

A Study of Factors Affecting Sustainable Management for Petrochemical and Chemical Products Industry: A case of Thailand

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This paper aims to study the rationale and driving forces behind the petrochemical businesses in Thailand to implement sustainable management and the obstacles and economic benefits in implementing it. Semi-structured interview with executive consultants, administrative officers, and managers at four firms is used as a data collection method. The study found that government, laws, codes and regulations, society and sector specificity are factors driving the petrochemical businesses in Thailand to implement sustainable management. The lack of coordination within the organization, the difficulty in communication and misunderstanding, and the lack of budgets are identified as major obstacles. The economic benefits of sustainable management to the petrochemical businesses in Thailand are improving the brand image, reducing pollution, and lessening the impact on the society.

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1. Introduction

Petrochemical and chemical product industry is a vital industry for Thailand. Currently, this industry continues to grow rapidly. In addition, Thailand is also the biggest exporter of chemical products in ASEAN region due to the availability of production throughout the supply chain and a variety of products. The development of the petrochemical and chemical product industry benefits the economy and society by increasing of the raw materials. However, it also causes health and environmental issues.

Furthermore, environmental problems have been considered as an important issue and have gathered attention from all sectors including business sectors. As most business processes have created negative impact on the environment including petrochemical and chemical businesses in Thailand. The petrochemical and chemical products in Thailand have received significant attention from both local and international companies for more than 20 years. Developed countries have established strategies to solve the problem by announcing policies and regulations that would act as guidelines for companies to follow. Therefore, petrochemicals and chemicals businesses in Thailand should focus on sustainable management or environmental management practices to reduce the impact on the environment and society as well as increase their competitiveness to compete in the international market, which focuses considerably on environmental impact of the production process.

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This paper aims to at least in part fill that gap, by exploring key determinants that drive sustainable management, obstacles, and benefits from implementing it. Three key research questions are addressed:

- RQ1.** What are key determinants that drive sustainable management for petrochemical businesses in Thailand?
- RQ2.** What are obstacles in implementing sustainable management for petrochemical businesses in Thailand?
- RQ3.** What are benefits from implementing sustainable management for petrochemical businesses in Thailand?

At first, this paper mentions the definition of sustainable management, how sustainable management is important until there is perceived in the business processes, factors and benefits to implement the sustainable management in the business. Moreover, the paper states the research methodology and the result from the key research questions. Finally, the summary and conclusion are stated in the research which broaden how to improve the generalization of the findings.

2. Literature Review

2.1 Sustainable Management

Currently, environmental problems have been considered as an important issue because there are unprecedented phenomenon happening to the environment and affecting the living of human beings. Most organizations from every part of the world have paid more consideration in improving the environment in order to meet regulatory compliance and increase competitiveness. (Gábor, Sándor, and Ágnes 2010)

According to the understanding of the researcher, the meaning of environmental management is the usage of natural resources to respond to the human's need. This usage should be planned attentively and properly, and affected, both directly and indirectly, businesses the least. Moreover, the businesses have to comply with laws and regulations because natural resources have become human's necessity and key resources for company to run the business sustainably.

At the present time, sustainable development is the core value for companies to plan their business processes. (Jed 2005) From the report of Common Future by World Commission on Environment and Development, it is reported that sustainable development is the development which meets the current needs without losing the abilities to achieve the business's needs. Moreover, company plays an important role to change the consumption and production trends in the future. (United Nation 2002) and can help balance the three dimensions in sustainability development, which are societal, economic and environmental dimension.

2.2 Factors Influencing the Implementation of the Sustainable Management in Business

From the literature review, the implementation of sustainable management is affected by various factors such as government, regulation, codes, policies, and guidelines, local community, market position characteristics, visionary top management, and organizational structure. (Azapagic and Perdan 2000), (Corbett and Cutler 2000), (Hong Wang et al. 2012), (Lee Ki Hoon 2009), (Mauser 1997), (Muthatakul and Setthasakko 2010), (Qinghua

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2010), (Setthasakko 2007), (Tao Ren 2009), (Thomas, Kail, Carsten, and Evi 2011), (Vijayalakshmi, Agamuthu and M.A. 2012). However, there is no research on the factors influencing the implementation of the sustainable management in petrochemical businesses in Thailand.

2.3 Benefits from the Implementation of the Sustainable Management in Business

At present time, petrochemical businesses increasingly focus on sustainable management and environmental management because the businesses are caused in sustainable management dimensions, which are known as “Triple Bottom Line”.

