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How Vulnerable is Indonesia's Financial System Stability to External Shock?

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Abstract

The main objective of the study is to measure the vulnerability of Indonesia's financial system stability in response to external shocks, including from regional economies namely three biggest Indonesia major trading partners (China, the U.S and Japan) and other external factors (oil price and the federal funds rate). Using Autoregressive Distributed Lag (ARDL) model and Orthogonalized Impulse Response Function (OIRF) with quarterly data over the period Q4 2002 - Q1 2016, results confirm that, 1) oil price response has the largest effect to Indonesia financial stability system and the effect period is the longest compared to others, represented by NPL and IHSG; 2) among those three economies, only China's economic growth has significantly positive effect to Indonesia financial stability system. Based on the findings it is better for the authorities to: 1) Diversify international trade commodities by decreasing share of oil, gas, and mining export and boosting other potential sectors such as manufacture, and fisheries; 2) Ensure the survival of Indonesia large coal exporter companies without neglecting burden of national budget; and 3) Create buffer for demand shock from specific countries by diversifying and increasing share of trading from other countries particularly from ASEAN member states.

Keywords: Financial Stability, External Shocks, Regional Economies.

JEL Classification Code: F65, G20.

1. Background

External shocks are considered as major determinants of financial stability and have significant effects on emerging markets (Almansour, Aslam, Bluedorn, & Duttagupta, 2015). The recovery of global economic downturn in 2015 that was slower than expected has created a risk-off behavior amongst investors; most notable is spillover effects on emerging markets. To what extent the downturn is mainly related to the economic slowdown in China, the uncertainty over U.S monetary policy normalization, and the sustained fall in commodity prices including oil prices (Cashin, Mohaddes, & Raissi, 2016; International Monetary Fund, 2016; Maćkowiak, 2007). Cashin et al. (2016) find that China negative output shock brings significant spillovers and larger impact on all ASEAN-5 countries except for the Philippines than the Asia-Pacific region, showing countries exposing more trading with advanced economies are much more vulnerable to negative shocks. Nguyen, Tran, and Le (2014) confirm findings that the U.S monetary policy shocks is likely impacting East Asia indirectly through the role of China that slowdowns in imports and exports and weaken commodity prices. Such conditions make market confidence drop, capital inflows decrease (Maćkowiak, 2007), currency depreciate, corporate and household performance depress, NPL rises and credit weaken (Bank Indonesia, 2015).

In terms of global recovery challenges, it is also compelling by the fact that the contribution of EMs to global economic growth is bigger than advanced economies, accounted 58%. Indeed, Indonesia's Financial System Stability (IFSS) have been marked moderate at least in the last quarter of 2015 after having undergone a slowing trend since 2012, reflected by inflation reached 3.35% (yoy), which hits farther than inflation target range of 4±1%. To be more detailed, here is a brief description of Indonesian economic structure as follows:

> Indonesia is a small open economy with domestic oriented economic structure, commodity exporter, and

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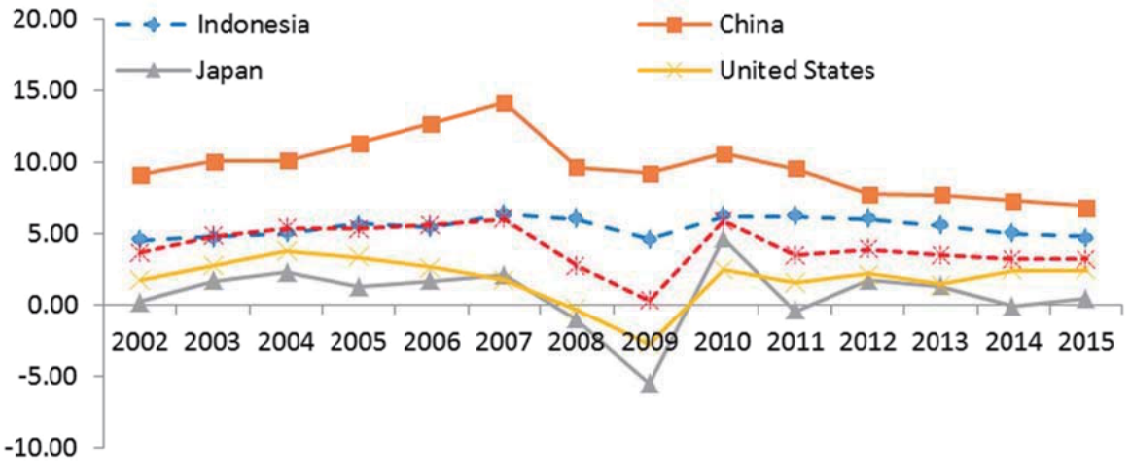
free-foreign exchange system. About 65% of the economy comes from consumption, 32% from investment, and 21% from exports. In one aspect, this economic structure makes Indonesia is more resilient against external shocks. Nonetheless, as commodity exporter's country, Indonesia exports rely significantly on primary commodities such as oil and gas, palm oil, rubber, coal, thin and other minerals, and are subjected to global commodity price cycle (Warjiyo, 2015).

Warjiyo (2015) discusses further that important vulnerabilities in IFSS relate to global financial market and capital flows. By the fact that over the period of 2009 – 2011 Indonesia as a commodity exporter has experienced high economic growth which corresponded to high global commodity price and huge capital inflows. However, the growth begun to decline in 2012 because of the slowdown in China economy followed by the decline in commodity prices. In other words, financial market can be developed by creating an environment, benefiting capital inflows.

Furthermore, Figure 1 highlights that Indonesia growth depicts moving along with its major trading partner dynamics (China, the U.S and Japan), in particularly during the busts. In other word the growth shocks from advanced economies is relatively important in Indonesia growth dynamics and spillovers vary by countries that are more integrated with Indonesia through trade and commodity price linkage.

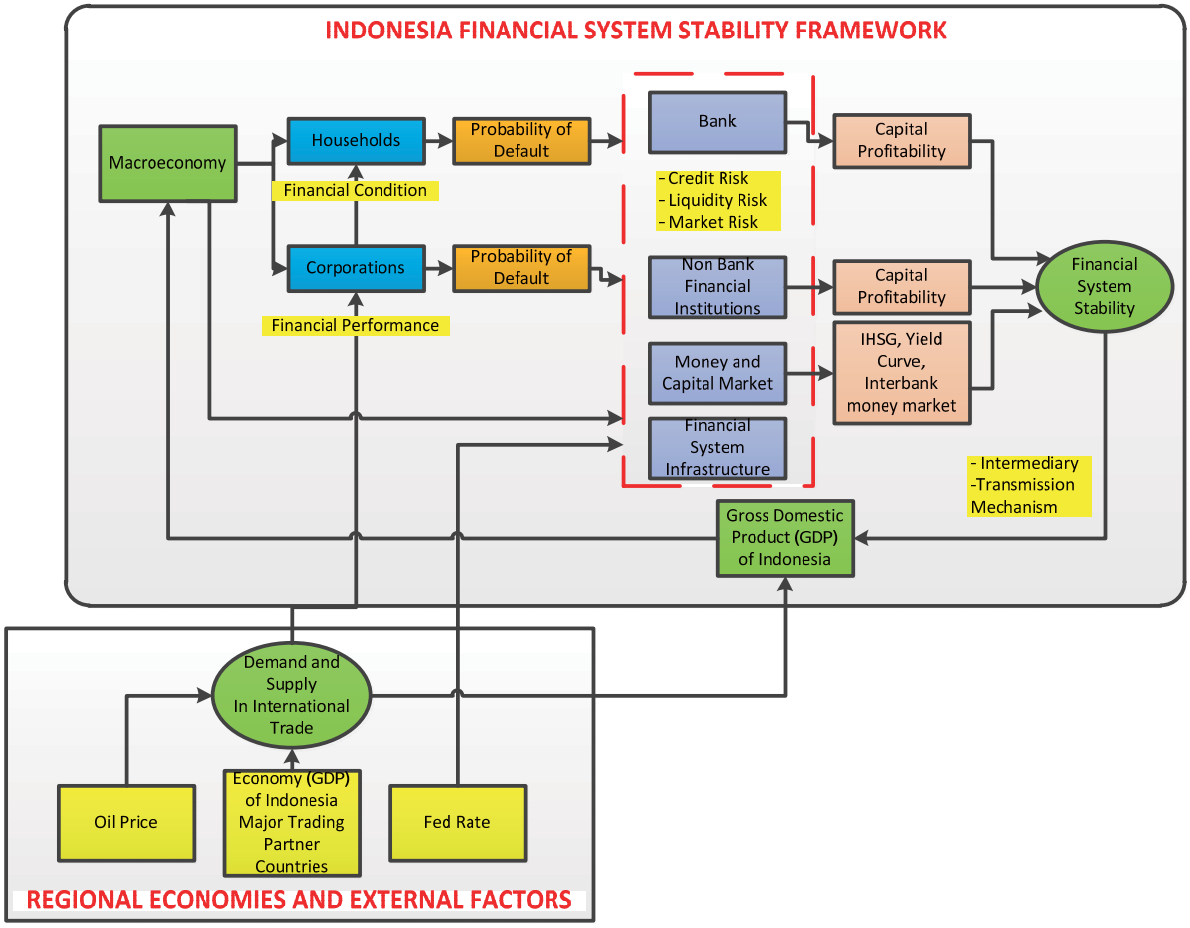
The major thought of this study seen mostly from international trade aspect, our hypotheses is economic resilience of other economies and oil price affecting demand from them, and eventually it will influence IFSS. To be clear, if downturn happened in a country's economy of Indonesia trading partner, consequently it is likely to decrease they demand of Indonesian goods and/or services that will also decrease GDP from export side, and at the same time resulting decline of Indonesian exporter firms' revenue. This decline is going to decrease their repayment capability that increases Non-Performing Loan (NPL), and if they are public listed companies, it will decrease their stock valuation and adjust (lowering) their stock price which is part of IHSG calculation. In the case of household, the decrease of GDP in a broad spectrum will decrease per capita income which make household ability to consume and to pay their loan decrease.

Similar flow also applies in oil price, demand shock of commodity resulting the downturn of oil price, consequently it will reduce the revenue of commodity exporter corporations and Indonesian GDP in a broader coverage. In terms of the federal funds rate (FFR), the increase of FFR will trigger capital outflow from Indonesian financial institutions and Indonesian capital market and consequently affect the soundness of Indonesian financial system. Ideally, to measure IFSS comprehensively we should encompass four aspects of IFSS (bank, non-bank, money and capital market, and financial system infrastructures) as can be seen in Figure 2. However, due to data limitation and considering their contribution to Indonesian financial market, we only take two aspects, namely banking aspect proxied by NPL- and capital market proxied by Indonesian Stock Exchange composite index (IHSG).



Source: World Development Indicators, The World Bank

<Figure 1> Economic Growth of Indonesia and Its Major Trading Partners 2002-2014



Note. This figure is modified from illustration of Bank Indonesia definition of financial system stability

<Figure 2> IFSS and its External Factors Framework

Generally, the framework used is Autoregressive Distributed Lag (ARDL) model to investigate magnitude of the effect of external movement to IFSS, and Orthogonalized Impulse Response Function (OIRF) to see how IFSS response to external shocks with the dataset used over the period Q4 2002 - Q2 2016, examining to what extent external shocks, namely GDP China, U.S, and Japan, oil prices and FFR impact on IFSS indicators, represented by NPL and IHSG.

The paper is organized as follows. Section 2 is research objectives. Section 3 highlights literature reviews. Section 4 presents data and research methods. Section 5 analyzes empirical results and finally section 6 is conclusion and policy recommendation.

2. Research Objectives

In this study, we intend to investigate how is the response of IFSS to economic dynamics of Indonesia's trade major partners and other external factor shocks and how vulnerable it is.

3. Literature Review

In the era where the world economies have been integrated globally both in real and financial sectors, not only does domestic shocks fluctuate domestic macroeconomic but also by external ones. Almansour et al. (2015) using structural VAR estimate the growth effects of external factors and conclude that EMs remain vulnerable to

external shocks. Nguyen et al. (2014) also apply structural VAR and IRF, investigating whether or not external shocks play important role in macroeconomic fluctuations of East Asian countries over the period 2001-2012. Authors find that the trade impact of the U.S. in Southeast Asia has been imparted through China. Bermingham and Conefrey (2014) employ VAR and IRF analysis to assess the slowdown on mortgage delinquency in Irish. Their results further suggest that a negative shock to U.S GDP growth impacts on an increase in number of mortgages. Cashin et al. (2016) studies how shocks to China's GDP are spread internationally using global VAR over period Q1 1981 to Q1 2013. Additionally, Horvath, Rusnák, & others (2009) focus on responses of small open economy to external shocks, study case in Slovakia using VAR model and IRF analysis. Their findings show that external shocks are very important source in fluctuations of Slovak price level. Another study case in Croatia done by Krznar, Kunovac, and others, (2010) finds similar result with Horvath et al. (2009) that external shocks impact on domestic economic activity and prices. Finally, Aghion, Bacchetta, and Banerjee (2004) emphasize the role of financial sectors to small open economies as determinant factors affecting instability through capital liberalization, assuming firms facing credit constraint.

Some key important indicators of external shocks are advanced economies' GDP, oil price and FFR. In the context of small open economy framework, the degree of openness is attributed by the part of GDP, reflecting the amount of export. GDP movements can be used to identify the demand shocks (Krznar et al., 2010), the extent to which these shocks are responsible for volatility in financial market. Furthermore, role of financial sectors can be as important as determinants of instability in which funding sources potentially increase the response to shocks and the scope for volatility (Aghion et al., 2004). They assume firms facing financial constraints with the constraint being tighter at a lower level of financial development, full capital account liberalization therefore may destabilize the economy. Nations need to improve the risk-management procedures and to maintain the external debt at sustainable levels in response to rising Non-Performing Loans (NPL). Additionally, capital market enables economic agents to pool, price and exchange risk. To extent, countries with deeper capital market face less severe business cycle output contraction and lower chances of an economic downturn compared to those with less developed capital market (Tharavanij, 2007).

Furthermore, the oil price affects the domestic macroeconomic fluctuations through global supply and demand for oil by the fact that the fourth largest oil consuming countries in 2014 were the U.S, China, Japan and India, consecutively (Khan & Ahmed, 2011; Nguyen et al., 2014; Ratti & Vespignani, 2016). Besides the oil prices have a simultaneous impact on U.S real output and U.S monetary policy (Leeper, Sims, Zha, Hall, & Bernanke, 1996), that when a positive oil-price shock happens, real GDP declines and the overall price level increases (Cavallo, Wu, & others, 2012). The FFR influences EMs economies through trade channel for the U.S is reported as the second largest importer after euro area and the third largest exporter after the euro and China. Known as the world's dominant economy in term of proportion in global GDP and its financial markets account the largest, reflecting both of the size and depth of the economy. In particular, correlations across national stock markets are highest when the U.S. stock market is declining.

Vector Autoregression (VAR) and Impulse Response Function (IRF) models have been applied broadly in macroeconomics. In the context of a small open economy, a VAR is used to identify the impact of external shocks to financial stability; to what extent macroeconomics fluctuations in the EMs are affected by external shocks; IRF is used to estimate size of external spillover effects (Bermingham & Conefrey, 2014; Cashin et al., 2016; Horvath et al., 2009; Krznar et al., 2010; Maćkowiak, 2007; Nguyen et al., 2014). The contributions of this paper are the following. To our knowledge, no other research addresses the determinants of IFSS indicators (NPL and IHSG) to economic dynamics of Indonesia's trade major partners (The U.S, Japan and China) and other external factor shocks (oil prices and FFR). Not only using IRF, the results of our model is also obtained by implementing a different approach that is ARDL model. The use of ARDL analysis has the advantage that, (1) settles endogeneity issues (Pesaran & Shin, 1999; Pesaran, Shin, & Smith, 2001); (2) determines cointegration of small sample cases (Tang, 2003); (3) captures both long run and short run coefficients through its bound test and conditional unrestricted error correction model (UECM); and (4) allows independent variables to have different number of lags.

4. Data and Research Methods

Using quarterly data over the period of Q4 2002 to Q1 2016, this study analyzes the response of Indonesia's financial system stability to external shocks.

Furthermore, models implemented in this study are as follows:

$$\begin{aligned} \mathrm{NPL}_t = {} & \beta_0 + \beta_1 \mathrm{Ch\_GDP}_t + \beta_2 \mathrm{US\_GDP}_t + \beta_3 \mathrm{JP\_GDP}_t \\ & + \beta_4 \mathrm{LnOilPrice}_t + \beta_5 \mathrm{FFR}_t \\ & + \beta_6 \mathrm{ID\_GDP}_t + \mu_t \end{aligned} \quad (1)$$

$$\begin{aligned} \mathrm{LnIHSG_t} = {} & \alpha_0 + \alpha_1 \mathrm{CH\_GDP_t} + \alpha_2 \mathrm{US\_GDP_t} + \alpha_3 \mathrm{JP\_GDP_t} \\ & + \alpha_4 \mathrm{LnOilPrice_t} + \alpha_5 \mathrm{FFR_t} \\ & + \alpha_6 \mathrm{ID\_GDP_t} + \mu_t \end{aligned} \quad (2)$$

The remarks of variable on equation (1) and (2) are as follows (see Table 1):

China, the U.S, and Japan GDP represent Indonesia major trading partner factor, considering these countries are the three biggest trading partners of Indonesia respectively-that their GDP movements are likely to affect and trigger fluctuation to Indonesia economy. Meanwhile, FFR and crude oil price are considered as external factors besides economy of countries mentioned above, which may influence the Indonesia as their movements and value cannot be determined by any Indonesian authorities or institutions. In addition, GDP growth of Indonesia is embedded into the model as a control variable since the main driver of Indonesian financial system stability is its domestic economy itself.

Consider the dataset is time series; prior to determining the methodology used, this study applies unit root test to identify the stationary level of each variable in order to determine the robust method. Following is results of Unit Root Test using Augmented Dicky Fuller with a constant and trend (see Table 2).

<Table 1> Variables of Study

No	Variables	Description	Source
1	NPL	Ratio of commercial banks' non-performing loan in percentage	Bank Indonesia
2	IHSG	Composite index price of Indonesia Stock Exchange (IDX)	Yahoo Finance
3	CH_GDP	Seasonally adjusted real growth (%)of China GDP over the same quarter in the preceding year (YoY)	System of National Accounting (SNA) of China
4	US_GDP	Seasonally adjusted real growth (%) of United States GDP over the same quarter in the preceding year (YoY)	Federal Reserve Economic Data
5	JP_GDP	Seasonally adjusted real growth (%) of Japan GDP over the same quarter in the preceding year (YoY)	National Accounts of Japan
6	LnOil Price	Natural logarithm of West Texas Intermediate (WTI) crude oil price	Federal Reserve Economic Data
7	FFR	U.S federal funds rate	Federal Reserve Economic Data
8	ID_GDP	Seasonally adjusted real growth (%) of Indonesia GDP over the same quarter in the preceding year (YoY). This variable is meant to control the most important factor that may affect both NPL and IHSG	OECD Statistics

<Table 2> Unit Root Test Results

Variables	t-statistic		Order of Integration
	Level	First Difference	
NPL	-2.108	-6.330***	I(1)
LnIHSG	-3.251*	-5.508***	I(0)
CH_GDP	-2.665	-6.369***	I(1)
US_GDP	-2.935	-5.608***	I(1)
JP_GDP	-4.175***	-6.667***	I(0)
FFR	-4.182***	-3.169	I(0)
LnOil Price	-1.846	-7.234***	I(1)
ID_GDP	-3.317*	-5.651***	I(0)

Notes: (i) critical values with trend and intercept at 1%, 5%, and 10% are -4.072, -3.465, and-3.159 respectively, and value t-statistic that lower than critical values indicates the variable is stationer (ii) ***,**,* indicates it is significant at 1%, 5 %, and 10% level respectively.

From the above result, we can see that all of variables are stationer either at I(0) or at I(1). Therefore, we can apply Autoregressive Distributed Lag (ARDL) as the methodology as Pesaran et al. (2001) stated that ARDL can be used for set of variables with different order of stationary as long as it does not exceed first difference level of stationary, whereas Johansen's cointegration only allows same difference order.

Then the next step is to identify the long run relationship by estimating the following ARDL representation of equation for both NPL and IHSG as dependent variables:

$$\begin{aligned}\Delta\mathrm{NPL}_t = {} & \alpha_0 + \sum_{i=1}^{p} \omega_i \Delta\mathrm{CH\_GDP}_{t-i} + \sum_{i=1}^{p} \varphi_i \Delta\mathrm{US\_GDP}_{t-i} \\ & + \sum_{i=1}^{p} \omega_i \Delta\mathrm{JP\_GDP}_{t-i} \\ & + \sum_{i=1}^{p} \rho_i \Delta\mathrm{LnOilPrice}_{t-i} + \sum_{i=1}^{p} \phi_i \Delta\mathrm{FFR}_{t-i} \\ & + \sum_{i=1}^{p} \phi_t \Delta\mathrm{ID\_GDP}_{t-i} + \beta_1 \mathrm{NPL}_{t-1} \\ & + \beta_2 \mathrm{CH\_GDP}_{t-1} + \beta_3 \mathrm{US\_GDP}_{t-1} \\ & + \beta_4 \mathrm{JP\_GDP}_{t-1} + \beta_5 \mathrm{OilPrice}_{t-1} \\ & + \beta_6 \mathrm{FFR}_{t-1} + \beta_7 \mathrm{ID\_GDP}_{t-1} + \mu_t \end{aligned} \quad (3)$$

$$\begin{aligned}\mathrm{LnIHSG}_t = {} & \alpha_0 + H + \sum_{i=1}^{p} \varphi_i \Delta\mathrm{US\_GDP}_{t-i} \\ & + \sum_{i=1}^{p} \omega_i \Delta\mathrm{JP\_GDP}_{t-i} \\ & + \sum_{i=1}^{p} \rho_i \Delta\mathrm{LnOilPrice}_{t-i} + \sum_{i=1}^{p} \phi_i \Delta\mathrm{FFR}_{t-i} \\ & + \sum_{i=1}^{p} \phi_t \Delta\mathrm{ID\_GDP}_{t-i} + \delta_1 \mathrm{LnIHSG}_{t-1} \\ & + \delta_2 \mathrm{CH\_GDP}_{t-1} + \delta_3 \mathrm{US\_GDP}_{t-1} \\ & + \delta_4 \mathrm{JP\_GDP}_{t-1} + \delta_5 \mathrm{OilPrice}_{t-1} \\ & + \delta_6 \mathrm{FFR}_{t-1} + \delta_7 \mathrm{ID\_GDP}_{t-1} + \mu_t \end{aligned} \quad (4)$$

Where Δ is first difference of related variables, $\alpha 0$ is intercept, p is optimal lag length, and μt is white noise residuals.

Furthermore, the bound test under Pesaran et al. (2001) is used to investigate the presence of long run relationship between dependent variable and joint independent variables. The bound test is basically based on F-test method. The null and alternative hypotheses both for NPL and IHSG as dependent variables are as follows respectively:

<H0> β1 = β2 = β3 = β4 = β5 = β6 = β7 = 0, i.e., no presence of long run relationship; (5)

<H1> β1 ≠β2 ≠β3 ≠β4 ≠β5 ≠β6 ≠β7 ≠0, i.e., there is a long run relationship between dependent variable and joint independent variables.

<H0> $\delta 1 = \delta 2 = \delta 3 = \delta 4 = \delta 5 = \delta 6 = \delta 7 = 0$, i.e., no presence of long run relationship; (6)

<H1> $\delta 1 \neq \delta 2 \neq \delta 3 \neq \delta 4 \neq \delta 5 \neq \delta 6 \neq \delta 7 \neq 0$, i.e., there is a long run relationship between dependent variable and joint independent variables.

Moreover, the ARDL bound test applies Wald-test (F-statistic). Pesaran et al. (2001) provides two critical values which are I(0) or lower critical bound and I(1) or upper bound. The former assumes that there is no cointegration or long run relationship between dependent variable and joint independent variables, whereas the latter assumes otherwise. In short, if the F-statistic value exceeds I(1) or upper bound, it implies that there is a long relationship among variables. If the F-statistic value is below I(0), it means otherwise; other than the F-test that has a value in between I(0) and I(1) cannot be concluded.

The next step is to investigate short run elasticity between dependent variable and independent variables. This is implemented by running ARDL Error Correction Model from equation (3) and (4) expressed as follows respectively:

$$\begin{aligned}\Delta\mathrm{NPL}_t = {} & \alpha_0 + \sum_{i=1}^{p} \beta_1 \Delta\mathrm{NPL}_{t-i} + \sum_{i=1}^{p} \beta_2 \Delta\mathrm{CH}_{\mathrm{GDP}_{t-i}} + \sum_{i=1}^{p} \beta_3 \Delta\mathrm{US\_GDP}_{t-i} + \sum_{i=1}^{p} \beta_4 \Delta\mathrm{JP\_GDP}_{t-i} + \sum_{i=1}^{p} \beta_5 \Delta\mathrm{LnOilPrice}_{t-i} \\ & + \sum_{i=1}^{p} \beta_6 \Delta\mathrm{FFR}_{t-i} + \sum_{i=1}^{p} \beta_7 \Delta\mathrm{ID\_GDP}_{t-i} + \lambda \mathrm{EC}_{t-1} + \mu_t \end{aligned} \quad (7)$$

$$\begin{aligned}\Delta\mathrm{LnIHSG}_t = {} & \alpha_0 + \sum_{i=1}^{p} \delta \Delta\mathrm{LnIHSG}_{t-i} + \sum_{i=1}^{p} \delta_2 \Delta\mathrm{CH\_GDP}_{t-i} + \sum_{i=1}^{p} \delta \Delta\mathrm{US\_GDP}_{t-i} + \sum_{i=1}^{p} \delta_4 \Delta\mathrm{JP\_GDP}_{t-i} \\ & + \sum_{i=1}^{p} \delta_5 \Delta\mathrm{LnOilPrice}_{t-i} + \sum_{i=1}^{p} \delta_6 \Delta\mathrm{FFR}_{t-i} + \sum_{i=1}^{p} \delta_7 \Delta\mathrm{ID\_GDP}_{t-i} + \lambda \mathrm{EC}_{t-1} + \mu_t \end{aligned} \quad (8)$$

Where λ is the speed of adjustment parameter, and EC is residuals estimated form cointegration model of equation (2).

In addition, we adopted Orthogonalized Impulse Response Function (OIRF) in order to capture the response of Indonesian financial system stability indicators (in this paper represented by NPL and IHSG) to one standard deviation shock of each external factor over specific period of time.

5. Analysis Based on Empirical Results

Firstly, in order to examine the presence of long run relationship of joint variables (all external factors variables and IFSS indicators, we look into the result of ARDL bound testing procedure as reported in Table 3.

<Table 3> Bound Test Result

Dependent Variable	F-statistic value	Critical value of 5% significance level	
		Lower bound	Upper bound
NPL	4.212	2.45	3.61
IHSG	4.418	2.87	4

As seen from Table 3, the F-statistic values of both NPL and IHSG as dependent variables exceed critical value of the upper bounds, implying there is a cointegration among the joint variables. In other words, there is a long-run relationship among the joint variables.

