

The Implication of an EMS Adoption

Grace Manuella Purnomo - 420525

2015/2016



**Saxion University of Applied Sciences
International Finance and Accounting SDP
Bachelor Thesis**

International Finance and Accounting SDP – 2015/2016

Bachelor Thesis

The Implication of an Environmental Management System (EMS) Adoption

Bachelor Thesis to obtain the Bachelor Degree in International Finance and Accounting from Saxion University of Applied Sciences

<i>Date</i>	<i>June 13, 2016</i>
<i>Author</i>	<i>Grace Manuella Purnomo</i>
<i>Student Number</i>	<i>420525</i>
<i>University 1st Supervisor</i>	<i>P.J.M. Bergmans</i>
<i>University 2nd Supervisor</i>	<i>H. Postma</i>

ACKNOWLEDGEMENTS

The accompanying thesis “Effects of an Environmental Management System (EMS) Adoption” was written to obtain the Bachelor Degree in International Finance and Accounting from Saxion University of Applied Sciences.

After almost 6 months, it is time to say thank you to all who have participated during the writing of the thesis. First, I would like to thank my thesis supervisor, P.J.M. Bergmans, for her guidance, supervision, and help throughout this thesis project. I also would like to thank my second supervisor, H. Postma. Lastly, a special thank you goes to my parents who have supported me from the beginning of this thesis project.

Thank you.

Grace Manuella Purnomo

June 2016

ABSTRACT

Within the sustainable business, to become an organization environment and human friendly is important. Sustainable business needs protecting the environment which provides the factors of production. The concept of sustainable environment business development which has important notions, without disregarding the needs of future generations, not ignoring the human needs, is a concept that aims to provide the basic needs of all society effectively.

A structured literature review has been carried out that analyzes published research, evaluates contributions, and summarizes the results of EMS and its influence to the entire supply chains. The authors selected only those papers that discussed EMSs and GSCM rolls on adoption of environment management practices through supply relationships.

This thesis contributes the EMS literature by providing a detailed insight why the EMS should be forced to be implemented by all of organizations or institutions. The business stakeholders, including governments had pushed the organization to implement the EMS/ISO 14001 as the basic strategies to have a better environmental footprint. Compliance avoids paying the penalty and environmental scandals, which leads to good name, reputation and enhanced corporate image. And good environmental performance significantly save costs, improves productivity and reduces the operation cost, and once again leads to a competitive edge. In addition, the study identifies the influence of institutional pressures and barriers on implementation of environmental management systems (EMSs), and the benefit upon successful implementation of EMS on environmental performance.

Keywords: *Environment Management System – EMS, Green Supply Chain Management – GSCM, ISO 14001, Green purchasing*

TABLE OF CONTENT

ACKNOWLEDGEMENT.....	2
ABSTRACT.....	3
TABLE OF CONTENTS	4
LIST OF TABLE AND FIGURE	5
CHAPTER I – INTRODUCTION	6
CHAPTER II – THEORETICAL FRAMEWORK	13
Environmental Management System	13
Green Supply Chain Management	19
Effects after Adopting an EMS in Social and Finance Performance.....	23
Barriers to an EMS Adoption in the organization	28
CHAPTER III – CONCLUSION	29
CHAPTER IV – POLICY	32
LIST OF REFERENCES	34

LIST OF TABLE AND FIGURE

List of Figure

Figure 1 - Green purchasing strategies: level of buyer effort in relation to impact on supplier behavior

CHAPTER I

INTRODUCTION

Problem Description

“We have to replant a lot of trees because there is a massive deforestation that also leads to global warming. We should stop eating Nutella, for example, because it’s made with palm oil.”

-Segolene Royal, France’s Ecology Minister-

In 2015, Ecology Minister of France, Ségolène Royal, was calling for a boycott of Nutella, a famous chocolate hazelnut spread made by the giant Italy chocolate group (Ferrero Corp.), because it contains palm oil and its production is contributing to the deforestation in Asia and Latin America (RT, Nut spat: Stop eating Nutella and save forests, French ecology minister says, 2015). *“Oil palms have replaced trees, and therefore caused considerable damage to the environment,”* she said, in June 2015, since then it became famous *“Nutella Crisis”* between French and Italy (PalmOilToday, 2015).

France consumes about 26% of the global Nutella supply which is sold in more than 75 countries and sold every 2.5 seconds per jar (Jones, 2015). Ferrero, as Nutella makers, imports nearly 80% of its palm oil from Malaysia and the rest comes from Papua New Guinea, Indonesian, as well as Brazil (theguardian, 2015). In addition, Ferrero said, *“Nutella awares of the environmental conditions and commits to source palm oil in a responsible manner (theguardian, 2015).”*

In 2011, French Minister charged 300% tax on palm oil because of its deforestation impact and causes obesity. However, in 2012, the draft law *“Nutella Law”* was cancelled after the amendment was rejected by French senate from 186 votes to 155 (BusinessInsider, 2015). In 2013, Ferrero published *“Palm Oil Charter”* as an evidence that Ferrero is starting their aim to use only traceable certified palm oil (Dubecki, 2016). Ferrero said, *“It is playing a leading role in the sustainable transformation of the palm oil sector (Worland, 2015).”*

The *“Nutella Crisis”* had changed the palm oil and its importance in the famous chocolate spread hazelnut to the public and the intense media coverage around this ingredient last year in France. Ferrero as the manufacture of Nutella is also highlighting the palm oil ingredients of their hazelnut chocolate spread, their quality and origin while insisting on the sustainable, responsible and RSPO certified origin (i.e. origin from environmentally-friendly plantation and sustainability respecting farmers) of the oil used by the company. Ferrero has announced its goal of using 100% of sustainable palm oil by 2015 to improve its image to the consumers (OECD, 2012).

Nutella is remains today as top brand in the market of chocolate spreads, and represents 61% of the market shares in the sector and generates hundreds of millions of dollars of revenue for Ferrero. Eventhough its negative effects on the environment, simply boycotting Nutella wouldn’t help very much, since approximately 80 percent of global palm oil production is

used for food purposes including as cooking oil, in margarines, noodles, and an assortment of baked goods. In addition, palm oil is used as an ingredient in non edible products including in the production of bio-fuel, soaps, detergents and surfactants, cosmetics, pharmaceuticals and a wide variety of other household and industrial products. Recently palm oil is widely used as a feed-stock in bio-diesel production (Growth, 2011; OECD-FAO, 2015).

Incorporate total global palm oil production in 2014 is 53.67 million Mt, but the Certified Sustainable Palm Oil (CSPO) is only about 11.1 million Mt (about 18% from total global production), and sold only 5.3 million Mt. This reflected that about 80% of the world palm oil production is “not environment sustainable certified”.

#NutellaGate and palm oil issues are an illustration depicting that the natural environment becomes part of a consideration in the sustainability of a business. Since the Earth Summit in 1992, the natural environment has become something very important for a wide variety of businesses and industries that made them to start analyzing what the impact of their operations on nature and how to reduce it (Shela, 2015). This is because many businesses and industries have to face various environmental problems, such as the scarcity of natural resources, climate change, pollution, global warming, etc. nowadays. However, these businesses and industries have to fulfill social and economic goals too. Therefore, all businesses and industries must begin to think about an effective and efficient policy or tool to solve the problems. It means these companies have to find a solution how to maximize the use of resources without giving impact on environment, but they can still promote economic development.

A lot of researchers have done research in order to find a way to solve the negative impact from the operations of the companies on the environment. They tried to find the solution from different perspectives and disciplines; and they found that managing environmental performance cannot from one area, but it should be through the whole supply chain. Thus, one way that has the potential to solve the problem is by conducting a green supply chain management (GSCM) practices. Khairani et. al (2012) suggests that companies need to undergo towards reviews their environmental obligations to gain competitive advantage. The companies need to integrate environmental initiatives, not only within the walls of the company, but also across the entire supply chain in order to ensure the company's sustainability (Khairani, Rajamanoharan, & Thirumanickam, 2012). This 'industrial eco-system' can only be maintained through a green supply chain management (Khairani, Rajamanoharan, & Thirumanickam, 2012). Green supply chain management (GSCM) is related to environmental improvement by means of reducing the environmental risks and impact of the firm and its supply chain partners while enhancing and balancing the firm's economic, operational and environmental performance (Khairani, Rajamanoharan, & Thirumanickam, 2012).

Green supply chain initiatives have benefits on the level of the individual firm and the national level because:

- For the individual firm, green supply chain management brings distinct competitive advantages in terms of low costs, green products, and better integration with suppliers (Nunes, Júnior, & Ramos, 2004);
- For the national level, green supply chain management can stimulate markets for green products, while creating incentives for small and medium sized-enterprises (SMEs) to adopt better environmental practices (Nunes, Júnior, & Ramos, 2004).