The researcher found that the thinking of each company on sustainable management is different. Some companies think that sustainable management and environmental management are needed because environmental laws and regulations are enforced. Some companies think that sustainable management and environmental management increase much more cost. In fact, the company which successfully implements environmental and sustainable management can have both monetary and non-monetary benefits in both short and long-term.

3. The Methodology and Model

The objectives of this research are to study the rationale and driving forces behind the petrochemical businesses in Thailand to implement sustainable management and the obstacles and economic benefits from implementing it. Semi-structured interview with executive consultants, administrative officers, and managers at four firms is used as the data collection method. The four companies are varied in terms of annual sales, firm size, major customers, and number of employees. The interview results are categorized and analysed by using content analysis of Mile and Huberman (1994) for qualitative analysis: data reduction, data display matrix, and compared to represent the overall petrochemical business in Thailand. The companies are referred to here under the pseudonyms Company A, Company B, Company C, and Company D.

4. The Findings

4.1 Key Determinants That Drive Sustainable Management for Petrochemical Businesses in Thailand

4.1.1 Government, Laws, Codes and Regulations

Government plays an important role to issue the laws and the regulations, monitor, and evaluate business processes in order to have the businesses implemented. Furthermore, the business can proceed systematically, and lessen the impact on environment and society. The statements supporting this idea are listed as follows:

“The business processes emit air pollution into surrounding environment. The rate of emitted air pollution that the company controls is lower than legal permission. For wastewater, the company has set up wastewater treatments so the wastewater is reused and is not released to the surrounding environment.” (Company A, Executive consultant)

“Because the business processes in petrochemical and chemical product industries cause negative environmental and societal impacts and the company is the leading firm in this

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industry, Company is observed how our business processes can cause the negative environmental and societal impacts. Moreover, that can prevent our illegal business processes, fines, indictments, and disruption of our operations.” (Company B, Administrative officers)

“Because of the strict export laws and the regulations, environmental issues are significant factors to impede the goods, not only electronic devices but all goods are needed to be considered about environmental effects throughout their life cycle.” (Company C, Specialist)

The finding clearly points out that government, laws and regulations is one of the key determinants that drive sustainable management for petrochemical businesses in Thailand. The findings of this study are similar to the discussion in Qinghua Zhu (2010), which indicates that Japanese laws and policies on reuse, recycling and recovery are the critical main drivers and mechanisms for Japanese large manufacturers’ green supply chain management practices. To encourage green supply chain management implementation, the Japanese government has introduced concepts such as Extended Producer Responsibility. Moreover, the findings are consistent with previous researchers, such as Azapagic and Perdan (2000), whose research shows that in the developed world, the businesses response to the then emerging environmental issues and later to the idea of sustainable development has gone. At first, the main driver the improvement of environmental performance was regulation. Leppelt et.al. (2011), which studies by providing insights on how seven leading European chemical companies manage their supplier relationships in order to ensure sustainability within their supply chains along the three dimensions of the triple bottom lines. It is noted that the foundation is the availability of sustainability standards, such as codes, policies and guidelines within an organization. Stajkovic and Luthans (1997) view codes as one key antecedent for influencing the ethical standards of people and organizations, and hence a company’s sustainable supplier relationship management practices. Lee Ki Hoon (2009), which is the exploratory study of the process of green management adoption in small and medium-sized enterprises in Korea, states that studies of smaller companies concluded that environmental regulations and increased customer pressure are the main drivers for green management. And Hong Wang et al.(2012), which shows that currently, the development of chemical regulations in china has not yet covered the entire life cycle of chemicals. So the sustainable management system should be further improved by introducing more advanced regulations and policies to meet the needs of the management on the whole life cycle of chemicals.

4.1.2 Society

The business processes have continuously caused a number of negative environmental and societal impacts and this issue has become an interesting topic in the public eyes. The statements supporting this idea are listed as follows:

“Since the company is located in Map Ta Phut industrial estate where many residents live around, most of the villagers are directly affected by the business processes. A great amount of news is also published to the public eyes so the company has to focus on sustainable management.” (Company A, Executive consultant)

“Our business processes have direct negative environmental and societal impacts. The villagers are the victims. If the company does not show its responsibility, protest and disruption of business processes may be inevitable.” (Company B, Administrative officers)

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“The residents around the company are affected by the business processes so the company has to implement sustainable management and environmental management in order to lessen the negative impacts and continue the businesses operation along with good environment and society.” (Company D, Manager)

The findings of this study are consistent with previous researchers such as Azapagic and Perdan (2000), which shows that one of the important drivers for the change in attitude was a realization that, in addition to the more obvious costs, bad environmental practices bore other, at first less tangible costs- those associated with the social perception. Moreover, the findings of this study is similar to Setthasakko (2010), which indicates that local communities is one of the external pressures for influencing corporate practices to incorporate environmental and social responsibility into core business strategies.

