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Environmental Management Practices in Small Batik Industry in Kelantan, Malaysia

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Abstract:
Small businesses form a backbone of economy in developed countries as well as in developing countries. However, at the same time, small businesses significantly contributed to environmental degradations because they are preoccupied with matters pertaining to business as well their limitation in resources to look after the environment. In Malaysia, batik industry is one of handicraft products that contributed significant to the country economy, but the industry has poor environmental record. Yet until recently, not many researchers in Malaysia conducted in research pertaining to environmental management practices of SMEs entrepreneurs by using batik as a case. This paper examines environmental practices adopted by entrepreneurs in their business activities. This study utilized in-depth interviews with three entrepreneurs in the industry in Kelantan. The results of the study found that the level of implementation of environmental-friendly practices among batik entrepreneurs were low.
Keywords: Environmental management practices, SMEs, batik industry

1 Introduction

Since the late 1980s, the business impact on the environment has become an issue of increasing concern, particularly in western economies (Gerrans and Hutchinson, 2000; Robbins, 2001). Usually big businesses are getting more attention when it comes to their impacts on the environment relatively due sheer size of their business. In the context of small business, surely it has very limited operations, but it has the potential impact to the environment. Stakeholders and many small business owners believed that they have little impact on the environment (Lee, 2000; Rowe and Hollingsworth, 1996). Similar to its medium and big business counterparts, small business' activities have also contributed to environmental problems. Although an individual contribution towards environmental problem compare to big businesses, taking together, they have a very large impact to such problems (Welford, 1994; Tilley, 1999a). In this regard, special attention should also be given to small businesses in order to address environmental degradation in the country. But, one must bear in mind that small businesses is not a little version of big business, in regard of their limitations in terms of resources –finance, human and technology. They need different approaches in addressing the problems.

Sustainable development in business should have its unique position which balancing both sustainable production and sustainable consumption ((Weerasiri & Zhengang, 2012). Its responsibility should be start with pollution prevention then expand into control and environmental design (Chavan, 2005). Sustainable business practices in a company are characterized by environmentally-friendly practices initiated by a company for the purposes of becoming a more sustainable organization in the future. Entrepreneurs or the owner managers may first recognize the importance of sustainable practices in their business activities to ensure environmentally-friendly business. In the case of batik industry, batik entrepreneurs quite difficult to practise environmental management in productionof Batik because of their equipments and tools in the production of Batik is traditionally inherited from generation to generation (Ahmad, Harris, & Seng, 2007). Low phase of technology advancement of this industry add to this predicament. In Malaysia Batik is classified as handicraft industry because it involves the use of means, methods, and tools that use traditional and raw materials for industry relief from customs duties. Batik premises are built along the river because owners intended to use water from rivers as water sources and then discharge Batik effluence into the river. Batik industries generate a huge contribution to Malaysia's economic development. However, Batik activities also produce large amounts of effluents with a high concentration of pollutants which required extensive treatment before discharging into the environment.

Amongst various cottage industries, Batik industry is chosen as a case because a number of reasons. First, the said industry is responsible for water pollution and according to the latest report by department of the state of Kelantan compliant rate of the industry relatively low compared with other industries-65% (DOE Kelantan Report, 2011). This industry produces wastewater or discharge which contributes to water pollution since it utilizes heavy chemicals. Wastewater from Batik industry contains grease, wax, heavy metal suspended solids, and dyes (in painting and coloring processes) (McClatchy, 2011). Second, Batik industry is a significant

industry in Malaysia. It is a cottage industry which is run by Malay entrepreneurs, largely in the two Malay belts state of Kelantan and Terengganu. This industry not only provides income for entrepreneurs but at the same time employs thousands workforces in both downstream and upstream of the industry. The future of Malay craft relies on the survival of the very industry. So, it comes as no surprise to see why this industry has given more priority by government.

Within the Batik industry, the areas of concern pertaining to the environment include premise housekeeping such as detached wet and dry areas, space for Batik styling, fabric dyeing space, color stabilization space, remove candle (boil) and melting wax space and rinsing and immersion space. Then, managerial raw materials like providing proper storage of colors and waxes. Next, water, fuel and electricity usage management and comfortable workspace for employees in Batik premise. A proper waste management can include the establishment of drainage system and compliance with occupational health and safety.

This qualitative research study was designed to explore the current level of implementation of environmentally sustainable practices in the Batik industry in Kelantan area. The hope is to generate a more in-depth understanding of what each batik entrepreneur is doing to address this issue, and also create baseline information on the environmental practices as a whole among Batik entrepreneurs.