The problem for green supply chain management is the reduction of flexibility by the use of fewer suppliers and organization's culture (Nunes, Júnior, & Ramos, 2004). It becomes complex because of the involvement of the transference of knowledge, technology and environmental practices through supply chain (Nunes, Júnior, & Ramos, 2004).

However, in order to improve their environmental performance through the whole supply chain, the companies need to establish a system that can play a role as a policy to regulate and guide their environmental performance. The policy that has the potential to resolve these problems is the environmental management systems (EMSs). An Environmental Management System (EMS) is a formal set of internal procedures and policies that create a framework for an organization to identify, minimize, and manage environmental impacts, ensure compliance with applicable environmental laws and regulations, and reduce wasteful uses of natural resources (Case, 2006). In short, the Environmental Management Systems (EMSs) are strategic management approaches that define how an organization will address its impacts on the natural environment (Darnall, Jolley, & Handfield, 2008). (Case, 2006) said policy approaches encouraging or mandating EMS adoption may have the potential to change in corporate environmental behavior that will result in increased environmental protection. This statement characterizes as management-based where environmental regulations are used by outside organizations to improve environmental behavior and practices within the companies (Case, 2006). It will lead the companies to cost saving, improve in business performance, and gain competitive advantage.

Corporate environmental initiatives under various EMS have positive impact on environment performance. At the bottom layer are the physiological needs and the safety/security need of the individual (Rao, 2001). In the same manner, the corporate organizations start the EMS program as survival needs to control pollution and waste, now they could avoid threats and penalty in various environmental laws, increased productivity and competitive advantage (social needs), then begins their role as an environmental image company (Rao, 2001). Finally, they come to self-actualized needs in the environmental sustainable development (Rao, 2001). Since EMSs are developed in different organizational settings and organizations follow different types of EMS, it is expected that EMS differ across organizations in respect to the comprehensiveness of their coverage (Phan & Baird, 2015).

Research Question

Based on the above background, the research focused on identifying the challenges that face implementation and adoption of Environmental Management Systems (EMSs) and Green Supply Chain Management (GSCM). Also, by using the green supply chain management (GSCM) adoption model to investigate and review upon overcoming identified challenges and barriers and drive the following questions as follows:

- What are the effects for adopting environmental management system (EMS) on supply chain management (SCM) practices?

This analysis is also addressing the following sub-questions:

- What are the advantages and disadvantages for adopting environmental management systems (EMSs)?
- What are the consequences of environmental management systems (EMSs) adoption?
- What are the pressures for implementing environmental management system (EMS)?

The author address this sub-questions in order to provide reasonable statement for adopting both environmental management system (EMS) to improve supply chain management (SCM). This statement will help to make a conclusion regarding the link between green supply chain management (GSCM) and environmental management system (EMS).

Research Methodology

Before a research begin, the researcher has to decide which method will be used to research this study. Research methodology is divided into five different types, such as experiment, survey, archival analysis, historical study, and case study (Henriksson & Nyberg, 2005). These methodologies represent each different method and tool to collect and analyse data (Henriksson & Nyberg, 2005).

- An experiment is commonly assessed to be best suited when the research is aimed to find an explanation for something. An experiment can use manipulation to adjust the result and it can be repeated too if needed (Henriksson & Nyberg, 2005).
- A survey is used to conduct a research that relates to quantitative research, for example market research (Henriksson & Nyberg, 2005).
- An archival analysis is an analysis that drives the researcher to find an answer to his/her research problem by analysing already existing archival data; it can be used to answer research questions like who, what, where, why, when, and how. It also can be used when the researcher has introduced the prevalence of a phenomenon as a goals (Henriksson & Nyberg, 2005).
- A history study is a research to study events that have already occurred to see the development and at which speed the development has taken place (Henriksson & Nyberg, 2005).

- A case study is when the researcher is getting more detailed and multi-dimensional picture of the studied object with a limited amount of studied objects (Henriksson & Nyberg, 2005).

The main research methodology that will be used for this thesis is history study. Based on previous study from Nicole Darnall et. al (2008) about “*Environmental Management Systems and Green Supply Chain Management: Complement for Sustainability?*”, the author wanted to find the relationship between environmental management system (EMS) adoption and green supply chain management (GSCM) practices to reach sustainability. The author used #NutellaGate as an illustration to see the condition of the issue in reality. Firstly, the author gathered information about the major problem that occurred in the case and tried to figure it out in general theory. This knowledge was used to help the author to collect relevant theories about sustainability, environmental management system (EMS), and green supply chain management (GSCM). These theories were studied and presented to give better understanding and develop theoretical base that will leads to a conclusion to solve this problem.

Research Approach

Information can be collected with different methods without limiting other methods to be implemented. When information is collected for research, it has to be compressed, systematised, and inspected to be able to answer the questions behind the research (Henriksson & Nyberg, 2005). Qualitative and quantitative approach will be two kind of approaches to be used for research.

Qualitative Research means a research which data cannot be quantified. In the qualitative approach the background characteristics of the researcher and the intentions of the research are of big interest since they explain the perspective in which the research has been shaped (Henriksson & Nyberg, 2005). The purpose of this approach is understanding when the author is not trying to check the validity of the information, but it is to reach a deeper understanding about the problems in the study by collecting different kind of information (Henriksson & Nyberg, 2005).

Quantitative Research means a research with a quantitative data and can be measured to create a good opinion or conclusion about the problems. Basically, quantitative research focuses on gathering facts and studying relations between them (Henriksson & Nyberg, 2005). Statistical analysis is one method that will be used to get a result from quantitative research.

This study will use qualitative approach because there is no numeric data will be collected. Also, it will use literature review methodology as a main method to analyse the problems.

Data Collection

The data will be collected from different kind of sources. It can be from primary or secondary data. The difference between primary and secondary data is:

- Primary data is a data that is collected through other opinion to understand the projects, such as interview and questionnaire. There is no previous documentation exists (Henriksson & Nyberg, 2005).
- Secondary data is a data that has not been gathered for the specific research area, for example previous project, studies, books, scientific articles, and documentation (Henriksson & Nyberg, 2005).

The authors have collected secondary data. The secondary data was gathered from scientific journals and other sources. Next, it will be published as a literature.

In order to obtain the relevant articles, the author have set several key words in various combination as follows: *Environmental Management System (EMS), Green Supply Chain Management (GSCM), Green Purchasing, Advantages and Disadvantages of an EMS adoption, Barriers in adoptin an EMS, EMSs impacts in social area, EMSs impacts in financial performance*

The following search engines have been used to collect the relevant articles:

- Social Science Research Network
- Science Direct
- Google Scholar

Firstly, the search engines have selected several articles related to the key words. The selection of these relevant articles were eliminated based on the date when the articles were written, such as after 2000. Next, the articles were selected through its abstracts, summaries, and conclusions.

In addition to articles, books; magazine and newspaper articles; and other information were included to find a specific information about the theories and/or the cases to support the main information. It was collected via search engines and written after 2000.

Research Objective

Environmental management system is a strategic management approach which helps the companies to improve their environmental performance. It will assist the companies by addressing their impacts on the natural environment. According to Darnall et al. (2008), there is a question remains regarding environmental management system (EMS) is used by the adopters to challenge their supplier networks to become environmental friendly. Also, there is an issue announces that EMSs are only used for creating and documenting environmental policies and procedures rather than encourage the companies to improve their environmental performance (Darnall, Jolley, & Handfield, *Environmental Management Systems and Green Supply Chain Management: Complements for Sustainability?*, 2008). However, Darnall et al.

(2008) stated: *“The operational capabilities necessary to adopt and EMS may also assist an organization’s efforts to reduce its environmental impacts throughout its supply chain. The purpose of this thesis is to examine the capability of the potential policy, such as environmental management system (EMS), for promoting environmental sustainability not only within an organization’s boundaries, but also expanded throughout the supply chain, i.e. a company’s suppliers and customers.”*

CHAPTER II

THEORETICAL FRAMEWORK

Environmental Management Systems (EMSs)

What is Environmental Management System (EMS)?

Studies regarding environmental management systems (EMSs) have conducted since 1990s which focused on driving costs and benefits to achieve environmental sustainability. The first of environmental management system was the UK national standard BS 7750 which was created in the early 1990s, then, the European Eco-Management and Audit Scheme (EMAS) was launched in 1995, while the most commonly referred to international standard for environmental management, ISO 14001 in 1996 (Phan & Baird, 2015). This international standard was first developed in 1996, in line with ISO 9001, a quality management system standard, to facilitate the organizations to integrate both the systems; and after five years review for its adequacy and relevance, new edition of ISO 14001 came in 2004 (Deepak, Bishnoi, & Mona, 2015).