4.1.3 Sector Specificity

Because both domestic and international petrochemical businesses are in a highly competitive, the businesses have to improve their standards to keep up with international standards in order to gain more competitive advantage and profitability. The statements supporting this idea are listed as follows:

“The company needs to improve our production and our operation to keep up with international standards in order to smoothly expand branches and investments in another country, which is why sustainable management has been implemented in the company. (Company B, Administrative officers)

“Because of intensively competitive market situation, in the past, the company always had some competitive strategies to maintain profitability but, nowadays many companies begin to implement green organization concept in order to improve their competitive advantage and brand images and express their environmental conservation concerns. Doing all of them can cause recognition and support from public. However, in free trading era, the businesses compete not only within the domestic market, but also in the international market, so natural resources and financial resources are used to gain their efficiency, improve credibility level, and attract general public and investors. (Company C, Specialist)

“The pressure among petrochemical and chemical product industries affects our competitive capabilities. If sustainable management is implemented among these industries, the stakeholders will recognize that the company concerns about environment and society.” (Company D, Manager)

The findings point out that sector specificity is one of the key determinants that drive sustainable management for petrochemical businesses in Thailand. The findings of this study are similar to the discussion in Lee Ki Hoon (2009), which state that increasing green competitiveness for overseas markets urge the adoption of green management. Moreover, customer demand is another important factor influencing the adoption of environmental management. The findings are not, however, consistent with the discussion in Setthasakko (2010) that international buyers have no impact on the creation of environmental and social responsibility for Thai frozen seafood processors. They are only interested in buying products that are clean, safe, and cheap.

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4.1.4 Searching for the Worthwhile Production Source

Searching for the worthwhile production source is an interesting key determinant because it has not been found in previous research. The current concept of sustainable management or environmental management is the operation which is run with processes of the entire supply chain. The company should search for the production source which has environmental management concerns to create the new green products. The statement supporting this idea is listed as follows:

“The company intends to concern about environmental problems throughout the entire supply chain, including destroying and reusing. From product designer, manufacturer, distributor to retailer, everyone has to comply with our standard and our green product concept. Suppliers have to concern with environmental conservation.”(Company C, Specialist)

It is found that the key determinant which relates to searching for the worthwhile production source is increased outsourcing of production and administrative processes. This key determinant is similar to the discussion in Pagell et al. (2009) and Bernades (2010) which indicate that increased outsourcing of production and administrative processes has caused the purchasing and supply management function to become vital in a firm’s sustainability effort, since environmental and social misconduct among suppliers are a major risk to a company’s reputation and profits. This key determinant is also similar to the discussion in Carter and Rogers (2008), which studies about sustainable supply chain management. The Carter and Rogers’s research indicates that development in purchasing and supply chains leaves purchasing and supply management with the responsibility of ensuring sustainability beyond corporate boundaries and across all three dimensions of the triple bottom lines.

4.2 Obstacles in Implementing Sustainable Management for Petrochemical Businesses in Thailand

4.2.1 The Lack of Coordination Within the Organization

The lack of coordination within the organization is the major obstacle to achieve the sustainable management. The statements supporting this idea are listed as follows:

“Sustainable management will be achieved by coordination from all parts of the company. It is difficult to encourage the employees to give precedence to sustainable management because the employees already have their own duties to take care of. Therefore, the company solved this problem by setting up a seminars and activities in order to let employees share their information. Currently, the problem has continuously diminished.” (Company A, Executive consultant)

“The company does not have many obstacles for implementing sustainable management. The only obstacle we meet is the lack of coordination within the organization because implementation of sustainable management needs the participation of all sectors in organization. The company plans to resolve this problem by clearly delegating the responsibility to employees.” (Company B, Administrative officers)

“Readiness and coordination within the company is our major obstacle because the staff is the important driver for our business to achieve the sustainable management. The readiness of staff is difficult because staff has different potential levels, and different

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learning skills. If the company can solve this problem, its operation easily continues.” (Company D, Manager)

The findings of this study are consistent with previous researchers such as Zhu (2010), which states that the lack of cooperation and diffusion may seriously impede the operational performance improvements for Japanese large firms’ organizations from green supply chain management practices. According to Callenbach et al. (1993) and Lee Ki Hoon (2009), in order to successfully carry out green management, employees must be inspired, empowered and environmentally aware. So the lack of employee coordination and awareness of sustainable management is the barrier to adopt green management in Korean SMEs in manufacturing industry.

