

UNIVERSITI PUTRA MALAYSIA

EFFECTS OF ENVIRONMENTAL MANAGEMENT ACCOUNTING ON ENVIRONMENTAL PERFORMANCE OF MANUFACTURING COMPANIES IN MALAYSIA

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TAMILSELVI MUNUSAMY

Thesis Submitted to the Graduate School of Management, Universiti Putra Malaysia, in Fulfillment of the Requirements for the Degree of Master of Science

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DEDICATION

I dedicate my dissertation work to Malaysia manufacturing companies as a breakthrough that each of them need to understand while shaping their companies strategies and management routine. Early detection lead to prevention and avoid bleeds in their profit and loss account.

I also dedicate this dissertation work to my family and friends. A special feeling of gratefulness to my husband and kids, Manimaran, whom always encourage and push myself. My kids Darshiyniy, Nerrash and Varchhan thanks for your support with managing your routine with limited observation from my end.

I also dedicate this dissertation to my loving parents and parents in law whom always encourage me. My brothers Nanthakumar and Jayakumar who have advices and supported me throughout the process with the keynote of sky is the limit.

I dedicate this work to my best friend Thenmolly S for being there for me throughout the entire program. Last but not least to my superior leader Matthias Von Oelfan whom always concern, check my progress status and encourage without limitation.

I will always appreciate all they have done and pray for their good health.

Thank you god for the guidance and strength given.

Abstract of thesis presented to the Senate of UniversitI Putra Malaysia in fulfillment of the requirement for the Degree of Master of Science

EFFECTS OF ENVIRONMENTAL MANAGEMENT ACCOUNTING ON ENVIRONMENTAL PERFORMANCE OF MANUFACTURING COMPANIES IN MALAYSIA

By

TAMILSELVI MUNUSAMY

October 2016

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Environmental issues are attracting increase attention in Malaysia with tremendous increase in waste generation; cost of production and waste treatment is getting expensive. Environmental data shows that 80% of the wasted was generated by the manufacturing industry. It also indicates that future natural resources are being squandered as waste due to less exposure in the environmental management accounting which end up to unproductivity, overproduction, increase in total delivery cost or inefficiency in manufacturing plant.

Purpose - This research exploits the quantitative research methodology to understand the relationship between contingent factors which are uncertainty environment, organizational size, environmental strategy, regulatory pressure and top management commitment that influence the environmental management accounting and environmental performance among manufacturing companies in Klang Valley, Selangor.

Design/methodology/approach – Survey conducted on manufacturing companies that are located in Klang Valley, from the Federal Malaysian Manufacturer (FMM) database. 600 questionnaires were sent out to manufacturing companies, with most of the question using Likert scale. Smart PLS 3 the second generation multivariate was used to simulate the model.

Findings – Total usable sample was 114 manufacturing companies, which suggested that uncertainty in the environment, regulator pressure and top management commitment significantly impact environmental management accounting. With

environmental management accounting, the companies able to improve environmental performances for example input and output target yield of raw material being define, in daily routine reporting and meeting it to be discuss too. If the yield of that day was below the target this indicating that more wastage had occur. At that point the management team could immediately detect and address the issue promptly to avoid further waste from occurring.

Originality/value of paper – This study presents empirical knowledge towards the understanding of the driving factors of environmental management accounting practices in Malaysia. It considers that environmental issues are closely associated with business sustainability agendas; policy makers should recognize the need to instill efficiency, productivity, wastage and lower total delivery cost in all manufacturing practices.



Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk Ijazah Master Sains

KESAN PERAKAUNAN PENGURUSAN ALAM SEKITAR TERHADAP PRESTASI ALAM SEKITAR SYARIKAT PEMBUATAN DI MALAYSIA

Oleh

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Tesis ini bertujuan untuk mengenalpasti factor-faktor kontingen yang memberi kesan kepada pengurusan perakuanan alam sekitar serta menilai bagaimana ia mempengaruhi prestasi alam sekitar di kalangan syarikat pengilang di Lembah Klang, Selangor, Malaysia. Isu-isu alam sekitar semakin menarik perhatian di Malaysia dengan peningkatan yang besar dalam penjanaan sisa buangan; kos pengeluaran dan rawatan sisa semakin mahal. Data alam sekitar menunjukkan bahawa 80% daripada sisa buangan dihasilkan oleh industri perkilangan. Ia juga menunjukkan bahawa sumber semulajadi di masa depan sedang disia-sia sebagai sisa kerana kurang terdedah dalam perakaunan pengurusan alam sekitar yang akhirnya menghasilkan hasil yang tidak produktif, pengeluaran berlebihan, peningkatan jumlah kos penghantaran atau ketidakcekapan dalam kilang pembuatan. Borang soal selidik yang dikembalikan oleh 150 syarikat pegilang pembuatan mencadangkan bahawa ketidakpastian dalam persekitaran, tekanan pengatur dan komitmen pengurusan puncak memberi kesan besar kepada perakaunan pengurusan alam sekitar. Dengan perakaunan pengurusan alam sekitar, syarikat-syarikat dapat meningkatkan prestasi persekitaran seperti contoh hasil input dan output sasaran bahan mentah yang menentukan, dalam laporan rutin harian dan pertemuan itu juga akan dibincangkan. Jika hasil pengeluaran hari itu berada di bawah sasaran ini menunjukkan bahawa lebih banyak pembaziran telah berlaku. Pada masa yang sama, pengurus dapat mengesan dan menangani isu tersebut dengan segera untuk mengelakkan sisa buangan yang lebih jauh daripada berlaku. Tesis ini membentangkan pengetahuan empirikal ke arah pemahaman faktor utama perakaunan pengurusan alam sekitar di Malaysia. Isu alam sekitar dikaitkan rapat dengan agenda kemapanan perniagaan; pembuat polisi perlu mengiktiraf keperluan untuk menanamkan kecekapan, produktiviti, pembaziran dan jumlah kos penghantaran yang lebih rendah dalam semua amalan perkilangan.

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Thank you always for the support and unconditional love without the limit.

I certify that a Thesis Examination Committee has met on 6 October 2016 to conduct the final examination of Tamilselvi Munusamy on her thesis titled "Effects of Environmental Management Accounting on Environmental Performance of Manufacturing Companies in Malaysia" in accordance with the Universities and University Colleges Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U.(A) 106] 15 March 1998. The Committee recommends that the student be awarded the Master of Science.

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CHAPTER 1

INTRODUCTION

Introduction

This introductory chapter provides an overview of the research topic. Its main objective is to explain the importance of conducting research on the environmental management accounting in Malaysian manufacturing industries. The chapter comprises six main sections: the background of the study, environmental issue in Malaysia manufacturing industries, problem statement, research question, objectives of the study, and significance of the study.

1.1 Background of the Study

Currently environmental issues are attracting increasing attention in Malaysia, with companies or businesses being requested to change their business practices to incorporate environmental activities. Pertaining to corporate reporting, Bursa Malaysia requires all listed companies to disclose their corporate social responsibility (CSR) activities in a mandatory report. More and more incentives and rebates are being provided to encourage more environmental engagement, such as green tax incentives, duty exemptions for hybrid cars, pioneer status tax incentives for waste recycling facilities, and many more. Manufacturing industries are no exception, as progressively more manufacturing products and companies are applying for ISO 14001 (Environmental Management System). Table 1.1 represents number of companies certified for ISO 14001 in Malaysia.



Table 1.1 : Number of companies certified for ISO 14001 in Malaysia

Source: ISO Survey 2011

However, companies are still not convinced, due to insufficient disclosure on sustainability in corporate reporting. Many organizations fail to realize that the relationship between organization contingent factors and environmental performance has an impact on their profit and loss and balance sheet. Companies are still not convinced about the benefits of reporting environmental related issue, because it involves a high cost and no immediate return.

One of the reasons for the gap is that companies do not know which contingent factors they need to address to achieve better environmental performance. Organizations have to realize that it is necessary to pay attention not only to the customers but also to their environmental performance. As a result, this research was carried out to gather empirical evidence to show to the related parties and stakeholders specifically regarding the relationship between contingent factors and environmental management accounting in Malaysian manufacturing industries. Since manufacturing industries contribute a quarter of the Malaysian GDP growth and 80% of the waste is generated by these industries, the study focuses on manufacturing companies as a target group.