The British Standard Institute defines an environmental management system (EMS) as “*the organisational structure, responsibilities, practices, procedures, processes and resources for determining and implementing environmental policy*” (Maier & Vanstone, 2005). According to ISO 14001, an environmental management system is a component of the overall management system which includes organizational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing, implementation, achieving, reviewing and maintaining the environmental policy (Mangra, Cotoc, & Trăistaru, 2014). An EMS can be defined as a systematic management tool to approach business and its operation to achieve a desired level of environmental performance and to ensure relevant regulatory compliance (Statzer & Baldwin, 2011). In short, an environmental management system (EMS) means a strategic management tool that help a company to conduct good environmental performance in accordance with regulations adopted.

Why an EMS is created?

The agenda of both public and private organization is the challenge in adopting environmental management systems. The success of an organization depends on its stakeholders' management achieved by creating value and satisfying their needs and expectations. A lot of stakeholders (e.g. customers, governments, public authorities, and communities) ask the companies to adopt environmental management systems through ISO 14001 or EMAS certification to ensure their responsibilities on environmental performance. The pressure that these stakeholders exert constitutes a fundamental explanation of firms' environmental behaviors and strategies (Benito, Lannelongue, & Queiruga, 2011). Greater environmental pressure or stakeholder influence increases the organization's interest in adopting practices and developing initiatives that will enable it to address environmental issues (Benito, Lannelongue, & Queiruga, 2011). However, according to (Weiß & Bentlage,

2006), developing an EMS that meets the ISO 14001 or EMAS requirements is a very ambitious undertaking, and obtaining certification of an EMS requires additional effort and cost, especially if an outside register audits the EMS and verifies that it meets the requirements.

There are heaps of companies that are subject to environmental regulations, but they are not aware of it. Basically, by contributing to the negative impact on the environment, the companies may be subject to environmental regulations. There is no specific requirements about the size and type of organization that is subject to environmental regulations. However, a lot of companies, such as restaurants, clinics, machine shops (auto repair), bakeries, supermarkets, and so on, are affected by environmental regulation today. Even though there are many variations and exemptions to environmental regulations, it is best to start developing an EMS as soon as possible to avoid the costs of possible non-compliance (Weiß & Bentlage, 2006). The literature suggests that government-sponsored EMS programs are an important instrumental variable. When national environmental standards are perceived insufficient to control the pollution, local governments may ask that factories voluntarily agree to respond and offer assistance to do so (Darnall & Kim, Which Types of Environmental Management Systems are Related to Greater Environmental Improvements?, 2011). As such, assistance programs may encourage the adoption of all sorts of EMSs.

Other reasons why factories may adopt an EMS relate to the regulatory system and must comply with environmental regulations or face the threat of regulators levying legal action, penalties and fines; they may adopt an EMS to lower their environmental impacts and their regulatory burden. In other instances, factories may yield to stakeholder influences from regulators in an effort to maintain or improve their informal relationships and accrue political goodwill (Darnall & Kim, Which Types of Environmental Management Systems are Related to Greater Environmental Improvements?, 2011). According to (Weiß & Bentlage, 2006): *“Enforcement action is generally reserved for those facilities which make no effort to comply after repeated warnings and notifications”*. Factories may also implement an EMS because of pressures from environmental stakeholders, which may come in the form of public campaigns to persuade consumers to favor the products of companies that have demonstrated a stronger regard for the environment or product boycotts from organizations that have demonstrated a weaker regard for the environment (Darnall & Kim, Which Types of Environmental Management Systems are Related to Greater Environmental Improvements?, 2011).

An EMS has two main goals which are pollution or waste prevention and compliance with environmental regulations. Briefly, an EMS can help the companies to comply with environmental regulations and combine the companies goals with environmental goals in order to manage environmental obligations effectively (Weiß & Bentlage, 2006). It also can manage potential liabilities by systematically identifying risks and avoiding environmental and financial damages (Weiß & Bentlage, 2006).

The Economy of EMS

The companies need to concern about whether an EMS can reduce the cost of regulation or not, especially in macro-economic terms and the compliance cost for each company. There is an indication that a well implemented of EMS will lead the companies to gain benefits and competitive advantage, such as improves profits, resource efficiency, and waste reduction. It is important to be aware that implementing an EMS is a labour-intensive process and it may not bring benefits to the companies (Weiß & Bentlage, 2006).

Generally, the scale and nature of the environmental impacts of an organization are the indicators to measure the costs of implementation environmental management systems (EMSs). (Weiß & Bentlage, 2006) stated the cost of implementation also depends on the existence and stage of development of environmental management in the organisation, and on the speed at which implementation is undertaken. There are two types of implementation costs, such as internal and external costs. Internal labour costs, for both managers and other employees, are the greatest cost for most organisations (Weiß & Bentlage, 2006). Meanwhile, external costs mainly occur during the process of implementation of an EMS and possibly also on further external coaching of the improvement process after certification, include:

- Outside staff training,
- Consultant fees,
- In-house training and specialized training costs,
- Certification costs,
- Internal manpower costs,
- Investment costs for improving environmental performance (Weiß & Bentlage, 2006).

Fortunately, the costs of an EMS implementation usually not exceed the benefits of implementing an EMS.

Benefits in Adopting Environmental Management System (EMS)

By applying an EMS, a company are allowed to: (1) Identify and control the environmental impact of its activities, products or services (2) Continuously improve its environmental performance, and (3) Implement a systematic approach to setting environmental objectives and targets, achieving and demonstrating that they have been achieved (Statzer & Baldwin, 2011). Moreover, an EMS provides:

- ❖ *Greater Efficiency* – An EMS that defines a consistent set of requirements across a company eliminates redundant activities (Statzer & Baldwin, 2011).
- ❖ *Improved Communication* – As work processes are standardized, so that all employees, whether in corporate offices or the field, can communicate to each other without the confusion of multiple interpretations or definitions (Statzer & Baldwin, 2011).
- ❖ *Gains during Mergers and Acquisitions* – The acquired company need only adapt to the standard of the acquiring company, and the EMS makes it clear what needs to be done (Statzer & Baldwin, 2011).

- ❖ *Reduced Incidents Save Money, Reduce Harm to People and the Environment, and Enhance Company Image* – Companies that successfully implement an EMS invariably experience a significant reduction in environmental incidents (Statzer & Baldwin, 2011). Improved environmental protection reduced incidents and improved profitability (Statzer & Baldwin, 2011). The goal is to invest enough in prevention and appraisal to significantly drive down failure costs (Statzer & Baldwin, 2011).

Implementation of an environmental management system is just one of the ways to ensure the sustainability of economic activity, and this can be applied also in conjunction with environmental management systems, such as:

- ✓ Green products designing;
- ✓ Accounting of environmental costs;
- ✓ Integrated environmental systems (environment-quality, environment-energy, security- environment);
- ✓ Eco-marking of the products, as green products (Mangra, Cotoc, & Trăistaru, 2014).

Organizations that adopt environmental management systems (EMSs), regardless of their form, can benefit from improving their regulatory compliance by the ISO 14001 certification and indicates that the organization has implemented a management system that documents the organization's pollution aspects and impacts, and identifies a pollution prevention process that is continually improved over time which in turn can enhance their corporate image and increase profits (Darnall, Jolley, & Handfield, *Environmental Management Systems and Green Supply Chain Management: Complements for Sustainability?*, 2008). By relying on its environmental management system (EMS) structure, the firm reduced disposal costs, liability risks and improved manufacturing efficiency, customer satisfaction, new access to markets and also environmental management systems (EMSs) improve an organization's environmental performance (Darnall, Jolley, & Handfield, *Environmental Management Systems and Green Supply Chain Management: Complements for Sustainability?*, 2008). Furthermore, (Christini, Fetsko, & Hendrickson, 2004; Maier & Vanstone, 2005) stated companies that are proactive in implementing an effective EMS seek multiple benefits:

- Facilitating greater awareness of legislative requirements and thereby developing plans for compliance;
- Open markets and reduced trade barriers;
- Reduction in liability and risks;
- Identifying the potential for cost savings through efficiency improvements;
- Enhanced credibility among customers and peers;
- Reduction of harmful impacts to the environment;
- Prevention/reduction of pollution and waste, many times resulting in cost savings;
- Improvements in site and project safety by minimizing injuries related to environmental spills, releases, and emissions;
- Improved relationships with stakeholders such as government agencies, community groups, and investors by improving the company's public image through enabling more detailed reporting; and

- Establishment of a system for continued environmental improvement.