5.1. Magnitude of external factors' effect to Banking system stability

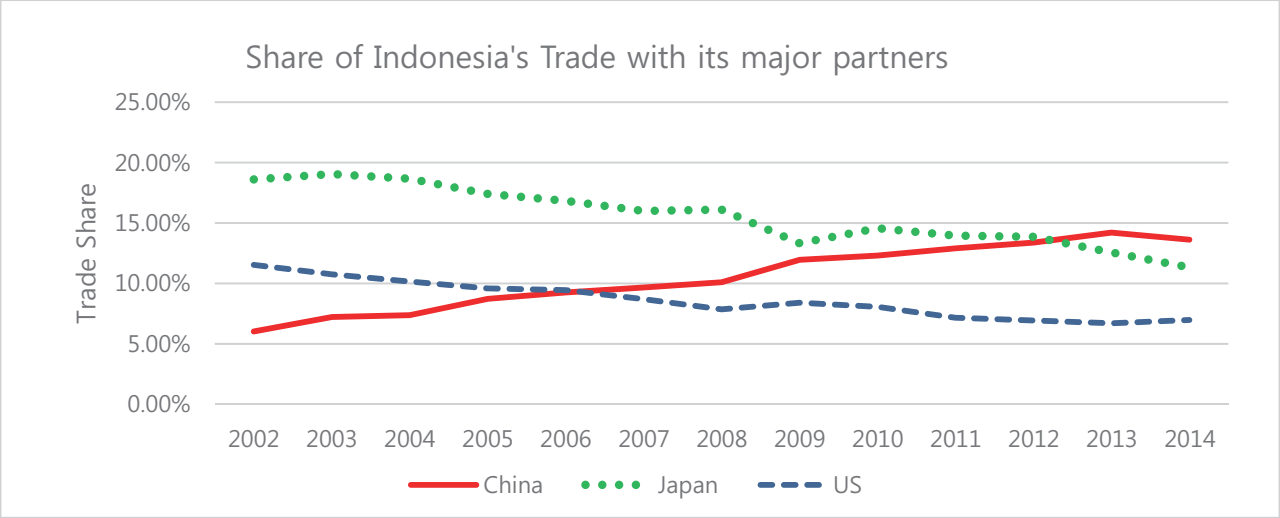
Secondly, by running ARDL estimation from the equation (3) and (7) we can obtain both the short run and long run estimation results as reported in Table 4.

Table 4 presents both the short run and long run estimations. In the short run, China's GDP is significantly affecting NPL and the effect directly influences NPL since the first quarter with coefficient of -0.3% meaning that 1% increase of China's GDP is likely to decrease Indonesia's NPL by about 0.3%. Surprisingly, two variables representing the U.S economy and its monetary tool, U.S GDP and FFR, do not have significant impact on Indonesia's NPL. In contrast, Japan's GDP is significantly positive affecting NPL in lag order of 1 which is the effect will happen on the next quarter.

<Table 4> ARDL Estimation of NPL as Dependent Variable

Dependent Variable: NPL								
Section A: short run coefficients estimation								
Lag order	ΔLnNPL	ΔCH_GDP	ΔUS_GDP	ΔJP_GDP	ΔLnOil	ΔFFR	ΔID_GDP	EC
0	-	-0.314** (0.123)	-0.138 (0.123)	-0.069 (0.069)	0.482 (0.542)	-0.008 (0.356)	0.122 (0.233)	-
1	-	0.967*** (0.154)	-0.300 (0.197)	0.234*** (0.011)	1.878** (0.709)	-	0.591** (0.306)	-0.125 (0.109)
2	-	-0.369*** (0.101)	0.054 (0.184)	-	-1.896** (0.694)	-	-1.174*** (0.300)	-
3	-	-	-	-	2.201*** (0.523)	-	0.631** (0.010)	-
4	-	-	-	-	-	-	-	-
Section B: long run coefficients estimation								
Constant		CH_GDP	US_GDP	JP_GDP	LnOil	FFR	ID_GDP	
12.894 (13.208)		-2.298 (2.608)	1.581 (1.775)	-2.660 (2.205)	-1.600 (3.880)	2.864 (2.215)	2.582 (3.665)	

Note: (i) *, **, *** indicates it is significant at 10%, 5%, and 1 % level respectively, (ii) Number of lag determined automatically using Akaike Info Criterion (AIC) with maximum number of lags is set to 4 lags (iii) EC is error correction.



Note: Trade share is calculated as (tij/TI), where tij is the total trade of Indonesia with country "j" and TI is the total international trade of Indonesia.

<Figure 3> Trade share of Indonesia's major trading partner with Indonesia over Total of Indonesia's international trade

If we look at Figure 3, reasons behind the different effect of each country are simply as follows: (1) the increase of China's GDP is significantly decreasing Indonesia's banking NPL, the extent to which because over the years share of China's trade with Indonesia to Indonesia's total international trade was increasing about 125% from 2002 to 2014, (2) the U.S's GDP does not significantly affect NPL of Indonesian banking due to the share of Indonesia trade with the U.S did not differ much over that period, and (3) the effect of Japan's GDP is contrary to the effect of China that Indonesia trade share with Japan was constantly declining. Japan is losing more than a third of its total trade share with Indonesia over the period of 2002 to 2014. That declining trend share does not merely mean Japan has no important role to Indonesian economy, yet because Japan has changed its strategy instead from trade oriented to investment oriented in relation with ASEAN countries. For instance, Japanese automotive companies have built factories in ASEAN countries during that period. Consequently, Indonesia automatically reduced the number of vehicles imported from Japan since it produced domestically in Indonesia, yet it did not count as Japan's export instead of it increased Japan's GNI (Gross National Income).

Interestingly, among other external factors, oil price movement has shown the largest effect to Indonesian NPL with coefficient of -1.9% from two lag order, meaning 1% increase in current world crude oil price is expected to decrease NPL by approximately 1.9% in the next two quarters. This is because within the period of the study Indonesia's oil and gas export ratio to total export is large, averaged approximately 20% of total export, that did not even include mining and agriculture commodities which both affect directly e.g., coal that is substitute product of oil. The decrease of oil price is likely followed by the decline of coal price, and indirectly affects other mining and agriculture commodities e.g., gold, crude palm oil, and etc.

This also strengthen by the fact that within the last decade which is mostly covered by the period of study, commodities (which the price of them are generally adjusting crude oil price) has become one of growth engines for Indonesia, besides there is also so called 2000s commodity boom where price of crude oil increased dramatically since 2000 and peaked to USD 140 per barrel in Q2 2008. As a consequence, in that period, Indonesia's economic growth also rose steadily and hit 6.3% growth before it began to fall gradually starting from 2014 in line with the constant decrease of oil price which bottomed to USD 28.5 in the beginning of 2016 caused by slower demand of energy from China and world awareness to use clean energy. This also triggered slower economic growth of Indonesia which consequently increases banking non-performing loan ratio as also supported by Khandelwal, Miyajima, & Santos (2016) and Miyajima (2016) that stated downturn in oil price could lead to slower credit and deposit growth and the increase of NPL.

In terms of long run, there is no significant effect of any external factors covered in the model. This is because the effect of external factors to Indonesian banking stability system is immediately experienced in the short time.

5.2. Response of NPL to external factors' shock

By implementing Orthogonolized Impulse Response Function (OIRF), below is the result of the response of NPL to external factors' shock.

<Figure 4> Response of NPL to external factors' shock

Figure 4 indicates that in terms of other countries' economy factor, China's GDP shock has the steepest impulse meaning it has the largest effect; an increase in China GDP will cause NPL to decrease starting from the 2nd quarter after the increase of GDP until the effect dies out on the 5th quarter. In addition, regarding the longest effect of external shock to NPL is given by oil price. From the figure 4 we can see that the decrease even does not stop on the 10th quarter which is our maximum lag period.

5.3. Magnitude of external factors' effect to Banking system stability Index

By running ARDL estimation from the equation (4) and (8) we can get both short run and long run estimation result as reported in Table 5.

<Table 5> ARDL Estimation of IHSG as Dependent Variable

Dependent Variable: IHSG								
Section A: short run coefficients estimation								
Lag order	ΔLnIHSG	ΔCH_GDP	ΔUS_GDP	ΔJP_GDP	ΔLnOil	ΔFFR	ΔID_GDP	EC
0	-	0.019 (0.016)	0.020 (0.019)	0.012 (0.012)	0.267*** (0.074)	0.020 (0.015)	0.068** (0.029)	-
1	0.252*** (0.133)	-	-0.046 (0.030)	-0.006 (0.011)	-	-	-	-0.072*** (0.161)
2	-	-	-	-0.026** (0.010)	-	-	-	-
3	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-
Section B: long run coefficients estimation								
Constant		CH_GDP	US_GDP	JP_GDP	LnOil	FFR	ID_GDP	
5.004 (0.002)		0.027 (0.020)	-0.036 (0.028)	0.026 (0.024)	0.172 (0.079)	0.028 (0.023)	0.093*** (0.031)	

Note: (i) *, **, *** indicates it is significant at 10%, 5%, and 1 % level respectively, (ii) Number of lag determined automatically using Akaike Info Criterion (AIC) with maximum number of lags is set to 4 lags (iii) EC is error correction.

<Table 6> Volatility of IDX Sectoral Indices

Year	Percentage Change From the Previous Year										
	IHSG	**Agri**	**Mining**	**Basic**	**Misc**	**Consu**	**Prop**	**Infra**	**Finance**	**Trade**	**Manuf**
2007	52.08%	126.09%	250.41%	61.83%	68.01%	11.10%	104.87%	13.28%	26.14%	42.59%	41.49%
2008	-77.01%	-150.68%	-256.36%	-70.06%	-92.36%	-27.82%	-120.67%	-49.73%	40.78%	88.67%	58.44%
2009	86.98%	90.81%	151.06%	102.93%	179.84%	105.39%	41.85%	48.57%	70.94%	85.91%	123.65%
2010	46.13%	30.30%	48.59%	41.37%	60.78%	63.06%	38.35%	12.45%	54.82%	71.92%	55.60%
2011	3.20%	22.41%	14.93%	49.04%	117.99%	96.03%	56.17%	-3.99%	63.15%	111.12%	87.60%
2012	12.94%	-3.87%	-26.41%	28.97%	1.94%	18.99%	42.44%	29.75%	11.86%	27.27%	15.66%
2013	-0.98%	3.73%	-23.31%	-8.70%	-9.84%	13.81%	3.20%	2.52%	-1.77%	4.84%	0.24%
2014	22.29%	9.86%	-4.22%	13.09%	8.47%	22.21%	55.76%	24.71%	35.41%	13.11%	16.04%
2015	-12.13%	-26.87%	-40.75%	-24.98%	-19.11%	-5.19%	-6.47%	-15.42%	-6.10%	-3.31%	-13.75%
2016*	19.44%	16.38%	28.72%	41.17%	31.50%	18.48%	23.94%	22.97%	18.39%	-0.64%	25.69%
B*		**1.54**	**2.71**	**1.04**	**1.47**	**0.66**	**1.11**	**0.56**	**0.22**	**0.03**	**0.36**

Note: Agri = agriculture, Basic= basic industry and chemicals, Misc = miscellaneous industry, Consu = consumer goods industry, Prop = property and construction, Infra = infrastructure and utilities, Trade = trade, services, and investment, Manuf = manufacturing.

$* \beta_i = \frac{\mathrm{cov}(R_{i,t} - R_{M,t})}{\sigma^2(R_{M,t})}$

Where $R_{i,t}$ denotes average stock return of sector i in specific period of time, σ ($R_{i,t}$)denotes standard deviation of average stock return of sector i, $R_{M,t}$ denotes average return of benchmark index, which in this case is IHSG, in specific period of time, and β_i score reflects its volatility towards benchmark index. the higher the beta the more volatile the sector, β=1 indicates that the sector *i* moves along with the market or IHSG (same volatility), β<1 indicates that sector *i* is less volatile than IHSG, whereas β>1 indicates that sector *i* is more volatile than IHSG e.g: β=1.25 means that sector *i* is 1.25 times more volatile than IHSG.

** : 2016 figure statistics is up to August 2016

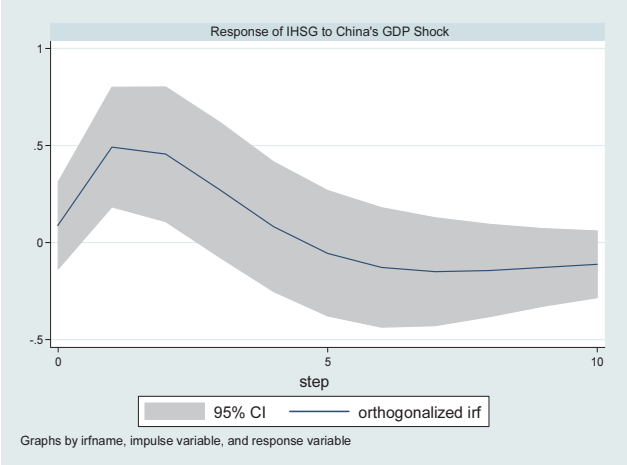
Regarding short run effect, interestingly we can see that the only external factor that significant is oil price with the coefficient of 0.27% implying that 1% increase of crude oil price is expected to increase IHSG by 0.26%. This is because mining sector, which its performance heavily affected by oil price, is the most volatile sector in IDX in period of 2007 to 2016 as can be seen its beta (β) higher than any other sectors (the higher the beta the more volatile the sector) (see Table 6).

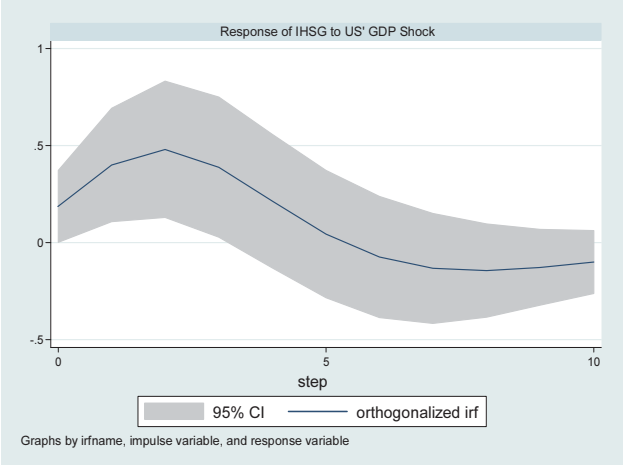
Similar to effect of external factors to NPL, in the long run there is no single external factor that has a long run impact to IHSG. The only variable matters in the long run is economic resilience of Indonesia itself which in this study measured by GDP growth.

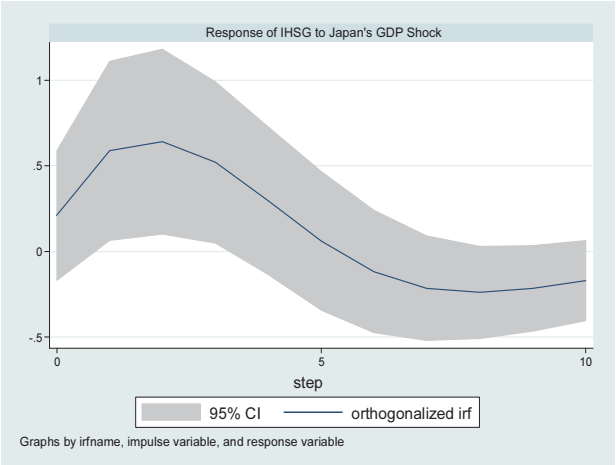
5.4. Magnitude of external factors' effect to capital market system stability Index

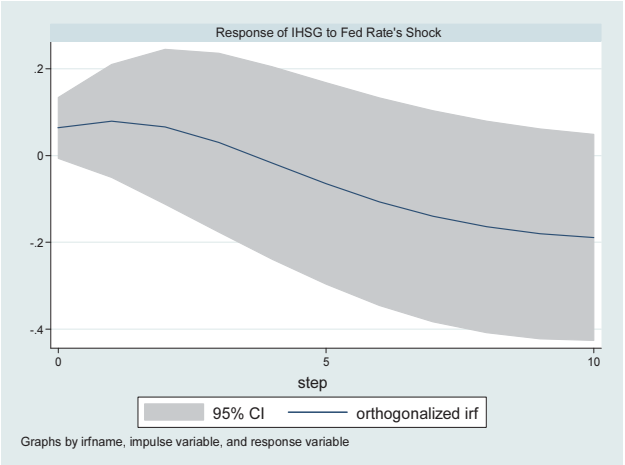
By implementing Orthogonolized Impulse Response Function (OIRF), Figure 5 is representing the result of the response of IHSG to external factors' shock.

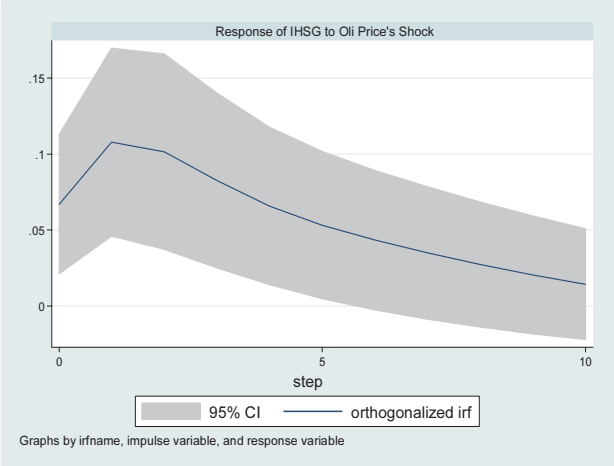
Figure 5 shows that the steepest graph is noted by oil price implying that oil price shock has the biggest impact to IHSG which the effect peaked in the second quarter before it gradually decreases. In addition, in term of other countries economy, the graph pattern is similar among China, US, and Japan meaning that the response of IHSG to those three external factors is quite similar with nearly the same magnitude which reaches the peak at the second quarter before the effect begins to flatten starting from seventh quarter.











<Figure 5> Response of IHSG to external factors' shock

6. Conclusion and Policy Recommendations

The study tries to test the vulnerability of Indonesia's financial system stability on external shocks using an ARDL and OIRF framework with quarterly data over the period Q4 2002 to Q1 2016. Results are the following. First, oil price responses emerged the largest and the longest effect to Indonesia financial stability system, represented by NPL and IHSG. Second, only China's economic growth has significantly positive effect to Indonesia financial stability system.

Finally, according to the analysis and empirical results there are some recommendations which should be better to be implemented by Indonesian authorities to improve the soundness of Indonesian financial system. First, considering oil price has the largest effect to IFSS, Indonesia should diversify its international trade product commodities by decreasing share of oil, gas, and mining export share and boosting other potential sectors such as manufacture, and fisheries.

Second, taking into account the spillover effect of recent downturn of oil price followed by low coal price that threaten the balance sheet (financial balance) of Indonesia large coal exporter companies (such as Adaro, PT Bukit Asam, Indo Tambang Raya Megah, etc.) government should think carefully and have win-win solution to ensure the survival of those companies without neglecting burden of national budget, a good example of such kind of policy is the recent project of 35,000 Mega Watt which involving those companies as the electricity supplier by giving them share of the target by allowing them to build power plant and giving subsidy to the price of electricity paid by consumers. The bankruptcy of those companies will lead to vulnerability of IFSS from both aspects of corporation and household considering they are labor intensive companies.

Third, to buffer demand shock from specific country, particularly in this study is China, it is better for government authority establish policies that attract Indonesian exporter firms' to geographically diversify their country markets especially to ASEAN countries as it currently is benefiting them with the presence of ASEAN Economic Community (AEC) Agreements. In addition, this Intra-Regional Geographical Diversification buffer has proven able to lowering the volatility of international trade output (Brixiová, Meng, & Ncube, 2015; Newfarmer, Shaw, & Walkenhorst, 2009).

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Oil Price Fluctuations and Stock Market Movements: An Application in Oman

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Abstract

It is undisputable that crude oil and its price fluctuations are major components that affect most of the countries' economies. Recent studies have demonstrated that beside the impact that crude oil price fluctuations have on common macroeconomic indicators like gross domestic product (GDP), inflation rates, exchange rates, unemployment rate, etc., it also has a strong influence on stock markets and their performance. This relationship has been examined in a number of settings, but it is yet to be unraveled in the Omani context. Accordingly, the main purpose of this study is to examine the possible effect of the oil price fluctuations on stock price movements. The study applies Toda and Yamamoto's (1995) Granger non-causality test on the daily Oman stock index (Muscat Securities Market Index) and oil prices between the period of 2 January 2003 and 13 March 2016. The results indicated that the oil price fluctuations have a significant impact on stock index movements. However, the stock price movements do not have a significant impact on oil prices. These findings have significant implications not only for the Omani economy but also for the economy of similar countries, particularly in the Gulf Cooperation Council (GCC) countries. The latter should carefully consider their policies and strategies regarding crude oil production and the generated income allocation as it might potentially affect the financial markets performance in these countries.

Keywords: Oil Price, Muscat Stock Exchange, Toda and Yamamoto, Oman.

JEL Classification Code: B26, C22, E44, G14.

1. Introduction

It is vital for each investor to understand that many forces impact stock prices. On one hand, there are internal factors that are directly linked to the financial performance of the company and its development. This includes the earnings' tendency, the distribution of dividends, mergers and acquisitions, innovations, the hiring strategy, etc. On the other hand, there are external factors such as gross domestic product (GDP), inflation rates, exchange rates, unemployment rate, and fluctuations in gold prices and in US Dollar (USD) value, etc. Undoubtedly, these factors have a strong and significant influence on stock markets and their performance (Siddiqui, 2014). As the relationship between stock prices, gold prices and USD value is presented, a missing piece needs to be added, namely, the oil prices. In fact, oil price fluctuations have an impact not only on the overall economy of a country but also on the economic performance of related economies. According to Balcidar and Ozdemir (2013), oil is an important element of the economy since it is an intermediary factor that transfers wealth from oil importing countries to oil exporting countries. Hence, the change in oil price affects the global economy.

In this regards, oil price fluctuations have an effect on the macroeconomic level. Specifically, their impact is recorded on a number of economic variables including inflation, unemployment, GDP growth, interest rate, exchange rate, and financial markets, etc. On the microeconomic level, many studies have shown that oil price change has an impact on the cost of goods and services, the cost of production, the company's returns and earnings and consequently, it can alter its dividend distribution policy. Given the significance of the oil price fluctuations in most of the economies, the objective of the paper is to examine the relationship between the oil price and stock index in Oman, which is one of the main crude oil exporters in world. This study applies Toda and Yamamoto's (1995) Granger non-causality test to achieve this objective.

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The rest of the paper is organized as follows: section two reviews the prior studies in the area; section three discusses the methodology that is applied in this study and describes the variables and proxies used; section four summarizes the results of the study; and finally section five provides practical and research recommendations.

2. Literature Review

The financial literature is rich with empirical studies that link the fluctuation in oil prices and the stock market performance. A brief literature review of the studies conducted in the mentioned area in different parts of the world is presented in this section. In the context of developed countries, Jones and Kaul (1996) studied the reaction of international stock markets to oil price shocks. The study covered Canada, United Kingdom, Japan and United States, between 1960 and 1991. The authors found no relationship between the two variables.

In a similar context, Papapetrou (2001) examined the relationship between oil prices, real stock prices, interest rate, real economic activities and employment levels in Greece using a multivariate vector-autoregression (VAR). The findings revealed that oil prices are important in explaining stock price movements in Greece. Subsequently, Aloui, Jammazy, and Dakhlaoui (2008) focused on the volatility spillovers between crude oil markets and major stock markets for the period between 1989 and 2007. The authors used two different analytical approaches and found that oil price volatility has a negative impact on stock market behavior. Furthermore, Bjornland (2009) analyzed the impact of oil prices on stock market returns in Norway between 1993 and 2005. By applying structural VAR models, the author found that an increase in oil prices positively impacts the stock market returns.

In a relatively recent study, Ramos and Veiga (2013) analyzed the non-linear effects of oil price changes in stock markets. They found that oil price spikes depress international stock markets but not the opposite. In other words, drops in oil price do not necessarily increase stock market returns. This conclusion is valid for developed countries. However, emerging market returns are not sensitive to oil price variations. Regarding emerging countries, Basher and Sadorsky (2006) studied the impact of oil price changes on a large set of emerging stock market returns. They found that positive shocks to oil prices depress the emerging markets' stock prices and US dollar exchange rates in the short run. Similarly, Liao and Chen (2008) examined the effects of oil and gold prices on individual industries in the Taiwanese context by applying the threshold GARCH model (TGARCH). The study covered the period spanning from January 1998 through December 2005 and concluded that for both the electronic and rubber industrial sub-indices, a positive impact of the fluctuation in oil prices was detected.

On the other hand, Ono (2011) examined the impact of oil prices on real stock returns for Brazil, Russia, India and China between 1999 and 2009 using VAR models. The findings showed a positive and significant impact of oil prices on real stock returns only for China, India and Russia. Adaramola (2012) has also examined the long-run and short-run dynamic effects of oil price on stock returns in Nigeria between 1985 and 2009 using Johansen cointegration test. A bi-variate model was applied and revealed a significant positive relation of stock return to oil price shocks in the short-run and a significant negative relation of stock return to oil price shocks in the long-run. Furthermore, Basher, Huang and Sadorsky (2012) studied the dynamic relationship between oil prices, exchange rates and emerging markets stock prices. They found strong evidence that oil price risk impacts stock price returns in various emerging markets. The study revealed that oil price increases have a positive impact on excess stock market returns for daily and monthly data, in emerging markets, whereas for weekly and monthly data, oil price decreases have positive and significant impacts on emerging market returns.

In a more recent study, Ansar and Asghar (2013) analyzed the impact of oil prices on the consumer price index (CPI) and Karachi Stock Exchange index (KSE-100) from 2007 through 2012 using multi regression model and found a positive relationship between oil prices, CPI and KSE-100 Index. In the Gulf Cooperation Council (GCC) context, Hammoudeh and Aleisa (2004) investigated the relationship between the GCC stock markets performance and the oil price index. The authors found a bidirectional relationship between Saudi stock returns and oil price changes while the other GCC markets are less dependent on oil price fluctuations. Similarly, Arouri and Rault (2012) examined the long run link between oil prices and stock markets in GCC using bootstrap panel cointegration techniques and seemingly unrelated regression (SUR) methods. The findings revealed that oil price increases have a positive impact on stock prices for all GCC countries except Saudi Arabia.

Moreover, Abdalla (2013) examined the impact of oil price fluctuations on stock market returns in Saudi Arabia over the period from 2007 through 2011. The author applied a bivariate vector autoregressive-generalized autoregressive conditional heteroscedasticity (VAR-GARCH) model and found a positive impact of oil price fluctuations on stock market returns. In a recent study, Al Hayky and Naim (2016) investigated the dynamic relationship between oil price and

Kuwait's stock market index between 2005 and 2015. The authors used Markov Switching model and detected that there is a positive and significant relationship between the Kuwaiti stock market index and oil price fluctuations in the period of high volatility regime while no relationship was found for the period of low volatility regime.

In summary, the above studies revealed contradicting results regarding the significance of crude oil fluctuations in predicting the stock price movements. This observation is valid for different countries regardless of the level of development/underdevelopment, or whether the country is a crude importer or exporter. Hence, it is highly required to further examine the effect of crude oil fluctuations on stock markets movement and performance in the Omani context, especially in the current era of highly volatile crude oil prices.

