



Modelling green batik industry – A strategy for sustainability in the craft industry in Malaysia

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Abstract

Over a few decades, industrial development has brought prosperity and wealth together with triggering unintended ecological degradation. Therefore, a modern society has increasingly demanded industries to take responsibilities for the effects of those business activities that have negative impacts on the environment. Increasing numbers of businesses have shown interest towards adopting proactive approaches and practices, aiming to reduce these negative environmental impacts. In order to ensure sustainable development, businesses as the main players in development inherently need to consider the triple bottom lines – planet, profit and people. Yet until recently, not many researchers in Malaysia as well as other developing countries are interested in conducting their research in environmental strategies especially in the area of SMEs. The purpose of this article is to discuss a model of how the craft industry in general and batik industry in particular need to respond to ensure their practices are conducted in a sustainable manner. The industry is chosen because it is one of the main sources of water pollution and the industry rate of compliance is the lowest as reported by the Malaysian Department of the Environment. The study sheds light into the model of current environmental practices and the interfaces of environmental management of the industry and increasing needs its stakeholders.

Keywords: Environmental management strategy; SMEs; Green batik industry; Craft industry; Malaysia

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1. Introduction

As a result of the government policy that emphasizes more on industrial, commercial crop production as well as other commodities and service sectors, Malaysia economy has increased exponentially. Internationally, the manufacturing was the eighth largest contributor to total exports in January -June 2013 as much as RM 12.01 billion (Malaysian External Trade Development Corporation, 2013). But nevertheless, the rapid development in the country is also not spared from environmental degradation. Impacts of development and modernization as a result of rapid industrialization in Malaysia are becoming increasingly visible with the evidence of environmental deterioration that is observed in many places throughout the country (Abdullah and Sani, 1998; Hamirdin, 1997). Air and water pollution, heavy sedimentation, flash flood, and landslides are constant news in the media. According to the report from the Department of the Environment (DOE) based from 900 monitoring stations in 120 rivers across the country, the department classified only 32 as clean, 75 as slightly polluted and 13 rivers as highly polluted. The recent report showed the situation has yet improved. This is evident when violation of the Environmental Quality Act (1974) amongst businesses has been frequently reported in local media. Amongst businesses, manufacturing is one of the major contributors to river pollution in the country.

Releasing negative consequences of waste produced by the manufacturing firms in the natural environment, Malaysia government through the DOE has imposed stringent regulations on the players. A stern action has been taken on the culprits not only to ensure they do not repeat the same mistake. Consequently, the action has forced the manufacturing firms to be more environmentally responsible in their business. Not only they can avoid court action, but also far reaching impacts in terms of good name when their companies convicted if found guilty by the court. There are an increasing number of businesses, especially big players have integrated environmental agenda into their corporate strategies. An increasing number of businesses have established environmental management system (EMS) and complied with ISO14000 certification is a positive sign of corporate environmentalism.

But nevertheless, sustainable development is not going to be achieved unless other important players – small and medium enterprises (SMEs) are also environmentally responsible. Small business contribute significantly to the economy due to the increase of small business activities nowadays. 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 problem (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, technology. They need different approaches in addressing environmental problems.

Amongst various cottage industries, batik industry is chosen as a case. First, the said industry is responsible for water pollution, according to the latest report by DOE of the state of Kelantan compliant rate of the industry relatively low compared with other industries-65% (Malaysian Department of Environment, 2011). This industry produces wastewater which contributes to water pollution since it utilizes a lot of

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 largely run by small 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 employed 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 the government.

In this vein, an investigation of the environmental practices of Batik Industry is an imperative to study. Such an investigation will provide valuable information to develop a proper model of green Batik Industry which represents the response to pressure from organization of stakeholders. Knowledge of the green model for the industry is very important for both practitioners because it is a prerequisite to contribute to sustainable development because implementation of the model through daily practice can increase competitiveness of the industry as a growing number of consumers looking for environmentally friendly products. This model will not only be used in Malaysia, but at the same time can be applied and replicated in the same industry in Indonesia and other developing countries that share similar condition with Malaysia.