Regulators are interested in their potential to achieve greater environmental protection by providing leadership in the development of environmental management systems (EMSs) and promoting wider adoption of environmental management systems (EMSs) across a range of organizations and settings. Regulator interest in environmental management system is based on the notion that the benefits associated with reducing pollution can be enjoyed by society at large (Darnall, Jolley, & Handfield, *Environmental Management Systems and Green Supply Chain Management: Complements for Sustainability?*, 2008).

Principles of an EMS

Environmental management systems (EMSs) are strategic management approaches that define how an organization will address its impacts on the natural environment to challenge their supplier networks to become more environmentally sustainable (Darnall, Jolley, & Handfield, *Environmental Management Systems and Green Supply Chain Management: Complements for Sustainability?*, 2008). An EMS provides for a strategic approach to an organization's environmental policy, plans, and actions that affecting the entire organization and its relationships with the natural environment (Statzer & Baldwin, 2011; Darnall, Jolley, & Handfield, *Environmental Management Systems and Green Supply Chain Management: Complements for Sustainability?*, 2008). Moreover, an EMS under ISO 14001 standards affect daily operations, product design and manufacturing, refining manager and employee commitment, and how they will affect trade in national, regional, and global areas (Rao, 2001). It also could improve profits and increase market share while reducing environmental risk through green production. Hence, as systematic and comprehensive system for improving both business and environmental performance, EMSs are increasingly recognized.

Handful companies willingly and voluntary were starting green initiatives by implementing structured environmental management systems (EMSs) to reduce both pollution and inefficient use of natural source and minimized waste. This brought cost saving and the companies improved their business performance and gain the competitive advantage (Rao, 2001). EMS adopters, therefore, may be more likely to rely on their complementary knowledge-based capabilities towards working with their networks suppliers and customers to minimize system-wide environmental impacts (Darnall, Jolley, & Handfield, *Environmental Management Systems and Green Supply Chain Management: Complements for Sustainability?*, 2008).

An EMS can work well, especially help the companies to improve environmental performance if the companies not only focus on what happens, but also why it occurs. An EMS requires significant resources to develop and implement, and invariably encompasses a strong emphasis on a plan-do-check-act philosophy as the result of the work of W. Edwards Deming, the American statistician (Statzer & Baldwin, 2011). ISO 14001 is based on Total Quality Management (TQM) business concepts of continuous improvement, or PDCA (Plan, Do, Check, Act) (Deepak, Bishnoi, & Mona, 2015). The initiatives with a uniform managerial structure are the environmental management systems or EMS under ISO 14001

format comprise environmental policy, planning, implementation and operation, checking and corrective action and management review (Rao, 2001). Based on Deming's (1986) continuous improvement model, EMSs are intended to help organizations embed environmental becomes an integral element of their overall business strategy (Darnall, Jolley, & Handfield, *Environmental Management Systems and Green Supply Chain Management: Complements for Sustainability?*, 2008). For this reason, EMSs increasingly are being recognized as systematic and comprehensive mechanism for improving environmental and business performance (Darnall, Jolley, & Handfield, *Environmental Management Systems and Green Supply Chain Management: Complements for Sustainability?*, 2008).

The observed model for sustainability as environmental performance and compliance has a significant impact on sustainability because environment sustainability reduced (environmental performance) (Rao, 2001). In many countries, environmental management systems implementation was voluntary managed to obtain financial benefits (increasing production efficiency, reducing waste and finding new markets), and also to increase credibility obtaining bank loans, to attract investors and beneficiaries (Mangra, Cotoc, & Trăistaru, 2014). Companies that have an effective EMS realize the benefits, better environmental compliance, and a reduced cost of compliance, improved operating performance, increased accountability and improved profitability (Statzer & Baldwin, 2011). Compliance leads to avoid pay the penalty and environmental scandals, thus, compliance leads to good name and enhanced corporate image; and good environmental performance significantly save costs, improves productivity, and reduces the operation cost, and once again leads to a competitive edge (Rao, 2001).

How an Environmental Management System (EMS) work in the organization?

Most EMSs involve implementing a written environmental policy, environmental performance indicators/goals, and an environmental training program in place for employees, and internal environmental audits (Darnall & Kim, *Which Types of Environmental Management Systems are Related to Greater Environmental Improvements?*, 2011; Phan & Baird, 2015). Various management standards have been introduced to assist organizations in developing formalized environmental management systems.

EMS should be based upon an organization's documented environmental policy and contain the following characteristics: (1) Goals, methods, and a timeline; (2) Procedures for maintaining appropriate documentation relating to its goals; (3) A defined structure and the responsibilities for each task; (4) Corrective and preventative actions as well as emergency procedures; (5) An employee training plan with periodic updates to define goals of the EMS, responsibilities, and risks; and (6) A plan for periodic auditing of the organization's performance in achieving the goals and Environmental performance metrics are needed to measure improvement with respect to environmental goals (Christini, Fetsko, & Hendrickson, 2004). Such parameters are essential to support goal setting, monitoring, and continuous improvement in product design.

Certified and Non-Certified Environmental Management Systems (EMSs) Implementation

All EMSs adoptions are used to improve environmental performance of companies. However, EMSs arise in different organizational settings and factories adhere to different types of EMS (Darnall & Kim, *Which Types of Environmental Management Systems are Related to Greater Environmental Improvements?*, 2011). One of the primary structural distinctions among EMSs is whether or not they are certified by an independent third party auditor (Darnall & Kim, *Which Types of Environmental Management Systems are Related to Greater Environmental Improvements?*, 2011). So, there will be a difference between a company that adopt EMS certified and non-certified EMS.

Companies with their certified EMS are more likely to have enhanced visibility for their environmental practices because auditors and online services make the names of certified businesses publicly available. Because of this increased visibility, companies may feel greater external pressure to address their environmental concerns and meet their environmental goals (Darnall & Kim, *Which Types of Environmental Management Systems are Related to Greater Environmental Improvements?*, 2011).

On the other hand, non-certified EMSs are divided into two categories: (1) non-certified completed EMS and (2) non-certified incomplete EMS. If the companies adopt non-certified completed EMS, then, they adopt all EMS core components identified: a written environmental policy, environmental performance indicators/goals, an environmental training program for employees, and internal environmental audits. Meanwhile, the companies with non-certified incomplete EMS will conduct few of these EMS core components. As a result, companies which adopt complete EMSs are more likely improve their environmental performance in large part because have a stronger overall organization commitment towards the environment. However, failure to implement any one of these components is likely to hamper the ability of EMSs to achieve its full environmental potential (Darnall & Kim, *Which Types of Environmental Management Systems are Related to Greater Environmental Improvements?*, 2011).

As a result, the companies with certified environmental management systems (EMSs) conduct their environmental performance more effective and efficient since there is greater external pressure that motivates them to address environmental impacts and comply with the environmental regulations.

Green Supply Chain Management

In practice, environmental management systems (EMSs) may encourage some organizations to expand their environmental considerations beyond their internal operations to their suppliers and customers (Darnall, Jolley, & Handfield, *Environmental Management Systems and Green Supply Chain Management: Complements for Sustainability?*, 2008). Environmental management systems (EMSs) have been linked to stronger environmental performance than other voluntary environmental techniques – such as corporate environmental reporting improves performance may occur only within the organization's internal operations and for external stakeholders to verify whether environmental

performance improvements actually occurred (Darnall, Jolley, & Handfield, *Environmental Management Systems and Green Supply Chain Management: Complements for Sustainability?*, 2008).

In the late 1980s, the term of supply chain management arose and spread widely in 1990s. (Harrison, Hoek, & Skipworth, 2014) stated “*a supply chain is a network of partners who collectively convert a basic commodity (upstream) into a finished product (downstream) that is valued by end-customer, and who manage returns at each stage. Meanwhile, supply chain management integrates supply and demand management within and between companies in order to serve the needs of the end-customer*”. In the past, supply chain management was vertical integration where vertically integrated companies serving slow-moving mass markets once attempted to own much of their supply chains (Hugos, 2003). Nowadays, however, a lot of industries are starting to consider environmental supply chain management. These industries believe that environmental responsibilities is the cornerstone to achieve competitive advantage.

The best way to ensure sustainable product development is to look at the environmental impacts throughout the product life cycle and find out the greatest environmental pressures. Therefore, environmental management supply chain means engaging with suppliers by implementing the preventive approach, the promotion of greater environmental responsibility, and the use of clean technologies. In other words, it is not only about compliance with environmental regulations, but also strategic and continuous environmental improvement in the supply chain. The companies can take steps to implement green supply chain management by using the existing environmental supply chain tools, such as life cycle assessment (LCA), eco-labelling, or environmental management systems (EMSs).