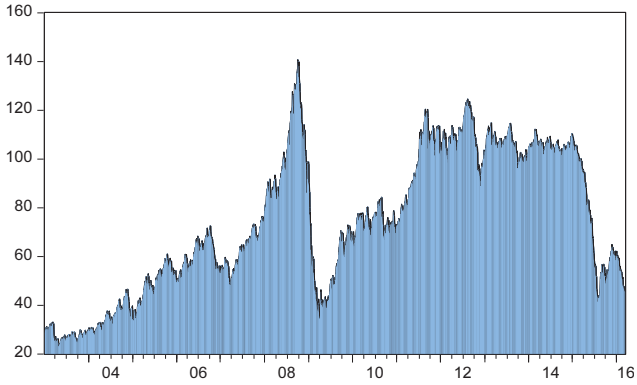
3. Methodology

The study uses two main variables for the analysis, namely, stock index and oil price for the period spanning from January 2nd, 2003 to March 13th, 2016. It is noteworthy that the stock market index in Oman is represented by Muscat securities market index (MSM30). The data is in daily frequency and it was collected from Bloomberg database. The analysis is conducted by applying Toda and Yamamoto's (1995) Granger non-causality test to examine the causality between oil price and the stock index in Oman. This method is used primarily due to its accuracy in considering the number of lags.

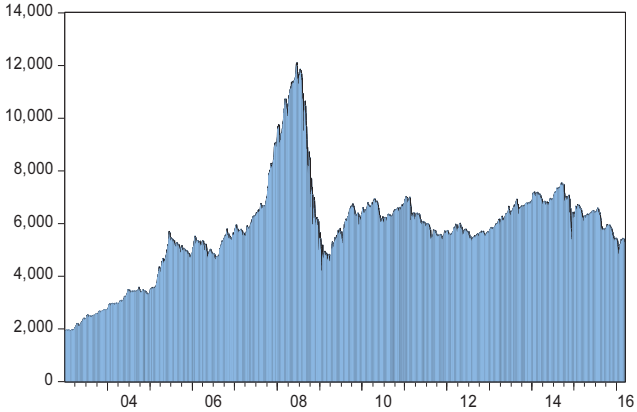
The descriptive summary in Table 1 shows that the average oil price during this period was $73.71 while the average index value was 5,768.96. It is remarkable that the oil price reached its highest value of 140.73 between September 22nd and 23rd, 2008. The same trend applies for the MSM30, which reached its peak around the same period of time as shown in Table 1, Figure 1 and Figure 2.

<Table 1> Descriptive analysis

	OIL	MSM30
Mean	73.71110	5768.961
Median	70.95000	5813.275
Maximum	140.7300	12109.10
Minimum	23.27000	1920.050
Std. Dev.	28.93436	1827.508
Skewness	0.038567	0.485854
Kurtosis	1.777075	4.709327
Jarque-Bera	203.8280	524.8114
Probability	0.000000	0.000000
Sum	240150.8	18795274
Sum Sq. Dev.	2726751	1.09E+10



<Figure 1> Oil price fluctuations



<Figure 2> Stock index fluctuations

4. Results

Prior to the Granger causality analysis, it is required to identify the degree of integration for all the included variables. This is performed through two main tests, namely, the Augmented Dickey Fuller (ADF) test and Phillips Perron (PP) test. The summary of the results in Table 2 indicates that oil price is non-stationary at levels, but stationary at first difference. Hence, it is integrated of order I (1). However, MSM30 is stationary at level and hence it is of order I (0). These results indicate that the Toda and Yamamoto's (1995) test is an appropriate method for the current analysis.

<Table 2> Unit root tests

	Level		First difference	
	ADF	PP	ADF	PP
Oil price	-1.845504	-1.778732	-29.12548***	-43.42720***
MSM30	-3.053447**	-3.237099**		

Note: *, **, *** refer to significance levels at 10%, 5% and 1% respectively.

Having checked the order of integration of the model variables and ensured that Toda and Yamamoto test is appropriate for this study, the latter is then applied. The results of the Granger non-causality test following Toda and Yamamoto (1995) is summarized in Table 3. The results indicate that the oil price fluctuations have a significant impact on the local stock index fluctuations. However, the stock index fluctuations do not have a significant impact on oil price movements. This is illustrated by the Chi square values that are significant at 1% for the impact of oil price on stock exchange, while not significant for the impact of stock index on oil prices. This finding is in line with those of Arouri and Rault (2012), Abdalla (2013), and Al Hayky and Naim (2016). Nevertheless, they contradict the findings of Hammoudeh and Aleisa (2004). This indicates that any major changes in the crude oil prices will potentially have a significant impact on the Muscat Stock Exchange performance. Hence, the authorities should carefully manage the crude oil production and more importantly the generated income allocation in a way that would enhance the stock market's performance.

<Table 3> Granger non-causality tests

Variables	Oil price	Stock index
Oil price	-	20.72***
MSM30	3.36	-

5. Discussion and Conclusion

The main objective of this study is to investigate the potential impact of oil price fluctuations on the stock price movements in Oman. Using Toda and Yamamoto's (1995) Granger non-causality test, the results revealed that oil price fluctuations have a significant impact on stock price indices, while stock price indices do not have any impact on oil price fluctuations.

These findings have significant contributions to the financial economics and macroeconomic theory, to the practitioners as well as to the policy makers and regulators. Particularly, these findings enrich the theory on the oil price fluctuations and its influence on the economy as a whole and specifically on the financial markets in respective countries. This is particularly significant in Oman, one of the major exporter of crude oil and gas. The country has been recently active in establishing vital substitutes to the oil and gas income, mainly through the development of marine infrastructure, agricultural production, services platforms, and above all, the financial market. The latter is a major element in the mobilization of investment funds in the country where the listed financial assets have tremendously increased over the last few years.

Though the current study brought about significant contributions, it still suffers from a number of limitations which should be considered in future studies. Primarily, this study focused on a single country, namely, Oman. This does not provide a comprehensive idea on the relationship between oil price fluctuations and the Muscat stock index in other settings. It is recommended in this regard that future studies should cover a wider area. On the other hand, this study used only two proxies for the respective variables. It is preferable at this level to use different proxies to reach a more robust research.

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Subsidy Rationalisation for General Purpose Flour: Market and Economics Implications*

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Abstract

Subsidies are an instrumental policy making tool for many governments, but their importance depends on the market situation of the national economy. Efficient subsidy implementation would allow the government to correct market failure thereby aligning social and private costs and benefit. The general objective of this study is to justify the need to rationalise subsidies for food items such as flour. This study assessed the structure and conducts of the general purpose flour market in Malaysia; and analysed the impact of subsidies on market performance to recommend policies to increase market efficiency under the subsidy rationalisation program. To accomplish these objectives, the study adopted a microeconomics market analysis as well as the standard structure and performance analysis method. These two approaches showed the characteristics of an industry's consumer behaviour, competition, as well as the efficiency associated with government regulatory policies on the flour industry. One of the biggest influences on the domestic market is related to the food consumption behaviour of the general population. Food consumption behaviour reflects global trends. As income rises, food trends tend to be consumed in processed form or in such a way that adds value in another manner such as the preparation of food products.

Keywords: Subsidies, Policy, Rationalise, Flour, Malaysia.

JEL Classification Code: H20, H24, H70.

1. Introduction

Subsidies are a decision making tool for many governments, but their significance relies on the market situation of the national economy. Effective implementation of the subsidies would allow the government to correct market failures, which would align the costs as well as social and private benefits. Thus, government intervention in the market is required because typical price mechanisms have a number of failures that cannot bring social benefits to all parts of the national economy. Based on this argument, the Malaysian government pays a high level of subsidies on energy and some selected essential food items such as sugar, rice, cooking oil, and flour. A subsidy that ultimately decreases the prices of goods for the end user would normally increase the demand and the overall usage of the goods. One form of government intervention is the payment of subsidies in order to increase the welfare level of poor people.

Malaysia, like other countries, pays a high level of subsidies on food, energy, education, and other social sectors of the economy in order to improve poor households' access to various commodities, primarily food and energy. This is also to reduce their poverty level. In 2013, government expenditure on subsidies equated to nearly 16 per cent of its operating expenditure, which is about 5.1 per cent of the total gross domestic product (GDP) (EPU, 2015). Although this can bring social benefits through access to affordable energy and employment in the economy, it may also carry economic and environmental costs. In addition,

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these subsides are costly for the government because an increase in energy prices also increases the budget in order to cover the negative effects of the shock on the energy prices.

General purpose (GP) flour is a price-controlled item in Malaysia at RM1.35 per kilogram (kg). The government pays all flour millers including Malayan Flour the price difference against the current market price of RM1.80 - RM2.00 per kg (subject to a certain volume quota set in 2007). Volume split between uncontrolled and controlled flour is 80:20. This study seeks to justify the need to rationalise subsidies for food items such as flour while also: (a) assessing the structure and conduct of the flour market in Malaysia; (b) analysing the impact of subsidies on market performance; and (c) recommending policies to increase market efficiency under the subsidy rationalisation program.

1.1. Subsidy: A Drawback

According to World Trade Reports 2006 (World Trade Organization, 2006), introducing a subsidy or any other government measure within a perfect market framework renders that market inefficient and welfare-diminishing. If a market is inefficient, any form of government intervention such as establishing subsidies, may affect economic welfare. Since 2012, subsidy rationalisation was at the forefront of Malaysia's annual budget. Steps were taken in light of widening fiscal deficit which represented about 5 per cent of Malaysia's GDP. Three major benefits of subsidy reforms include:

1) To achieve greater overall efficiency gains where subsidy savings, over consumption support, can be directed to productive infrastructure spending on education, science and technology, healthcare and public transportation;
2) To improve economic efficiency. As we move closer to market prices, supply and demand becomes more market-responsive and are then driven by price signals. Transport services and basic food industries can be moved to become more competitive. They will become more efficient because they will respond more efficiently to price changes. Non-subsidised prices for goods and services will force resources to be allocated with minimum wastage;
3) To produce a more resilient economy, reinforced by lower fiscal deficit and government debt.

1.2. Subsidy Rationalisation under the Economic Transformation Plan (ETP)

For the last 10 years, Malaysia has been running a fiscal deficit which has been growing progressively from RM5 billion in 1998, to a record high of RM47 billion in 2009. This was due to the fact that government expenditure, including subsidies, has been escalating, whereas government revenue has been able to keep pace with economic growth. Consequently, the government has to borrow a lot of money to cover the shortfall. On the other hand, the Malaysian government debt in 1997 was RM90 billion and has grown at a rate of 12 per cent a year to reach a record of RM362 billion in 2009. In addition, as a proportion to the national GDP, Malaysia is one of the world's highest subsidised countries utilising 4.7 per cent of its GDP compared to Indonesia's 2.7 per cent, the Philippine's 0.2 per cent, as well as other Organisation for Economic Co-operation and Development (OECD) countries that average 1.5 per cent.

As of late, various studies conducted with international bodies such as the International Monetary Fund (IMF) and the World Bank has encouraged subsidy reforms in light of Malaysia's widening fiscal deficit. Strengthening the social safety net is an integral part of the authorities' fiscal strategy. Untargeted fuel and food subsidies were regressive: as households in the top two quintiles of per capita consumption received 60 per cent of the subsidies while only 3 per cent went to the bottom quintiles. The elimination of fuel and food subsidies freed up resources that can be redirected to better support the poor. To mitigate the impact of subsidy rationalisation and the implementation of goods and services tax (GST), the 2015 budget calls for increased cash transfers to poorer households (those earning less than RM4,000 per month). The authorities are also reviewing overlapping and fragmented cash transfer programs.

1.3. Market Structure

The market structure of the flour industry in Malaysia is a typical example of a regulated or government controlled market, given the existing Price Act 1999, Price Control Act 1946, Supply Control Act 1962, and the legal framework of these acts. The price of food stuff or essential items such as flour is regulated, given no provision for competitive price practices. The fundamental reason for applying such price control mechanisms as a pro-poor distributive strategy is to close the income gap between poor and rich households. Basically, the Malaysian flour industry has been dominated by four major players in which Malayan Flour Mills (MFM) and Federal Flour Mills (FFM) are the clear dominator the market with both companies controlling about 57 per cent of the domestic market share. Table 1 shows a brief overview of the Malaysian flour industry which has been dominated by several major players as well as other smaller firms.

<Table 1> Locations of mills in Malaysia Capacity (tonne/day)

Company	Number of mills	Locations of mills in Malaysia Capacity (ton/day)	Est. mkt share	Capacity	Notes
Federal Flour Mill	4	Pasir Gudang, Perai, Kuching, Kota Kinabalu	32%	2,550	80%-owned by PPB Group. Also has flour milling in Vietnam, Indonesia, Thailand and China.
Malayan Flour	2	Lumut, Pasir Gudang	25%	2,520	Doubled capacity since 2012, utilization rate presently at 60%.
Interflour	4	Port Klang, Kuching, Labuan, Lahad Datu	21%	1,690	Privately-owned. To add 550 new MT/day capacity in 1H15 in Pasir Gudang. Also has flour milling in Indonesia, Vietnam and Turkey
Kuantan Flour	1	Kuantan	n.a	n.a	Loss-making for past 6 years
Seberang Flour Mill	1	Perai	n.a	n.a	Privately-owned

* The Kuantan Flour is no longer in operation and this make the market for flour mainly dominated by the three biggest firms.

1.4. General Purpose (GP) and Non-General Purpose

The flour market in Malaysia is divided into General Purpose (GP) and Non-General Purpose (Non-GP). GP flour is subsidised flour with a price ceiling of RM1.35 per kg in Peninsula Malaysia and RM1.45 per kg in Sabah and Sarawak. GP flour is mainly used for *roti canai*, bread, and other broad range of Malaysian sweet and savoury treats. Among the popular brands of GP are *Basikal, Bunga Raya,* and Blue Key. Random checks at retail outlets indicated that most of the time, the price of GP flour is above RM1.35.

2. Literature Review

Food subsidy is one of the government's policies to look after consumer's welfare against food price increases. Ramadan and Thomas (2011) studied the reform of food subsidy system in Egypt where the government removed the food subsidy to reduce the public deficit. The removing of food subsidy in Egypt caused reductions in welfare of the general population. Similarly, Sharma and Alagh (2013) concluded that food subsidy plays an important role in the well-being of poor households, especially in rural area in developing countries. According to this study, in India, food subsidy is a vital component of the social safety net for the poor. However, food subsidy is increasing in India unlike Egypt. The reasons behind the increasing food subsidy in India are the rising procurement price and food inflation, namely the price of rice and wheat.

Solaymani, Kari, and Hazly Zakaria (2014) studied the subsidy reform in Malaysia. The authors concluded that removal of subsidy has a significant negative impact on income and consumption. The effect of removal of subsidy is higher for rural households because their income is relatively lower. However, the welfare decreases for everyone in the country. Likewise, the empirical evidence of energy subsidy reform showed that subsidy reform has increased poverty and decreased household welfare due to the increase in the input cost, especially in developing economy (Nwafor, Ogujiuba, & Asogwa 2006; Gahvari & Taheripour, 2011). In a similar study, Löfgren and El-Said (2001) concluded that there is no doubt that the elimination of subsidy will have a negative impact on households' consumption, but if the government transfers the elimination of subsidised money to the poor households it will lead to a greater increase in the consumption of poor households. However, this will reduce the consumption of non-poor households.

In India, subsidies are a significant part of the budget and it is not very clear to the general public. Srivastava and Rao (2002) argued that even though the total amount of subsidy is very large in India, the government is not paying attention to the health and education sector because the per capital expenditures for health and education is low even though the degree of subsidization is high for these sector. This is mainly because subsidies in these sectors are very inefficient and largely hidden. In many cases most people are unaware of these subsidies (Srivastava & Rao, 2002).

Subsidy programs are important for low income households whereby it helps them gain access to basic needs. Without subsidy programs, many poor households will not have access to the basic needs (Razack, Devadoss & Holland, 2009). The authors found that in India, subsidies in the agriculture sector increase production and reduce

unemployment. Moreover, the wage in the agricultural sector and consumption among urban and rural households also increased. However, according to OECD (2007) and Karami, Esmaeili and Najafi (2012), subsidy programs are expensive, a burden on the government budget and could be inefficient if the benefits are not received by the targeted poor households. Moreover, Dhehibi and Gil (2003) found that in Tunisia removing or reducing food subsidies will not have a significant effect on the food expenditure structure but for low income households it will have some effect on their consumption.

3. Methodology

In order to achieve the research objectives, this study was conducted based on qualitative methods and secondary sources. Since the study is qualitative in nature, face to face interview was conducted between two groups consisting of consumers as well as restaurant owners and retailers to examine the consumer and retail markets' consumption pattern of wheat flour. The interviews that were carried out with consumers indicated that the GP flour (the subsidised flour) is not popular among end consumers as many of them use non-GP flour for their own consumption. To recommend policies, previous studies and government policies were assessed as a secondary source of information.

4. Results and Discussions

4.1. Consumers Perspectives

From the interviews that were carried out for the study, most consumers consume non-GP flour particularly those without benzoyl peroxide. This is mainly due to their general awareness that bleached flour (GP flour) which is whiter and finer has no vitamins and is hazardous to health. The differences between bleached and unbleached flour is as shown in Table 2. When some of the brand names of GP flour were mentioned, many respondents indicated that they have not seen or heard of the brand. In addition, they could not differentiate between the brands of subsidised and non-subsidised flour. Most of the respondents are unaware and do not consume GP flour because the flour is not available at their favourite stores, i.e., hypermarkets and nearby retailers. From our observation, GP flour is mainly available at 1Malaysia stores and stores that are targeted for Bangladeshi and Indonesian residents.

As such, we could derive that the subsidised flour (GP flour) does not reach the targeted consumers. Most consumers such as housewives could not differentiate between subsidised or non-subsidised flour but majority of them prefer non-GP flour for their own consumption. Price is not a determinant factor but health concern is the major issue among this group of housewives.

<Table 2> Type of Flour

	Bleached Flour	Unbleached Flour
Colour	White	Less white / yellowish
Bleached using	Bleaching chemicals such as organic peroxides, nitrogen dioxide, chlorine, chlorine dioxide, or azodicarbonamide	Aged naturally
Quality	Finer grain, making a lighter loaf	Tougher grain, making a denser loaf
Nutrition	Less vitamin E. Rest of the nutrition, i.e. calories, fats, fibre, proteins, calcium and iron are about the same.	More vitamin E. Rest of the nutrition, i.e. calories, fats, fibre, proteins, calcium and iron are about the same.

Source: Organics (2016)

4.2. Restaurant Owners

For restaurant owners, especially members of KIMMA (Malaysian Indian Muslim Congress) and PRESMA (Malaysian Muslim Restaurant Owners Association – with 3,200 members), the consumption of flour is estimated at 25kg per day and is mainly used for making *roti canai*. Most of them got their supply of flour from wholesalers. From 25kg of flour, the restaurants are able to produce, on average, 375 pieces of *roti canai*. Sales of *roti canai* contributed only about RM300~RM400(10%~13%) from the overall sales of RM3,000 per day.

The price of *roti canai* is about RM1.35 per piece but the price varies depending on the location of the establishments with the price of *roti canai* expected to be higher in city centre *vis-à-vis* at suburban areas. The price also depended on the add-on services provided by the restaurants, i.e. air-condition section, Wi-Fi, and others. On the issue of liberalization of flour subsidy, the representatives of KIMMA and PRESMA note on the market forces and consumer choices as carried out in many other countries.

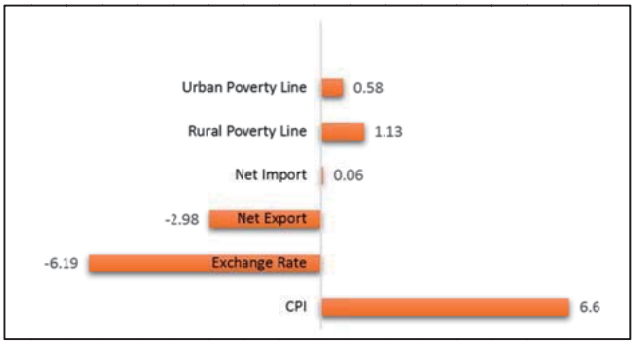
4.3. Retailers

Most big retailers or hypermarkets got their supply of flour directly from millers such as MFM. The amount of flour supplied to these retailers depended on the quota allocated to them. Majority or 80 per cent of retailers' businesses are

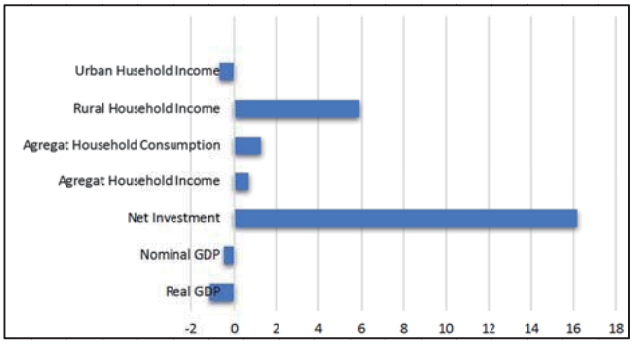
with end consumers and only 20 per cent with small retailers or restaurants. This is in line with the fact that 90 per cent of the flour sales among these retailers are from 1kg pack and only 10 per cent are from the 25kg pack. Depending on the availability of the flour, most retailers sell between 70~80 per cent of non-GP and only 20~30 per cent of GP flour. Demand for flour is stable across the year and only double nearing festive seasons such as Hari Raya.

4.4. Economy and Poverty in Malaysia: Subsidising the Poor Household

Malaysia is a small developing country in which its imports of food, beverages and tobacco accounted for over 5 per cent of its total imports. The country is considered a net importer of food commodities over time because its food imports are greater than its exports. In recent years, the increased in international prices of food has contributed to a significant decline in the value of its exports as shown in 2009 (Figure 1).



<Figure 1> Impact on Increase in Food Prices in 2009



<Figure 2> Impact on Increase in Food Prices in 2009

An increase in food prices during the 2008-2009 period decreased Malaysia's food imports by 4.4 per cent (from RM29 billion to RM28 billion). As in many developing countries, the poorest households in Malaysia spent a high share of their income on food and beverages. According to the most recent Households' Expenditure and Income Survey, households in rural areas spent around 30 per cent of their total expenditures on food and non-alcoholic beverages while this percentage falls to about 20 per cent for households in urban areas. This pattern of expenditure has been relatively constant over time. Rural areas in Malaysia include a significant percentage of poor households, where Sabah and Sarawak have higher percentages of poor people compared to Peninsular Malaysia. Furthermore, the hard-core poor index, which measures the level of household income below the food poverty line index, is much higher in the Sabah region, in comparison with other regions.

4.5. Subsidy Rationalisation: Past History and Market Adjustment

In the past five years, Malaysia has undergone two significant subsidy rationalisation programs which included fuel subsidy and sugar subsidy rationalisation programs. In both exercises, the market has readily adjusted and consumers and producers were able to realign the consumption and supply accordingly. The initial inflationary effect was expected, especially for energy subsidies such as fuel, which constitutes the main input especially in the transportation sectors. Furthermore, the market adjustment process for the fuel subsidy was undertaken on the back of relatively low prices for global petroleum market and this provided the soft landing for the consumer market. However, the general inflation trend was on the uptrend due to the weakening ringgit that hit the highest low (RM3.76=US$1) in early 2015. This is also due to the introduction of goods and services taxes (GST) in Malaysia in April 2015.

As for the sugar subsidy, the general impact has been rather soft as the general consumers took on lowering sugar consumption based on health reasons. The inflationary effect was transmitted through the food and beverages industry which was able to transfer the price increase to the consumers. Clearly, the market adjusted quite well to the unsubsidised price while political protest remains minimal except for GST and general political climate of the country.

4.6. Impact of 1kg Pack of GP Flour on the Income of the Poor

The following discussion focuses on the impact of the rationalisation of the 1kg pack on the income of the poor households. To assess this impact, the formula used in this study was based on the formula recommended by the International Monetary Fund (IMF) (2008) as well as the

limited data set available to the team. The robust feature of the formula is that it rests on the assumption on the weightage of the expenditure of household income spent on flour for any low income family.

In extension, the simulation was based on the prices charged for ASEAN countries which may represent a realistic price level/bench mark prices for 1kg pack (assumed quality is the same). The second part of the simulation was done to represent a gastronomic means of price increase for prices and this too is set to represent the 40 per cent lowest income level of the poor household. To assess the impact of the subsidy rationalisation, two general formulas were used to factor in the general public as well as the vulnerable 40 per cent poor household as announced under the 11th Malaysia Plan (11th MP). The income line was based on the poverty line and the number of household under poverty level as announced under the 11th MP.

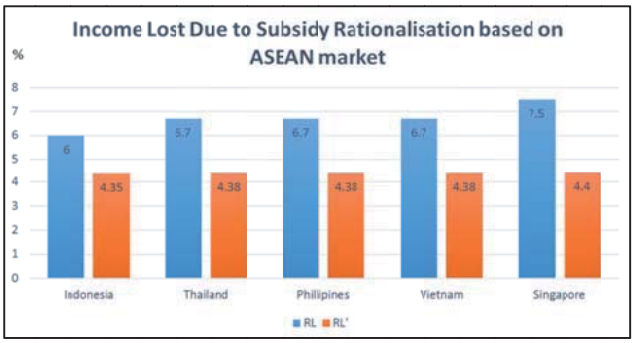
4.7. Scenario 1: A General Overview

Based on an IMF study (2008), the income impact of subsidy rationalisation on poor households will include the loss of income if price is to be adjusted based on the free market level, i.e. price after doing away with subsidy. Thus, the income loss (RL) depicts the decline in income if price is going to be liberated above the subsided prices in which the price of neighbouring ASEAN country would be used. This is selected to reflect the upcoming ASEAN Economic Community 2015 where spatial pricing would also be a feature for such an economic community. To estimate the loss of real household income as the arithmetic mean of the relative price change, we use the shares of the consumption items in household expenditures as weights. This amounts to the following:

$$\mathrm{RL} = \sum_i w_i \frac{P_i(1)}{P_i(0)} - 1,$$

where RL denotes the impact on real household income in per cent, w_i is the share of item in household expenditures, P_i (1) is the new (in most cases, higher) price of item i, and P_i (0) the price before the reform of price subsidies. This estimate of the loss of real household income can be illustrated with an example: suppose the price of subsidised flour rises by 40~70 per cent, and that the weight of flour in the expenditures of poor household's averages 0.05 per cent. Using the above equation, the average impact on the real income of poor households can then be estimated at 6.0~7.5 per cent.

This estimate provides an upper boundary on the increase in living costs. If households respond to changes in relative prices by shifting away from the item for which the price has increased, the actual loss will be smaller. The loss will be close to the above estimate if the subsidised item is a basic commodity for which no ready substitutes are available. If there is a perfect substitute, households will react to even a small change in the price of the subsidised item by shifting completely out of that item and into the substitute, suffering no loss in real income. The procedure below recognizes the likelihood of a consumer response. Figure 3 shows the income lost due to subsidy rationalisation based on ASEAN Market.