2 Batik Industry Issues

According to Department of Environment in 2011, Batik manufacturing industries in Kelantan achieved the lowest percentage of environmental compliance (62.50%), and other manufacturing industries like metal fabrication, leather, electric and electronic, food and drink, rubber based, Batik handicraft and textile recorded 100% compliance. Low-compliance by Batik manufacturing was identified due to contributed to the highest carbon emissions per year among Small and Medium Enterprises (SMEs) in the country. In the same year, there are 47 premises not specified under the Regulations Environmental Quality (Industrial Effluents) Regulations 2009. 40 of these premises are Batik industry and 7 other manufacturing premises. Compliance with Regulations Environmental Quality (Industrial Effluents) Regulations 2009 by non-designated premises is 95.31%. Hence, the compliance with environmental law by these manufacturing industries could be improved significantly.

As an alternative, firms are obligated to adopt new ways in managing the production process by adding the environmental factor in the management that is an environmental management and measuring environmental performance of their industry. This method had already been adopted mostly in European countries. In the past, most businesses and industries measured only aspects directly related to legal requirements or financial costs. Towards sustainable development, firms and industries have begun to manage environmental aspects of their business more systematically. Measuring environmental performance of the industry is an option to overcome the pollution problem in Malaysia. It shows that the cooperation from the industrial sector is also vital to implement the plans and strategies to reduce the pollution. Realizing the negative actions taken by Batik entrepreneurs for implementing environmental management, Faizah et. Al, 2014 have developed a green model focusing on the Batik industry by highlighting three options for green strategy such as premise layout, consumption of raw materials and waste management option. The implementation of green industry practices is very profitable for every part of earth system components.

Overall, most research pertaining to small business and environmental performance was conducted in developed countries (Welford, 1993, Shaper, 2002, Tilley, 1999a, 1999b, Debby, 2008; Groundwork, 1995; Friedman &Miles, 2001; and Hillary, 2004). A number of related studies were also conducted in developing countries (Sonnenfeld, 2000; Frijns, Phuong and Arthur 2000; Rao et al., 2009). However, only a few researchers have delved into this particular research area in Malaysia (Yaacob, Mahmood & Nik Ismail, 2007, Yaacob, 2010).

3 Environment In The Context Of Sustainability

An increasing human populations may cause declination of natural ecosystems and changes in the balance of natural cycles which lead to negative impact on both humans and other living systems. So that, an initiative called Local Agenda 21 (LA21) was proposed at the United Nations Conference on Environment and Development (UNDEC) in 1992 (Tonami and Mori, 2007) for creating the integration balance soon. Sustainable development requires the integration and balance of three parts such as environmental, social and economic benefits in the decisions of any development (Atkinson, 2004). The starting point of sustainable development is the idea that the long-term preservation of our environment, our habitat as well as its biodiversity and natural resources and the environment will only be possible if combined simultaneously with economic, social and political development particularly geared to the benefit of the poorest members of society. It finds expression in the integrated concept of environment and development.

3.1 Environmental Management Practices

The improvements in environmental management practices can affect a multitude of benefits to SMEs including

reduction in waste, cost savings, increased customer satisfaction, higher employee commitment, improved products, better public relations and competitive advantage (Simpson et al., 2004).

There nine typical benefits of implementing an EMS pointed out by Shen & Tam in 2002 such as ; fewer fines associated with violations, improved corporate image due to environmental performance; (3) contribution to the improvement of public environmental standards; (4) contribution to environmental protection; (5) better overall business competitiveness; (6) fewer environmental complaints; (7) improved work environment that boosts morale; (8) reduction in environment-related sickness and injuries; and (9) less environmental risk in air, land and water pollution.

In 2013, Altmets have combined the adoption of two members of Scandinavian and Ensonia environmental practices. The result found that although there have high environmental awareness among Scandanian members but they are not persistent in following that on the actual practice. He prove that Scandinavian members society have more environmentally conciuos than Estonia. On the other hand, small businesses have therefore been often found to have limited ability and willingness to engage with the best environmental practices for the issues (Hamann et al., 2009; Spence, 2007; Biondi et al., 2000; Gerrans and Hutchinson, 2000; Hillary, 2000) and they are often highly dependent on a small number of customers and are thought to suffer from greater constraints in financial and managerial resource (Williams & Schaefer, 2013).