Furthermore, Sergio's (2002) research reports that intensified market and environmental conditions are becoming extremely important and that changes in the time and the environment occur suddenly, so managers have to respond quickly to ensure right change management process being adapted to align the company with the market changes to remain compatible or face survival problems. Johnson's (1990) research adds that all manufacturers have to understand the phenomena and be proactive in making fast rectification to improve their performance in terms of cost and quality compared with their competitors. Anthony (2010) investigates the challenges faced by organizations in today's world; operating in an environmentally, socially, and economically sustainable manner is one of the most urgent challenges facing organizations today, and the basic issues are climate change, overconsumption of finite natural resources, and rapidly increasing destruction of the Earth's ecosystems.

According to Porter and Derry (2012), the traditional toolkits for managerial problem solving are ill equipped to capture and respond to sustainable issues. Thus, a black box of unknown causes and effects has emerged. The researchers describe the implication for linking complexity thinking and sustainable thinking, which have to match the speed, unpredictability, and rapid changes that characterize today's management world.

According to Jasch (2003), environmental management accounting (EMA), established in 2003 by the United Nations Divisions for Sustainable Development, is significant for modernization strategies for cleaner production due to the better cost and benefits yielded. At the same time, environmental management accounting provides information that can be used by the corporate management to assess opportunities for economic and environmental implications of their operations, products, and services, where else in conventional accounting the environmental cost was lumped into a general account code without an independent account code, this make finance team difficult to analyse environmental cost. Additional cost and resources required to reframe the reporting layout.

Jamaluddin et al. (2009) state that Malaysia, following the vision of 2020, has introduced environmentally sound and sustainable development as two main factors in social, cultural, and economic progress and enhancement of the quality of life of Malaysians. Therefore, companies are encouraged by the Malaysian Government to enhance their performance by minimizing their activities that exert an impact on the environment and increasing their innovative capacity through superior environmental cost information for creating and sustaining competitive advantages. Therefore, environmental management accounting as a new tool in management accounting is strongly viewed as a strategic environmental issue that is embedded in the current management accounting practices, which create and drive companies' values to a higher level of environmental performance.

1.2 Environmental issues in Malaysia Manufacturing Industries

Mustaffa et al. (2006) highlight that business is under pressure from the plethora of legislative and market changes that have taken place in recognition of environmental concerns. Responding to these pressures means that changes are necessary in many aspects of business, and the consequences have an impact on companies' financial position. Although Malaysia is categorized as a developing country, there are still many differences between developed Western countries and Malaysia, such as:

- i. Malaysian corporations are reluctant to disclose social information in their annual reports.
- ii. Most financial directors conclude that the users of annual reports do not take social information into consideration on the bottom line.
- iii. Companies normally disclose social and environmental information on a voluntary basis.
- iv. The management could easily distort social and environmental information because it could be a potential threat to that company.

Haslinda's (2010) research concludes that the implementation of Environmental Management System ISO14001 can put companies in an international position with quality standards and procedures, leading directly to productivity and efficiency. ISO 14001 is related to environmental aspects and requirements, since Malaysia is one of the most favoured foreign direct investment countries and among the top 25 manufacturers in the world. Regulators should set this system as a mandatory requirement for companies.

Shamsudin et al. (2006) state that the evolution of environmental policy and management in Malaysia started in the early 1920s. Over time various laws, ordinances, and rules have been tabled by the Government of Malaysia, such as the enactment of the Environmental Quality Act of 1974, private investment firms, the Department of Environment (DOE), Environmental Impact Assessment, and many more. One of the policy factors to be discussed further was "To minimize the energy requirement, and thus the operating costs, by mixing the type of waste with a high energy content with the type without". Based on these policy factors, how could a self-regulator provide evidence on the effectiveness of minimizing the energy used in the company's operating cost and how could it be validated? The question regarding the efficacy of the above regulations is a concern in that this entire act is self-regulating and is not integrated with the accounting policy or even the mandatory financial requirements in Malaysia.

In Malaysia the manufacturing sector has grown steadily in terms of value over the years, and it is estimated that about 43.7% of Malaysia's FDI was contributed by this sector in 2014, as shown in table 1.2 below. This indicates the need to perform studies on environmental issues among Malaysian manufacturers. Furthermore, Malaysia is ranked in the twenty-third position among the world's manufacturing countries, which shows that it is a major player in the global market. Recently Malaysia emerged as the fifth most popular destination for FDI in Asia (source: news release Malaysia Economy 2010).

