay. Also however, the executive manual appraises leadership competency, whereas the non-executive manual does not. Moreover, the reference to KPI, which are associated with the Balanced Scorecard and adaptive strategic learning and teams, are absent in the non-executive manual and only found in the executive manual.

5.3 Application of the Discourse in Practice

Analysis was carried out according to the four steps of analysis of the: (i) internal coherency; (ii) degree of fit to context; (iii) internal incoherency, and (iv) lack of degree of fit to context.

5.3.1 Internal Coherency

The use of the balanced scorecard is coherently used in relation to the strategic goals and the development of KPI. Similarly, the establishment of international benchmarking through the definition of KPI is coherent. Also, the human capital development goals, use of balanced scorecard and KPI are all coherent.

5.3.2 Degree of Fit to Context

The balanced scorecard recognizes correctly the New Public sector role the company has. In particular the Corporate Social Responsibilities given by the government (rules & regulation – from document 2 and 3) are incorporated into the Balanced Scorecard and definition of KPI. The international benchmarking policies based on international literature and best practice also fits the reality of the global operation of the company.

5.3.3 Tensions Due to Incoherency

There are tensions between the use of individualistic PM and the KPI strategy for teamwork. There are tensions also between the teamwork strategy and the lack of peer-review in the evaluation process. There are further tensions between the manager discretion that can override all evaluations. In general there is tension between the evaluation for KPI and the KPI.

Specifically, the reference to leadership in KPI refers only to executive class, and so raises questions about the strategic goal of teams. There are further tensions between the KPI in relation to leadership and the ways in which teams are structured. Effective (transformational) leadership appears to be compromised. The carrying out of triple-loop learning through internalisation of KPI is contradicted by the way in which KPI are evaluated.

5.3.4 Tensions in the Fit to the Context

The national cultural reality of four dominant cultural groups forming a multi-cultural arrangement is not represented in the documents' production, neither in the KPI, nor the evaluation process. This raises questions about whether or not the strategic goals are in reference to the reality of the Malaysian civil society.

There are tensions in the distinction between how executive and non-executive employees, and in how they are being evaluated. In particular, the coherently defined KPI are not applied to non-executive staff, and so human capital development is not being applied to non-executive employees. Value creation is not considered to apply to non-executive staff. Once again this raises questions about the success of the strategic orientation of the company to the Malaysian civil society.

6.0 Discussion

The application of the discourse in practice critically challenges the research framework and also extends it. It critically challenges it by pointing out that the framework is merely an ideal representing the potential relationships and processes involved, which by themselves do not represent the actual process of adaptation carried out by an organization seeking to progress sustainable development. The research framework models the learning within the organization but not the process of how an organization enters into the process of learning some or all of the relationships outlined by the model. The incoherency and tensions in the case study are instructive as to what the process of sustainable development implemented by organizations actually involves.

For example, even though there were coherent policies in relation to human capital development, through the use of the Balanced Scorecard and appropriate KPI for double-loop learning in the vertical dimension of the PM system, there is however tensions between these policies and the actual evaluation of KPI they promote. So it is not clear that the double-loop learning is actually implemented. The situation can be summarised as an intrinsic lack of authenticity. The questions that are raised are why this is so, and what can be done about it?

An answer is potentially provided through further attentiveness to the incoherency and tensions, namely that triple-loop learning does not appear to be recognised. This is shown by how neither the role of culture to embolden creativity and innovation, nor the benefits to be gained from inter-cultural teams to maximize synergies, are recognized. The role of culture at all has only very recently begun to be pro-actively considered. Associated with this are hierarchical traits present in the PM system. The distinctions between executive and non-executive employees indicate a class structure, whereby HRD at all is only being applied to the executive class. These are in tension with the international benchmarking goals and also with the stated KPI. The inclusive concern of national culture, civil society and social capital, which is the basis for CSR, is therefore shown to not yet be fully in place in practice. An appreciation of authentic organizational culture does not yet appear to be present.

Accordingly, transformational and authentic leadership are neither explicitly recognised nor promoted. So several aspects of international bench-marking do not yet seem to be in place. The lack of specific definition of double-loop and triple loop- learning in the PM system are indicative of the lack of recognition of the benefits to be gained from this international benchmark. This is particularly ironical as the multi-cultural national culture of Malaysia provides opportunities for maximal synergistic innovation if the international benchmarks were in place.

The company being researched still appears to be operating under the old paradigm of HRD being a subset of HRM, rather than the other way around. The history of the organization shows however that HRD is nevertheless developing and so is the authenticity of its organizational culture. These two processes appear to go hand in hand. This occurs on two fronts: as international benchmarking is incorporated and as the local national cultural context is better incorporated. This seems to suggest that culture has a positive role to overcome dysfunctional (low innovation) organizational structure, but that culture also needs help from international benchmarking so that it can fulfil its potential. So it can be tentatively concluded that local civil society needs global relations. At this point the discourse analysis extends the research framework. It indicates that the global international dimension has to be incorporated and operates paradoxically and recursively with the empowerment and relevance of local cultures.

7.0 Conclusion

To the extent that *the company* is a representative case, the results indicate that the three key propositions have tentatively been verified. First, organizational structure and operation is significant as to whether or not sustainable development is progressed. Second, the integration of the various facets to sustainable development is a challenging work in progress, for which conceptual analysis and understanding is as yet underdeveloped. Third, organizations sincerely seeking to progress sustainable development are learning how to, and so empirical study of the

process of their progress provides insight into the relationships between the various facets of sustainable development.

The case of *the company* suggest also that incorporating a reflective process on how well an organization is progressing the integration of the facets of sustainable development could lead to development of better theoretical understanding of what the interactions are, as well as to how to achieve the integration within the organization. An action research loop could become established.

The tentative results from *the company* also suggest however that theoretical understanding is not enough. On the one hand *the company* case has shown that guidance from international benchmarking is helpful for HRM and hence also for progressing sustainable development. On the other hand however it has also shown that mere implementation of theory becomes constrained by a barrier intrinsic to the finer aspects of the theory, namely in relation to transformational leadership, triple-loop learning and inclusive inter-cultural team synergies that balance trust and autonomy with evaluation of PM. These finer aspects refer to the development of social capital and participation by the organization in civil society. Here culture has been found to be essential, including in *the company* case where a feature of the evolution of HRM has been the increasing incorporation of culture. The point however, is that this cannot be driven by policy. It can only be facilitated by transformational leadership itself.

So *the company* case suggests that the fourth pillar of culture has a certain priority in sustainable development. Theoretical reflections on the results are suggestive that the reasons for this may be that culture enables tacit integration of the other three facets; those of the environment, the social and the economic. Further, this integration occurs both subjectively through the internalization of authority and leadership to facilitate synergistic teams and innovation, and objectively through participation in the arena of civil society, itself a complex evolving integration of markets and regulations constituted by social capital through culture.

So, possibly a way forward to progress sustainable development is to focus more on the operation of the organizations implementing it so as to ensure that intrinsic barriers to goal-directed management can be overcome through a focus on the role of cultural traditions to provide the social capital enabling the integrative process of internalization of authority, bringing transformational leadership facilitating triple-loop learning for innovation, and vision facilitating double-loop strategic adaptation to promote civil society.

It is possible however that one of the reasons that *the company* case has provided these insights is because it is an example of the new Public Service where there is an explicit interaction between the market and government regulation providing CSR guidelines. If this is the case it is suggestive that CSR should perhaps be provided for all businesses and organizations to progress sustainable development.

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