4 Research Methods

This research drawn samples from population of Batik entrepreneurs provided by Perbadanan Kemajuan Kraftangan Malaysia Kelantan State (PKKM, 2014). Informants of study consisted of Batik entrepreneurs who have premises in Kota Bharu and Bachok. All the interviews were conducted in September 2014.

An interview protocol was used to facilitate interviews. In the early part of the interview protocol consist of questions regarding to entrepreneurs background and premise profiles. In the second part consists of environmental practices adopted by entrepreneurs in producing Batik. Questions related to five options such as premise housekeeping, the use of raw materials, water and electricity usage, good and comfortable work space and waste material management. The interview protocol were construct based on Green Batik practices provided by the Department of Environment guidelines which aims to sustainable development in the future prospects.

The interviews were conducted between 30 minutes to 1 hour at the Batik premises. All the interviews were audio-taped with the consent of Batik entrepreneurs. The data obtained through interviews with the entrepreneurs were then transferred to word processor verbatim.

The analysis of data was done manually. Coding the questions was based on interview protocol construct. The respondents were namely Informant X, Informant Y and Informant Z.

The results of the analysis of interview data presented in the form of a narrative form.

5 Research Findings

5.1 Demography

Out of three informants, X and Y are male, and Z is female. As far as the highest educational level is concerned, informants education varies, informant A earned diploma, whereas informants Y and Z respectively SPM and SRP. The informant A was the youngest, age 27 years old, both informants Y and Z were in the middle ages – mid forties. Informant A quite new in Batik industry, only 6 years compared with informant Y and Z who involved in the industry for almost 2 decades. Both informants X and Y yet to have any children, informants Z had 5 children. In terms of number of employees, both informants X and Y had 5 employees and informant Z had 10 employees. Judging from the number of employees, it can be said all of them were in the category of small business. Start-up capital amongst informants varies, the lowest one was informant Z who parlayed on RM200 almost 20 years ago. This is followed by informant Y who spent RM2,500 and informant A who spent 4 times higher than informant B. When one of the researchers asked all the informants of the last reconstruction of their premises, all the informants admitted that they did not. Table 1 shows a background of informants and their batik premises.

Table 1.0 Background of informants and their businesses

Informant	X	Y	Z
Respondent Profile			
Gender	Female	Female	Male
Highest education	Diploma	SPM	PMR
Age	27 years old	43 years old	47 years old
Years in current job	6 years	15 years	17 years
Number of children	-	-	5 persons
Business Profile			
Number of employees	5 persons	5 persons	10 persons
Capital to run the business	RM10000	RM2500	RM200
Years in operation	1-5 years	1-5 years	More than 10 years
Last substantial reconstruction of premise	2009	2011	2004

5.2 Environmental Management Practices

Premise Housekeeping

In response to environmental initiatives taken by their premisesall the key informants said that they have adopted separate wet and dry areas. The former for chemical storage, , rinsing and immersion space, column for drying fabric.. The laterfor Batik design color stability, drying space and office.

Then, two of the informants mentioned that their premise did not have space for Batik styling (*menerap*) but only informant Y had that . Informant Z explained that he used a space for styling Batik and fabric dyeing. The same goes to Informant Y, her premise did not separate space for fabric dyeing because of the small space of her premise whereas Informant X provided a space for fabric dyeing which the basin of melting wax is located close to the styling space (*menerap*), the good ventilation space, and the spaces were be labelled. Informant X and Y confirmed that their premise did not have a space for color stabilization. The good space for fabric dyeing means the space provide close to coloring mixes space, the premise have special shelves to organize dyes.

In contrast, Informant Z uses a special space for color stability and a space to wash the fabric after stabilised the color. The space for color stability shall provide a place for drying fabric. After that, two of the informants have two separate spaces toremove waxes (boiling) waxes. Only Informant Y used the same space for remove waxes (boil) and melting wax. In response to the space for rinsing and immersion fabric, only one of informant, which Informant Y did not spare a space for rinsing and immersion, but Informant X and Informant Z provides two different spaces for rinsing and immersion fabric while produce Batik.