1.1. SMEs and environmental management

There are a number of reasons why research pertaining to SMEs is paramount important. The first argument is based on bold premise that small firms are significant in any particular countries economic and environmental terms. Small firms do not only constitute the largest of business constitutions, but at the same time employ significant numbers of employees. Second, the potential environmental impacts of the small firms sector could be underestimated by many people. Even though there is relatively little quantitative and qualitative data available that measure the environmental impact of individual small firms compare to big businesses, it is estimated that the cumulative environmental impact of the sector as a whole could be quite considerable. For example, it has been suggested that in UK small firms cumulatively could contribute as much as 70% of all industrial pollution (Groundwork Foundation, 1995). Third, despite an increasing number of research in environmental management, small firms are comparatively under a research field in academia in both developed and developing countries. The business-environment literature has in the main neglected small firms, instead focusing its attention on the activities of large firms (Smith et al., 2000). Fourth, argument to support the importance of small firm research is based on the premise that environmental solutions designed for large firms cannot necessarily be applied to small firms. It has been noted small firms often differ many ways from large firms in their financial capabilities, management style, organizational structure and the characteristics of the owner-managers (Dandridge, 1979). Small firms are by comparison often resource poor, presenting problems accessing finance and labor and finding the necessary time to manage environmental matters (Welsh and White, 1981). Small firms are not little big firms. They need their own unique answers to, and understanding of, the difficult environmental problems they face. The final argument is, in comparison to big businesses, management and ownership of small firms are usually synonymous. Hence, this provides a unique opportunity for their owners to put environmental or green

values into practice in the workplace and in turn to influence the behavior of employees, customer and other stakeholders. For the above reasons, small firms ought not to be overlooked in the search for knowledge and understanding of the relationship between business and the environment.

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

Up until now, studies showed that the owners of small firms' perception and their involvement in environmental management measures to address the natural environment have been one of mixed fortunes. Welford and Gouldson (1993) investigated environmental management of 102 SMEs in West Yorkshire, UK. In terms of environmental policies, he found only a handful of SMEs had environmental policies. When the management of the firms were asked whether they thought that environmental issues would become more important or not in the next five years (the study was conducted in 1992 and 1993), the management of the SMEs claimed it is becoming more important to their customers, high number of firms that environmental issues would become more important to their customers, high number of firms thinking their customer's demand would change increased substantially between 1992 and 1993.

As far as small business and environmental management concerned, there were some studies conducted in developing countries. For instance, Sonnenfeld (2000) studied a pulp and paper manufacturing in the South East Asia. He found the industry, especially small pulp factories have failed to ecological modernize compared with their big counterparts. They unable to make a significant usage of old and environmentally unfriendly machinery. A further study was conducted by Frijns et al. (2000) in Vietnam. One of the main issues focussed was a technology development amongst SMEs. Overall, they found the development in environmental technology in SMEs in the country was still in an infant stage. In a recent study by Yaacob (2010) of 21 recyclers in Kelantan and Terengganu found the respondents had low environmental knowledge. Their main motivation for running a business was financial reward. Except for one respondent, the rest of the respondents failed to relate their business with the environment.

1.1.1. A Green business models for Batik industry

There are a number of researchers have developed green business models since the early 1990s (Ghobadian et al. 1998; Tilley, 1999a). However, all of these models (except Tilley's model, 1999a) were overwhelmingly based on big businesses. As discussed in earlier sections imposing a model based on study of big businesses to small business is questionable. First, small businesses faced a variety of problems that may hinder them to adopt and adept big business green model. Financial constrains, inadequate human resources in terms of number, knowledge and skills, as well as, over concentration of daily activities hamper them to have medium and long term plan. Furthermore, small businesses are struggling to fulfill the end mets because many of them are merely surviving. Secondly, most of the green models were developed were based on developed

countries which are characterized by tougher environmental law, customer awareness and support of green business, availability of green governmental organizations have play interrelated and interlocking roles in environmental management.