<Figure 3> Income Lost due to Subsidy Rationalisation based on ASEAN Market

4.8. Scenario 2: Taking care of the Vulnerable 40%

The same method was repeated by adjusting the formula for the 40 per cent poor which also factors in the total number of household under the 11th MP. Alternatively, estimating the real loss of household income as the geometric mean of the relative price change, using the shares of the consumption items in household expenditures as weights. This can be calculated as follows:

$$\mathrm{RL}' = \prod_i \frac{P_i(1)^{w_i}}{P_i(0)} - 1.$$

Based on the 40 per cent of vulnerable poor household, the estimation shows that income loss only represents about 4.38~4.40 per cent out the real income among the poor household. Under both scenarios, the loss in income through the price adjustment based on the ASEAN price level would not significantly affect the real income of the poor household. However, this income lost can be significant after adjusting for 10 per cent inflation rate per annum. This minimum change of the income may be due to

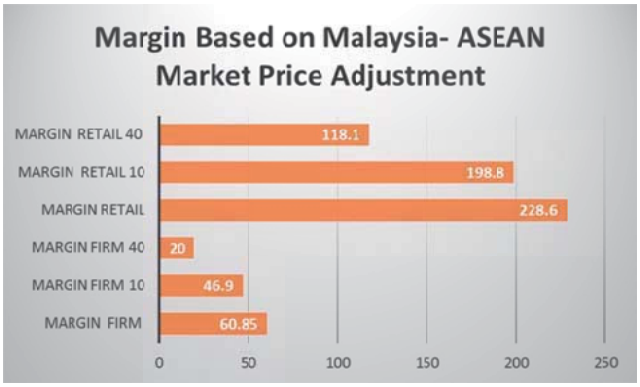
the fact that the total expenditure share for flour consumption is significantly small as compared to the total food or energy expenditure for the poor household.

Under most circumstances, subsidised food items would be easily targeted to the poor household if it's considered as "inferior goods". This is fairly reasonable as the market would consider it as "inferior items" based on the purchasing behaviour of the consumers which determine the market demand of the goods. In countries that have attempted to manage subsidised food such as Egypt, the categorisation of the goods as "inferior goods" would automatically lead to a situation where the poor would purchase the goods. This would have made the targeting mechanism to subsidise the item as administratively feasible without much leakages. Finally, this would have made the subsidy scheme in favour of "self-targeting" approach and contribute towards the success of the subsidy programme. By having an administratively self-targeted mechanism, this forms the best combination of any subsidised program that would reduce leakages and inefficiency related to any food subsidy program. Nevertheless, GP flour at the retail level (individual pack) may not be considered as "inferior goods" as brand names and health conscious behaviour among the consumers allow individual consumers to purchase GP flour with certain brand (random interview among housewives).

The unavailability of RM1.35 per kg/pack at nearby grocery stores may have made the subsidised GP flour not easily available thereby rendering it a rare item. As such, the distributive retail aspect of GP flour made it almost impossible to be considered as an "inferior good" in the Malaysian market. Eventually, the main focus of the subsidy now rests on the 25kg/pack which are predominantly purchased as intermediate goods for restaurants, food vendors, and processed foods products.

4.9. The Industry Scenario: 25kg Pack for Domestic Industry and Restaurant

Based on a 2015 Cabinet paper report, the major concerned was on the 25kg pack that will be an input for the production of food away from home (FAFH). It cannot be denied that any further rationalisation is going to transfer the cost to the consumer. However, several retailing structure needs to be analysed before some concrete recommendations can be made for policy input. The simulation based on prices in several ASEAN market shows that marginal differences could still be observed and this may have allowed some room to adjust prices based on prices of other ASEAN markets (Figure 4). For example, retailers (noodles) could still make a margin of about RM198.8 per 25kg pack even after adjusting for a 10 per cent increase in operating cost. However, the operating expenditure could affect the margin of percentage as the marginal differences correlates inversely with the increase in operating cost.



<Figure 4> Margin Based on Malaysia - ASEAN Market Price Adjustment

4.10. Basic Indicator for firm-retail Margin: the case of noodles

The discussion among the restaurant operators indicated that the operators were ready to do away with the subsidy and two-tier pricing. As the main component in the roti/noodle is GP flour, any move to increase the price will be passed back to the consumers. Admittedly, noodle/roti is a staple food for many Malaysians and any move to do away with the subsidy may create a public outcry. The following calculation portrays a simple calculation on the cost of unsubsidised flour on the potential cost of noodles and how it may affect the margin of the operators. Few suggestions from the operators include, the subsidy should be on the final goods and operators will be subsidised based on controlled final goods. In extension, operators proposed that non-subsidised outlets may charge prices above the controlled prices. Nevertheless, the operational part of the proposal may face problems as the monitoring element may be difficult due to the two-tier pricing for final goods.

Based on the simulation on two food items, the major food vendor has some margin to absorb the unsubsidised prices while future price increases may not necessarily be completely attributed to food based inflation only. For example, the plummeting ringgit may also contribute towards the uptrend in the food prices and the general cost of living in Malaysia. Nevertheless, the general tendency will be for the retailers to pass the extra cost to consumers as they wish to maintain their margin.

4.11. The Production Quota among Flour Millers

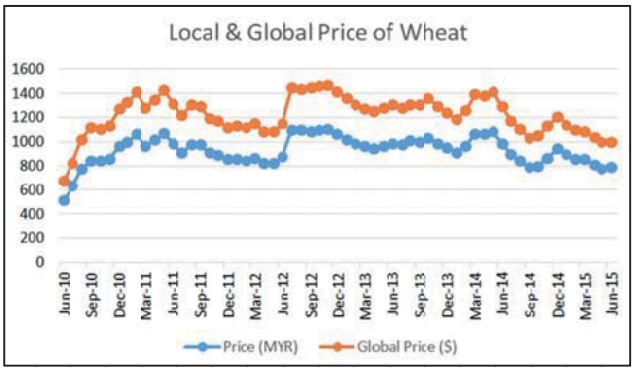
We have posed several fundamental questions to the Ministry on the rational of fixing the quota. The retail price of GP flour has been set at RM1.35 per kg based on wheat price HRW-Ord at USD$245 per metric ton as of May 2007. The average price has increased to USD$466 in December 2007 which resulted in producers incurring a loss of about RM1,083 per metric ton. Currently, the total subsidised flour is approximately 250,152 metric tons annually and this is to be allocated between the flour producers.

The production quota is mandatory based on volume split between production quota of 80:20 in which the 20 per cent quota is to be complimented by subsidy payments to the producers. The quota for subsidised GP flour has not changed since 2007, even though there has been a significant shift in demand due to its lower price compared to non-GP flour. Flour millers are subsidising through their own pockets while waiting for the government to adjust the quota. Flour millers are given a monthly production quota based on each company's historical sales record. The subsidised volume of GP flour is about 250,152 metric tons per year and this is to be distributed among the flour millers. Despite the greater demand for subsidised GP flour, the monthly quota for each company has remained the same since 2007. The request for quota adjustment was due to the impact on the effect of the company performance.

The general effect of quota is always detrimental to the efficiency of the economy. Any direct intervention through subsidy and quota control would subject the market to waste and inefficiency both at the consumer and producer level. In relation to the waste, a sufficient number of products will be sold on the "informal market/illegal market" as border trade become points for illegal movement of goods. This too has contributed to distorted distribution whereby subsidised flour is not easily found in border town as the "smuggled goods" are easily available. Even though the quantity is quite negligible, the overall lost weighted over the long run may be significant. Our estimate shows that the over efficiency lost due to price control and quota production is about RM2.4 million per quarter indicating an annual income loss of RM9.6 million for the flour industry. Out of this loss, about RM764,253 per quarter was incurred by consumers where not all end up paying RM1.35 per kg while producers experience losses about RM1.7 million per quarter as the price is fixed at RM1.35 per kg due to the production control set at the quarterly basis. On both ends, the producer and consumer losses still represent market distorted effects which can represent the flour market inefficiency. In terms of policy assessment, this loss represents dead weight loss which indicates a sign of inefficiency associated with any production control and subsidised goods which is regulated at 1 single price below the market price.

4.12. Effect of World Prices on Malaysia's Import of Wheat

There is a significant effect of world price on Malaysia's import of wheat due to currency depreciation. The U.S. dollar became stronger which makes exports more expensive for the Malaysian government (importer). This might lead to reduced imports of wheat. It makes U.S. imports cheap and may increase U.S. imports. A weaker home currency increases the prices of imports purchased by the home country and reduces the prices paid by foreign businesses for the home country's exports. This should cause a decrease in the home country's demand for imports and an increase in the foreign demand for the home country's exports, and therefore increase the current account. However, this relationship can be distorted by other factors. The graph in Figure 5 shows that Malaysian and the global price of wheat have a similar trend. However, Malaysia as a wheat importer has to pay more due to its currency depreciation.



<Figure 5> Local and Global Price of Wheat

5. Policy Recommendations

The flour subsidy issue in Malaysia may differ from other countries as it does not represent the staple food of the country as compared to rice and other basic essentials such as cooking oil. Malaysia's fairly successful sugar rationalisation may represent an exemplary exercise that does not create much resistance from the general consumers. This is partly because of the health issues related to the consumption of sugar in daily dietary intake. However, similar knock on effect can be seen as sugar remains to be an important component for the beverages and food industry and this is expected to contribute to higher

expenditure for food items. On reflection, the post sugar rationalisation phase has contributed towards a general uptrend in the consumer price index (CPI) of 3.1 per cent as reflected in the third quarter of 2014. Even though sugar may not represent the biggest goods expenditure per household, but the food and beverages and restaurant sectors may factor in the price increase for sugar in their input cost.

The finding from the study shows that the subsidised price for flour of 1kg does not have the targeted market penetration. Our random checks showed that the RM1.35 per kg pack is hardly available in any grocery store except in big hypermarkets such as Mydin, Giant, and Tesco. The only small stores that carried a regular stock are those branded under the 1Malaysia store in which there are about 162 stores nationwide. Our discussion with sales managers from these stores indicated that it is a fairly high sales volume item especially in hypermarkets. Alternatively, 1Malaysia stores near cross border towns do not carry any stock, as the RM1.35 per kg subsidised pack are easily transported towards neighbouring countries through the nearest immigration check point. This indicates the degree of leakages of the existing subsidised program which contributed to the untargeted impact of the subsidy program in Malaysia.

Our findings also show that the impact on subsidy rationalisation on the 1kg per pack is not going to affect the welfare of the poor households by any significant amount. Based on our calculation, the poor household's income will be affected by about 6.0~7.5 per cent and 4.35~4.40 per cent if the 40 per cent of the vulnerable poor is to be taken into account. This decline may be addressed through existing safety net programs which are already available in the system such as the extreme/elderly income support (*Bantuan Warga Emas*) under the Welfare Department. This decline would be easily adjusted through direct transfer payment as all the administrative procedures are in place. However, there is a need to better coordinate some of the existing safety net programs, as the poor household continues to receive support from the government. There is no need to design any new scheme in order to address the negative impact of the subsidy rationalisation scheme on the GP flour. In extension, the compensation programs could also be addressed through the energy subsidy rationalisation scheme, as it represents a bigger budget expenditure for any poor households.

The 25kg per pack GP flour may have a significant impact on general consumers and this may provide a high degree of resentment among the general public. As has been the case in most countries that plan to rationalise the flour subsidy, government efforts have been unsuccessful as bread has been the staple food for the poor. The experience of Egypt has been unique and the government continued to subsidise the *Coarse Baladi bread* and *Baladi Wheat Flour* as it represents the bread that is mainly consumed by the poor. At the same time, Egypt continues to charge market prices for premium bread as the non-poor households could afford to pay higher/unsubsidised prices for regular bread. The prime lesson to be learned is to allow the market to discriminate the two types of goods that is consumed by the different groups of consumers.

In actual fact, prices of *roti canai* or food away from home (FAFH) experience the market discrimination process as prices for *roti canai* and FAFH could be much more expensive in urban areas than those in rural areas. Similarly, some restaurants in upscale markets may charge higher prices for *roti canai* and FAFH, whereby this is accepted within the current market structure. It is expected that the ordinary restaurants (lower-end) serving FAFH are price inelastic (-0.11) but with low tendency to switch to other substitutes (Levedahl, 2011). However, an inelastic demand may not affect the level of consumption as much, given no substitute for the same goods.

Given a relatively inelastic income for low-end FAFH (0.01), any changes in income may not influence demand. Based on this empirical finding, any prices changes due to subsidy rationalisation may not have a significant impact on the demand for process food such as *roti canai* which is among the most popular FAFH among Malaysians. Subsidy reforms entail price liberalisation or adjusting controlled prices of subsidised goods and services, often during macroeconomic adjustment. The economic goals are to correct fiscal imbalances and to improve allocative efficiency. Since the removal of subsidies may have adverse consequences for the poor, these effects must be analysed and, to the extent feasible, mitigated or offset. In this context, the principal—and interrelated—issues that arise are the speed of price-subsidy reforms.

There is a trade-off between rapidly cutting budget-financed subsidies and avoiding an adverse impact on the poor. A one-time adjustment of prices to eliminate subsidies can yield immediate budget savings and quickly correct distortions in resource allocations. However, it can also result in a sudden and significant drop in the standards of living, especially for low-income households. The need to compensate households implies that fiscal savings from price-subsidy reform are usually less than the amount spent on generalised subsidies before the reform.

Gradual reform is not without drawbacks. Apart from the fact that it takes longer to reap budgetary and economic gains, progress under gradual reform may falter, or even be reversed. A number of small price increases may engender more public opposition to continuing reforms than a single large increase. In addition, the continued presence during

the phase-out period of institutions needed to administer the price subsidies contributes to the risk of a reversal of the reforms. Finally, a gradual approach may fail if it is adopted to postpone politically difficult reforms. Such failure can be avoided by publicly adopting a detailed timetable of measures and the options for protecting the real income among the poor households.

Fiscal considerations: A high share of explicit subsidies in spending implies a greater potential for rapid budgetary savings. The budgetary savings will be offset in part—at least in the short run—by compensation for the poor. Elimination of implicit subsidies, on the other hand, will not generally yield budgetary savings, although the revenues of public-sector agencies could increase. Consequently, the speed of reform for the implicit subsidies should reflect the availability of resources, including from external sources. Since the monetary value of subsidy are tied up to the physical amount of subsidised flour, rationalisation of GP flour subsidy includes the proposal to transfer this subsidy through the existing income support program managed by the Welfare Department under the Ministry of Women, Family and Community Development. Since the delivery of income support program has been aligned based on mean testing method, this is expected to better target the poor families facing an increase in the cost of living. This is not expected to affect the operating expenditure of the income support program as it is an existing program managed by the Welfare Department.

Availability of social protection instruments and administrative capacity: Compensating the poor for the elimination of subsidies requires not only resources, but also a system to deliver compensation to those who need it. Price-subsidy reform can be rapid when countries already have the social protection instruments that can be adapted to the needs of the poor during any reform. If new social safety net instruments need to be established, the administrative capacity to design and implement adequate and well-targeted social protection will affect the speed of reform. Availability of information on the socioeconomic and demographic characteristics of the poor will also influence the speed.

Willingness of governments to act on a technically sound reform package: Political considerations have an impact on whether reforms are implemented in a timely manner. In part, they are determined by the popularity of the government and by the level of organization of the middle class. Even under favourable conditions, governments may opt for a slower pace of reform in order to assess and react to unintended consequences, including any adverse political repercussions, and adjust the timing and speed of reforms accordingly. As noted above, however, this runs the risk of reform reversal.

Assess the gains from price-subsidy reform: These would include improved resource allocation (e.g., improved availability of price-controlled items), resource savings that could finance critical public services, or reduce the deficit or taxes, and the beneficial impact on real incomes of some households (see below).

Examine the short-term impact of increasing prices of consumer items on real household incomes, particularly the incomes of the poor: Both the direct and indirect effects of changes in the price of subsidised items must be considered by following these steps.

Assess the direct impact of a reduction in subsidies on real household incomes: This study has identified that liberalising the domestic GP flour market may not affect the real income of the poor households. Nevertheless, we cannot ignore the fact that food price increases had an immediate and significant impact on the level of real consumption of low-income households. This was attributable to the high share of food (over 30%) in total expenditures of low-income households and the high increase in food (above 75%) as reflected in the post GST implementation. However, in the case of GP flour and the 1kg pack, it only represents about 0.05% of the expenditures of the poor households. Thus, any move to liberalise the domestic markets may not affect the welfare of the low-income households. Not all poor households lose from price-subsidy reform. For example, households that produce more food than they consume may gain from the liberalization of food prices. Those employed in the traded-goods sector may also benefit from the elimination of implicit exchange rate subsidies.

The impact of price-subsidy reform on real household income (particularly of the poor) should be monitored: There must be continuous monitoring of social outcomes during the implementation of subsidy reforms. In many countries, weak governance and administrative capacity hamper the targeting and delivery of benefits. Weak governance can divert and waste resources allocated for price subsidies. Weak administrative capacity reflects the lack of cost-effective mechanisms to channel income transfers or targeted price subsidies to the designated population groups, and can be rooted in such factors as insufficient information on the poor and lack of equipment. Even where administrative capacity exists, targeting and delivery can be difficult. Determining eligibility on the basis of income may lead to miss targeted benefits if the administrative capacity is weak.

6. Conclusions

This study has attempted to address three fundamental issues which include: a) To assess the structure and conduct of the flour market in Malaysia; b) To analyse the impact of subsidies on market performance; and c) To recommend policies to increase market efficiency under the subsidy rationalisation program.

The interviews that were carried out with consumers indicated that the subsidised GP flour is not popular among end consumers as many of them use non-GP flour for their own consumption. The unpopularity is partly due to the unavailability of the flour at their favourite shops. The subsidised flour could be easily found at shops targeting Indonesian and Bangladeshi immigrants. In a way, the subsidised flour does not reach the target consumers. These findings strengthen our view on the liberalisation of the 1kg per pack that it will not affect the welfare of poor households.

For restaurant owners and retailers, the liberalisation of the 25kg per pack will have little effect on them. As stated earlier, retailers regard GP flour as a service item and they are not gaining much margin from the product. For restaurant owners, the price of *roti canai* depends on the location of the stores and other add-on services requested by consumers at their store and are thus not totally dependent on the subsidised flour.

The findings show that the liberation on the 1kg per pack GP flour may not affect the welfare of poor households as much as real income may be reduced by approximately 4.38 ~7.58 per cent. This can be compensated through the existing safety net programs implemented by various agencies. Similarly, liberation for the 25kg per pack demands more consideration as it affects the demand for FAFH and this may have an impact on the general consumers. However, our findings show that the producer-retail margin may be sufficient to absorb the minor adjustment of the unsubsidised price based on data from the ASEAN countries. Furthermore, the price inelastic nature given the limited substitute for FAFH may result in insignificant reduction in demand given the new unsubsidised prices. In extension, the low-income elasticity for low-end FAFH may not affect the market demand for end products such as *roti canai* or local cake/delicacies which use GP flour as the main ingredient. This study also shows that the efficiency cost associated with price and production control (quota) is fairly significant and this must be addressed within the current market structure.

It is projected that the Malaysian economy is expected to expand approximately 4.5 to 5.5 per cent in 2015, driven primarily by growth in domestic demand. In line with the growth in consumer demand, interest in good quality pastries and bread is rising, and the number of specialties cafes and pastry shops serving bakery products is similarly increasing. All these factors are boosting wheat imports. As domestic consumption stabilises and there is a need to reduce the available stock, wheat imports are forecast to drop by 8 per cent in 2012/13 and subsequently increased by 6.5 per cent in 2013/14. The price of wheat import is lower due to slow export demand in 2015/16. The projection of 2015 to 2017 indicates that the import price will remain almost unchanged. World wheat production is projected to reach record levels due to upward revisions for the European Union and Canada (IGC and USDA FAS). Global stocks ending in 2015 are projected to reach their highest level in twelve years, but consumption is also expected to rise (AMIS and IGC). However, there is a significant effect of ringgit depreciation over import cost. The impact of price depreciation shows that the Malaysian government now has to pay 25 per cent higher than before. This indicates that the U.S. dollar has become stronger which makes U.S. exports more expensive for the Malaysian government (importer) which may reduce imports.

In conclusion, there is a strong justification for the government to rationalise the GP flour subsidy as it has some distorted effect on the market efficiency and competiveness. Malaysia may need to adjust to a more competitive price and market structure for the GP flour industry such as in neighbouring ASEAN countries which have moved towards less regulated markets that has contributed towards a much more efficient and competitive market. Alternative compensation strategies for the poor household must include greater targeting for income transfer to eliminate leakages and market distortion effects.

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Evaluation of Economic Potential and Level of Concentration of the Regions of Kazakhstan*

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Abstract

This research is devoted to the development of methods general and standard methodological approaches and approbation those for the evaluation of economic potential and level of concentration of the regions of Kazakhstan. This paper presents the results of development of the authors on the selection and justification of the methodological approaches for quantitative evaluation of the economic potential (the degree of territorial differentiation of the profile) and concentration of regions. In this study, we used scientific methods: method of analysis the main trends of economic development, and method of evaluation of concentration of the region. Based on the analysis of foreign techniques developed and tested methodical approaches to the assessment of the economic potential (index and coefficient methods). Proposed methodological approaches to the assessment profile of the territory and developed a system of indicators, which includes an aggregated index of spatial concentration, which accurately reflects the concentration of production in the region. This study shows the results of the analysis of the potential regional disparities and trends of economic development of Kazakhstan. By using, the proposed methodology shows the possibility of their use; we calculated the indicators of integrated assessment of the economic potential and indicators of spatial concentration.

Keywords: Region, Spatial Development, Economic Potential, Concentration, Kazakhstan.

JEL Classification Code: O31, R11, R12.

1. Introduction

In the modern conditions of unstable development of the global economic system, the spatial factor becomes increasingly important in the evaluation of the phenomena and trends of economic development at the global level and within a country, and its regions. In addition, this requires a clear methodological framework that provides methods and tools for assessing spatial relationships and their changes.

Research in the field of spatial development have fragmentary, were not integrated and not supported methodologically until recently. Methodological tools in domestic practice used to analyze the state and dynamics of socio-economic development of regions far from perfect. The consequence of this was lack of clear understanding of the real situation and tendencies of development of the national economy in a modern space, especially in light of the current transformations within the country and in the world. Meanwhile, a drastic change in recent years has been so multifaceted and dynamic that escalated the need for scientific understanding of the conditions and prospects of spatial development of Kazakhstan's economy. There is also the need to study the empirical material in the evaluation of adaptive possibilities of application of foreign models and methods in the area of spatial development.

Thus, for the development of effective policy of spatial development of the country required a new methodological approach to the study of problems of the analysis and increase of efficiency of use of the economic potential of the

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region. Because of which it is possible to conduct a comprehensive assessment of the socio-economic situation of regions, to identify positive and negative factors influencing their development, to identify potentially untapped reserves. Obtained in the process evaluation results will determine the causes of disparities in regional development and to develop recommendations to reduce them.

Therefore, this study aims to study the disparities in development of regions and to provide specific recommendations. In this study in the course of the study obtained the following results: First, based on the analysis of foreign techniques developed and tested methodical approaches to the assessment of the economic potential of the region and its competitive advantages based on the use of the index and coefficient methods. Second, by modifying the foreign approaches to the assessment profile of the territory has developed a system of indicators, which includes an aggregated index of spatial concentration of Herfindale-Hirschman Index (HHI) and the modified Krugman Dissimilarity Index (KDI), which accurately reflects the concentration of production in the region. Third, this research shows the results of the analysis of trends and of the degree of differentiation of economic development of regions of Kazakhstan, their potential and competitive advantage for the period 2000-2015. We conclude that the growth of regional disparities remains a leading trend, and in the economy of the Kazakhstan are concentrated in a limited number of regions with special advantages.

The study divided into the following sections. The Section 2 proposes to consider the theoretical aspects of the spatial development. Section 3 sets the methods of evaluation of the level of economic potential and concentration of the regions of Kazakhstan. Section 4 is conclusion.

2. Theoretical Background and Literature Review

A study of the basic theory of spatial development should base on the analysis of theoretical ideas and schools of thought that have played a significant role in the formation of a system of ideas about the object of study. It should note that the theory of spatial development has a rich scientific heritage in a sufficiently large time interval. Initial theoretical studies of spatial development associated with the description of the economy of the territory consolidation of information on economic systems. Therefore, all the initial economic study carried out within a particular geographical space, i.e. the object of study was the economics of a particular geographical area or locality (Pred, 1966; Saushkin, 1973; Krugman, 1991). Then, concepts of the regional economy expanded due to several new aspects of research of economic space, but it retains its value and the issues that have been characteristic of the economy of regions. The emphasis was on modeling the economic linkages at different spatial levels. Thus, scientists estimated spatial development in economics went through three stages, which differed as to the condition of the object of study – the economy and the content of the economic science (Pchelincev, 2004; Minakir, 2011).

The next stage of development of the regional economy due to phenomenon of globalization, i.e. integration of the national subsystems in the common economic space. Therefore, there is a need for long-term forecasting of economic development and accounting of external effects leads to obvious practical needs of spatial organization as a function of spatial development. In many cases, economic space from the point of view of the regional economy is the territory, which is a set of objects and relations between them. Granberg (2010) explores the structural features of the organization of the regional space and offers different models of regional development. Kolomak (2010) showed that the interaction occurs in the development of various kinds of spatial structures. Therefore, he explored the external effects of the organization of the regional space.

The modern theory of spatial analysis explores regional characteristics of subsystems and involves the analysis of resources of the region (Kireyeva & Nurlanova, 2013; Dezhina, 2013). Therefore, it is possible to build an optimization model of the spatial organization and shaping the strategic directions of development of these systems. In addition, the economic science will create new concepts based on developing a new strategy for spatial development. That is why special importance given to research involving new territorial aspects of the organization of life and spatial differentiation. In this case, particular attention is to form regional policy studies as an independent direction of spatial development economy (Leontiev, 1997; Maslakov, Zubkov, & Plenkin, 2000; Anokhin & Schulze, 2009). Thus, summarizing the analysis of existing theories and concepts, we conclude that important subject in spatial economics is part of studies that cover the problems of concentration and specialization of production. The space may not be confined to one country or region; problems of complex development; heterogeneity of socio-economic development and polarization; the problem of relations and interactions between “center” and “periphery”; problems of urbanization and agglomeration and others.

In addition, in studies of contemporary authors used a new model of spatial development, such as “theory of proximity” or “traceability”, which is associated with the problems of sustainable development of economy and

society with local development of individual areas (Boschma, 2005; Courlet & Pecqueur, 2013). It seems to us that the methodology of modern spatial analysis should integrated with the cluster approach to the organization of space (Kireyeva, 2016). For some countries, especially for the newly industrialized economies of East Asia (Taiwan, South Korea, Singapore), such approach have become important tool. Such approaches through enhanced national economic model based on the transition from an export-oriented policy to a new policy of spatial development.

However, in Kazakhstan since the beginning of the 21st century is finding new ways of divergence from dependence on raw materials. An important tool for establishing knowledge-based policy, which aimed at ensuring of territories base on “theory of proximity”. Further, determines the need to develop a general and standard of methodological approaches, and approbation them for the evaluation of level economic potential and concentration of the regions of Kazakhstan. Therefore, it is need to proceed to the next section of this research.

3. Methodology of Research

The initial methodological basis of this project will serve as scientific developments of foreign and domestic scientists in the field of economic, regional and innovation developments, as well as some aspects of the assessment of economic potential and concentration. The study of foreign experience of evaluation of profiling regions has led to the conclusion that all existing in regional economic science methodological approaches are not mutually exclusive, but complement each other. In essence, they applied in parallel in various combinations that depend on the peculiarities of spatial development. For example, the number of social and economic resources (factors of production) is a key component of spatial development. The prospects for economic and social progress in the region depend on not only resources, but also the specifics of their placement.