1.2 Premise housekeeping

OPTIONS	INFORMANTS		
	X	Y	Z
Detach wet and dry areas	/	/	/
Space for Batik styling (*Menerap*)	/	X	X
Fabric dyeing space	/	X	X
Color stabilization space	X	X	/
Remove waxes (boil) and melting wax space	/	X	/
Rinsing and immersion space	/	X	/

*(/) = Yes
*(X) = No

Use of raw materials

Informant X, Y and Z were asked to explain the environmental initiatives adopted in managing raw materials, two of the informants have a good environmental implementation in providing colors. The good two informants said that they kept the dye in a closed container and they used scales to measure the dyes. Agreed with that statement, informant Z said that he kept the dye in the suitable storage shelves but not labeled. Only informant Y not have good environmental adoption, her practice have proven by the following statement :

..“There are no scales used for measuring the dyes. I have produced over the years since my first time using the dye powder. The right measure was found after color the fabric repeatedly through my own observation. It takes long time to see the stabilize color....”(Informant Y)

In providing fabric area, all of the informants’ response for good adoption in implementing green business. They cut the fabrics as needed, used the excess fabric to light a fire and take the initiatives to make products such as blouses, pajamas, shawl and pillow.

When they were asked about the use of waxes, all of them confirmed that they recycled the used waxes. Informant Z said that he recycled the waxes by using the wax to light the fire apart from the use of wood.

1.3 Use of raw materials

OPTIONS	INFORMANTS		
	X	Y	Z
a) Providing colors	/	X	/
b) Providing fabric	/	/	/
c) Providing waxes	/	/	/

*(/) = Yes
*(X) = No

Water and Electricity Usage

When the entrepreneurs were asked what the initiative have taken to reduce the water usage, only Informant Z has used the water effectively, which soaking the fabric in a bundle, use rubber pipe to drain the water, use the floats to control water levels and the pipe have valve cover, however, the water tank do not comply with the size set by government stakeholders. Informant Z agreed that the float is very important for blocking the water flow from flowing out. Informant Y decided to soak the fabric one by one and it caused waste water.

In the response of electricity usage options, two of the informants (Informant X and Informant Y) have least practices for reducing the electricity usage. The environment in Batik premises was constructed in the poor lighting. Most of the premises were built in the closed area and it caused the workers to use the lamp while produce Batik. Only Informant Z installed the transparent roof to have good lighting practice.

1.4 Water and Electricity Usage

OPTIONS	INFORMANTS		
	X	Y	Z
Reduce of : Water Usage	X	X	/
Reduce of : Electricity Usage	X	X	/

*(/) = Yes
*(X) = No

Comfortable work place

When all the informants were asked in response about the comfortable work space while working on the Batik premise, all the informants do not have good ventilation in their premise. According to Informant X and Y, they need more space to adopt the greening aspects. Informant X said :

.."I built premises on a small scale and still not able to take the initiative to green Batik. It is good if there was more space. Now, there is no place to store the chemicals and others"..

1.5 Good and comfortable work space

OPTIONS	INFORMANTS		
	X	Y	Z
Good and comfortable work space	X	X	X

*(/) = Yes
*(X) = No

1.6Waste Material Management

OPTIONS	INFORMANTS		
	X	Y	Z
Drainage system	X	X	/
Recycle	X	X	X
Occupational Health and Safety	X	X	X

*(/) = Yes
*(X) = No

When all the informants were asked about their waste material management, Informant X and Y confirmed that they do not have a drainage system to be discharged into an Effluent Treatment System. Only Informant Z said that his premise has small drains to discharge the wastewater into the river and drainage system is in good condition (no rubbish in the drain). Both Informant X and Informant Y did not built a gradient and cement flooring in their premise.

In the response of recycling option, all key informants mentioned a type of practice that not adopted in environmental practices. This involved a variety of recycling efforts, including waxes, plastic bag, water recycle and excess fabric.

In occupational health and safety options, all the informants (Informant X, Informant Y, Informant Z) said that their premise did not have motivation to encourage the employee for using appropriate clothing such as mask, apron, glove and shoes while control the chemical, dyes, waxes and so on. In addition, all the informants' premise did not provide a fire extinguisher in the premise and kept in the right place and trained the employees

to use the fire extinguisher. Then, all the informants did not provide the nail cover on the *pemidang besi*.

6 Discussion and Conclusions

This research has generated some interesting findings and contributed to inherent knowledge about how Batik entrepreneurs adopt environmentally friendly practices in their businesses.

First, among three Batik entrepreneurs, Informant X and Informant Z have good practices for housekeeping. They established separatespaces for various activities such as styling (Menerap) space, fabric dyeing, color stability, space tor remove waxes (boil) and melting wax space and rinsing and immersingspace.

Second, practice was proper section to store usage of raw materials such as fabric and wax. In this option, all the informants adopted highest practice for those raw materials except proper storingcolors. The entrepreneurs did not keep the dyes in a closed containers and did not use scales to measure and weight dyes accordingly.