Why greening the supply chain?

Green supply chain management is defined as green in each supply chain element, such as green in procurement, green manufacture, green distribution, and reverse logistics. Green supply chain's concept assumes full responsibility of a firm towards its products from the extraction or acquisition of raw materials up to final use and disposal of products (Eltayeb & Zailani, 2009). Green supply chain management (GSCM) has emerged from two primary origins, i.e. (1) life cycle assessment (LCA) approach that is used to assess a product's environmental impact by environment management and (2) integrating environmental issues with supply chain management issues to improve and optimize the supply chain process (Muduli, Govindan, Barve, Kannan, & Geng, 2013). The main purpose of greening the supply chain is to reduce and minimize the adverse effects on the environment and waste generated throughout the life cycle of product also assuring the consumer satisfaction and healthy products (Batra & Chanana, 2015). Moreover, an important thing in greening supply chain is balancing between economic and environmental performance of a business operation throughout the chains by establishing long-term buyer-supplier relationships.

Green supply chain management arises because of the important assets, such as eco-efficiency and remanufacturing process. Global market demand, government pressures,

investors, and other stakeholders also play a role in sustainable supply chain management practices. (Fortes, 2009) claim *“increasing government regulation and stronger public mandates for environmental accountability have brought these issues into the executive suites, and onto strategic planning agendas”*.

(Broek, 2010) stated companies that successfully adopt green policy can generate profits, provide social impact, and reduce environmental impact. The companies also will gain visibility, earn credibility, and develop a reputation for leadership, as well as attract to talent (Broek, 2010). Last but not least, the companies can improve all forms of resource efficiency.

Greening the Supply Chain through an EMS Adoption

As mentioned above, external pressures and incentives set by governments, customers, investors, and stakeholders are regarded as the starting points on greening the supply chain. Large companies (e.g. big brands) lead the process of greening the supply chain, being vulnerable to external pressure due to needs to protect brand reputation (Laurell, 2014). Whereas, small and medium sized enterprises (SMEs) often have limited financial resources and management capacity that make requirements on data delivery, audits and remediation activities create burdens for these companies (Laurell, 2014). (Laurell, 2014) argued: *“A way of responding is to establish supplier management of risk and performance, which often includes supplier evaluation schemes with environmental and social criteria. This creates demands for definition of life cycle based standards for the environmental and social performance of products to be implemented throughout the supply chain”*. The recommended tool to assist the companies in order to improve their environmental performance is environmental management systems (EMSs). However, this tool has impact in many firms to emphasize environmental programmes for both internal and external scope. Basically, the stage has been set for the extension of environmental management to the supply chain and to associated environmental sourcing strategies, such as sourcing as a function includes supply base management, the controlling of total costs, the creation and exchange of long-term value and the creation of value partnerships with suppliers (Sarkis, 2006).

Green Procurement

Regarding greening the supply chain, (Sarkis, 2006) said *“there still remains a lack of comprehensive frameworks and a dearth of information as to how the purchasing function can simultaneously integrate environmental initiatives into functional and strategic level decision-making processes”*. Strategically, customers have to cooperate with suppliers to discover the benefits in addressing environmental issues. In a supply chain, upstream enterprises (suppliers) provide products (e.g. materials, semifinished products, components, services) to downstream enterprises (customers) and in turn, downstream enterprises will purchase products to their upstream enterprises (Dawei, Hamid, Chin, & Leng, 2015). Thus, supplier is defined as the main character in supply chain because purchasing is the starting point for a company's supply chain.

(Dawei, Hamid, Chin, & Leng, 2015) demonstrated that suppliers have played a critical role in, have had a significant impact on, and their partner enterprises' operation and development

in many ways, such as delivery time, quality level, inventory position, production cost, service quality, and product design. It is known that environmental issue is becoming increasingly important. Government also set a policy to solve this issue, such as the use of recycled material; strict compliance with local, state, and federation regulations; and proper disposal of waste material (Monczka, Handfield, Giunipero, & Patterson, 2009). As a result, buyers must consider a supplier's ability to comply with environmental regulations as a condition for selection (Monczka, Handfield, Giunipero, & Patterson, 2009). (Dawei, Hamid, Chin, & Leng, 2015) mentioned *"building good partnerships with suppliers and managing suppliers effectively has already been to the key approach to improving an enterprises' competitive advantage"*. Green supplier has been developed from supplier management to reducing environmental risks. (Dawei, Hamid, Chin, & Leng, 2015) pointed out that green suppliers have contributed to the reduction of product life cycle cost and provided environmental-friendly, safer, and cheaper product to consumers by allocating the use of resources and raw materials more effeciently, thereby limiting the expenditure of environmental remediation. (Dawei, Hamid, Chin, & Leng, 2015) suggested *"a new and necessary requirements for modern enterprises to survive in global and information-based competition is to understand the importance, operational modes, and process methods of green supplier management"*. So, the companies need to selecting their suppliers to achieve environmental resources.

The companies need to find suppliers that are green and according to industry standards by collaborating with them. It is because, in recent years, some organizations have begun relying on their supply chains to improve their business performance and create value for their end customers (Darnall, Jolley, & Handfield, *Environmental Management Systems and Green Supply Chain Management: Complements for Sustainability?*, 2008). Organizations are focusing more tightly on their core competensies and relying on their suppliers to a greater degree for non-core activities, such as new product development through early design and concurrent engineering to green their supply chain to avoid inheriting environmental risks from less environmentally conscious suppliers (Darnall, Jolley, & Handfield, *Environmental Management Systems and Green Supply Chain Management: Complements for Sustainability?*, 2008).

The greening of suppliers refers to the greening of the inbound logistics in the supply chain, wherein suppliers are urged to refrain from the use of environmentally hazardous materials in their operations and are encouraged to adopt environmental management system (Rao, 2004). The starting of greening the suppliers initiatives has been the environmental management system (EMS) under ISO 14001 which encourages a company to incorporate policies that ensure its suppliers are aware of environmental practices and possible environmental liabilities (Rao, 2004). Through greening the suppliers, the companies will achieve several advantages, such as (1)the company to integrate and align its supply chain activities making its operation more efficient and cost effective; (2)the partnership that evolves between the company and its suppliers can lead to increased efficiency in their combined operations, greater product quality, and environmental innovation in the creation of green products; and (3) greening the suppliers will lead to increased market share, enhanced competitiveness,

improved financial performance, and enhanced corporate image, increased brand equity of the product and the fulfillment of the companies' social and environmental responsibilities (Rao, 2004).

Effects after Adopting an EMS in Social and Financial Performance

An EMS implementation requires investment in both financial and human resource. The employees' behavior and attitudes towards an EMS are an important determinant of a company decision to adopting an EMS. In general, a lot of studies have done to determine the motives and reasons why adopting an EMS is important or to identify the effects of an EMS in supply chain and environmental practices. (Chan & Hawkins, 2009) indicated that one of the main driving forces for seeking ISO 14001 certification are, in addition to cost savings, improved reputation and improved economic and environmental performance, is the interests of stakeholders, including customers, suppliers, communities, and environmentally conscious investors. However, (Chan & Hawkins, 2009) stated only a few studies have attempted to investigate the link between an EMS and employee as the key internal stakeholder, especially the impact on this stakeholder.

EMSs yield better when employees are treated as major stakeholders (Chan & Hawkins, 2009). In all cases, it is important for employees to identify their employers' principles and practices that reflect the beliefs of them, as it is hard to retain staff who are unable to take pride in their employers' actions (Chan & Hawkins, 2009). To improve the opportunity in successful environmental practices, employee involvement is crucial and should include teamwork, cooperation, and individual employee initiatives (Chan & Hawkins, 2009). When existing responsibilities and authorities are redefined to ensure the success of an EMS, it is often necessary for some employees to take on more works and responsibilities (Chan & Hawkins, 2009). It is believed that an EMS adoption enhances staff morale and at the same time, the companies gain benefits, such as enhanced financial performance and competitiveness.

Most studies about the relationship between EMSs and employees indicate that staff satisfaction and morale are enhanced by an EMS. (Chan & Hawkins, 2009) found that in the hotel industry, one of the most obvious and important advantages of implementing environmental programmes is an increase in employee satisfaction. They are willingly to change their work routines to assist the property in its environmental initiatives (Chan & Hawkins, 2009). The managers as part of a chain also see the benefits from customer satisfaction. However, the additional workload during EMS implementation may affect the employees who are already under pressure to provide good quality service while balancing other business concerns (Chan & Hawkins, 2009). A well designed EMSs requires more and better record keeping which forces managers and workers to find better ways to carry out documentation (Chan & Hawkins, 2009). As a result, an EMS or EMS certification has significant impacts on employee morale and satisfaction through additional workload, training, documentation, and auditing. There are two types impacts for adopting an EMS, such as positive and negative impacts of an EMS on employees.