One of the main objectives in the development of methodological approaches to the assessment of the economic profile of the region is the justification of methods, criteria and indicators for the analysis of dynamics of development of economic space, assessment of the level of concentration of industrial production in the country. In other words, it is necessary to develop accurate, objective and comprehensive methods for the assessment of the economic profile of the area capable to be a convenient tool for mapping of existing resources and definition of reserves of economic growth and implementation of many aspects of regional policy.

Under the methodological approaches to the analysis of spatial development of the national economy is a set of tools in location analysis and development of regional economic systems, the most important of which are the following:

1) Index method – based on relative indicators expressing the ratio of level of the analyzed index for any period, or the ratio of level of the analyzed indicator in different regions among themselves or with the average value of this indicator.
2) Coefficient method – based on the calculation of certain relative indicators (ratios) whose values can be compared for various periods of time on various activities, as well as with the accepted regulatory values.

The proposed new approach based on the classification of methods to assess the potential and economic profile of the territory. According to this approach, these methods can be classified into the following two groups:

1) method of analysis the main trends of economic development;
2) method of evaluation of concentration and industry specialization of the region.

In this paper presents the developed methodological tools that will allow analyzing of economic potential and concentration of the regions of Kazakhstan. Two approaches suggested and reflected strong methodological positions with evident implication. These methods are not identical, but they are interlinked, that needs to clarified and expanded.

3.1. Analysis of Economic Potential of the Regions of Kazakhstan

One of the most important indicators to assess the economic potential of the territory and its competitiveness is the indicator of the gross regional product (GRP). GRP characterizes the level of economic development, peculiarities of its structure, and the efficiency of certain sectors of the economy. GRP, as the most general indicator aimed at homogenization social and economic trends provides a clear picture of regional differences and often requires a more detailed analysis of structural changes. The original statistical data of the state statistics sometimes raise doubts on completeness of reflection in the GRP socio-economic processes. However, such a generalized nature makes this indicator the most convenient for analysis of the most important economic contrast changes the dynamics in terms of regions.

<Table 1> Methodological approaches to the assessment of the economic potential of the region and its competitive advantages

No.	Indicator	Calculation formula	Shorthand notation
1	Coefficient of GRP (C_{GRP})	C_{GRP} = GRP/GDP	GRP – gross regional product GDP – gross domestic product
2	Coefficient of the volume of industrial production in the region (C_{VIP})	$C_{VIP} = VIP_R / VIP_C$	VIP_R – volume of industrial production in the region VIP_C – volume of industrial production of the country
3	Coefficient of the volume of investments into fixed capital of the region (C_{VIFC})	$C_{VIFC} = VIFC_P / VIFC_c$	$VIFC_R$ – volume of investments into fixed capital of the region $VIFC_C$ – volume of investments into fixed capital of the country
4	Coefficient of the volume of retail trade in the region (C_{VRT})	$C_{VRT} = VRT_R / VRT_C$	VRT_R – volume of retail trade in the region VRT_C – volume of retail trade in the country
5	Coefficient of the volume of exports of the region (C_{VE})	$C_{VE} = VE_R / VE_C$	VE_R – volume of exports of the region VE_C – volume of exports of the country
6	Coefficient of the percentage of the region's population with incomes below the subsistence minimum (C_P)	$1/C_P = P_R / P_c$	P_R – indicator of the percentages of the region's population with incomes below the subsistence minimum of the region P_C – indicator of the percentages of the region's population with incomes below the subsistence minimum of the country
7	Coefficient of the level of unemployment in the region (C_U)	$1/C_U = U_R / U_C$	U_R – indicator of the unemployment in the region U_C – indicator of the unemployment in the country
8	Coefficient of the average monthly wage in the region (C_{AMW})	$C_{AMW} = AMW_R / AMW_C$	AMW_R – indicator of the average monthly wage in the region AMW_C – indicator of the average monthly wage in the country

Note – compiled by the authors

In the European countries to calculate, the integral indicators in the regions proposed the classification of main regional indicators. For example, the economy GRP per capita (the level of purchasing power); employment by sectors of economic activity; the number of applications for the European patent for 1 million, etc. Based on the analysis of international practices in estimating capacity and economic profile of the territory by using the indexes and coefficients methods, we can distinguish formal and comprehensive system of indicators reflecting the contribution of the territory economic potential of the country (see Table 1).

Further, we proposed to calculate of the generalized of integrated index of economic potential of the region and its competitive advantages (I_{PCA}), which can be calculated by the following formula:

$$I_{PCA} = \sum C_{GRP} + C_{VIP} + C_{VIFC} + C_{VRT} + C_{VE} + \frac{1}{C_P} + \frac{1}{C_U} + C_{AMW} \quad (1)$$

In the end, it can be noted that the proposed methodical approach of estimation of economic potential of the territory and its competitive advantages takes into account regional specifics. At the same time, effective use of the results of evaluation of the potential of the territory gives the possibility of solving large complex practical problems related to the dynamics and ordering of factors of competitive advantages and alignment with the resource capabilities of the region.

Qualitative integrated assessment of the economic potential of the regions of Kazakhstan and its competitiveness based on source data of state statistics and economic indicators, as they contain a wide range of different economic aspects in the regions. The obtained results of integrated indicators, which characterized economic potential and competitive advantages of regions of Kazakhstan in 2010, are shown in Table 2.

The results of calculations of integrated indicators of economic potential and competitive advantages of regions of Kazakhstan in 2015 are presented in Table 3.

<Table 2> Indicators of integrated assessment of the economic potential and competitive advantages of Kazakhstan's regions in 2010

Region of Kazakhstan	Indicators								
	C_{GRP}	C_{VIP}	C_{VFC}	C_{VRT}	C_{VE}	C_{SP}	C_{U}	C_{AMW}	I_{PCA}
Akmola region	0,027	0,015	0,023	0,026	0,008	1,477	1,000	0,703	3,279
Aktobe region	0,054	0,079	0,078	0,064	0,100	1,083	1,094	0,898	3,452
Almaty region	0,046	0,030	0,066	0,040	0,003	0,985	1,036	0,753	2,958
Atyrau region	0,130	0,258	0,238	0,041	0,334	1,102	1,074	1,911	5,087
East Kazakhstan region	0,057	0,053	0,031	0,092	0,036	0,774	1,018	0,791	2,851
Zhambyl region	0,020	0,010	0,032	0,021	0,004	1,226	1,018	0,662	2,993
West Kazakhstan region	0,048	0,082	0,050	0,030	0,020	0,970	1,036	1,032	3,268
Karaganda region	0,086	0,085	0,045	0,103	0,079	1,711	1,055	0,857	4,021
Kostanay region	0,039	0,037	0,026	0,032	0,030	1,016	1,018	0,738	2,935
Kazylorda region	0,039	0,067	0,053	0,025	0,062	0,970	0,983	0,899	3,098
Mangistau region	0,068	0,136	0,080	0,024	0,084	0,560	0,906	1,716	3,575
Pavlodar region	0,047	0,070	0,040	0,037	0,027	1,625	1,036	0,837	3,718
North Kazakhstan region	0,021	0,007	0,056	0,024	0,002	1,204	1,000	0,666	2,981
South Kazakhstan region	0,055	0,026	0,011	0,050	0,030	0,565	0,983	0,741	2,462
Almaty city	0,081	0,009	0,085	0,087	0,070	1,912	0,935	1,428	4,608
Astana city	0,180	0,035	0,086	0,303	0,079	2,500	0,921	1,373	5,477

Note – compiled and calculated according to the Committee on statistics RK.

<**Table 3>** Indicators of integrated assessment of the economic potential and competitive advantages of Kazakhstan's regions in 2015

Region of Kazakhstan	Indicators								
	C_{GRP}	C_{VIP}	C_{VFC}	C_{VRT}	C_{VE}	C_{SP}	C_{U}	C_{AMW}	I_{PCA}
Akmola region	0,027	0,017	0,028	0,029	0,006	0,966	1,020	0,706	2,798
Aktobe region	0,048	0,067	0,080	0,068	0,068	1,556	1,020	0,878	3,785
Almaty region	0,049	0,030	0,069	0,052	0,005	1,120	1,020	0,738	3,082
Atyrau region	0,102	0,265	0,171	0,029	0,360	1,000	1,000	1,832	4,759
East Kazakhstan region	0,059	0,060	0,052	0,094	0,028	1,120	1,042	0,819	3,274
Zhambyl region	0,025	0,015	0,032	0,029	0,002	0,903	1,020	0,677	2,703
West Kazakhstan region	0,049	0,099	0,041	0,032	0,120	0,966	1,000	0,894	3,201
Karaganda region	0,075	0,078	0,062	0,089	0,052	2,000	1,020	0,891	4,267
Kostanay region	0,036	0,029	0,029	0,036	0,021	1,120	1,000	0,749	3,020
Kazylorda region	0,034	0,054	0,040	0,027	0,038	0,875	1,000	0,863	2,931
Mangistau region	0,058	0,126	0,081	0,023	0,122	0,933	1,000	1,837	4,180
Pavlodar region	0,045	0,060	0,054	0,046	0,019	1,867	1,042	0,845	3,977
North Kazakhstan region	0,020	0,009	0,018	0,025	0,002	0,667	1,000	0,670	2,411
South Kazakhstan region	0,061	0,033	0,068	0,055	0,029	0,459	0,926	0,699	2,331
Almaty city	0,103	0,019	0,098	0,107	0,064	7,000	0,980	1,469	9,840
Astana city	0,209	0,040	0,078	0,259	0,064	4,667	0,909	1,283	7,508

Source: Statistical Yearbook of the Republic of Kazakhstan by the Committee on statistics

The obtained results of the analysis indicate that in the group of leading regions with a high level of integrated index of economic potential and its competitive advantages included the fallowing regions – Astana city (9,840), Almaty city (7,508), Atyrau region (4,759), Karaganda region (4,267) and Mangystau region (4,180). The leader according to the assessment is Astana city, which is natural on the eve of the international innovation exhibition "EXPO-2017". Second place takes to the southern capital – Almaty city, thus again confirmed its status as the economic, financial, and innovative center of the country. Third place takes West Kazakhstan region, which has the largest production capacity due to raw mining materials.

In the end, the indicators of integrated assessment of the economic potential of the regions of Kazakhstan and its competitive advantages are quite balanced. However, to define industry "growth points" policy of spatial development and the elaboration of measures for their implementation requires a detailed analysis of the industry structure of regional economy of Kazakhstan. Therefore, we propose to move to the next stage of the analysis of economic development of the territory of Kazakhstan – the assessment of industry concentration regions of Kazakhstan.

3.2. Evaluation of Concentration of the Regions of Kazakhstan

Based on the study of various scientific studies we can distinguish the following methodological approaches to assessing the economic profile of the territory. Methods for the determination of geographical concentration, which reflect the degree of concentration or sparseness of industrial production within a specific region or territory (for example, indicator GRP). The concentration can be determined in relation to the country, region, locality (for example, Herfindale-Hirschman Index, Gini Index, etc.). Based on the analysis and modification of existing methodical approaches to the assessment profile of the territory, and by using the index and coefficient methods, it is possible to provide a system of indicators that most accurately reflects the specialization and concentration of industrial production in the region (see Table 4).

We calculated of indexes of spatial concentration for all other regions of Kazakhstan, which is determined based on Herfindale-Hirschman Index (HHI). The obtained results of this analysis summarized in Table 5.

<Table 4> Methodological approaches to the analysis of indicators of the evaluation of the concentration territory

No.	Indicator	Calculation formula	Shorthand notation
1	Indicator of Herfindal – Hirschman Index concentration, or HHI (I_{HHI})	$I_{HHI} = (C_{GRP})^2$	I_{HHI} – indicator of Herfindal – Hirschman Index concentration; C_{GRP} – coefficient of region's share in the GRP of the country.
2	Aggregated Herfindal – Hirschman Index (HHI) of spatial concentration	$HHI = \sum_{j=1}^{m}(I_{HHI})^2$	HHI – aggregated Herfindal – Hirschman Index of spatial concentration; m – number of regions; j=1 – the highest index value is 1.

Note – compiled by the authors

<Table 5> Indexes of spatial concentration of Herfindale-Hirschman (HHI) of Kazakhstan's regions in 2010 and 2015, in parts

Region of Kazakhstan	Indexes of concentration Herfindale-Hirschman (HHI)	
	2010	2015
Akmola region	0,001	0,001
Aktobe region	0,003	0,002
Almaty region	0,002	0,002
Atyrau region	0,017	0,010
East Kazakhstan region	0,003	0,003
Zhambyl region	0,000	0,001
West Kazakhstan region	0,002	0,002
Karaganda region	0,007	0,006
Kostanay region	0,002	0,001
Kazylorda region	0,002	0,001
Mangistau region	0,005	0,003
Pavlodar region	0,002	0,002
North Kazakhstan region	0,000	0,000
South Kazakhstan region	0,003	0,004
Almaty city	0,007	0,011
Astana city	0,032	0,044
Aggregated index HHI	0,088	0,094

Source: Statistical Yearbook of the Republic of Kazakhstan by the Committee on statistics

According to the data obtained, we can conclude that the greatest spatial concentration by GRP demonstrated in 2015 – Almaty city, which is 1.3 times more compared to 2010. At the same time, clear trends in concentration not observed. In some regions, the concentration decreased in 2015 (Atyrau region, Mangistau region and Aktobe region), others increased (Almaty city, Astana city, South Kazakhstan region and Zhambyl region). Overall, the comparison between the dynamics of different indicators of concentration illustrates the close connection between regions of Kazakhstan.

4. Conclusions

This research prepared on the results of scientific research within the grant project of the Committee of Science of Ministry of education and science of the Republic of Kazakhstan on the theme "The new policy of spatial development of economy of Kazakhstan on the principles of inclusiveness and "smart specialization": concept, key priorities, institutions and mechanisms of implementation".

This paper presents the results of development of the authors on the selection and justification of the methodological approaches for quantitative evaluation of the economic potential, the degree of territorial differentiation of the profile and concentration of regions. This study shows the results of the analysis of the potential regional disparities and trends of economic development of Kazakhstan. By using, the proposed methodology shows the possibility of their use, evaluation of economic profile of the territory and identified of prospective regions. It provides some suggestions for improvement of future studies dealing with this subject. Based on this research finding of this paper, the practical implications listed below:

Firstly, the economic science will create new concepts based on developing a new strategy for spatial development. That is why special importance given to research involving new territorial aspects of the organization of life and spatial differentiation. Analysis of existing theories and concepts, we conclude that important subject in spatial economics is part of studies that cover the problems of concentration and specialization of production. However, in Kazakhstan since the beginning of the 21st century is finding new ways of divergence from dependence on raw materials. An important tool for establishing knowledge-based policy, which aimed at ensuring of territories base on "theory of proximity".

Secondly, we proposed new approach based on the classification of methods to assess the potential and economic profile of the territory. According to this approach, these methods can be classified into the following two groups: method of analysis the main trends of economic development, and method of evaluation of concentration of the region. Based on a reasonable methodology and analysis of statistical information for identification we used the indicators of integrated assessment of the economic potential and indicators of spatial concentration.

Thirdly, assessment of economic potential and spatial concentration in the regions of Kazakhstan is consistent with the trends of many countries with developing market economy. In addition, the obtained results coincide with the findings of the integrated assessment of competitive advantages, despite the fact that the latter assessment obtained by systematization of the factors of competitive advantage and their linkage with the resource capabilities of the region.

Fourthly, the most competitive regions according to the obtained results are Almaty city, Astana city, Atyrau region and Karaganda region. These regions are the prospects for the natural development of the agglomeration process; their growth will be determined by the location of the area of specialization, the distribution of which closely linked to the territorial localization. Therefore, it is possible to hypothesize, to reduce the excessive specialization and the need for industrial diversification of resource regions, which, if adverse changes in world market conditions continue to take the position, and leadership positions are put forward service and industrial areas focused on the production of innovative products. Thus, we can conclude on the gradual restructuring of the old model the spatial distribution to new model of formation of knowledge economy in the regions of Kazakhstan.

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Linkage between Public Policy, Green Technology and Green Products on Environmental Awareness in the Urban Kuala Lumpur, Malaysia

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Abstract

The main purpose of this study is to investigate the factors that have an impact on public policy, green products and technology in Kuala Lumpur, given government initiatives to boost the environment awareness. The data used in this study was collected by distribution questionnaires randomly in six areas of Kuala Lumpur and 400 respondents were interviewed. Based on a literature review, three hypotheses were stated and tested using structural equation modeling (SEM). SEM is a statistical analysis method that involved two or more variables in analyzing structural relationships among the variables. The SEM model shows that green products and government policies have a direct influence on environmental awareness. However, green technology does not have a direct influence on environmental awareness. Since, knowledge on green technology does not have a significant impact on raising environmental awareness among the public, a much more pragmatic awareness campaign needs to be put in place to use green technology as a part of modern living. The study suggests that the urban population needs to be more aware of the environmental issue as cities tend to have better infrastructure to raise public awareness on green issues. Moreover, the government should increase the environmental awareness among younger generation through workshops, seminars, campaigns, and pamphlets.

Keywords: Public Policy, Green Technology, Green Products, Environmental Awareness, Malaysia.

JEL Classification Code: Q50, Q51, Q56.

1. Introduction

Good awareness of environmental issues is important for a healthy natural environment (Patchen, 2006). Many researchers have worked on the environmental issues and awareness. Their findings indicate that there is a strong relationship between environmental policies, awareness and issues (Masud et al., 2016; Patchen, 2006; Kollmuss & Agyeman, 2002; Doss & Morris, 2001; Huq & Toulmin, 2006). According to Schultz and Oskamp (1996), people's attitude and knowledge on environment issues and awareness are very important to improve the natural environment. Individuals' views on natural environment and surrounding reflect their knowledge on environmental issues. A positive attitude and perception on environmental issues and awareness plays a significant role in conserving the environment (Bradley, Waliczek, & Zajicek, 1999). Environmental awareness is a precondition for understanding the environmental issues. Leiserowitz (2007) studied the environmental awareness, he argued that public perception significantly affects the future environmental policies and development. Likewise, Schmidt (2007) also found that concern for the environment is significant towards environmental preservation.

Malaysia has initiated green initiatives in recent years to minimize the degradation of the environment as well as achieve a sustainable growth. Efforts made by the

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government as well as the private sector in conserving energy and promoting renewable resources have been exemplary. Through the efforts on leveraging the green technology, it is expected that Malaysia will achieve sustainable development and will eventually triumph in accelerating towards a high income nation. However, Malaysia's effort in introducing green technology started back in 2009, where the Malaysian government established the basic foundation for green economy.

In terms of policy perspectives, environmental issues have been given due emphasis since the implementation of Sixth Malaysia Plan (EPU, 1990) in which environmental management was directly integrated into the national development planning as well as the national project. Under the Seventh Malaysia Plan (EPU, 1995) and Eight Malaysia plan (EPU, 2000), the emphasis on environmental issues continued to be given due emphasis. From the Ninth Malaysia Plan (EPU, 2005) onwards, environmental issues were introduced as one of the main issues. The Seventh Malaysia Plan (EPU, 1995) asserted Malaysia's commitment towards enhancing environmental awareness among the population to promote an environmental friendly lifestyle. The plan stated that the relevant ministries will develop policies, strategies and programs on environmental education, awareness and training. The imparting of knowledge and instilling of awareness is expected to help Malaysians adopt a more environment friendly lifestyle. Environmental ethics and a sense of responsibility will be inculcated and the population will be encouraged to take an active role in the protection and maintenance of the environment.

The private sector, non-governmental organizations, and the media will be encouraged to play a bigger role to complement the Government's efforts in this endeavor. The Seventh Malaysia Plan also proposed the national policy on the environment which aims at promoting economic, social and cultural progress through environmentally sound and sustainable development. Subsequently, under the Tenth Malaysia Plan (EPU, 2010), the New Economic Model also focused on the environmental management in which the principle of sustainable development strategies was the main theme. The sustainability principles were discussed in line with the use of natural resources for a country which intended to enhance national income and achieve high income status by 2020.

This paper attempts to assess the environmental awareness of the general public related to public policy, green product and green technology. Moreover, the rest of this paper is organized as follows; Section 2 discusses the literature review on environmental awareness, green products, green technology and government policy. Section 3 presents the methodology and model specification of the study. Section 4 analyses the results and Section 5 concludes the study.

2. Literature Review

Environmental awareness influences human behavior in several ways, such as reducing wasteful or harmful consumption patterns and raising preference for environmental friendly products, selective waste collection, or different forms of protest that may represent ecological sensibility. However, Friedman (2008) states that *"the convergence of global warming, global flattening, and global crowding is driving those five big problems – energy supply and demand, petro dictatorship, climate change, energy poverty, and biodiversity loss – well past their tipping points into new realms we've never seen before"*.

Afroz, Masud, Akhtar, and Duasa (2012) conducted a study in public environmental awareness and performance in Kuala Lumpur. The researchers found that 69 percent of the respondents were satisfied with the environmental quality of Kuala Lumpur. On the other hand, Mei, Wai, and Ahamad (2016) found that environmental awareness and behaviour towards the awareness is not positively related. The environmental awareness is not strong enough to positively reflect in the behaviour. Similarly, Liu (2009) found in Tianjin, China that the respondents have very poor understanding on environmental awareness but they showed a positive attitude towards environmental issues.

Fisman (2005) argued that children should be educated in school about the environmental awareness from a very young age. The author also found that there is a significant positive effect on learning about the local environment and knowledge of environmental perceptions. Moreover, environmental knowledge does not have any relation with socioeconomic status of primary school children but there is a significant improvement in the surrounding environment of high school students. Banna et al. (2016) found that not everyone is willing to pay for the environmental friendly technology. Moreover, the adoption and training of using the environmental friendly technology also has a price. Therefore, training to adopt green technology should be a part of corporate social responsibility (CSR) of companies.

Assuming the urban residents may have access to information on green products, this will encourage them to purchase and use green products. Studies have shown that a group of environmentally conscious consumers in more than 80 percent of Thai, Malaysian and Korean consumers from the emerging markets in the region, are willing to pay premium price to purchase green products (Dunlap & Scarce, 1991; Lung, 2010). D'Souza, Taghian, Lamb and Peretiatkos (2006) noted that all products offered should be

environmentally safe without a need to trade off quality and pay premium prices. It has also been stated that the consumers express environmental concerns based on product characteristics, accuracy of green product claims, information provided on the products and its benefits (Forkink, 2010; Luchs, Naylor, Irwin, & Raghunathan, 2010). Barr and Gilg (2006) found that committed individuals put forward a higher importance on environmental issues and develop a high level of environmental concern and express a personal responsibility to help the environment. By clearly stating the benefits of a product on packaging or in advertising, negative perceptions towards an environment friendly product's effectiveness, such as environmental concerns, can be surmounted (Luchs et al., 2010).

In purchase of green marketing products, consumers should have the awareness of the products marketed in green marketing. Companies try to influence each of these decisions by providing information that can assist in the product review. Therefore, it is important for consumers to develop environmental awareness of green products and technology. Previous studies have been conducted on the consumers' perception and attitude towards green products and technology (Cox, 2008; Haytko & Matulich, 2008, D'Souza & Taghian, 2005; D'Souza et al., 2006). Indeed, there has been a substantial research conducted on consumer characteristics (Banerjee, Gulas, & Iyer, 1995; Schlegelmilch, Diamantopoulos, & Bohlen, 1994), yet there is no agreement on the "true" profile of a green consumer (D'Souza et al., 2006). Lee (2008) stated that there are a few studies conducted on the green marketing issues in Asian countries, including Malaysia, as compared to developed countries.

Recent initiatives of promoting green technology and green economy include green manufacturing hub, green infrastructure, low carbon emission, efficient use of resources and a healthy and well educated population. Information technology (IT) can have a detrimental influence on the environmental footprint of organizations (Siegler & Gaughan, 2008). Some of the examples of green information communication technology (ICT) would be the energy saving, disposal of electronic waste, virtualization of server resources, regulatory compliance, telecommuting, end-user satisfaction and return of the investment on the product used (Kounatze, 2009). Green IT plays an important role in environmental sustainability which finally leads to the solution to improved sustainability.

Malaysia has made a strong commitment in implementing its green policy. As reflected in the policy statement, green technology shall be a driver to accelerate the national economy and promote sustainable development. Together with this objective, policies attempt to minimize growth of energy consumption while enhancing economic development. At the macro level, the green technology and industry is expected to contribute to national economy. Similarly, green technology is expected to be promoted through education and public awareness in order to encourage its use. Under the New Economic Model (2010-2015), green policies were given due emphasis which includes new elements such as reducing carbon foot print, ability to better assess green investment, using non-collateral basic criteria and assessing viability of green technology projects. Moreover, there should be venture capital for green economy and green technology. Based on policy evolution timeframe, Malaysia's environmental planning started off with strong focus on nature conservation (1980-1990), followed by government reforms based on Agenda 21 as seen in the introduction of new instrument and supra structure reforms 1990-2005 and active green investment from 2006 until the present date (EPU, 1990; 1995; 2000; 2005).

3. Research Method

3.1. Site Selection

The target population was defined with respect to the sampling unit of the study. Sample was clustered based on the municipal council represented by Parliamentary zone which includes Ampang, Setapak, Pantai Dalam, Petaling Jaya Utara, Batu, and Putrajaya. The areas were divided into six clusters to capture the diverse groups in terms of race, employment and the overall-socio-economic status. The survey was conducted from January 2016 to April 2016. Randomness of the survey was based on alternating working days versus weekends to carry out the survey among potential respondents. In extension, randomness was also based on the willingness of the general public to respond to the survey. A total of 400 questionnaires were completed over the sampled period.

3.2. Sampling Technique and Sample Size

This study used multi-stage of sampling technique to collect the data and obtain study objective. Using cluster sampling technique, Kuala Lumpur was clustered into six clusters based on geographic location. A total of 400 questionnaires were distributed among young generation through face-to-face interviews. Out of 400 questionnaires, 28 questionnaires were incomplete, resulting in 372 usable questionnaires to obtain study aims. This study used a questionnaire as the primary instrument to collect data. The questionnaires were divided into two sections (A and B). Section A consisted of the demographic information of the

respondents, which included their gender, age and education. Section B contained 29 items to assess the environmental awareness based on a 5-point Likert scale with 1 being "strongly disagree" and 5 being "strongly agree".

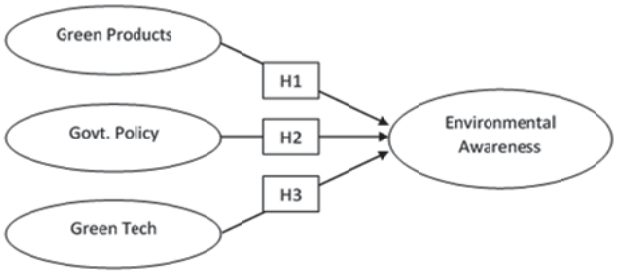
3.3. Data Analysis Technique

This study adopted Structural Equation Modeling (SEM) to analyse the effect of public policy, green products and green technology on environmental awareness. The advantage of using SEM is that it can be applied to different shapes of data. For example, SEM is appropriate for non-normality data set (Hair, Sarstedt, Ringle, & Mena, 2012; Ringle, Götz, Wetzels, & Wilson, 2009). Moreover, according to Chin and Newsted (1999) SEM is able to reach robust result. Other advantages of using SEM are that it is applicable for formative mode and to identity the key driving constructs (Hair et al., 2012; Ringle et al., 2009). A SEM model has two parts; measurement part and structural part. The Measurement part demonstrations the relationship between latent variables and their indicator. And the structural part shows the relationship between latent variables (Vinzi, Chin, Henseler, & Wang, 2010).