While Fiona's green model was based on SMEs in the UK, her study did not focus on any specific industry. Furthermore, none of the above mentioned models were developed based on studies in developing countries. Then, none of the studies involved cottage industry. Therefore, developing a green business model for cottage industry in which taken into consideration of SMEs capabilities is the contribution of this study. This is where this research contributes to the body of knowledge of green business in Malaysia as well as other developing countries. Realizing the importance role of green SMEs emerging and booming markets in Asia the contributing of this study is justified.

2. Batik industry issues

According to Malaysian Department of Environment (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 seven other manufacturing premises. The compliance under Environmental Quality (Industrial Effluents) Regulations in 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. Towards sustainable development, firms and industries have begun to manage environmental aspects of their business for sustainability. 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.

By and large, small business and environmental performance research were conducted in developed countries (Welford and Gouldson, 1993; Schaper, 2002; Tilley, 1999a, 1999b; Debby, 2008; Groundwork Foundation, 1995; Friedman and Miles, 2001; Hillary, 2004). A number of related studies were also conducted in developing countries (Sonnenfeld, 2000; Frijns et al., 2000; Rao et al., 2009). However, only a few researchers have delved into this particular research area in Malaysia (Yaacob et al., 2007; Yaacob, 2010).

2.1. Batik and the environment

Batik industry in some parts of the east coast states of Malaysia like Kelantan and Terengganu's batik-making activities in cottage industry. In addition, batik has classified as handicraft industry because it involves the

use of means, methods and tools used are still traditional and raw materials for industry relief from customs duties. The bulk of this plant has built along the river intended to use the water from the river as a water source. Batik has now expanded beyond his world to go through the process of modernization concepts, techniques and philosophy of its own.

The implementation of green industry practices is very profitable for every part of earth system components. The benefits of implementing green batik industry showed in Table 1.

Table 1. Green industry practices

No	Aspects	Benefits
1	Environment	<ul style="list-style-type: none"> • No dyes spill and chemicals able to absorb directly into the ground or discharged into the public drain and river. • Environmentally friendly product.
2	Safety and Healthy	<ul style="list-style-type: none"> • Avoid the workers from physically injured. • Decrease workers' risk of disease such as cancer that caused by dyes and chemicals exposed.
3	Cost	<ul style="list-style-type: none"> • Reduction in raw material costs through savings • Cost reduction through water conservation • Cost reduction through energy conservation (electric, firewood and gas) • Reduction of costs for water treatment
4	Premise and Product	<ul style="list-style-type: none"> • Enhance the image and batik industry competitiveness • Produce better quality products and durable • Produce products that can achieve eco-labeling • Product market is becoming better known and widely • Premises orderly, clean, and comfortable

Source: Adapted from Malaysian Department of Environment (2013)

3. Manufacturing for the environment: A model for green batik industry

The aim of environmental management is to increase the ecological performance of manufacturing process when it deals with environmental issues. Greening involves redesigning production systems to be environmentally friendly, using cleaner technologies, using high-efficiency production techniques, minimizing waste at source as well as maximizing usage of fuel and energy efficiency (Frosch and Gallopoulos, 1989). In batik process, players need to adopt and adapt the suitable industry practices to go green. The carbon footprint reduction for the implementation of cleaner production options on the premises of batik is based on; (i) the main raw material; (ii) primary fuel; (iii) water consumption; (iv) waste generation and (v) electricity. The implementation of these options can reduce carbon footprint by 10000 kg

per year and a reduction in the average rate of 165g of carbon dioxide per meter batik process (Malaysian Department of Environment, 2013).

Green Industry Practice incorporated into the manufacturing process of batik through the options that have been identified. These options will be shown in Table 2 includes several of good strategies for implementing green batik are: (i) savings and reduction measures; and (ii) recycles. In general, the Green Industry Practice of options that can be implemented in the textile industry.