Table 1.2 :	FDI Position	by Sector.	, Malaysia	, 2008–2014
		•/	•	/

Sector	20	08	20	09	20	10	20	11	20 [.]	12	20	13	201	4
	RM (Mil.)	%	RM (Mil.)	%	RM (Mil.)	%	RM (Mil.)	%						
Agriculture	8.7	3.4%	9.2	3.4%	9.4	3.0%	9.5	2.6%	9.9	2.4%	10.9	2.4%	11.1	2.4%
Mining (Oil & Gas)	14.6	5.7%	17.2	6.3%	18.4	5.9%	24.3	6.6%	27.5	6.8%	35.0	7.8%	35.8	7.7%
Manufacturing	125.6	49.3%	126.7	46.8%	146.8	46.8%	173.2	47.4%	187.6	46.2%	203.4	45.6%	204.1	43.7%
Construction	1.1	0.4%	1.1	0.4%	1.4	0.4%	1.4	0.4%	1.6	0.4%	2.8	0.6%	3.4	0.7%
Trade/Commerce	18.8	7.4%	21.3	7.9%	25.5	8.1%	30.5	8.4%	34.1	8.4%	32.3	7.2%	34.5	7.4%
Finance Intermediate	53.5	21.0%	64.3	23.8%	73.9	23.6%	81.4	22.3%	87.3	21.5%	94.8	21.2%	98.0	21.0%
Information & Communication	19.7	7.7%	17.3	6.4%	21.8	6.9%	25.6	7.0%	33.5	8.2%	34.7	7.8%	45.0	9.6%
Others Services	13.0	5.1%	13.6	5.0%	16.3	5.2%	19.7	5.4%	24.1	5.9%	32.4	7.3%	35.8	7.6%
Total	255.0	100.0%	270.5	100.0%	313.3	100.0%	365.5	100.0%	405.7	100.0%	446.4	100.0%	467.5	100.0%

FDI Position by Sectors, Malaysia 2008 - 2014

Source: Malaysia Economic Statistics Time Series 2014

The recent economic statistics revealed by the Ministry of Finance show that manufacturing industries contribute 25.7% to the Malaysian GDP growth as shown in table 1.3 below.

Table 1.3 : 2014 GDP contributions by sector in Malaysia



Moreover, the latest Bank Negara update reports that trading economics websites, services, and manufacturing sectors are the main drivers of strong performance, registering robust double-digit average growth for the Malaysian economy. In addition, table 1.4 shows that the electricity consumption by industry exerts a significant impact on the environment, such as energy usage, in which it is the major consumer.



 Table 1.4 : Electricity Consumption by Industry, 2000–2014

Furthermore, in the interview conducted with Dr Mahathir Mohamad (the former Prime Minister) on 7 July 2011, he stated that "Malaysia is counting on foreign investment to provide a quarter of the investments needed to fund projects under its Economic Transformation Programme (ETP), which aims to turn the country into a fully developed nation by 2020, which means in average of investment to be in is 11 billion a year" (source: Reuters). Tan Sri Mustapa Muhamed, the Minister of International Trade and Industry, stated on 2nd July 2015 that Malaysia remains an ideal location for new investments and sustained confidence of existing investors' in reinvesting, which is especially relevant at a time of uncertainty in the global economy and ongoing turbulence in geopolitics.

Source: Malaysia Economic Statistics Time Series 2014



Table 1.5 : Malaysian FDI inflows 2006–2014

Table 1.5 above shows that the FDI inflows surged by 34% in 2013, as multinational companies continued to choose Malaysia as their regional investment destination, with manufacturing holding a 44% share, followed by financial intermediates with 21% and information and communication with 10%. As shared by MIDA, in investment performance 1H 2015, Malaysia remains an ideal location for new investments and sustains the existing confidence in reinvesting. Conversely, a warning statement was issued to Malaysian manufacturing industries, as they need to look seriously at their management tools and determine whether they are currently aligned with the business and environment scenarios.

Therefore, this research intends to fill the gap by studying the contingent factors that influence environmental management accounting and the environmental performance of Malaysian manufacturing companies.