Third practice related to usage of utilities - water and electricity usage. The informants have least practice of minimizing water and electricity usage. As far as research is concerned excessive usage of water was common practice. For example like soaking fabric, was done piece by piece. Rubber pipe did not use to control excessive flow of water. Water float switch for water level controller and faucet did not have valve cover. As far as electricity is concerned, Batik premises were constructed near entrepreneurs'houses or extension of their houses. As a result of not properly designed, electric light needs to be apply all the time during production of Batik, this will increase consumption of electricity. Little efforts had been done to reduce usage of electricity.

Fourth, most of the informants did not establish good and comfortable work space. Perhaps informants did not perceived size of workplace l space of premise and good ventilation in their premises as crucial, or lack of capital prevent them to provide better working environment.

Last, all the informants seem not to m manage their waste materials either solid of liquid. They did not have a proper drainage system to discharge Batik effluent. If they have drainage system it was not in good condition (rubbish chocked drain), floors of the premises were not properly covered with concrete. Furthermore, a variety of recycling efforts including plastic bag, water recycle and excess fabric recycling were least observed. None of entrepreneurs complied with occupational safety and health requirement. They did not prepare safety equipments and let alone motivate their employees to use appropriate clothing such as mask, apron, glove and safety shoes when dealing with chemicals, dyes, waxes and so on.. None of of the informants had kept and trained their workers to use the fire extinguishers.

As a conclusion, Batik entrepreneurs in Kelantan showed lowenvironmentally friendly practices . Understanding this situation is crucial to develop a proper mechanism to increase awareness of entrepreneurs on the importance environmental management in Batik industry. Exposing entrepreneurs on negative sides of the industry to the surrounding is also helpful, realising this effect can change their mindsets and in turn motivate them to address the problem. Listening to their predicaments is also helpful to address the problem. As far as result of this finding is concerned, low environmentally friendly Batik practices required long and hard way to push them to the next level. Sustainability of this industry requires proactive efforts from entrepreneurs

7 References

Ahmad, A. L., Harris, W. A. N. A., & Seng, O. O. I. B. (2007). Removal Of Dye From Wastewater Of Textile Industry Using Membrane Technology Homemade textile industry is very well known in Malaysia especially in the East Coast of Peninsular Malaysia and Sarawak . This industry is traditionally inherited from generatio, *36*, 31–44.Atkinson, P. E. (1990). Creating cultural change: The key to successful TQM. London, UK: IFS Publications.

Altmets, A. (2013). *Pro-environmental practices in a workplace: a case study of two foreign ict companies' estonian branches*. Thesis dissertation.

Biondi V, Frey M, Iraldo F. (2000), Environmental management systems and SMEs. Greener Management International. Spring: 55–79.

Bubna-Litic, K. and L. de Leeuw: (1999). Adding the Green Advantage: A Survey of Australian SME's. Paper Presented at Ecobiz 99, The Business and the Environment Conference, Sydney Businesses: An Empirical Study', S.A.M. Advanced Management Journal 68(2), 23–32.

Chavan, M. (2005). An appraisal of environment management systems: a competitive advantage for small businesses. *Management of Environmental Quality: An International Journal,* 16(5), 444-463.

Debby F.M (2008). Environmental Behaviour in Chicago Automotive Repair Micro-enterprises (MEPs). Business Strategy and the Environment, 17, 194-207.

Deegan, P.E. (2010). A description of a web application to support shared decision making. *Psychiatric Rehabilitation Journal,* 34(1):23-8

Department of Environment Kelantan Annual Report 2011.

Faizah, N. & Rafi (2014). Green Model in Batik Industry – A Strategy for Sustainability in Craft Industry in