The positive impact is an EMS adoption enhances employee satisfaction because they feel they have contributed to protect the environment. Strong top management support an EMS adoption positively influences employees attitudes regarding acceptance of the environmental programme (Chan & Hawkins, 2009). The job satisfaction of the company's executives is enhanced through their high level of involvement in the EMS planning process (Chan & Hawkins, 2009). The awareness and knowledge of employees are developed through environmental training and practices (Chan & Hawkins, 2009). The teamspirit of individual departments also improves when they know their leaders are environmentally knowledgeable (Chan & Hawkins, 2009). These positive attitudes will increase the marketability of a company.

Meanwhile, the negative impact is employee commitment will negatively affect if an EMS is used only to saving costs, improve company image, and attract green customers (Chan & Hawkins, 2009). They are affected by the environmental policies due to the business nature and global demands. An inactive green committee, which causes inadequate communication and a perceived lack of control, fueling suspicion employee about the motives of the real company to implement EMS, uncertainty about the future development of the system and lower participation in environmental programs (Chan & Hawkins, 2009). Regarding training and education, because of the lack of continuous and in-depth training and external communications, employees often do not have the knowledge of new environmental initiatives (Chan & Hawkins, 2009). Thus, a company need to updating its environmental measures if this company wants to continue to adopt an EMS.

In addition, the adoption of an EMS reflects on the supplier-buyer behavior. Figure 1 shows the relative position of the green purchasing strategies against axes of impact on supplier behavior and buyer's level of effort (Sarkis, 2006).

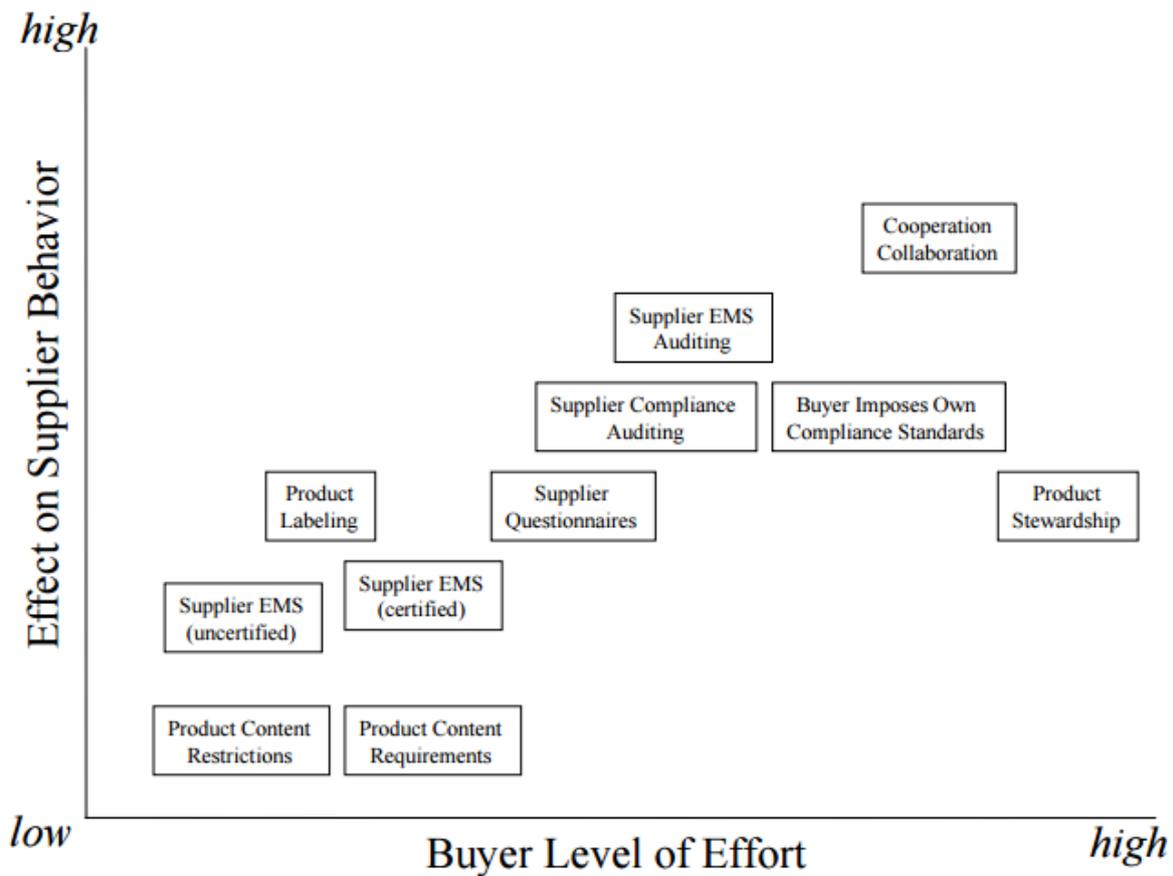


Figure 1 – Green purchasing strategies: level of buyer effort in relation to impact on supplier behavior (Sarkis, 2006)

(Sarkis, 2006) found that the firms with the most impact on their suppliers' environmental behavior were collaborating closely with those suppliers and making significant efforts over time. Types of supplier behavior and buyer's level of effort related to an EMS adoption are as follows:

- *Supplier Environmental Management Systems* are divided into two categories, such as uncertified suppliers and certified suppliers.
 - As *uncertified suppliers*, buyers require suppliers to develop and maintain an environmental management system (EMS) that generally conforms to one of the recognized international standards, such as BS 7750, ISO 14001, EMAS, and CMA. However, the buyer does not require the supplier to have the system certified as fully compliant with the appropriate standard. The cost to buyers of imposing this requirement on suppliers is quite low; buyers can simply demand that suppliers have an EMS. The impact on supplier behavior is also higher as the supplier will have an organized approach to environmental management (Sarkis, 2006).
 - As *certified suppliers*, buyers require suppliers to have an EMS that is certified. It is low cost to buyers and of even higher cost to suppliers to ensure compliance with EMS specifications, especially since the cost of certification by third parties may be expensive. The impact on supplier behavior would be

greater than for uncertified EMS because additional management resources would need to be allocated by the supplier (Sarkis, 2006).

- *Supplier Environmental Management System Auditing*, buyers audit not only the compliance status of the suppliers, but also their EMSs. This increases the buyer's level efforts and may also entail the use of additional experts in EMS, as well as the impacts on supplier would be higher (Sarkis, 2006).

Environmental management systems (EMSs) also has emerged as a means to systematically apply business management to environmental issues to enhance a firm's long-run financial performance by developing processes and products that simultaneously improve competitive and environmental performance (Watson, Klingenberg, Polito, & Geurts, 2004). (Watson, Klingenberg, Polito, & Geurts, 2004) believed that representing environmental expenditures in terms of effective organizational cost reduction is a highly viable approach toward managerial justification of EMS expenditures. Environmental cost of quality is used to measure the effects of an EMS adoption. This framework is an adaptation of the traditional cost of quality to provide a framework that links environmental and financial performance (Watson, Klingenberg, Polito, & Geurts, 2004).

The Environmental Costs of Quality (ECOQ) framework retains the four types of cost employed in the COQ framework, but extends the interpretation of the meaning of each type of cost in terms of environmental quality (Watson, Klingenberg, Polito, & Geurts, 2004):

- *Internal failure costs* have been expanded to include worker compensation and lost work hours due to injury; Superfund costs or liability for environmental cleanup including reclamation of lands impacted by toxic exposure at the manufacturing or waste disposal facility decontamination or reclamation costs at the manufacturing or waste disposal facility due to toxic exposure; excess packaging costs; Occupational Safety and Health Administration penalties or fines; and opportunity cost of underused resources, waste, or pollutants.
- *External failure costs* has been expanded to include loss of market share due to consumer sentiment; hazardous and non-hazardous waste disposal; Superfund costs or liability for environmental cleanup including decontamination or reclamation of lands impacted by toxic exposure outside the manufacturing or waste disposal facility; medical/environmental costs due to pollution in the communities surrounding manufacturing or waste disposal facilities; and end or useful life product disposal.
- *Appraisal costs* have been expanded to account for all costs associated with environmental monitoring.
- *Prevention costs* have been expanded to account for product design for sustainability, recycling, and disassembly; process design to reduce environmental impact of operations; worker training; and research and development costs associated with EMS.