Table 2. Strategies for implementing green batik

No	Options	Before	After
1	The layout of the premises	Enclosed spacious premises	Good Ventilation
2	Consumption of raw materials	Excess wax and resin is discharged directly to the ground/discharged into the river without treatment	- Reusable wax produced for patterning batik - Sell off excess wax
		Dyes are not kept in the right place and without label	Prepare a sealed dye container and labeled
		Use plenty of water to rinse and soak the cloth	Soaking the fabric in bulk
		Not implementing recycling	Recycling of surplus raw materials
3	Waste management	With no drainage system	Provide proper drainage system to be channeled directly into the treatment system
		No effluent treatment system	Provide an appropriate water treatment system

Source: Malaysian Department of Environment (2013)

A model for Green Batik Industry produced from green options is proposed based on research conducted by DOE for the benefit of the Planet, Profits and People (3Ps). Green Batik Industry is shown in Figure 1. Overall, there are three interrelated processes involved. First, the model building starts from the premise layout options that involve the whole space on the premises. Batik is usually done in an enclosed space premise. Improvements to the greenest option should be the recommendations on space with good housekeeping and proper ventilation. At present some of the premises are operating without a concrete floor so waste material, especially liquid substances will infiltrate directly into soil and contaminate the underground. The new measure will keep work environment is more comfortable and safe.

Second, options need to be considered in the batik process nowadays is the use of raw materials in the manufacture of batik. The raw material used is the use of wax and resin to the *canting* process of batik. The excess of wax and resin is discharged directly to the ground/discharged into the river without treatment. It is better if the extra wax used will be reused for patterning batik. The benefits of the implementation are to avoid wastage of raw materials (wax), reduce waste and reduce operating costs. Besides, sell off excess wax

to be reused for other manufacturing interests. It is advantageous to employers for their side incomes. Another environmental issue in the batik industry is the use of dyes. Dyes are not kept in the right place and without proper labeling. The means of implementation in the proceedings of a green option to be applied is prepared a sealed dye container and then labeled them. It is important to be easily handled, organized, neat and orderly. Further, batik industry uses a lot of water to rinse and soak the cloth. Options proposed for the green industry are the entrepreneurs should soak the fabric in bulk to conserve water. Related to the issue on the use of raw materials as well, almost all material scan be reused for such actions can reduce waste, cut costs and reduce wastage of raw materials in the industry.