1.3 Problem Statement

In conjunction with business sustainability or business continuity, it is crucial to identify the basic resources that will be required in another 20 years' time. According to the CIMA (Chartered Institute of Management Accountants) in 2011, Taylerson Malmesbury, a syrup ice cream producer, shared the operations risk foreseen by the company. The sale of products linked to cold weather is expected to decline within the next 20 years as winters become milder.

Sources : Malaysia Investment Performance 2015 (MIDA)

Noor (2011) states that Malaysia is a rich country environmentally, and it is one of the fastest-growing economies in the ASEAN region at present, facing numerous environmental problems, such as air pollution, water pollution, and exploitation of natural resources. The paper concludes that, although the Government of Malaysia has passed some important environmental laws along with the international initiatives for protecting the environment, it regrets the absence of environmental governance that deals with the human rights and the environmental rights approach, including good governance under the public international law and the international environmental laws along with ethics and social responsibilities. With that in mind, each organization has to plan well to guarantee efficient usage of resources and ensure that the future's needs can be satisfied.

Noor's (2011) study highlights that Malaysia provides 41% of the world supplies of rubber, 39% of woods, 37% of palm oil, and 32% of tin, but this rich environment, along with its natural resources, are facing numerous problems, such as climate change, biodiversity degradation, increased scarcity, unwise use of natural resources, hazardous waste management, a growing rate of urbanization, weak enforcement and short-term policy, instable and defective foreign policy, weak environmental governance, lack of technicalities, lack of environmental accounting, and lack of good governance, which are often responsible for depleting the natural resources. As stated above, the lack of environmental accounting shows that Malaysia is at an infancy stage.



Table 1.6 : Schedule Waste Trend 1994 to 2014

In Malaysia the amount of waste generated by industry is currently increasing tremendously as show in the table 1.6 above. Comparing 2003 with 2011, it spiked by 263%, and the trend increased continuously until 2014.



Table 1.7 : Schedule Waste generated by Industry 2007 to 2014

Regarding the scheduled waste generated by industries in Malaysia as shown in table 1.7 above, the top five contributors are from the chemical, power station, metal, electronics, and premises industries. In summary 80% of the wastage is contributed by manufacturing industries; therefore, this study focuses on these industries. The treatment cost or dumping cost of the waste generated by industries is expected to increase and indirectly affect the operating cost of companies. Under local regulations the waste should undergo additional treatment before being dumped in landfill to avoid any environment-related issues for the ecosystem, which incur costs.

To improve their operating cost, companies should examine the contingent factors that influence their environmental management accounting and exert an impact on their environmental performance. Once they can identify which organizational contingent factors they need to consider, they can improve their environmental and financial performance and generate higher returns for the shareholders. This implies that the waste generated and the cost of production will be lower, yielding better performance for the organization.- This lower the company total delivery cost with that the research questions has being established.

Source: Malaysia Economic Statistics Time Series 2014

1.4 Research Questions

- i. What are the contingent factors that influence the environmental management accounting practices in manufacturing companies in Klang Valley, Selangor?
- ii. Does environmental management accounting (EMA) mediate the relationship between contingent factors and environmental performance?

1.5 The Objective of the Study

This study aims to achieve several objectives, which are listed below:

- i. To identify the contingent factors (uncertainty environment, organization size, environmental strategy, regulatory pressure, and top management commitment) influencing the environmental management accounting practice in Malaysian manufacturing industries.
- ii. To determine whether there is a relationship between environmental management accounting and environmental performance.
- iii. To examine the mediating effect of environmental management accounting in the relationship between contingent factors (environmental uncertainty, organization size, environmental strategy, regulatory pressure, and top management commitment) and environmental performance.

1.6 The Significance of the Study

This study bridges two research domains: environmental management accounting and the organizational contingent factors that influence manufacturing companies in Klang Valley, Selangor. At the same time, it reveals some key managerial implications of integrating environmental performance into organizational contingent factors. First, this study contributes to manufacturing companies regarding contingent factors' influences on environmental management accounting. Second, this research helps accountants, management teams, and boards of directors to identify the environmental factors in organization management that can ensure better control over the corporate environmental objectives. With environmental management, accounting, the management team can improve the cost of production and at the same time reduce the waste generation. It can also ensure sustainability of the resource supply for the business continuity. Third, the study develops a model to assist manufacturing companies in designing their environmental management accounting and environmental performance. In general this study aims to provide various parties, such as accountants, policy makers, academicians, and industry players, with insights.

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