The sample size adequacy remains a prime concern in the application of SEM. Referring to Hoe (2008), a sample size of 200 offers enough statistical strength for data analysis. According to Hair, Black, Babin and Anderson. (2010), sample size plays a vital role in gaining steady, significant approximations and explanations of outcomes. While no precise guidelines regarding sample size have been required, one rule of thumb recommended by Hair et al. (2010) is that a minimum suggested ratio is less than five observations for each parameter. If the observation or parameter proportion is less than 5:1, the statistical strength of the outcome might be in doubt (Baumgartner & Homburg, 1996). This postulation suggests that models with a larger number of parameters necessitate a greater sample size (Kline, 2010). However, if the sample size is too large (e.g., beyond 400), the SEM statistical analysis might be too sensitive, and constructing a goodness-of-fit measure would indicate poor fit (Hair et al., 2010). Therefore, a sample size of about 372 is considered adequate. In line with the above recommended guidelines, it was decided to use the target sample size for this study as 372.

3.4. Hypothesis

In order to have a clear understanding and to develop a clear representation of this study; particularly to find the relationship between green products, green technology and government policy on environmental awareness, following hypotheses have been taken into account (Figure 1).



<Figure 1> Proposed research model

<H_1> Green products are positively related to environmental awareness.
<H_2> Government policies are positively related to environmental awareness.
<H_3> Green technologies (Green Tech) are positively related to environmental awareness.

4. Results and Discussion

4.1. Demographic Characteristics

A total of 400 questionnaires were successfully distributed and collected through face-to-face interviews. Out of a total of 400 questionnaires, 28 questionnaires had missing data. This indicates a response rate of 93% (n=372) (see Table 1).

<Table 1> Socioeconomic and demographic profiles of the respondents (n = 372)

	Frequency	Percentage(%)
Gender		
Male	163	43.82
Female	209	56.18
Age		
20 & below	130	34.95
21-30	205	55.11
31-40	20	5.38
41-50	14	3.76
51 & above	3	0.81
Education		
No formal education	2	0.54
Primary education	3	0.81
Lower Secondary education	65	17.47
Higher Secondary education	23	6.18
High school	23	6.18
Diploma	50	13.44
Bachelor Degree	188	50.54
Master Degree	8	2.15
PhD	2	0.54
Others	8	2.15

Source: Field survey, 2016

Table 1 show that males comprised 43.82% of the respondents, while females constituted 56.18%. Table 1 also shows the age distribution of respondents in the study area. The age group 21-30 had the highest number of respondents (55.11%), followed by age group of 20 & below (34.95%). Most of the respondents were young generation. The age group of 51 & above has the lowest respondent (0.81%). Moreover, the study found that most of the respondents have bachelor degree (50.54%), and 0.54% of the respondents do not have any formal education. A very small number of respondents has masters and PhD degrees. Thus, the finding is consistent with the aim of being a developed nation by 2020.

4.2. Tests for Confirmatory Factor Analysis (CFA)

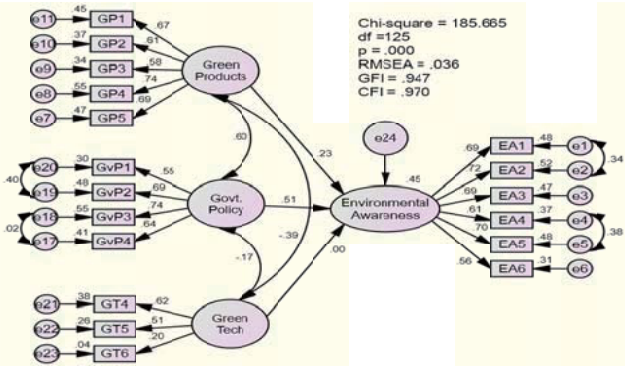
To determine the discriminate validity, confirmatory factor analysis (CFA) was applied (Davis & Consenza, 1993). The purpose of CFA is to choose the relevant items that indicate a certain variable (Malhotra & Briks, 2007). Kline (2010) stated that the aim of measurement model is to observing the appropriateness of indicators representing latent variables. In the same context, Hair et al. (2010) argued that the purpose of measurement theory is to estimate the relationship between observed and latent variables. The competence of a measurement model is performed by CFA. In order to do that, four types of fit indices - normed chi-square, root mean square approximation (RMSEA), chi-squared statistic and comparative fit index (CFI), are used to determine how the model fits with the data. For an adequate model fit: normed chi-square has to be less than 5; RMSEA less than 0.088; and CFI values greater than 0.90 (Hair et al., 2010; Byrne, 2009). Based on the CFA tests, all four dimensions had adequate model-to-data fit: the CFI value was above 0.90; and the RMSEA value was less than 0.088. This study also shows that some items have significant factor loadings (greater than 0.70), which indicate adequate discriminant and convergent validity (see Table 2).

<Table 2> Construct validity of confirmatory factor analysis

Items	Stand. Loadings
Environmental Awareness	
Regulations implemented by the government to protect the environment are still not enough (EA1)	0.68
Enforcement of regulations and law are not effective (EA2)	0.72
The level of consciousness and knowledge amongst Malaysians regarding environmental care is still inadequate (EA3)	0.69
There is no clear channel for making complaints about environmental pollution (EA4)	0.61
Pollution badly affects the flora and fauna (EA5)	0.70
The manufacturing industry does not care about the environment (EA6)	0.56
Green Products	
The purchase of green products is a good investment for future generations (GP1)	0.67
The purchase and demand of green products exert pressure on companies/manufacturers to be more aware about environmental conservation (GP2)	0.61
Green products are relatively more expensive compared to other products/brands (G3P)	0.58
Green products have a positive impact on the environment (GP4)	0.74
Application of solar energy in buildings can reduce the use of electricity (GP5)	0.69
Government Policy (Govt. Policy)	
Lack of exposure or publicity about the policy/programs(GvP1)	0.55
Implementation of the policy/programme is less effective (GvP2)	0.69
The introduction of green technology modules at all school levels (GvP3)	0.74
Enhance awareness and knowledge of public through suitable programs and campaigns (GvP4)	0.64
Green Technology (Green Tech)	
Have you ever heard of green technology? (GT4)	0.62
Do you know about the green technology initiative promoted by the government? (GT5)	0.51
To your knowledge, paper (green technology product) currently found in the market? (GT6)	0.20

4.3. Test for Structural Equation Modeling (SEM)

Structural equation modeling (SEM) is used to assess the association among the main constructs of a hypothesized model (Kline, 2010). In this study, a structural model was tested to examine the relationship between green products, green technology, government policy and environmental awareness (see Figure 2).



<Figure 2> structural equation modeling of environmental awareness

In Figure 2, the model had an adequate fit to the data: chi-squared per degree of freedom (251.657/126) = 1.99 (less than 3); CFI = 0.939 (greater than 0.90); GFI = .932 (greater than 0.90); p = 0.00 and RMSEA = 0.052 (less than 0.088) (Masud, Kari, Yahaya, & Al-Amin, 2014; Hair et al., 2010).

Figure 2 shows that the R-squared for the endogenous variable is environmental awareness (0.45). The R-squared indicates that 45% of the endogenous factor was explained by the exogenous factors. Hypothesis H_1 and H_2 are supported at a significant level (p< 0.10); however, H_3 is not supported because it is not significant at level (p< 0.10) as shown in table 3.

The SEM model shows that green products (β = .237) and govt. policy (β = .569) have positive influence on environmental awareness and both are statistically significant. However, green technology (β = -.003) does not have positive influence on environmental awareness and is statistically insignificant. The SEM result in Table 3 also shows that, the factors of environmental awareness, green products, government policy and green technology are statistically significant (p< 0.10).

<Table 3> Hypothesis and path coefficients

Hypothesis	Path	β	P-value	Remark
H1	Environmental Awareness ← Green Products	.237	.012**	Supported
H2	Environmental Awareness ← Govt. Policy	.569	***	Supported
H3	Environmental Awareness ← Green Tech	-.003	. 990	Unsupported
	EA1 ← Environmental Awareness	1.000	***	Supported
	EA2 ← Environmental Awareness	1.031	***	Supported
	EA3 ← Environmental Awareness	.985	***	Supported
	EA4 ← Environmental Awareness	.766	***	Supported
	EA5 ← Environmental Awareness	.793	***	Supported
	EA6 ← Environmental Awareness	.753	***	Supported
	GP1 ← Green Product	1.000	***	Supported
	GP2 ← Green Product	1.142	***	Supported
	GP3 ← Green Product	.939	***	Supported
	GP4 ← Green Product	.972	***	Supported
	GP5 ← Green Product	.983	***	Supported
	GvP1 ← Govt. Policy	1.000	***	Supported
	GvP2 ← Govt. Policy	1.061	***	Supported
	GvP3 ← Govt. Policy	.986	***	Supported
	GvP4 ← Govt. Policy	.739	***	Supported
	GT4 ← Green Technology	1.000	***	Supported
	GT5 ← Green Technology	1.067	***	Supported
	GT6 ← Green Technology	.418	.011**	Supported

** Significant at 5 percent level

*** Significant at 1 percent level

5. Conclusion and Recommendation

The government of Malaysia is promoting a series of programmes regarding environmental awareness through different agencies and ministries as part of the vision 2020. The main purpose of this study is to investigate the factors that have an impact on environmental awareness in Kuala Lumpur regardless of government undertaking initiatives to boost the environment awareness. The finding of the study concludes that quite a few number of respondents did not have a formal education, and more than 53% of the respondents have university degree, which is consistent with the aim of being a developed nation by 2020. The finding shows that green products and government policy have direct influence on environmental awareness. However, green technology does not have direct influence on environmental awareness.

The findings of the study suggest that government should come out with appropriate plan and policy in order to raise the environmental awareness. For instance, policymakers should play a vital role in creating awareness among communities and younger generation through campaigns, pamphlets, information dissemination, seminars and workshops. More importantly environmental awareness and issues should be part of education curriculum in school, as early as primary school (Fisman, 2005). As awareness is a prerequisite for favourable attitude towards raising environmental consciousness, information should be circulated and displayed to the young generation so they are more confident and willing to cooperate with the environmental awareness raising activities that are proposed or implemented.

The awareness and adaptation of green technologies and products should be in top down approach. There should be support from top management for adaptation and used of green technologies and products for industries. The New Economics Model (NEM) of Malaysia focuses on the environmental issues for a sustainable development. The policies of NEM should be clearly stated, hence, it can be understood and adopted by everyone. The main problem with green technology and products is that the cost of this technology and products is high as compared to its substitute products and technology. In Malaysia the scale of productions of green technology and products is still small as compared to developed countries. Therefore, there should be initiatives from public and private sectors on production of green technology and products in a more economical manner.

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Sustainability Practices as Determinants of Financial Performance: A Case of Malaysian Corporations

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Abstract

This research is carried out to investigate the relationship between sustainability practices and performance in a financial sense for Malaysian Oil and Gas sector. Objectives include to study the state of sustainability disclosure among Malaysian oil and gas companies, to understand if companies that practiced sustainability had better performances to their financial bottom-line and to conduct a data analysis to understand the relationship between Environmental, social and governance performance [represented by the acronym ACSI] and financial performance. Sustainability performance is measured using ACSI checklist, which is an adaptation of the GRI 3.0 by Global reporting initiative while financial performance was measured on financial and profitability parameters namely EBITDA, EPS and PE ratio. Secondary data sources are used which were then converted into a rating scale to develop quantitative data. SPSS 21 is used for the analysis. The result shows that the majority of oil and gas companies in Malaysia had poor performance in terms of sustainability disclosure. On all three chosen profitability parameters, the companies that practiced sustainability were found to perform better than their counterparts that did not. Strong and significant relationship exists between sustainability practices and better financial performance.

Keywords: Sustainability, Financial Performance, Profitability, Oil & Gas Sector.

JEL Classification Code: M20, M14, M48, Q56.

1. Introduction

According to the international institute of sustainable development, the concept of sustainability originated around 1962 when the post-world war II community and the environmental movement were being gradually merged (Lowitt et al., 2009). In 1987, the World Commission on Environment and Development's was summoned with the aim to come up with a standard definition for sustainable development, it was an event that was basically concerned about how continuous development can be achieved and managed without upsetting the balance of nature (Goodland, 1995). Since then, the term 'sustainability' has taken a new approach especially since the 1990s as there is now a shift from merely focusing on environmental issues to a focus on merging environmental, social and global economic issues (Lowitt et al., 2009; Mebratu, 1998; Pearce & Warford, 1993; Reed, 1997). The recognition of sustainability can be seen today as many organizations are now embarking on programs such as corporate governance, CSR, green production, green value chain, paperless banking and reduction of water consumption (Choi & Yu, 2014; Lowitt et al., 2009; Statman, 2000); In addition, according to Siew et al. (2013) stakeholders are also seeking disclosures of organizations business activities that includes financial, social and environmental performance. Sustainability awareness in business organizations continues to grow as the world face up to social, environmental and ecological problems such as gender and economic inequality, human rights abuses, global warming, carbon emissions, gas flaring and various levels of environmental degradation (Enquist et al., 2007; Lowitt et al., 2009; Luus et al., 2007).

In respect to these events, the business case for sustainability has continued to grow to unprecedented levels over (Epstein & Buhovac, 2014). Various research works has been done on sustainability with the most research in developed countries like USA, Australia, United Kingdom, Germany, France and a few others (Epstein & Buhovac, 2014). The bulk of the research has focused on best

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practices across industries such as tourism, banking & finance, construction, transportation and agriculture (Christmann, 2000; Shriberg & MacDonald, 2013). In other parts of Europe, research has been done on sustainable management systems in Romania (Burja, 2012). There has also been notable research in developed countries that focused on the link between sustainability practices and company profitability on basis of firm valuation (Bartlett, 2012), ROE, EBITDA and ROI (Flammer, 2012; Griffin & Mahon, 1997; Kusuma & Koesrindartoto, 2014; Luus et al., 2007; Siew et al., 2013). In South America (Petrini & Pozzebon, 2010); Indonesia, Japan, China and India, research was also done on the effects of sustainability practices on profitability (Fuji et al., 2012; Kusuma & Koesrindartoto, 2014) and the effect of corporate sustainability on employees (Aggarwal, 2013; Choi & Yu, 2014). In Africa, major research work has been done in terms of rethinking environmental sustainability practices as well as reconciling sustainability and profitability (Kipesha & Zhang, 2013; Oribu et al., 2014). In Malaysia, majority of the research on sustainability focused on industry practices (Osman et al., 2012). There has been research linking sustainability practice and reporting to company financial performance in terms of share price stability and growth as well as on the issue of sustainability as it affects corporate performance. Research was also done on gender diversity in boards and management positions in Malaysia (Marimuthu, 2009). Generally, there is not adequate literature to determine the effects practicing sustainability will have on the financial performance of organizations in Malaysia. Therefore, this research will aim to plug that gap, add to existing literature and also provide scope for further research work on the subject.

The business case for sustainability continues to be made by scholars like (Epstein & Buhovac, 2014); however, there's also question to be asked in that, is there any real financial benefit for business organizations that practice sustainability? On top of this, considering that several factors can affect profitability of a business, such as size, marketing, location and even financial capability, does the practice of sustainability contribute in any way to said profitability? These are questions that need to be answered. Currently, most successful business organizations are integrating concept of environmental management, corporate ethics and brand reputation into their processes (Lopez et al., 2007). And it has often been argued that the ability of a firm to adopt sustainability practices should give them competitive advantage over firms that do not (Adams & Zutshi, 2004). However, the validity of this claim and the extent to which it is applicable remains an issue of debate. Looking around various academic literatures, it can be said that majority of the compliers to sustainability come from the developed country (Flammer, 2012; Griffin & Mahon, 1997; Luus et al., 2007; Siew et al., 2013). So, it is interesting to know the position of developing countries on this matter. There might be a lack of legislation, willingness or even a lack of understanding on the part of business managers in these parts of the world as to the gains of practicing sustainability, if any.

The main aim of this research is to understand the effect that the practice of sustainability has on the profitability of Malaysian companies; it seeks to deal with the issue in a Malaysian context and the financial performance of the organization will also be reviewed which will then lead to an understanding as to whether Malaysian stakeholders have a preference for companies that practice sustainability. Objectives: (1) To understand the level involvement of Malaysian oil and gas companies in the practice of sustainability. (2) To understand if companies practicing sustainability perform better than those that do not. (3) To understand the strength of relationship between sustainability practices and better financial performance. Research Questions: (1) What is the level of involvement of Malaysian oil and gas in the practice of sustainability; and what is the outcome of this result in a ranking system? (2) In comparison, do companies that practice sustainability has better financial performance than those that do not? (3) Is there a linear association between sustainability practices and profitability; and in the case where a relationship exists, what is the strength of this relationship?

2. Literature Review

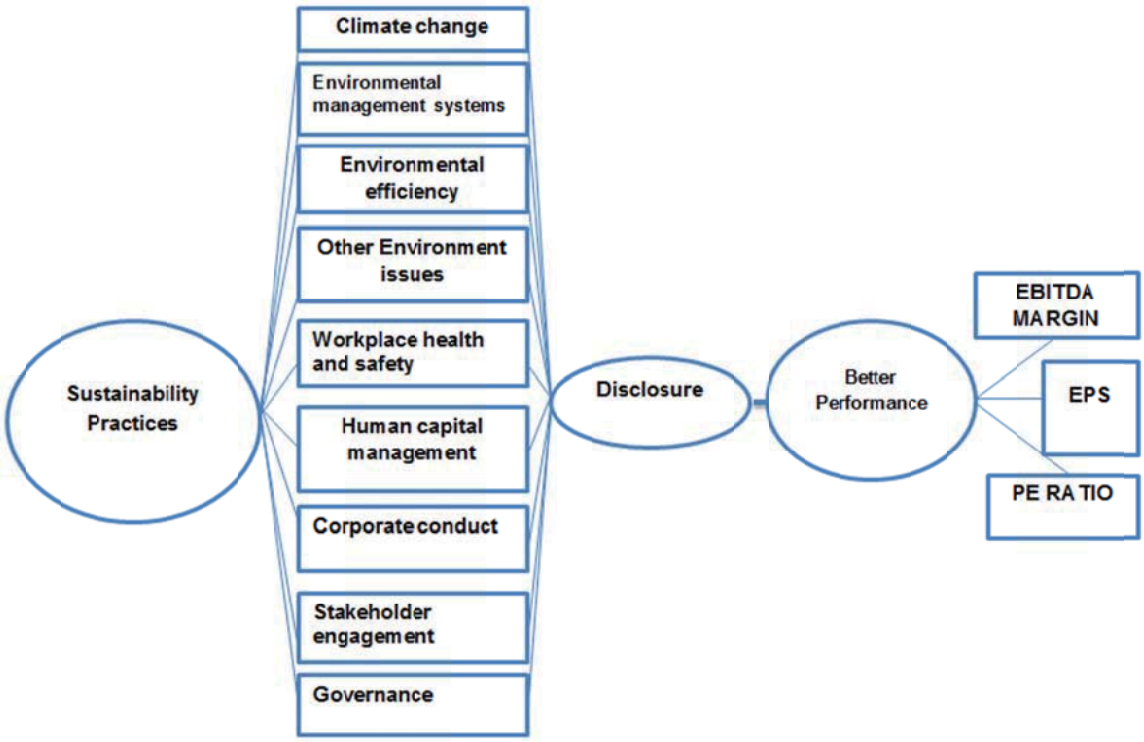
Research has revealed that there is no single accepted definition for the concept of sustainability at this point (Berns et al., 2009). However, the Brundtland commission summoned by the United Nations defined Sustainable development as "development that meets the present needs without compromising the ability of future generations to meet their needs". In other words, the need of the current day has to be met whilst preserving resources to meet the needs of future generations. Bartlett (2012) defined it as "*development that does not compromise the ability of future generations to meet their needs*". Despite a slight difference in these definitions, the key point of unity here is the commitment to a future generation and a general acceptance of the importance of the concept (Berns et al., 2009). Bartlett (2012) is of the opinion that the Brundtland commission focuses more on the needs of the present which he argued, has nothing to do with sustainability and only secondarily identified the needs of the future, which he argued should be the main concept of sustainability. From a business perspective, Kocmanova et al. (2011) defined

sustainability as the corporate strategy that monitors long-term corporate growth, efficiency, performance and competitiveness by incorporating economic, environmental and social performances into corporate management. This could be one of the most suitable definitions in terms of clarity in the business world, because, it directly echoes the sentiment of the Triple bottom line concept by John Elkington. From the perspective of this definition, the concept of sustainability is seen from the eyes of a business manager, and places a requirement that business organizations must be responsible to and accountable for their economic, social and ecological bottom lines.

The triple bottom line theory: This concept was introduced by John Elkington in the mid-1990s; it refers to how an organization deals with and reports on its impact and behavior towards people, planet and profit (Atu, 2013; Morland, 2006; Norman & MacDonald, 2003; Slaper & Hall, 2011; Sridhar & Jones, 2012). Triple bottom line concept places equal attention on the environmental, social and economic aspects of a business as the guide towards policy formulation and measurement of business performance (Sridhar & Jones, 2012). TBL places equal importance on the relationship between the planet, people and profit in the sense that, businesses derive the majority of their material inputs from the planet, while the process of converting these inputs to outputs is done by people and the basis of the organizations reaping profits come from these activities, Norman and MacDonald (2003) agree with these sentiments. Sustainability and the triple bottom line is made up of issues such as climate change, environmental management and systems, human capital management, corporate governance, stakeholder engagement, social responsibility and accountability (Petrini & Pozzebon, 2010); triple bottom line, 3p sheds more light on the inter relationship and the importance of being responsible to all these aspects of a business. In every way it is looked at, the activities of every business organization have various negative and positive impacts on people, the environment and the economy (Reddy & Gordon, 2010), therefore, this concept is important because of its consideration for all three components and its proposal that businesses must be both responsible for and accountable to all three components. However, on the flip side of the coin, there have been a few criticisms of the triple bottom line concept, according to Tripathi et al. (2013); Sridhar and Jones (2012), measuring social and environmental impacts can be difficult or even unrealistic, because unlike financial performance, it cannot be quantified in monetary terms; there is also a criticism that the practicality of the model is still in question according to (Hubbard, 2009; Norman & MacDonald, 2003; Tripathi et al., 2013). Despite these valid criticisms, there is a general acceptance that the 3BL remains the key model for organizations to follow in their pursuit of sustainability. Due to its wide acceptability in the field of sustainability, this study will draw a lot from the theory of the triple bottom line in investigating and analyzing the impact of sustainability practices on organizational performance of Bursa Malaysia listed companies that fall under the oil and gas sector. It is the guiding concept for this research study.

Sustainability reporting: Sustainability reporting is a broad term that is used in describing the reporting on economic, social and environmental impacts of business which should clearly outline both the positive and negative impacts of the business (Atu, 2013; GRI, 2006). It is a concerted effort to integrate economic, environmental and social considerations into the evaluation and decision making processes of the reporting organization. What can be deduced from these definitions is that, all activities of organizations have various impacts on the society and environment (Reddy & Gordon, 2010); therefore, the concept of sustainability reporting was proposed in other to measure and disclose such impacts of the business organizations, beyond traditional accounting reports (Atu, 2013). The key for organizations to manage their progress towards sustainability is through measurement (Elkington, 1997; Elkington, 2004).

According to Maharaj and Herremans (2008) the number of companies that started reporting environmental or sustainability activities has increased greatly since Shell Canada started the trend in the year 1991. Despite this, the overall consensus remains that the level of involvement and reporting remains low. Factors such as government & stakeholder pressures, regulatory standards are some of the reasons why sustainability reporting became important (Pramanik et al., 2008; Roberts, 1992; Tilt, 1994; Yew, 2000). However, in Malaysia, just like the principal subject of corporate sustainability, TBL reporting is still at early stages (Janggu et al., 2007; Thompson & Zakaria, 2004). According to Mokhtar and Sulaiman (2012) there is now a growing worry among stakeholders and the general public that activities such as waste dumping, logging and bush burning are happening with high regularity, and this has led to serious questioning of the role of business organizations in the society. However, despite obvious merits of sustainability reporting, critics say it is just an organizational tool to make good impression, and to take away public attention from real ethical and moral accountability issues (Bansal, 2005). For this reason, the study, understanding and practice of sustainability and sustainability reporting cannot be underestimated. To enable proper understanding and reporting of sustainability activities, organizations like GRI and Dow Jones have come out with frameworks that have been acclaimed as generally acceptable and widely used for reporting triple bottom line activities of a business.



<Figure 1>: Conceptual framework adopted from ACSI framework. (ACSI, 2011)

These organizations have a set of parameters that can be used as a framework in measuring the involvement of organizations in practice of sustainability (see Figure 1).

Hypotheses:

<H1> Publicly listed Malaysian companies in the energy sector have high levels of sustainability practices.

<H2> Malaysian companies in the energy sector, which release/publish their sustainability initiatives, policies and practices, have better financial performance than those companies, which do not.

<H3> There is strong positive correlation between the extent of sustainability practices and financial performance of the companies.

3. Methodology

This study uses combination of methods at various stages. Both exploratory and explanatory research design is applied; it will follow a deductive approach. This research is done by using qualitative, secondary data sources to generate quantitative data for analysis; some of the data sources include but are not be limited to sustainability reports, annual reports, press releases and independent research articles. Also, the study uses secondary data sources collected from selected Malaysian companies listed on the Bursa Malaysia, the legitimacy of the data is not in question because the companies are recognized in Malaysia and are publicly listed in the Bursa Malaysia stock exchange, in addition, most publicly listed companies employ the services of external auditors to audit their accounts, therefore, as a result of this, secondary data source will usually have high level of credibility and reliability. The study will be done using time series of longitudinal data. For the time series data collection, annual reports and all relevant online text materials posted in the company's websites and other sources are be considered. The research considers annual reports from the chosen year of 2010 to 2013. Data from 2014 until 2016 is not included some of the parameters are not updated for certain companies.

The research uses purposive sampling as the samples will come from a sub-group; this is because it focuses on a particular sector and will involve all the companies operating under that sector. The samples to be used in the analysis is a selection from the Bursa Malaysia listings, based on a company's primary business activity falling under the energy sector specifically in oil & gas, therefore, organizations who are "Investment holding companies" and have other

businesses as core or supplementary businesses are not considered. The researcher only considers companies that have been publicly listed in the Bursa Malaysia not later than year 2008 and companies that have been incorporated for at least for the past 10 years. Out of *32* companies that fell under the oil and gas sector, 11 companies did not meet the target population criteria because they are either investment holding companies with multiple business focus or were listed in the Bursa Malaysia after the year 2008. So, the sample of *21* companies that met the criteria are oil and gas companies listed on the Bursa Malaysia. In the course of this paper, specifically to answer research question 2; the chosen companies are divided into 2 parts which are those companies that fully integrate the triple bottom line [economic, social and ecology] concept in their business and disclose accordingly in either a separate sustainability report or annual reports and the other section will be companies who have no record of full or partial sustainability practices and disclosure.