4.2.2 The Difficulty in Communication and Misunderstanding

If the understanding within organization is not in the same direction, the problem will occur. The statements supporting this idea are listed as follows:

“Sustainable management is not a fundamental knowledge that every employee learned in their study backgrounds. So our company has to conduct meeting and training to let our employees share their knowledge and have the same understanding, to ensure that all employees understand the sustainable management in the same direction. The company sets up training program every year. Moreover, we also have new employee’s training, which is the way to achieve sustainable management in the company.” (Company A, Executive consultant)

“The difficulty in learning and understanding sustainable management is our minor obstacle. The problem is derived from less experienced coordinator, who does not understand what the sustainable management’s objectives are. To solve the problem, the company always sets up kick-off meetings.” (Company B, Administrative officers)

“It is important to plan carefully to make a common understanding throughout the organization. If the plan is not good enough, the operation problems will arise. The company also has the problem due to the difficulty to set indicators for measuring environmental and social risk management. (Company C, Specialist)

The finding clearly points out that the difficulty in communication and misunderstanding is one of the obstacles in implementing sustainable management for petrochemical businesses in Thailand. The findings of this study are consistent with Setthasakko (2010), which notes that insufficient knowledge about how to change to the use of more sustainable practices is the barriers to corporate sustainability and the lack of building organizational learning is the root causes of barriers to the development of environmental management accounting and the impact on corporate environmental performance. That finding indicates that accountants are conservative and unable to adjust new challenges. They are not proactive towards an environmental agenda.

4.2.3 The Lack of Budget

The sustainable management and environmental management budget is a cost that the businesses have to consider carefully because it is high. The statements supporting this idea are listed as follows:

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“In manager’s view, sustainable management increases the business cost. Our vision is to maintain obvious sustainable management. Of course, the company has a lot of environmental management budget. We consider the budget allocation from our policy. We analyze the result of the performance in the past every year to set the policy, deciding what activity should be added, continued or discontinued. When the policy is set, the budget will be allocated to each area of environmental management such as polluted water or waste.” (Company A, Executive consultant)

“The sustainable management cost is one of the obstacles that the company is facing because the cost does not provide direct and obvious value to the business, unlike the main activity. Therefore, the financial support in sustainable management is decreased.” (Company D, Manager)

The finding points out that the lack of budget is one of the obstacles in implementing sustainable management for petrochemical businesses in Thailand. The findings of this study are similar to the discussion in Tao Ren (2009), which indicates that unfavourable economic conditions is the barrier to developing process innovation in the petrochemical industry. Due to recurring unfavourable economic conditions, which causes the lack of budget in sustainable management, firms in the petrochemical industry have been reluctant to invest in developing new processes. For many large firms, the petrochemical business has become less profitable due to the recent globalization of the market. Furthermore, this finding is similar to the discussion in Setthasakko (2010), which notes that a narrow focus in economic performance is the root causes of barriers to the development of environmental management accounting in pulp and paper companies in Thailand. Cost concerns are also important barriers to the development of environmental management accounting. Incurring costs are even more significant for small firms, who generally have less resource available.

4.3 Benefits from Implementing Sustainable Management for Petrochemical Businesses in Thailand

4.3.1 Improving the Brand Image

Sustainable management supports the businesses to improve the brand image to public and stakeholders’ eyes. The statements supporting this idea are listed as follows:

“The company considerably achieves implementing sustainable management so we can continuously improve our competitive advantage. The brand image is improved and operating problems and obstacles are decreased.” (Company A, Executive consultant)

“Sustainable management helps to improve the businesses’ brand image to the public eyes. The company can be more credible in all stakeholders’ perception, leading to the increase of investment, and better chance to expand into domestic and international markets.” (Company B, Administrative officers)

“The firms within the same industry play the important roles to support us to implement sustainable management in order to improve our brand images and our competitive capabilities. After implementing some part of sustainable management, the company found that the brand images are continuously improved.” (Company D, Manager)

The findings of this study are consistent with previous researchers such as Azapagic and Perdan (2000), which states that at the present time, the industry associates with the

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image of the business so the industry should implement sustainable management to improve their brand images, and Sharma and Henriques (2005) and Leppelt et.al. (2011), which note that responsible purchasing and supply management practices lead to increased efficiency, reduced likelihood of supply disruption, and safeguard an organization's image.