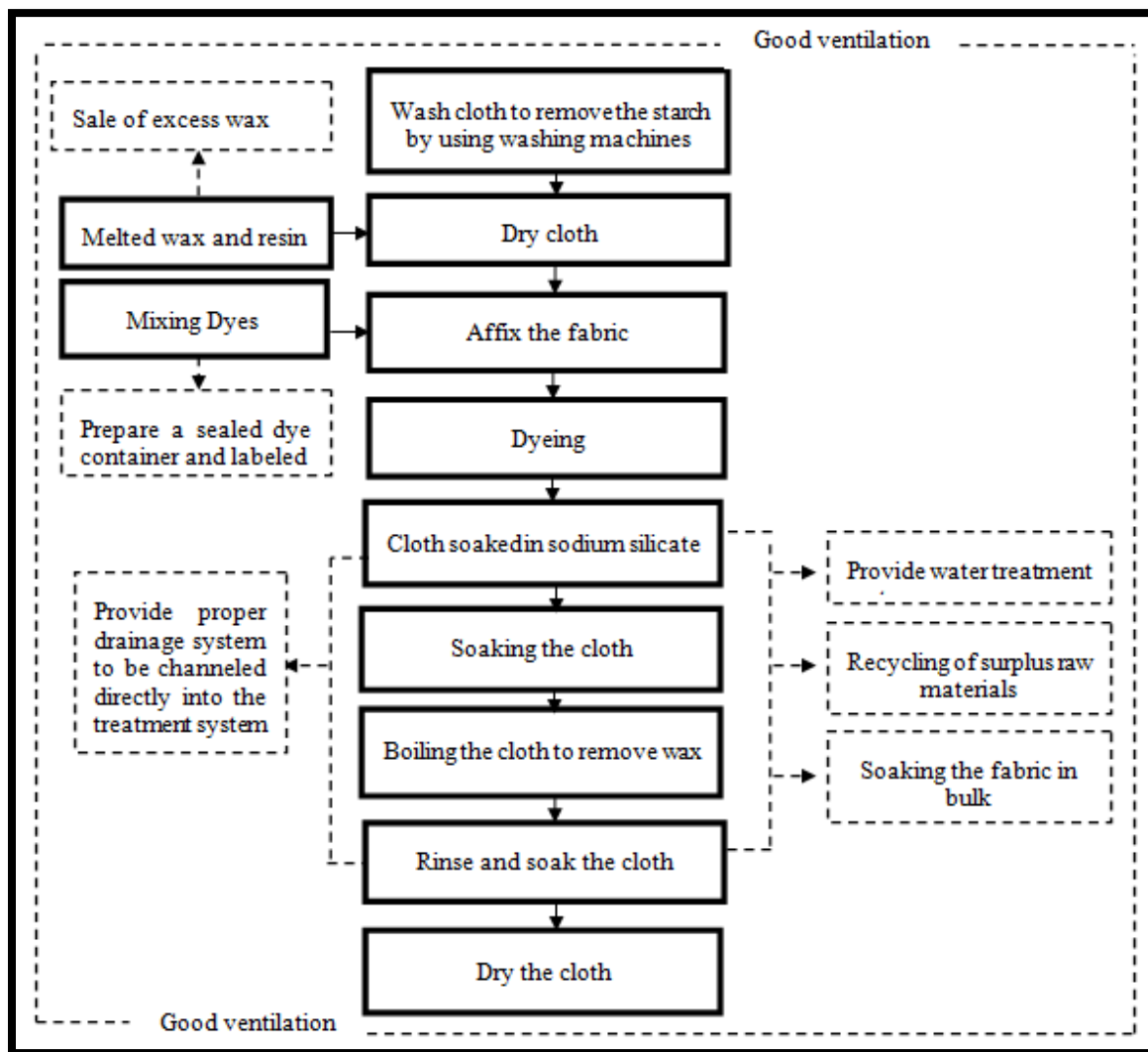


Figure 1. Green batik industry model (Source: Green Industry Initiative for Malaysian Batik Industry Paper Presentation Seminar, 20 September 2012, Putrajaya).

Third, proper waste management options should be implemented by the entrepreneurs. Batik premises need to have good drainage to channel waste by the industry, especially batik dyes used. The industry provides a proper drainage mechanism where waste water is being directed to the treatment system before being recycled or discharged into the main river. At present the availability of recycling technology within the reach of small batik entrepreneurs provide opportunity for them to practice green management. The benefits are; all waste water can be treated completely and avoid the waste water to seep into the ground. This method reduces the risk of water contamination to the nearby residents. In addition, waste water can be treated before being discharged into public drains.

4. Conclusion

Green Batik Industry Model which is introduced is developed based on industry practices and guidelines on the implementation of green batik industry based on the recommendations of the Malaysian Department of Environment. The proactive adoption in implementing environmental management will make sure the success of an industry based on Environmental Regulations and Acts. Among the options identified for the improvement towards green industry such as the layout of the premises (good ventilation), raw material consumption (reusable wax produced for patterning batik, sell of excess wax, prepare a sealed dye container and labeled, soaking the fabric in bulk, and recycling of surplus raw materials) and waste management (Provide proper drainages system to be channeled directly into the treatment system and provide an appropriate water treatment systems) should be implemented in the premises to ensure the batik industry go green based on social, environment and economic pressures while to divert attention away from the negative social and environmental impacts. This model provides guidance to existing entrepreneurs and aspiring entrepreneurs in the batik industry in Malaysia in implementing a sustainable business.

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