3.1. Data Analysis Technique

3.1.1. The Level of Sustainability Practice Involvement.

Using annual/sustainability reports available online, this part examines the level of sustainability practices by Malaysian companies in the oil and gas sector on matters such as climate change, environmental issues, workplace health and safety, human capital management, corporate conduct, stakeholder engagement and governance which are the main domains for measurement according to the checklist adapted from (Siew et al., 2013). There are 9 domains with 68 items which are of the highest importance to institutional investors and stakeholders (ACSI, 2011, p.13); it is presented in a tabular form; the checklist is according to Australian Council of Super Investors, and is drawn heavily from the GRI 3.0 reporting guidelines. It was used in analyzing construction industry in Australia and the researcher found the checklist to be of relevance to analyze oil and gas sector. A rating value of 0 or 1 is used; 0 means the absence of information while 1 means presence of information provided by the oil and gas companies.

The aim of H1 is to understand the level of involvement of Malaysian oil and gas companies in the practice of sustainability. Once information has been entered into the checklist; Euclidean distance test is conducted to further balance the result of the checklist items against the reported items by the organizations. Euclidean distances are used to show the magnitude of differences in the level of disclosures (Danielsson, 1980). In this case, the problem can be viewed as the distance between 2 points whereby one point represents what is expected of oil and gas companies in Malaysia [9 domains and 68 items] and the other point represents actual activities/practices disclosed by the organizations. Euclidean distances can be used in addressing the shortcomings that can come up as a result of using a simple checklist such as the one used in *Hypothesis 1*; it can also be used in simplifying the result of the data entered into the checklist. The representative score [which in this case is distance measured] is hence an accurate reflection of the level of consistency in reporting achieved throughout all domains (Siew et al., 2013). Because there are nine domains involved, Euclidean distance is measured by;

$$"D = \sqrt{\sum}(p_1 - q_1)^2 + (p_2 - q_2)^2 + .. + (p_n - q_n)^2$$

Adapted from: (Siew et al., 2013)

In this case, D is the Euclidean distance, p is the maximum number of items per domain, q is the number of disclosures by the companies and n = 9 represents the total number of domains. The scale used for measuring levels of sustainability practice involvement is as follows: excellent (0 - 6), good (7-14), average (15 - 20) and poor (> 20). After the Euclidean distance is calculated for each of the chosen companies, the result should fall under the scale and give a conclusive indication of the level of their involvement in sustainability practices based on their disclosures as identified in the checklist.

3.1.2. Comparative Analysis of Practicing and Non-practicing Companies.

In this part, a comparative analysis is conducted. For clear comparison, the 21 participating companies are split into 2 parts which are – those that disclosed sustainability activities either in a separate report or through their annual report to be denoted by **D** and those companies that do not practice sustainability and did not disclose anything of such in any online document, to be denoted by **ND.**

Where D = “Disclosing” companies.

Where ND = “Non-disclosing” companies.

The chosen parameters for measurement and comparative analysis are **EBITDA margin** and **PE Ratio**. EBITDA margin is a profitability measure while PE ratio is an equity measure, both profitability and equity is measured in this study to give a broader and better balanced assessment of organizational performance in this context. In other to conduct the comparative analysis, the mean values

of both parameters will be compared over 4 years, from 2010 to 2013. The reason for this is that a longitudinal time series data of 4 consecutive years can give more consistency in terms of result, rather than measuring only for 1 or 2 years. The two parameters to be considered are EBITDA margin and PE ratio; both parameters have been identified in past research studies as important factors for the valuation of organizations (Kusuma & Koesrindartoto, 2014).

3.1.3. Strength of Relationship

Correlation analysis is used to understand if two measurement variables have a linear relationship, and to quantify the strength of that relationship. It's used to test hypotheses on the existence of relationship between variables, which in this case is sustainability practices & firm performance. The level of association is measured by a correlation coefficient, denoted by r. It is also called Pearson's correlation coefficient. Correlation coefficient is measured on a scale that varies from + 1 through 0 to – 1, complete correlation between two variables is expressed by either + 1 or -1. When one variable increases as the other increases, it denotes a positive correlation; when one decreases as the other increases it is negative. Complete absence of correlation is denoted by 0 (Saunders & Lewis, 2012). To do this, the 9 variables for measuring sustainability will be grouped under the acronym “ACSI”. This is because the checklist used in deriving the quantitative data for statistical analysis in this study comes from the ACSI (2011), in addition, the 9 independent variables used in measuring sustainability are also adapted from the ACSI checklist. The statistical data was derived by converting the binary scores [0 for absence and 1 for presence of information reported] into an aggregate score by using a simple formula [number of disclosure/required disclosure * *5*], where 5 is the maximum attainable. For example; there are 9 disclosures under climate change; if an organization reports 6 disclosures, then that would be calculated as 6/9*5 to get an aggregate score of **3**. Where an organization had 0 aggregate score, then a score of 1 will be given. These details are further clarified in the data sets and will be attached along with the research work.

3.2. Measures of Variables

3.2.1. Independent Variables

There is currently no framework by Malaysian investors or government to analyze sustainability practices. Therefore, this research has adopted a framework set by Australian Council of Superannuation Investors [ACSI]. The framework draws from and combines a range of sustainability guidelines in the world such as GRI, Carbon disclosure project and global framework for climate risk control (ACSI, 2011). This framework/checklist was used in (Kusuma & Koesrindartoto, 2014; Siew et al., 2013) in analyzing construction sector in Australia. The researcher has found guidelines and provisions of the framework to be relevant to the oil and gas industry and therefore will be applying it in this study. This framework is also in line with the concept of the triple bottom line which is the guiding theoretical framework that has been used throughout this study. In the ACSI framework, there are originally 9 domains under which there are a further 68 items – therefore, the 9 domains make up the independent variables for this study, while the 68 items under it can be referred to as the independent sub-variables. Sustainability practices will be measured in this study based on these identified variables. Below, the independent variables to measure sustainability in this study are re listed as follows:

1. Climate change.
2. Environmental management systems.
3. Environmental efficiency
4. Environmental issues [others]
5. Work place health and safety.
6. Human capital management.
7. Corporate conduct.
8. Stakeholder engagement.
9. Governance.

3.2.2. Dependent Variables

Firm performance in this study will be measured based on profitability and equity. The 3 dependent variables that will be used to measure performance in this study are;

1. EBITDA margin = EBITDA/Revenue
   When **EBIDTA** is not given in annual report, the formula will be as follows: Gross Profit + Interest + Taxes + depreciation and amortization/revenue.
2. PE Ratio = current share price/earnings per share
3. EPS: net income / average outstanding common shares

Measures like EBITDA, EPS and PE ratio have been identified as important parameters to judge financial performance of business organizations, both parameters have been used in previous research such as (Siew et al., 2013).

4. Results

4.1. H1 – *level of sustainability involvement based on disclosure.*

Based on the result of the checklist and Euclidean distance to measure the level of involvement as against the expectations of investors, the chosen companies can be judged as follows. Only 3 companies had "excellent" level of sustainability involvement and disclosure, 4 companies fell under the "good" category, 15 companies fell under the "average category" while none of the companies fell under the poor category; as show in below table (see Table 1).

<Table 1> Sustainability Involvement Rating

RATING	GRADE [Euclidean score]	Number of companies	% of companies
Excellent	0-6	3	14
Good	7-14	4	18
Average	15-20	15	68
Poor	> 20	0	0

Further analysis of the checklist reveals a very clear pattern in the involvement of Malaysian oil and gas companies in practice of sustainability, majority of the companies had excellent levels of involvement in terms of economic sustainability through corporate governance, whistle blowing policy, code of conducts and ethics and other aspects of economic sustainability, the level of involvement in terms of social sustainability was also found to be relatively good as majority of the companies engaged in philanthropic CSR, had good human capital management policies as well as good work place health and safety activities. However, for an industry that records one of the highest environmental impacts of any part of an economic, the involvement in environmental sustainability was really poor. Only about 7 companies had high level involvement in managing climate change and environmental efficiency, the majority of the oil and gas companies were found to be lacking very far behind in this regard. The result shows that the vast majority of the oil companies have average to low level of sustainability practices involvement, though there is no listed reasons for this by the companies individually, UNEP (2000) are of the opinion that reasons for not engaging in sustainability involvement could be as a result of doubts about the advantages of such practices; competitors not disclosing their involvement; a possible lack of interest by key stakeholders such as shareholders and clients and the possibility that revealing some information especially about carbon emission, waste and water handling could be damaging to the reputation of companies, especially those that are not very strong from a financially point of view. It remains to be seen if this is the case with regards to the oil and gas companies in Malaysia.

4.2. H2: Below is the result of comparative analysis of both set of companies, as denoted by D and ND (see Table 2).

<Table 2> Comparative Analysis

RATIO	2010	2011	2012	2013
EBITDA MARGIN [D]	19%	26%	21%	26%
EBITDA MARGIN [ND]	30%	14%	20%	17%
PE RATIO [D]	17.35	21.37	16.64	23.62
PE RATIO [ND]	8.98	15.38	15.62	22.21
EARNINGS PER SHARE [D]	RM12.60	(RM4.92)	RM0.31	RM0.42
EARNINGS PER SHARE [ND]	RM0.05	RM0.04	RM0.09	RM0.08

EBITDA margin provides an indication of cash flows in a company and is normally used by analysts to assess corporate financial health (KPMG, 2010). It is calculated from a company's earning power divided by its operating revenue (KPMG, 2010). The result shows that in 2010, ND companies outperformed D companies by up to 11%; however, from 2011 to 2013, D companies outperformed ND companies by 12%, 1% and 9% respectively. *PE ratio* is an equity valuation used in measuring the share price of a company in other to know whether it has a high or low value, a high PE ratio shows high share price valuation while a low PE ratio shows that the share price of a company is undervalued. The result shows that D companies consistently outperformed ND companies in all the years under review 2010 to 2013; though in 2012 and 2013, the margin of was quite closer than the previous years. EPS was also used to measure financial performance in this study. EPS shows the profitability level of an organization from the perspective of the shareholders. For 3 out of the 4 years in review, D companies outperformed ND companies, except in 2011 when D companies recorded an average loss of RM4.92 as against a gain of 4 cents made by ND companies. Therefore, as the results of the comparative analysis shows, based on the 3 varying parameters that was used in measuring the financial performance of the Malaysian oil and gas companies over time, it can be said that Malaysian oil and gas companies that reported their sustainability involvement and practices performed considerably better than those that did not. However, this is not to say that this was the singular factor that was

responsible for better performances of the D companies, as this research acknowledges the role of other variables that might lead to organizations performing better, these other factors will be further highlighted in the closing section of this research.

4.3. *Validity and Reliability Status*

This is a measure of internal consistency of items in the scale (Iacobucci & Duhachek, 2003). The closer Cronbach's alpha coefficient is to 1.0 the greater the internal consistency of the items in the scale (Iacobucci & Duhachek, 2003). According to George and Mallery (2003) a common rule of thumb to follow is given as: "_ > .9 – Excellent, _ > .8 – Good, _ > .7 – Acceptable, _ > .6 – Questionable, _ > .5 – Poor and _ < .5 – Unacceptable. This research eliminated bias in its data collection by focusing on all companies listed in the Bursa Malaysia as oil and gas companies. In addition, external validity of data was achieved by using data sources posted by the companies itself, and this data sources where then checked against data source released by BURSA Malaysia for validity and accuracy. Below is the result of SPSS analysis made for reliability test (see Table 3).

<Table 3> Reliability Statistics

Cronbach's Alpha	N of Items
.996	4

As seen above, after arriving at Cronbach's Alpha of α ≥ 0.996. Therefore, this is an excellent result and the data is highly reliable for the analysis to be conducted.

4.3.1. Descriptive Statistics

These statistics are used in giving numerical and graphical procedures that is used in summarizing a collection of data in a clear manner, stating how centralized and dispersed the data as shown in below table (see Table 4). The data looks to be very central based on SPSS analysis, as figures have closeness with the others. Standard error is high due to the small sample size.

<Table 4> Descriptive Statistics

	N	Range	Minimum	Maximum	Mean	Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
ACSI	21	2.00	2.11	4.11	2.8100	.55248	.305	1.359	.501	.977	.972
EBITDA	21	2.00	2.23	4.23	2.9519	.53431	.285	1.329	.501	1.084	.972
MARGIN											
EPS	21	1.89	2.37	4.26	3.0995	.51521	.265	1.257	.501	.777	.972
PE	21	1.77	2.52	4.29	3.2643	.45346	.206	.998	.501	.709	.972
Valid N(listwise)	21										

<Table 5> Correlation Analysis

		ACSI	EBITDA MARGIN	EPS	PE
ACSI	Pearson Correlation	1	.997**	.993**	.985**
	Sig. (2-tailed)		.000	.000	.000
	N	21	21	21	21
EBITDA MARGIN	Pearson Correlation	.997**	1	.988**	.985**
	Sig. (2-tailed)	.000		.000	.000
	N	21	21	21	21
EPS	Pearson Correlation	.993**	.988**	1	.993**
	Sig. (2-tailed)	.000	.000		.000
	N	21	21	21	21
PE	Pearson Correlation	.985**	.985**	.993**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	21	21	21	21

**. Correlation is significant at the 0.01 level (2-tailed).

4.3.2. Correlation

This test is basically done to understand relationship between variables and to establish the strength of that relationship (Hinkle et al., 2003; Moinester & Gottfried, 2014; Taylor, 1990; Rodgers & Nicewander, 1988). The correlation statistical test data is show below and explained afterwards (see Table 5).

At ρ 0.997, test showed that sustainability performance (measured by ACSI) had a strong positive relationship with EBITDA margin of the oil and gas companies, the same can be said of earnings per share at 0.993 and price to earnings ratio at 0.985. In addition to the positive correlation, the strength of this relationship was also significant for all three financial performance variables measured at Sig. (2-tailed) 0.000. Though a positive result, some scholars believe that a small sample size might not provide adequate consistency (Goodwin & Leech, 2006; Hinkle et al., 2003; Moinester & Gottfried, 2014) believes that a small sample size might also have some slight effect on *r* value making it either skew to a very strong or very weak relationship. Therefore, the sample size of 21 might not have been enough to show a high level of consistency for the results. The coefficient of determination (r2) is <0.5 for all the measures of financial performance; that is <50 per cent of the variation in a company's financial bottom line can be explained by variation in their sustainability performance measured here by the ACSI checklist scores. Therefore, there is adequate evidence from this research to justify claims that there is strong positive correlation between profitability and sustainability performance. All three of the correlation coefficients were well above the <0.5 mark, which suggests a strong positive correlation.

5. Discussion

5.1. Hypothesis 1

Quite a number of scholars have done research on various areas of the economy that shows that there is some kind of gains to be had if companies are involved in sustainability practices (Feldman et al., 1996; Khaveh et al., 2012; Klassen & McLaughlin, 1996; Konar & Cohen, 2001). Based on the evidence of this study, only 14% of Malaysian oil and gas companies had excellent levels of sustainability evident in their reporting, while another 18% had considerably good level of involvement. Breaking it down though, majority of the companies had excellent level of corporate conduct, governance and stakeholder engagement, philanthropy was also another section where the companies performed excellently, however, most were lacking in environmental performance. There could be a few mitigating factors for this such as lack of talent Baharin and Abdullah (2011), unwillingness from business managers (Adams et al., 2004), or even a lack of legislation or enforcement, though in the case of Malaysia, the Bursa Malaysia has adequate legislation, another mitigating factor for this might also be the lack of a localized framework with which Malaysian organizations can operate and implement sustainability processes, this is especially evident in this study seeing as a measurement framework by Australian investors was applied herein. Despite organizations like Global reporting initiative giving frameworks that can be used, it can be argued that such frameworks may only be more suitable for developed countries. Therefore, it might be time for Malaysian key stakeholders to develop a framework with which key industries can apply and measure sustainability performance and involvement.

Secondly, during the filling of the checklist, it can be seen that the extent of women in top management was either not reported or low altogether. This is also a sustainability issue that has been touched on in various reports such as Lord Davis report (Thornton, 2013). According to studies, these may be down to cultural factors, environmental factors or due to the fabric of the organizations founded by male managers; whatever the reasons might be, Malaysian oil and gas companies may want to start having more women in management and reporting as such, various scholars conducted research and found a positive correlation of this towards better organizational performance (Smith et al., 2006). Based on this evidence the research will reject the hypothesis 1 that oil and gas companies in Malaysia have high sustainability involvement.

5.2. Hypothesis 2

Over the four years reviewed, the result came out that companies that fully involved in and reported their sustainability activities performed better than their counterparts that did not, this is despite the fact that only 8 out of the 21 were in the D category. After the result, a review of the size of the organizations was also done to understand if the financial capability or size of the organization had any role in their activities, strikingly, some smaller organizations actually had far better sustainability performance than organizations bigger than them. This goes to reinforce the belief among scholars that commitment of management remains of the keys to sustainability involvement; it is a choice between the business managers whether or not they will go down the sustainability route. Below is a comparison of the size of companies sampled in this research (see Table 6).

<Table 6> Sustainability Disclosure

	Participating companies	DISCLOSURE	Size [Mkt Cap]
	PETRONAS Gas Berhad	D	44.48 B
	Alam Maritim Resources Berhad	D	614M
	Sapurakencana Petroleum Bhd	ND	14.02B
	Perdana Petroleum Bhd	D	752.41M
	Petra Energy Berhad	ND	440.80M
	Scomi Group Berhad	ND	384.32M
	Shell Refining Company Berhad	D	1.48B
	Uzma Berhad	ND	552.17M
	Petron Malaysia Refining & Marketing Bhd	D	699.30M
	Petroliam Nasional Bhd (PETRONAS)	D	44.48B
	Dayang Enterprise Holdings Berhad	ND	2.02B
	Barakah Offshore Petroleum	D	695.26M
	KNM Group Berhad	ND	1.20B
	Daya Materials Berhad	ND	223M
	Wah Seong Corporation Berhad	ND	976.36M
	Kejuruteraan Samudra Timur Berhad	ND	88.96M
	Petronas Dagangan Berhad	D	18.34B
	Deleum Berhad	ND	628M
	Dialog Group Berhad	ND	7.69B
	Perisai Petroleum Teknologi Berhad	ND	686.05M
	TH Heavy Engineering Bhd	ND	377.77M

Source: Bursa Malaysia (2015)

The above shows that though the size of a company might be a factor in sustainability involvement, it is basically a management decision whether or not they want to be involved. On this evidence therefore the proposition 2, that sustainability practicing organizations perform better than those that do not is valid and acceptable as a result of this study.

5.3. Hypothesis 3

Corporate sustainability & the perceived impact on organizational financial performance have been researched in recent times, a number of research studies have been performed over the past 10 years to examine this relationship. However, the results have been quite inconclusive, inconsistent, and contradictory at times. It ranges from positive (Burhan & Rahmanti, 2012; Ngwakwe, 2009; Orlitzky et al., 2003; Schadewitz & Niskala, 2010) to negative (Detre & Gunderson, 2011; Lopez et al., 2007) to mixed (Jones, 2005; Manescu, 2011) and even some researchers found out an insignificant relationship (Buys et al., 2011; Humphrey et al., 2012). The result of Pearson Correlation *r* conducted showed all profitability ratios had a strong positive relationship with the level of sustainability involvement represented by the ACSI checklist, additionally, the strength of the relationship was discovered to be significant as well. Looking at the result of Pearson *r*, EBITDA margin displayed the best relationship with sustainability involvement at 0.993. The EBITDA is used in measuring the cash flow of an organization, overall it is known as a good measure to understand cash flow of very large organizations and how they can deal with debt, cash flow can come about as a result of investor confidence whereby they can invest more money into the organization (Flammer, 2012).

6. Conclusion

After environmental and social performance is compared against the financial performance of 21 Bursa Malaysia listed oil and gas companies, through SPSS Pearson Correlation data analysis, the research concludes that there is a strong relationship between sustainability practices and financial performance of the companies, in addition, these relationships were found to be very significance. Based on a

review of key literatures in this field of sustainability, it can be said that efforts to identify the impact of sustainability on financial performance are, at the very least in part, efforts to legitimize the practice of sustainability so that space can be created for broader purposes in business activities, with the aim being to establish that business can also be about doing good, rather than just doing well. The impact of business on our lives, along with the meaningful purposes that people [investors, shareholders, workers etc.] seek to pursue through them implies a bigger and far reaching question that organizational scholars are confronted with. In the Malaysian context and as a developing nation, how does the populace live with oil and gas companies that impact on lives, society, economy and environment both in a negative and positive way? What is the needed legislation that might be made to improve sustainability performance? How do oil and gas companies adjust to sustainability demands as it is in the developed nations? These are key questions and a simple correlation between sustainability practices and financial performance, though useful for literature and partial decision making do not necessarily answer these questions, though based on this research, an argument can be made that there are indeed financial benefits for investing in sustainability. On the scholarly side of things, research still has to be done to reach a conclusive point at which we can determine the extent to which the financial bottom-line of an organization is positively affected by their involvement in sustainability practices, this research will include a model that can as well be used in determining the extent to which other variables [size, finances, location, employees, marketing] contribute to well-being of an organization.

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An Exploratory Treatise on Consciousness and Espousal of Halal Supply-Chain: An Indian Perspective

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Abstract

The purpose of this research is to be acquainted with the awareness and approval of halal supply chain among Indian manufacturers and distribution network members for haulage and warehousing activities from the perception of respective service suppliers. A total of 20 respondents, which consist of 10 transportation companies and 10 warehousing companies from the State of Andhra Pradesh in India were selected for the study by using purposive sampling method. The principal focal points of the discussions are on awareness and adoption of halal transportation and warehousing services chosen for the study in the comprehensive halal supply chain. A total of 90 percent and 70 percent of respondents from the transportation and warehousing companies respectively agreed that they know only about the concept of halal but do not have any exposure and ken on the halal supply chain. However, findings of this research won't have extensive validity in the market, gaining an enough familiarity with the halal supply chain in the Indian social context is of immense importance. This is a pioneering attempt aimed to investigate the awareness and adoption levels of halal supply chain among Indian businessmen which are precious for supply chain companies to customize their services in the country as well to the world of academia.

Keywords: Halal, Supply chain, Transportation, Warehousing, India.

JEL Classification Code: L91, M10, N75, Z12.

1. Introduction

In the present day's extremely competitive business milieu, companies are always in the quest to find the crucial flourishing strength in the organization to hang around with perfect full-fledged competitiveness in every possible facet. For that reason, supply-chain is an activity which can be considered by almost all companies in every kind of industry, from the core to services. In the last two to three decades, radical changes have taken place in the supply-chain system with the introduction of technology. Modern day's business people have always attempted to trim down various preventable costs in every area of their business as a most crucial way to proliferate their firm's profitability.

According to Qur'an's Chapter 2:168 Al-Baqarah, "Almighty issued a clear guideline especially to Muslims and even to all, to obtain only permitted things and said absolutely, that people should eat only lawful or good food available on earth by not following the footsteps of evil". Halal means "permissible" or "allowed" which encompasses all that is permissible to be consumed by Muslims, according to Shariah, i.e. Islamic law. The Muslim community should use only permitted things, food or actions as per Qur'an, which is garnered through the Halal supply chain services. A competent strategic thinking with the ideal administration, even in supply chain activities, categorically proffers all kinds of fruitful benefits to manufacturers as well as to network members in any business. The increasing trend of population in general and the Muslim population in particular, as well as the awareness about halal products in India, leads to the tremendous potential for halal based activity.

Researchers like Christopher (1988), Van Amstel and Van Goor (2001), Van Assen, Amstel, and De Vaan (2010) and Tieman, Jack, Vorst, and Ghazali (2012) emphasized that

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halal manufacturers require an aggressive supply chain approach in line with the Shariah which will be a perfect value addition to acquiring a dominant competitive advantage in a highly competitive market. The popularity of halal products are almost abysmal in India but almost cent percent of Muslims have a confident intention to know more about halal beyond their present ken which is simply the prayer offering before and during slaughtering of animals for food.

In the present situation, the general propensity towards halal products or services is not exclusively meant for Muslims. Non-Muslims were also found to prefer halal products or services in different parts of the globe. This was proven by the researchers like Abdul Talib, Mohd Ali and Jamaludin (2008) and Belkhatir, Bala, and Belkhatir (2009) which mentioned that halal orientation is not at all sighted as exclusively related to Shariah i.e., Islamic law and a majority of non-Muslims are also intensively on track to purchase halal products and services with a view that the products are fresher, more hygienic and delicious. The enhancing trend of demand for halal products and the indomitable intention of Indian Muslims to follow Shariah provides an unquestionably great satisfaction to halal compliance, as well as to obtain the most hygienic and quality products. In addition, notable researcher, Tieman (2011) stated that consistency in maintaining halal integrity throughout the supply chain is the prime responsibility of manufacturers.

Based on the importance of research on the halal supply chain, Jaafar, Endut, Faisol, and Omar (2011) stressed on the need to introduce halal supply chain services by logistic firms to meet the demand from halal manufacturers around the world. Researchers in this study have a tendency to prefer halal service providers as an alternative to halal manufacturers for this research. Accordingly, this study was initiated with a purpose to investigate the awareness and espousal of halal supply chain among Indian manufacturers and network members for haulage and warehousing from the point of view of supply chain firms.

2. Literature Review

Halal is an Arabic word derived from the verb *Hala* which bears the meaning of “opening a node, unwind, unscrew, unravel, untangle, disentangle, disengage, or resolving something”. As mentioned by researchers such as Al-Jallad (2008), Malboobi and Malboobi (2010), and Latif (2011), halal in Islamic term means, “things, food, or actions permitted by God’s will or instruction, clean, pure, and opposed to haram”. Mohamad, Badruldin, Sharifuddin, Rezai, and Abdullah (2012) elaborated the meaning of halal by stressing on how a Muslim or a person leads his/her life and said that it is not only restrained to the nature and kinds of food that a Muslim is permitted to use. Whether it is a normal supply chain or a halal supply chain, it has to flawlessly synchronize the activities of suppliers, manufacturers, storage and warehouses which are all meant to deliver the expected level of value with the right quantities and distributed to the right location at the right time which is a perfect competitive advantage to any firm. The prime responsibility of supply chain is to minimize diverse costs involved in the procurement of raw materials, storing and processing, and delivery of final products to the final consumer.

Manzouri, Rahman, and Arshad (2011) stated that the conventional supply chain concentrated on a sequence of procedure in which raw materials are transformed into finished products, then distributed to the final consumers but halal supply chain concerted on the assimilation of business process and actions from the position of source to the point of utilization as per Islamic law is known as Shariah (Omar & Jaafar, 2011). Tieman (2011) said that only halal supply chains can protect the products from contamination because of the precautionary measures they have taken in transportation, packaging, product handling, and human resources. The principal focus of traditional supply chain is on cost minimization, whereas halal supply chain ponders over halalness of the halal product. The activities of both categories of the supply chains are akin but working with different objectives. The snowballing trend of consumption patterns of Indian Muslims on halal products demonstrates the method to halal services. Hence, espousal of the halal supply chain will be the most crucial reliant variable for this exploratory study.