4.3.2 Reducing Pollutions

Pollutions are caused by the business processes, especially petrochemical businesses which consume a lot of resources and emit a great amount of pollution. Sustainable management can support the businesses by preventing pollution. The statements supporting this idea are listed as follows:

“Implementing sustainable management can reduce pollution from our business processes. For example the wastewater will have to go through treatment process before being released to the surrounding environment and society.” (Company B, Administrative officers)

“After implementing the sustainable management, the company found that we can well reduce the rate of released pollution to environmental surrounding.” (Company D, Manager)

The findings of this study are consistent with Lee Ki Hoon (2009), which states that adopting green management into Korean SMEs' business organization can solve the wastewater treatment problem in process so the company can reduce pollutions before flowing out into the surrounding environment.

4.3.3 Lessening the Impact on the Society

Because the petrochemical plants are located in Map Ta Phut Industrial Estate which is close to residential area, the companies should pay more attention to their business processes in order to lessen the negative societal impacts. The statements supporting this idea are listed as follows:

“Sustainable management helps the company lessen the negative impacts on the society. The company can run along with residing of communities around the industrial estate.” (Company B, Administrative officers)

“In the specialist's view, sustainable management and environmental management can sustainably create competitive advantage, especially in the same industry. Customers will choose the service from the company which implements sustainable management. On the other hand, if the company is not responsible to the society, the company may have to face the protestor from surrounding community which will worsen the company's image. Moreover, sustainable management can reduce wastes from business process resulting in increase in our profitability.” (Company C, Specialist)

The findings of this study are consistent with Azapagic and Perdan (2000), which states that currently the increased public awareness of environmental problems and the lobbying of various pressure groups have made some businesses more exposed and vulnerable, in some cases reflecting badly on their economic performance. The now classic example is the case of Shell and the controversy surrounding the disposal of their Brent Spar oil platform in the North Sea. The public pressure and the lost of 10% of its customers forced

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the company to reconsider its decision to dispose the platform into the sea. Although controversial in many aspects, this example is significant as it demonstrates that environmental performance of industry has become a matter of public interest and that the public can use their buying power to encourage business towards fulfilling its environmental and social responsibilities. As a direct consequence of this event, Shell has started to take sustainable development more seriously and has subsequently developed a sustainability strategy.

5. Summary and Conclusions

From the study and in-depth interviews, it is found that although petrochemical businesses which were chosen to study in this research are different in terms of annual sales, firm size, major customers, and number of employees, these factors do not affect the sustainable management factors differently as it could be. The findings show that major key determinants that drive sustainable management for petrochemical businesses in Thailand consist of government, laws, codes and regulations, society, and sector specificity. Moreover, searching for the worthwhile production source is the new key determinant which is not found in previous research. The lack of coordination within the organization, the difficulty in communication and misunderstanding, and the lack of budget are identified as the obstacles to implement sustainable management. After implementing the sustainable management, the businesses can improve the brand image, reduce pollution, and lessen the impact on the society. Nevertheless, each company emphasizes the sustainable development from the different dimensions. Those dimensions towards sustainable development consist of economics dimension, environmental dimension and social dimension.

Each company has different goals, policies, organizational cultures, human resources and financial resources. Company A which is one of leading companies in Thailand, extremely emphasizes on environmental and social dimensions because the company aims to maintain a good social image. Company's major shareholder is Bureau of the Crown Property. In addition, Company A is well recognized as an innovative company and also well-represented for having strong corporate governance and sustainable management. Company A is standardized and rewarded for management for sustainable management regionally. In addition, Company A applies environmental and social policies into practice within the organization which has formed the company's culture and core values. Not only emphasizing on environment and society, Company A also has had a satisfactory financial performance up until the present.

Company B is another leading company that has also focused on environment and society as evidenced by implementation of environmental and social policies in any particular situation. Because Company B underlines foreign investment at the present time, the company also attempts to sustain its financial performance. The company views environmental and social responsibility and management as a secondary concern to support its financial performance.

Company C and company D are medium and small enterprises respectively which highlight financial performance as their primary objective. In order to maintain core competencies in the same industry and scale, the companies' financial performances are essential. However, both companies do not disregard environmental and social concerns because focusing on those concerns could in turn support the business operations and competitiveness. Company C emphasizes on social dimension because the company is a subsidiary of joint venture with foreign business that tends to put high emphasis on

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environmental concerns which can be observed by its report on sustainability following Global Reporting Initiative (GRI).

Furthermore, in order to improve the generalization of the findings, the future research should widen the sampling of Petrochemical businesses and in-depth study the relation between economy, environment and society, which are three dimensions of sustainable management. The comparative study of factors affecting sustainable management for Petrochemical businesses between industries, countries, and regions should be pursued. Moreover, the ranking and rating of factors affecting sustainable management and the study in the strategic management for the businesses to achieve sustainable management should be applied for the future research.

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