Malaysia. Corporate Social Responsibility : Business & Societal Perspective. ISBN 978-163041604-1.
Friedman A.L & Miles S. (2001). SMEs and the Environment: Two case studies, Eco-Management & Auditing, 8, 200-209.
Frijns, J., P. T. Phuong, et al. (2000). Ecological Modernisation Theory and Industrialising Economies: The Case of Viet Nam. Environmental Politics, 9(1): 257-294.
Gerrans PA, Hutchinson WE. (2000). Sustainable development and small and medium-sized enterprises: a long way to go. In Small and Medium-Sized Enterprises and the Environment: Business Imperatives. Hillary R (ed.). Greenleaf Publishing: Sheffield. 75–81
Hamann EM, Habisch A, Pechlaner H. (2009). Values that create value: socially responsible business practice in SMEs: empirical evidence from German companies. Business Ethics: A European Review. 18(1): 37-51
Hillary, R. (1999) Evaluation of Study Reports on The Barriers, Opportunities and Drivers for Small and Medium Sized Enterprises in the Adoption of Environmental Management Systems. Report submitted to Department of Trade and Industry Environment Directorate on 5th October 1999.
Hillary R (ed.). (2000). Small and Medium-Sized Enterprises and the Environment: Business Imperatives. Greenleaf: Sheffield.
Hillary R. (2004). Environmental management systems and the smaller enterprise, Journal of Cleaner Production, 12, 561-569.
Howes, S. (1997). Integrated Pollution Control, Clean and Competitive? In motivating Environmental Performance in Industry, Earth scan, London. Http://.ijes.or.jp/APEIS/RSIPO/spo/pdf/ overall/3.5.2 sme.pdf
Lee, K.: (2000) Strategic Corporate Change Towards Sustainable Enterprise in the Environment Era. *Proceedings of the Business Strategy and Environment Conference* (European Research Press, Shipley), pp. 271–278.
McClatchy (2011). Switch to 'green' batik. Tribune Business News, 6 October 2011.
Md Noor, N.L. & Nordin, A. (2012). Requirements Elicitation for the Technology Conception of a Community Information System for the Indigenous Microenterprise: A Contextual Multi-Analysis Approach on Business and Community Requirements of Batik Making. The Electronic Journal Information Systems Evaluation, 15; 102-115.
New Straits Times, 12 July 2013.
Robbins, P. T.: (2001). Greening the Corporation : Earthscan Publications, London, UK.
Rowe J., D. Hollingsworth (1996) Improving Environmental Performance of SMEs, Eco-Management and Auditing 3, 97–107
Schaper, M. (2002). Small firms and environmental management: Predictors of green purchasing in Western Australian pharmacies. International Small Business Journal 20(3): 235-249.
Shen, L. Y., & Tam, V. W. Y. (2002). Implementation of environmental management in the Hong Kong construction industry. *International Journal of Project Management*, *20*, 535–543. doi:10.1016/S0263-7863(01)00054-0
Simpson, M., N. Taylor and K. Barker (2004). Environmental Responsibility in SMEs: Does It Deliver Competitive Advantage?, Business Strategy and the Environment 13(3), 156–171.
Sonnenfeld, D. A. (2000). Contradictions of Ecological Modernisation: Pulp and Paper Manufacturing in South-East Asia. Environment Politics, 9(1): 235-256.
Spence LJ. (2007). CSR and small business in a European policy context: the five 'C's of CSR and small business research agenda 2007. Business and Society Review. 112(4): 533–552
Tomomi, T. (2009). Environmental Management Strategy for Small and Medium-Sized Enterprises: Why do SMBs Practice Environmental Management? Asian Business & Management, 9: 265-280.
Tilley, F. (1999b). Small Firm Environmental Strategy. Green Management International, 25, 67-80.
Tonami Aki & Mori Akihisa (2007). Sustainable Development in Thailand Lessons From Implementing Local Agenda 21 in Three Cities, The Journal of Environment Development,16, 269- 289.
Weerasiri, S., & Zhengang, Z. (2012). Attitudes and Awareness towards Environmental Management and its Impact on Environmental Management Practices (EMPs) of SMEs in Sri Lanka. *Journal of Social and Development Sciences*, *3*(1), 16–23.
Welford,R.&Gouldson, A. (1993). Environmental management and business strategy.London:Pitman.
Welford, R. (1994a). Cases in environmental management and business strategy. London: Pitman.
Williams, S., & Schaefer, A. (2013). Small and Medium-Sized Enterprises and Sustainability: Managers' Values and Engagement with Environmental and Climate Change Issues. *Business Strategy and the Environment*, *22*, 173–186. doi:10.1002/bse.1740
Yaacob, (2000). An Investigation of the Malaysian Palm Oil Industry's Environmental Strategies, Stakeholders' Pressure, Environmental Effectiveness and Competitive Advantage. PhD thesis.University of

Newcastle, NSW, Australia.

Yaacob, Mahmood, R & Nik Ismail, N.R. (2007) Perniagaan Kitar Semula -Kajian Awal Pengusaha PKS di Kelantan. Paper presented at the Persidangan Kebangsaan Industri Kecil & Sederhana, Kota Kinabalu Sabah, Malaysia, December 4-5.

Yaacob (2010). Small enterprises environmental management practices in Terengganu, Malaysia. Gyan Management, Vol.4(1), pp. 2-14.