The confident delivery of halal oriented products could be possible only through a flawless halal supply chain. Bahrudin, Illyas, and Desa (2011) stated that it is imperative for the manufacturers to uphold the halal reliability all through the supply chain as a fundamental endeavor to prevent consumer fraud regarding the halal quality of the products. Present consumers are greatly concerned with all the activities of a manufacturer right from the procurement of all the input factors to manufacturing process, technology used, supply chain activities, corporate social responsibility (CSR) implementation, promotional programs etc., because of which almost all the manufacturers in every segment are cautious in every bit of the design of their activity. There is no exception to manufacturers of halal products and services.

Designing and introduction of supply chain services with halal orientation should be the crucial obligation of the manufacturers. Even though the present halal principles control food making, groundwork, treatment and storage, all these do not ensure that the products are halal at the point

of consumption if the manufacturers do not apply halal supply chain throughout the delivery process (Tieman, 2006). Though India is the second largest market and also the second largest Muslim populated country in the world, there is no confidence in the adoption and awareness about halal products from the Islamic community. Even the academic research on halal is almost negligible in India, either it may be about perceptions and consciousness towards halal or supply chain services. Just like traditional supply chain, halal supply chain entails activities like transportation, warehousing, sourcing, and product handling; but the decisive facets like haulage and warehousing shows its mark in protecting the halalness of products.

As mentioned by Talib, Rubin, and Zhengyi (2013), halal transportation plays a critical role where there is a possibility of cross-contamination between halal and non-halal products. As mentioned by Tieman (2011), extensive research has to be taken up by the academia in this discipline and Islam has to proffer more concrete discourses to Muslims for consuming only halal goods (Al-Qaradawi, 2007). The susceptibility of halal supply chains (Bonne & Verbeke, 2008; Zailani, Ariffin, Abd Wahid, Othman, & Fernando, 2010), the magnitude and potentiality of halal market (Alam & Sayuti, 2011) pressurized businessmen to stretch its product line with halal orientation to win the hearts of Muslim customers (Tieman, 2013). The Muslim community has been acknowledged as an unexploited and feasible market which eventually roots from their mounting demographics and success of Muslim entrepreneurs in due course, connecting this segment with evident purchasing power (Sandikci, 2011). The significant portion of the Muslim population in India with a 24 percent growth rate in the last decade has made India a major potential market for Islamic marketing in general and halal products and services in particular.

As per the latest census in the year 2011, the Muslim population has increased from 13.4 percent in 2001 to 14.2 percent with a notable increase of population in some border states. In between 2001 to 2011, the Muslim population in India increased from 138 million to 171.8 million with a percentage of 24.4 (Ghosh & Singh, 2015). Even though Muslims are less in number as compared to Hindus, India is going to be one of the largest Muslim populated country in the world (Pew Research Center, 2012) and third largest Muslim populated country by 2030 after Indonesia and Pakistan with a stunning 236.2 million (Mohammed, 2013). This increasing trend of Islamic populace around the globe in general and India in particular definitely is an enormous business opportunity for the corporate sector which is planning to enter the market with halal oriented products and services because of proliferating tendency of consciousness and acceptance of halalness.

3. Research Methodology

The researchers initiated this research with a view to exploring the awareness and espousal levels of halal oriented logistic services provided by Indian companies. Through this study, researchers evidently observed that this exploratory study is the first gallant effort in India where awareness and adoption levels of halal products and services are very negligible. This is because there is no availability of sufficient information regarding halal or halal oriented services and the culture spread among Indian Muslims that conveyed specific information about their activities, interests, opinions, values, traditions, taboos and other social relations. As a result, researchers thought that qualitative method is necessary for the study, where data is garnered by conducting a sequence of personal interviews and through small focus groups (Sekaran & Bougie, 2009). In view of the fact that this concept is an absolutely novel-fangled approach to India without any such service providers to get a better understanding of the chosen subject matter for research. Even though findings of this study in terms of external validity are limited, gaining a rich and complex understanding of the halal supply chain in the Indian social context is of great significance.

The researchers have selected a purposive sample of 10 transportation companies and 10 warehousing companies on the basis of hypothetical dissemination of the research problem under consideration. Two researchers carried out semi-structured personal discussions with both higher and middle-level executives who have a competent ken and rich experience in this field from the two chosen classes of respondents who were spread-out in the coastal districts of Andhra Pradesh. The prime focus of the interviews and discussions are on awareness and adoption of halal and halal services chosen for the study. As planned by Hannabuss (1996), two researchers concentrated on recording and transcribing the outcome of the interviews with the two types of respondents. As mentioned by De Ruyter (1996) and Sekaran and Bougie (2009), the researchers planned and succeeded to garner data through small focus group interviews which are a perfect method for innovating a novel idea with highly lucrative, transparent and meaningful discussion. Moreover, both researchers and respondents were involved in through reciprocal, impulsive discussions with all the intra and intergroup members (Walden, 2006; Sekaran & Bougie, 2009) which extract constructive input for the chosen topic. Focus groups framed for the discussion consists of around five respondents who are highly experienced in the chosen fields of the study.

Two of the researchers conducted the focus group work. One acted as a moderator of the discussion and the other

as the note taker to garner the data relating to awareness and espousal of halal and halal services. The moderator-initiated discussion by raising both close-ended and open-ended questions. As said by Sekaran and Bougie (2009), one of the researchers acted as a moderator and took the responsibility for discussion by initiating the research topic, raising questions, controlling arguments, along with careful observation of proceedings of the discussion. The second researcher (note-taker) took detailed notes of these discussions. The core theme for the focus group is the halal supply chain services, which is further divided into four sub-themes viz., respondents' background, awareness levels about halal, espousal of halal services, perceptions of respondents to know more about the investigative topic. As noted by Miles and Huberman (1994), researchers should very cautiously note down the outcome of all the conversations and views expressed by all the members in the focus group. The collected information is then put on paper in an organized way and analyzed based on which the final conclusions are framed as mentioned in the next part of this study.

4. Results and Findings

4.1. Consciousness of Supply Chain Service Providers

Astonishingly, almost all the supply chain service providers hired by the Indian manufacturers are totally unaware about the halal and halal supply chain services. The majority of the service providers stated that halal means only prayer offerings before and during slaughtering of animals for food. Of the selected respondents, 90 percent of the respondents from transportation companies and 70 percent of the warehousing companies stated that they are aware of halal concept only but not halal supply chain. Even though the respondents are in the same business for the past two to three decades, they are ignorant of the halal concept in the domain of transportation and warehousing.

4.2 Espousal of Halal Supply Chain

When researchers questioned the selected respondents about the espousal rate, almost all expressed their lack of knowledge straight away and said that they have never heard about halal supply chain. They said that halal is related only to food products and not at all concerned with transportation and warehousing. Every respondent accepted that most of their customers simply asked for transport and warehousing services but never demanded halal backdrop services. Thus, the need for either halal or halal supply chain service was never felt. Further, respondents also expressed their opinion out rightly about the background of their customers who are mostly non-Muslims. Surprisingly, even Muslim manufacturers hired to transport and warehousing companies that are also proffering non-halal services even to Muslim customers. Presently, there is no enactment either from the government or any stress from Islamic community that enforces the introduction of halal products and services. Some of the supply chain service providers thought that adopting halal supply chain in India has severe obstacles like the lack of awareness and understanding about halal, lack of pressure from competitors and consumers, as well as non-accessibility of halal products and services.

4.3. Intentions to Know about Halal Supply Chain Services

Whatever may be the reason, it is evident that the overwhelming majority of transport and warehousing companies have an indomitable intention to know more about halal and halal supply chain, keeping in mind the future potential of the market along with forecasting of demands from the market. In the focus group interactions, the majority of the service providers reiterated that customization of their services to the Muslim community definitely enhances their firm's profit picture for which it is an imperative situation to learn about halal supply chain services. If such service providers know concretely about halal supply chain, it will be an added competitive advantage to the firm which in turn, is a lucrative business opportunity.

5. Practical Implication

This research proffers most worthy and resourceful information to the sectors which are involved in food, clothing, pharmaceuticals, cosmetics, and supply chain services etc. Islamic formal educational institutions along with religious organizations have to take an initiative to popularize Islam in general and halal concept in particular. It is an inspired decision to target this lucrative segment which provides alluring profitability particularly food, cosmetics, medicines etc., with halal-certified products because of the increasing trend of the Muslim population in India from the present to wooing around 236 million by 2030. Uniquely, Islamic religious organizations have a colossal responsibility to improve the conceptual knowledge of the community on matters related to their lifestyle, particularly about halal and

haram. These religious institutions have to come up with a suitable curriculum based on the cohesiveness of the community. As a final point, the extensive popularization of the Islamic religion requires extra attention from the religious groups and educational institutions from the primary to university level along with the introduction of halal excellence centers in different parts of the country.

6. Conclusion and Suggestions for Future Study

Halal and halal supply chain are two novel concepts in a country like India, which increases the lifespan of people by using only permitted halal products and services as per Shariah, the Islamic law. The trend of using exclusively halal based things, food and actions proffer enormous business opportunity to manufacturers and service providers on one side, and on another side, it gives greater satisfaction in following Islamic principles with a stringent manner. The present escalating trend observed towards halal and frequently highlighted in different media is the rising usage of halal products and services in non-Muslim communities, which means that products with this nature are healthier and more hygienic than others. Even though Indians do not have a proper understanding about halal and the adoption level is almost minute, this will be a market with mammoth potential for halal products because of the increasing trend of Muslim population and their attitude towards halal products and services. The focus group's semi-structured interviews confirmed that the apparent benefits only encourage consumers for adoption. This investigative study attempts to garner awareness and espousal of halal supply chain services provided or hired by the Indian manufacturers with a minimum sample which has a greater scope for further research with a more significant sample size focusing on Muslim dominated areas from other parts of the country.

In this context, the following hypotheses generated from the present study are worthy of investigation:

1. The awareness of halal supply chain practices are extremely low, both among Muslim and non-Muslim stakeholders in India;
2. There is a strong intention among the various stakeholders to have knowledge and usage of halal products in India; and
3. There is a vast scope for marketing of halal products by adopting halal supply chain practices in India.

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Brands and Competing Factors in Purchasing Hand Phones in the Malaysian Market

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Abstract

Hand phones are standard paraphernalia among university students. Factors that motivate them to own the gadget would be of interest to both the students as well as marketers. Hand phone usage is an unexamined field in academic literature, this exploratory study attempts to investigate student purchasing motives in cellular phone markets. It also intends to know the student's satisfaction with the different services and its future impact on socio economic changes. In this study, undergraduates (n=336) were requested to specify their purchase criteria of hand phone. The instrument used in the study to collect feedback from the respondents contains a combination of open-ended and scaled questions, and some background demographics. The study employed content analysis, Pearson's correlation, and t-tests as the primary tools to analyze the responses. Results show that brand was rated as the most important factor in student purchase decisions. Other factors, arranged in decreasing order of importance comprise price, product quality, features, durability, availability, promotion, and post purchase service. Brand and price correlated significantly. It is also observed that there is very little difference regarding preference between brand and price in purchasing a hand phone. Marketers may formulate suitable strategies out of the findings to promote hand phones to university undergraduates in Malaysia by emphasizing at brands and price.

Keywords: Brand, Consumer Product, Hand Phone, Market Research, Price, Undergraduates.

JEL Classification Code: M39, D10, E29, E31.

1. Introduction[1]

Hand phone markets became very competitive due to the presence of many manufacturers in hand phone industry (Karjaluoto et al., 2005; Keelson, 2012; Liu, 2002; Singh & Goyal, 2009). Current and potential customers are pampered with many choices of hand phones due to rapid advancement of mobile technology (Bukhari et al., 2013; Liu, 2002; Riquelme, 2001; Singh & Goyal, 2009; Turnbull, Leek, & Ying, 2000).

There are many factors that attract users to buy hand phones, which include brand, quality and price. Despite these, brands play a vital role in hand phone industry. The most popular brands of hand phones in Malaysian market include Nokia, Samsung, and Sony Ericson. There are several factors like product attributes, social status, durability and ease of use that motivate students to purchase reputable hand phones. Brands are perceived as a warranty not only for quality and performance but also for distinction and emotional attachment (Balakrishnan, 2009). According to Kay (2006), branding is an important strategy to win consumer preferences and to establish long term relationship with customer. In the hand phone industry, brand is not projected as a link between products and companies, rather the brand image. However, an increasing number of hand phone companies are now undertaking brand building activities in order to generate long-term profits (Aaker & Jacobson, 2001).

Aaker and Joachimsthaler (1999) demonstrated that both personal and situational factors have direct effect on a brand. However, there are many factors that influence the student to purchase hand phone other than brands like price, functions, promotions, post-purchase service, model, sales and others. In fact, price elasticity of demand is high for the lower or no earning group like student. It will therefore be

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interesting to know students' preferred factors in purchasing hand phones. However, the rapid globalization of developing countries is stimulating consumers in these markets to buy luxury brands. Against this backdrop, it is necessary to find out whether the trend exists across various levels of income groups. Globalization has brought changes in cultural values in various countries (De Mooij, 1998) and created awareness among consumers about multinational luxury brands (Kumar et al., 2009). Consumer perceived brands as an extension of their self-image (Belk, 1988) and the need to purchase branded products is driven by the desire to enhance self-image in the social context. Yet price elasticity of demand is higher for individuals with lower or no income like student than individuals with higher income like working individuals.

Mobile phone markets are one of the most turbulent market environments today due to increased competition. Marketers have special interest in consumer buying decision process and the factors that determine consumer choices among different mobile phone brands. On this basis, this paper attempts to ascertain the preferences of hand phone brands among students of two public universities in Malaysia. By knowing their preferences, hand phone marketers can mount appropriate strategies to attract and maintain this market segment.

Next section of the literature review deals with brands, perceived quality, satisfaction and hand phone brands, product attributes and hand phone brands, social status and hand phone brands, trust of new technology and hand phone brands, consumer choice in market and hand phone brands. It is followed by data collection method and analysis. Next sections present findings and discussions. The paper ends with conclusion and future research direction.

2. Literature Review

Mobile phones have been a standard item just like standard textbook among university students in Malaysia. Born in the technological era, students seem to be able to cope with courses without textbooks, but not so much hand phones and related personal communication gadgets. According to Muniz and O'Guinn (2001), brands can be powerful symbolic products, having considerable social impact, and provoking considerable loyalty. A reputable brand is associated status in a society. Strong brands carry strong appeal to consumers in comparison with those of competitors (Kay, 2006). Petruzzellis (2010) argues that brand attitudes do relate positively to consumer intention to use (purchase) specific mobile phones over others. Most purchases reflect social objectives and values and very few products are bought to satisfy basic needs through utilitarian benefits (Chernev, 2004). Brand is a strategic asset and a powerful source of differentiation which plays a critical role in marketing strategy (Lim & O'Cass, 2001).

The perception of high quality and expected satisfaction of branded product influences the customer to purchase branded hand phone. Perceived quality and customer satisfaction lead to customer loyalty as brand is considered to add extra value in form of emotional benefits, which extend beyond product attributes and functional benefits (Martensen et al., 2004). Consumers generally associate branded products with high quality. Consumers desire to promote self-consistency and self-esteem when brands fit with their desired self-image (Fournier, 1998). Such perceptions conjure the image of brand personality (Plummer, 2000) that is defined as the set of human characteristics associated with a brand. Brand personality can be described and communicated in terms of both demographic and psychographic characteristics (Aaker, 1997), providing features for the brand position in consumer's mind. A well-established brand personality heightens emotional ties with the brand, increases preference and patronage and develops trust and loyalty. Moreover, the product experience results in active construction of meanings associated with the behaviors, thoughts and feelings that occur during consumption (Padgett & Allen, 1997), which consequently impact on consumer purchase criteria of a product. This results in many university students purchase hand phones based on brands. According to Keller (1998), a customer focuses on the functional, emotional and self-expressive benefits of brands.

Attributes refer to the features that an object may or may not have, which include both intrinsic and extrinsic (Mowen & Minor, 1998). Benefits are the positive outcomes that emerge from the attributes. People seek products that have attributes that will solve their problems and fulfill their needs (Mowen & Minor, 1998). Understanding why a consumer choose a product based upon its attributes helps marketers to understand consumers preferences for certain brands (Gwin & Gwin, 2003). People chose brand the latter offer particular attributes within a budget range. Both tangible and intangible attributes of a product are equally important in choosing a product or brand (Myers, 2003). Research shows that there is no evidence that certain attributes are more related to customer loyalty than others (Romaniuk & Sharp, 2003). It was found that the more (non-negative) attributes are associated with a brand, the more loyal the customer tends to be (Romaniuk & Sharp, 2003). Romaniuk and Sharp (2003) suggested that marketers should focus more on how many attributes the brand should be associated with and not what attributes since product attribute is an important factor for customer to buy a specific

product or a brand. One should be cautioned that unfounded belief in product attribute can mislead consumer into expecting something that is not there (Mason & Bequette, 1998). Hence, if products fall short of customer expectations, they cause dissatisfaction. Some attributes may still be important in influencing consumer choice.

Approximately 95 per cent of all nations have mobile phone networks, and the majority of these countries have more mobile phone than landline subscribers, and probably today more mobile phones than TVs (Botelho & Pinto, 2004). Unlike other technology, mobile phone is now perceived as a social necessity, especially among teenagers (Skog, 2002). The mobile phone has become a true "extension of man" (Castells et al., 2004). While being a simple status symbol hand phone brand has been positioned in relation to the benefits it provides. The status-symbol system is substitute with experience. Indeed, the mobile phone has become an everyday, highly regarded, multipurpose interpersonal communication device (Levinson, 2004; Ling, 2002). However, even though the mobile market is greatly subject to the commoditization phenomenon, brand is one of the most strategic elements in distinguishing the products for the consumer. Consumer trust on technology can be reinforced through a strong brand, proves to be a primary factor affecting consumers' intentions of using a hand phone (Doney, Cannon, & Mullen, 1998). When highlighting the role of trust of technology, mobile technology trust lets customers shape their attitudes and behaviours on the utilitarian basis.

Recently, the explosive growth of usage of hand phone has attracted students. Thus, the history of consumers' usage of mobile phones suggests the attraction of consumers to innovation. Furthermore, previous studies (Ha & Stoel, 2004) show that innovative consumers are in general better educated and younger than the rest of the population, have higher incomes and occupational status, and are more often female than male. Consumption attitudes link personal values to actual consumption behaviors. The utilitarian components of attitude hold much potential for advancing the understanding of consumer attitudes. The benefits that come from the hand phone usage can be functional, such as comfort, functions availability, durability (Kay, 2006). This is particularly evident in the mobile phone market, in which the very differentiating factors are no longer the core product innovations that can be easily commoditized, but the additional attributes that bring added value. A wide range of value-added services, such as call-divert and mail box facilities, are now becoming standard. However, the intense competition has led to a sharp fall in prices, which has enhanced the commonality of mobile phone usage and led to the mobile phone becoming an increasingly common part of everyday life in most developed countries. Branding offers the marketers the escape mechanisms from the commodity spiral. It gives a higher value alluring the product with new dimensions. In fact, when the product as driver of customer values begins to get commoditised, brand helps increase value by adding dimension and promotes discrimination (Verma, 2007).

Normally, students obtain information about hand phone through friends and families, advertisement and from their own experience. In the long-run promotion and advertising help brands by making consumer less price sensitive and more brand loyal (Mela, Gupta, & Lehman, 1997). According to Evans, Moutinho, and Raaj (1996), publicity of an advertisement is crucial in changing consumer knowledge, attitude and behavior towards brands. However, famous brands are more successful due to the influence of the brand itself regardless of the content of the advertisement. Therefore, advertisement for less popular brands may be less successful even though the content may be good. Though advertisement is important for brand preference, liking towards the brand itself can influence liking for the brand. However according to the study by Gaskill (2004), consumers like or dislike towards advertisement does not necessarily lead to brand acceptance or rejection. So, even though consumers may like the ad that they see, it does not necessarily mean that they will go out and buy the branded product advertised. Usually the consumers attitude towards the ad is the same as their attitude towards the brand. However, advertisers must remember that advertising messages are interpreted differently between different genders.

3. Methodology and Data

The study used quantitative approach to generate highly relevant complementary data for analysis. This research selected students from main campus of two public universities in Malaysia. The field work was completed within two months. The university students have been chosen since the authors agreed that they represent their peers in purchasing mobile phone. A questionnaire was developed to investigate the factors that influence consumer choice. The questionnaire was divided into four sections: the first section deals with students personal use products, factors in buying hand phone, and the decision criteria of buying. Second section uses scale questions to learn about the importance of the factors to purchase hand phones. The third section deals with understanding of brand by students, choice between brand and other factors to purchase hand phones as well as reasons to purchase other than branded hand phones. The last section seeks respondent demographics. Apart from general information such as

gender, age and education, respondents were asked to specify the number of the mobile phones, favorite connection and name of the brand they use.

4. Results and Discussions

Table 1 reports the demographic profile of the respondents. Majority of the respondents were female (58.9%), Malaysian (53.9%), pursuing bachelor of business administration (57.1%), having two hand phones (46.4%) and using Nokia branded hand phones (37.8%).

<Table 1> Demographic profile (N=336)

Demographic characteristic	Percentage	
Gender	Female	58.9
	Male	41.1
Nationality	Malaysia	53.9
	Others	47.1
Area of study	BAcc	19.9
	BBA	57.1
	BEcon	11.6
	BHS	2.1
	BIRK	3.0
	LLB	2.7
	Other	3.6
Number of hand phones	One	45.5
	Two	46.4
	Three	8.0
Hand phone brands	Blackberry	1.8
	iPhone	9.2
	Nokia	37.8
	Samsung	33.0
	Sony Ericsson	18.2

Source: Author's estimation

<Table 2> Paired sample Mean test of all the variables

Variables	Mean difference	t	Correlation
Availability - Brand	-0.83	-10.97*	-0.40
Availability - Durability	-0.50	-8.51*	0.28
Availability - Model (Features)	-0.89	-14.86*	0.11
Availability - Post purchase service	0.78	12.31*	0.51
Availability - Price	-1.08	-14.70*	-0.28
Availability - Product quality	-0.83	-13.61*	0.21
Availability - Promotion	0.40	5.62*	0.31
Brand - Durability	0.33	6.10*	0.16
Brand - Model (Features)	-0.07	-1.22	-0.02
Brand - Post purchase service	1.61	17.68*	-0.32
Brand - Price	-0.26	-6.20*	0.44
Brand - Product quality	0.00	0.00	-0.17
Brand - Promotion	1.22	15.12*	-0.14
Durability - Model (Features)	-0.40	-6.72*	-0.02
Durability - Post purchase service	1.28	18.21*	0.34
Durability - Price	-0.59	-10.12*	0.08
Durability - Product quality	-0.33	-6.48*	0.35
Durability - Promotion	0.89	13.42*	0.33
Model (Features) - Post purchase service	1.67	22.87*	0.21
Model (Features) - Price	-0.19	-3.60*	0.06
Model (Features) - Product quality	0.07	1.12	-0.01
Model (Features) - Promotion	1.29	17.24*	0.03
Post purchase service - Price	-1.86	-20.07*	-0.33
Post purchase service - Product quality	-1.61	-21.90*	0.27
Post purchase service - Promotion	-0.38	-5.50*	0.49
Price - Product quality	0.26	4.21*	-0.03
Price - Promotion	1.48	16.96*	-0.30
Product quality - Promotion	1.22	18.73*	0.36

Source: Author's estimation

The results in Table 2 provide in detail synopsis of a selected Malaysian urban university's students' behavior in choosing hand phone. The hand phone has constantly changed its function from the original. The basic changes are in design, size, color of covers, ring tones, logos, screensavers, and by the actual use such as timing and placing the phone calls and messages.

Paired sample t-test analysis was carried out to investigate whether there is any difference in mean between each of the factors that is considered by students in their purchase of hand phone in Malaysia. The highest mean was reported for price (4.6) and the lowest was for post purchase service (2.8). This suggests that the consumers in this sample focus the most on the price of the hand phone and the least on the post purchase service. The results in Table 2 show that there is significant difference between all factors except between product quality model (feature) and brand. The results also show the mean difference between each pair. The mean difference ranges between -1.86 (for post purchase service and price) and 1.67 (post purchase service and model, features). In addition, bivariate correlation is reported in Table 2. The correlation is the lowest between availability and brand (-0.40) and highest between availability and post purchase service (0.51). This suggests that the higher the availability of the product the more important is the brand of the phone. Moreover, the model (feature) has close to zero correlation with product quality, price, brand, and durability. That is, the features alone do not reflect quality, price, brand or durability. Similarly, price has almost zero relationship with product quality of the mobile phones which means that for students, price is not perceived to reflect quality.

Table 3 compares the mean of male and female of each factor. The results show that there is a significant difference between male and female in all factors except Brand where they are indifferent. Looking at the mean of each group it is clear that females have higher emphasis on all the factors than males. The highest mean for male and female students goes to price (4.5 and 4.7 respectively) and the lowest is for post purchase service (2.1 and 3.2 respectively). Looking at the means of each factor for both male and female it is found that the preferences differ. For example, although both male and female rank price as the most important factor, brand is the second most important factor for male students but it is the fourth for female students. In addition, both male and female students agree on the four least important factors which are post purchase services, promotion, availability and durability.

<Table 3> Gender difference and hand phone purchase priorities.

Factors	Gender	Mean	t	Sig. (2-tailed)
Availability	Male	3.3623	-2.785***	.006
	Female	3.6515		
Brand	Male	4.4058	1.033	.302
	Female	4.3283		
Durability	Male	3.7971	-4.173***	.000
	Female	4.1919		
Model (Features)	Male	4.2609	-3.790***	.000
	Female	4.5404		
Post purchase service	Male	2.1377	-7.823***	.000
	Female	3.1818		
Price	Male	4.4638	-2.928***	.004
	Female	4.7222		
Product quality	Male	4.1884	-3.197***	.002
	Female	4.4798		
Promotion	Male	2.6159	-6.761***	.000
	Female	3.5000		

Source: Author's estimation

The result supports the high price elasticity of hand phone demands. In previous research the result might indicate that brand is the most important factor that consumers look at when purchasing a hand phone (Kay, 2006; Petruzzellis, 2010). This is because the price elasticity of demand is lower for individuals with income higher than students. Therefore, the current result is economically sound since students do not really earn income and if they do it will be lower than working individuals.

5. Conclusions

This study is in an attempt to understand student's preference regarding hand phones, highlighted some considerations that are equally important as brand like price. In fact, the findings have indicated the variables that influence students in the choice of hand phone. As there are many factors specified in questionnaire like price, quality, design etc. are also some important determinants for university students to purchase hand phones. However, among the factors students emphasize their preference on brand as it is supported by many authors that brand has a standard which satisfies customer by providing good quality products. In particular, brand plays a vital role for students to purchase hand phone. On the other hand, price is also very important factor for students to select a hand phone. There is very little difference regarding preference between brand and price in purchasing a hand phone.

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Appendix

The Journal of Asian Finance, Economics and Business (JAFEB)

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The Journal of Asian Finance, Economics and Business (JAFEB) publishes original research analysis and inquiry into issues of Asian Finance, Economics and Business Management. The JAFEB is an international peer-reviewed journal, which is devoted to contemporary issues of finance, economics and business in Asia, including Central Asia, East Asia, South Asia, Southeast Asia, and Middle East. The journal is published four issues per year quarterly in full English.

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The mission of JAFEB is to bring together the latest theoretical and empirical finance, economics and business management research in Asian markets. The journal audience includes: business school academics and researchers, economists, social scientists, international business persons, and policy makers, as well as managers from both for profit and not for profit corporations.

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