(Watson, Klingenberg, Polito, & Geurts, 2004) said "The traditional view regarding environmental responsibility is that costs are minimized when the firm is in compliance with all environmental regulations and that the costs of reducing the level of impact beyond this

point outweigh any benefits the company may receive. Implicitly, the society will be exposed to some adverse environmental impact produced by either the product or the process used in production and that no extrinsic benefit in terms of financial incentive to the corporation exists for proactive management of the environment”.

(Watson, Klingenberg, Polito, & Geurts, 2004) study found that there is no difference in financial performance for both EMS implementers and non-implementers – an EMS strategy produces zero benefits. The results found by (Watson, Klingenberg, Polito, & Geurts, 2004) were as follows:

- The cost of reducing environmental impact does not seem to significantly impair a company's profitability;
- The benefits produced by EMS may not be fully realized by existing accounting practices;
- Companies employing EMS strategies may have not fully exploited their competitive position.

These results occurred because there are substantial costs associated with EMS implementation and the market does not render the costs of EMS implementation significant (Watson, Klingenberg, Polito, & Geurts, 2004).

According to (Lo, Yeung, & Cheng, 2011), a lot of studies have found both positive and negative impacts of an EMS adoption on financial performance. Some critics argue that adopting an EMS is just a bureaucratic paper exercise that requires excessive documentation, as considerable effort is required in preparing and updating procedures and records (Lo, Yeung, & Cheng, 2011). The second study finds that profit margin, sales growth, return on equity, and earning per share of Taiwan manufacturing firms are negatively affected after EMS adoption (Lo, Yeung, & Cheng, 2011). Based on a survey of 1510 supply chain and purchasing managers, the third study finds that EMSs in general have a strong negative impact on the major dimensions of firm performance and the adoption does not enhance the firm's competitive position in the marketplace (Lo, Yeung, & Cheng, 2011).

On the other hand, a number of surveys using subjective data have found positive relationships between EMS adoption and firm performance (Lo, Yeung, & Cheng, 2011). For example, the fourth study finds that EMS certified firms attain better financial performance than non-certified firms (Lo, Yeung, & Cheng, 2011). The other studies reveal that EMS adoption improves leads to cost reduction, quality improvement, waste reduction in design and equipment selection, and lead time reduction for manufacturers (Lo, Yeung, & Cheng, 2011).

However, when (Lo, Yeung, & Cheng, 2011) study through research on fashion and textiles firms found that ISO 14000 adoption has a significant positive impact on ROA and ROS. In other words, certified firms earned additional profits more than their non-certified competitors (Lo, Yeung, & Cheng, 2011). (Lo, Yeung, & Cheng, 2011) also found EMSs adopting firms in the fashion supply chain are more cost-efficient in their production processes, which leads to a better ROS than their non-certified competitors. This observation

provides an empirical evidence that EMS adoption is not only for marketing purpose and it is not for improving sales performance (Lo, Yeung, & Cheng, 2011). Nevertheless, an EMS adoption is used to improve a firm's profitability through cost savings.

Barriers to Adopting EMS in the organization

Nevertheless, the journey to achieve something does not always run smoothly, there will be obstacles that must be passed. Barriers are obstacles that restrict companies to adopt an EMS. Barriers to implement EMS in the organization are as follows (Deepak, Bishnoi, & Mona, 2015):

1. *Time*, due to various factors such as customer pressure, top management decision or for new business it is desired to get certified within minimum time.
2. *Human Resources*, competent manpower with depth knowledge of requirements of standard is prerequisite for implementation of system. It is observed that availability of competent manpower is a major constraint and it also show that human resources are the major barriers in implementing the system. Lack of cross functional nature working of employees is another barrier for organization during effective implementation of EMS. Another factor is unawareness of employees about benefits from implementation of EMS; which leads to less involvement of employees.
3. *Financial Resources*, certification, implementation and maintenance of EMS require high cost - includes manpower cost, training cost, compliance cost, documentation cost, monitoring of key environmental parameters like air, water, etc. while certification cost includes registration cost, third party certification audit cost and surveillance audit cost etc.
4. *Documentation*, industries experience shows large documentation which includes development of manual, procedure, operation control procedures, emergency plan and other formats, checklist, records etc., require more time to develop. Review, updating and control of documents require more efforts if organization's size is large.
5. *Corporate Attitude*, corporate attitude and company culture also play an important role in successful implementation of EMS. Study shows negative attitude of corporate and unfavorable company culture create a climate that deprives the EMS implementation process. Inconsistent top management support becomes a hindering factor in implementation of EMS.
6. *Understanding and Perception*, sometime practical difficulties like; how to identify the environmental aspects and their associated impacts; how to evaluate significance of environmental impacts etc. reduces the momentum of implementation.
7. *Stakeholder pressure*, a variety of stakeholder pressures related to their environmental performance and their adoption of EMSs.

CHAPTER III

CONCLUSION

This study is created based on the previous study, which is Darnall et al. (2008) about “*Environmental Management Systems and Green Supply Chain Management: Complements for Sustainability?*”. The purpose of this study is to find out the influence of an environmental management system (EMS) in supply chain management (SCM). According to the theoreticals discussed in this study, it can be concluded that the companies that want to take an environmental action within their supply chain have to adopt an environmental management system (EMS). In other words, green supply chain management (GSCM) is the expansion of supply chain management (SCM) affected by an environmental policy, such as an environmental management system (EMS) adoption.

Environmental Management Systems (EMSs) are a strategic management approach that assists the companies in addressing environmental issues and developing environmental policies to improve their environmental performance. The goals of an EMS are environmental protection and compliance with environmental policy. An EMS can help the companies in greening the supply chain through green purchasing because it is the beginning point of supply chain.

Green procurement can improve the environmental issues, such as the use of hazardous materials. Supplier involvement is vital in order to achieve environmental goals. Thus, a lot of companies are starting to look suppliers that are green by managing their suppliers environmental performance with the purpose to ensure the materials and/or equipments they supply are environmentally friendly. An EMS or EMS certification becomes an important component in supplier selection. An EMS adoption has an influence towards supplier behavior. When a supplier status is certified supplier, then, this supplier has great responsibility towards his/her buyers. This supplier has an organised approach to environmental management and additional management resources that should be allocated.

The next step is greening the operation through the companies’ employees. Employees are the key internal stakeholders. An EMS will be a great strategic approach for a company if this company can see its employees as a major stakeholder in the decision to adopt EMS. By adopting an EMS, the employees morale and satisfaction can be enhanced. They feel that they have contributed in environmental actions. Besides, they have an opportunity to develop their environmental knowledge through environmental practices and training. These employees attitudes will increase the marketability of the companies.

In short, there are several steps have to take by the companies to achieve environmental supply chain. These steps are:

- *Compliance with environmental policy* – A firm can response in environmental management by complying with environmental regulations. Environmental issues can be seen as an regulation interference because financial penalties will be a punishment for violator.

- *Cleaner Production* – A well designed EMS requires better record which forces managers and employees to perform environmental actions.
- *Eco-efficiency* – Reduce waste, increase yield, and save energy used while production process and this lead to effectiveness of material usage.
- *Design for environment* – A firm can reach this step if they already adopt an EMS and also manage its supplier environmental performance. So, the supplier can supply environmental friendly materials and equipments.
- *Green supply chain management* – If a company follow the steps from the beginning, this company will achieve green supply chain management. In this step, a company need to ensure and verify the material used for production are supplied by responsible suppliers which harvested from sustainable sources, i.e. plantation, which not damaging the forest or environment or polluting the air or water.

The benefits from adopting an EMS are as follow:

- *Greater Efficiency* – An EMS that defines a consistent set of requirements across a company eliminates redundant activities.
- *Improved Communication* – As work processes are standardized, so that all employees, whether in corporate offices or the field, can communicate to each other without the confusion of multiple interpretations or definitions.
- *Gains during Mergers and Acquisitions* – The acquired company need only adapt to the standard of the acquiring company, and the EMS makes it clear what needs to be done.
- *Reduced Incidents Save Money, Reduce Harm to People and the Environment, and Enhance Company Image* – Companies that successfully implement an EMS invariably experience a significant reduction in environmental incidents. Improved environmental protection reduced incidents and improved profitability. The goal is to invest enough in prevention and appraisal to significantly drive down failure costs.

However, everything definitely has its strengths and weaknesses. The disadvantage of adopting an EMS is the employees commitments will change if an EMS is used only to saving costs and boost a company reputation because of the pressures to achieve such goals. Moreover, there will be an inadequate communication and lower motivation to participate in environmental practices because of the inactive green committe. If there is lack education and training, then, the employees will lack of knowledge in regard environmental initiatives.

Also, there is a possibility the companies gain no benefits in terms of financial because of substantial costs associated with EMS implementation and the market does not render the costs of EMS implementation significant. As a result, there is no difference between an EMS adopters and an EMS non-implementers.

In addition, the consequences of adopting an EMS are:

1. The costs of implementation is expensive because of some companies requires a certified supplier which supplier has to buy and adopt environmental certification, such as ISO 14000 or audit the environmental performance through the third party,

such as EMAS. The majority small-medium enterprises (SMEs) often lack of money and knowhow technological expertise.

2. The differences in environmental regulations between countries will lead to companies migration, polluting migration activities from developed countries to developing countries where the environmental laws still weak.

Last but not least, there are several external pressures cause a company to adopt an EMS, such as:

- A lot of stakeholders (e.g. customers, governments, public authorities, and communities) ask the companies to adopt environmental management systems through ISO 14001 or EMAS certification to ensure their responsibilities on environmental performance.
- The regulatory system and must comply with environmental regulations or face the threat of regulators levying legal action, penalties and fines
- Pressures from environmental stakeholders, which may come in the form of public campaigns

CHAPTER IV

POLICY

#NutellaGate is a famous environmental issue in 2015 because a French Minister asked the societies, especially French citizen to boycott Nutella during her live show. Even though Ferrero, Inc. as the maker of Nutella has used 100% traceable segregated palm oil since a few months ago in the same year as French Minister asking for boycotting Nutella. Also, Ferrero, Inc. had established Palm Oil Charter in 2013. What is the problem?

Palm oil is known as a resource which has environmental impact because of the way to expand oil palm plantation. It is need to underline, the problem has arisen towards Nutella because palm oil is one of the main ingredients. Nowadays, natural environment becomes an important part of consideration in establishing a business.

Based on the above analysis, it is clear that researchers need to conduct studies or surveys which help in clarifying and giving more understanding about the concepts of environmental management systems (EMSs) and green supply chain management (GSCM), especially in developing solutions to obstacles, and disclosing benefits from each concept. Specifically, future studies are needed in the following fields:

- Explaining and giving examples in adopting an environmental management system (EMS), such as how an EMS work in an organization.
- Outlining the effects after adopting an EMS, especially in social and financial area.
- Suggesting solutions for the difficulties and problems that are faced by an organization in adopting an EMS, for example SMEs.

Managers in private and public institutions can take some actions to improve their environmental performance by contributing to the existing literature which are elaborated in the following:

An EMS adoption and employee job satisfaction

Several firms have failed in adopting an EMS because they adopt it without considering the role of their key internal stakeholders, such as employees. The companies adopt an EMS only for cost savings and increase company reputation. This action has make workers feel pressured. The employees' motivation dropped when they notice that their leaders are not environmental knowledgeable.

The key elements that lead to successful implementation of EMS are (Rao, 2001):

- All staff commitment and awareness.
- Top level executives' commitment and corporate policy
- Adequate funds and budgets
- Ability to identify environmental aspects and impacts, employee's education background

The training program became urgent needs for the companies to have skillful staff for the environmental management. Thus this training program must be discussed with local government or association to have central training center for environmental management training and auditing. The greatest difficulty in implementing EMS is changing the mindset of human beings, and motivating people to get excited about the environment requires a lot of training, familiarization and charisma on the part of change leaders.

Greening the suppliers program

A principal component analysis revealed that Market mechanism – comprising Customers, Distributors, Competitors and Consumer's Organizations play a big role in influencing corporate environmental initiatives. The influence of other stakeholders is varied. And the most important is Suppliers as 1st Tier, 2nd Tier suppliers as all have same obligation to protect the environment. The initial focus on internal greening operations has broadened into a stronger external greening orientation. As a result, many firms are now attempting to ensure that operations and performance within their plants – as well as those managed by partners operating upstream and downstream in the supply chain – are more sustainable, controllable, and preferable environmentally friendly as a group or have long terms supply cooperation.

Organisations that seriously want to promote environmental sustainability will need to recognise that green purchasing is only a limited tool. For it to have a significant multiplier effect the organisation will need to commit the resources necessary to engage suppliers in sustained dialogue and education. The purchasing department will need to become a centre of excellence in 'train the trainer' for environmental management (Sarkis, 2006).

The limitation in conducting this study is lack of relevant scientific journal that can give more knowledge and understanding about the relationships between environmental management systems (EMSs) and green supply chain management, as well as the impacts for adopting an environmental management system (EMS).

Bibliography

- Batra, S., & Chanana, D. B. (2015). Greening the Supply Chain: A Way towards a New Way. *International Journal of Business Quantitative Economics and Applied Management Research Volume 2 Issue 3*, 23-31.
- Benito, J. G., Lannelongue, G., & Queiruga, D. (2011). Stakeholders and environmental management systems: A synergistic influence on environmental imbalance. *ScienceDirect*.
- Broek, F. v. (2010). Green Supply Chain Management, Marketing Tool or Revolution? *F.N. van den Broek-Serlé*. Breda: NHTV Breda University of Applied Sciences.
- BusinessInsider. (2015, June 17). *French minister Segolene Royal says Nutella is destroying the world, France should stop eating it*. Diambil kembali dari National Post World: <http://news.nationalpost.com/news/world/french-minister-segolene-royal-says-nutella-is-destroying-is-the-world-france-should-stop-eating-it>
- Case, D. W. (2006). Changing Corporate Behavior Through Environmental Management Systems. *Social Science Research Network (SSRN)*.
- Chan, E. S., & Hawkins, R. (2009). Attitude towards EMSs in an international hotel: An exploratory case study. *ScienceDirect*.
- Christini, G., Fetsko, M., & Hendrickson, C. (2004). Environmental Management Systems and ISO 14001 Certification for Construction Firms. *ascelibrary*.
- Darnall, N., & Kim, Y. (2011). Which Types of Environmental Management Systems are Related to Greater Environmental Improvements? *Social Science Research Network (SSRN)*.
- Darnall, N., Jolley, G. J., & Handfield, R. (2008). Environmental Management Systems and Green Supply Chain Management: Complements for Sustainability? *Social Science Research Network (SSRN) - Business Strategy and the Environment, Vol. 17, No. 1*, 30-45.
- Dawei, Z., Hamid, A. B., Chin, T. A., & Leng, K. C. (2015). Green Supply Chain Management: A Literature Review. *Sains Humanika*, 15-21.
- Deepak, B., Bishnoi, N. R., & Mona, S. (2015). Challenges and benefits of implementing an Environmental Management System: A review. *International Journal of Advanced Scientific and Technical Research - Issue 5 volume 2*, 159-180.
- Dubecki, L. (2016, January 28). *Should we be eating Nutella? What you need to know about palm oil and those freakshakes?* Diambil kembali dari SBS Food: <http://www.sbs.com.au/food/article/2015/11/20/should-we-be-eating-nutella-what-you-need-know-about-palm-oil-and-those>
- Elleman, K., & Kyst, J. (2010). *Environmental Supply Chain Management: A Guide to Danish Companies*. Copenhagen: the Danish Environmental Protection Agency.
- Eltayeb, T. K., & Zailani, S. (2009). Going Green Through Green Supply Chain Initiatives Towards Environmental Sustainability. *Global Journal of Environmental Research*.
- Fortes, J. (2009). Green Supply Chain Management: A Literature Review. *Otago Management Graduate Review Volume 7*, 51-62.

- Growth, W. (2011). *The Economic Benefit of Palm Oil to Indonesia*. Arlington: World Growth.
- Harrison, A., Hoek, R. v., & Skipworth, H. (2014). *Logistics Management and Strategy: Competing Through the Supply Chain 5th Edition*. United Kingdom: Pearson.
- Henriksson, T., & Nyberg, T. (2005). Supply Chain Management as a Source of Competitive Advantage: A case study of three fast-growth companies. *Goterborg University - Thesis*, 7-10.
- Hugos, M. H. (2003). *Essentials of Supply Chain Management*. New Jersey: John Wiley & Sons, Inc.
- Jones, K. (2015). *Stop eating Nutella, French Minister says. Here's Why*. Diambil kembali dari The Weather Network: <http://www.theweathernetwork.com/news/articles/stop-eating-nutella-french-minister-says-heres-why/53024>
- Khairani, N. S., Rajamanoharan, I. D., & Thirumanickam, N. (2012). Green Supply Chain Management Practices: Evidence from Malaysia. *Malaysian Accounting Review, Special Issue, Volume 11 No. 2*.
- Kumar, R., & Chandrakar, R. (2012). Overview of Green Supply Chain Management: Operation and Environmental Impact at Different Stages of the Supply Chain. *International Journal of Engineering and Advanced Technology (IJEAT), Volume 1, Issue 3*.
- Laurell, M. (2014). *Sustainability of Supply Chains and Sustainable Public Procurement: A Pre Study*. Sweden: United Nations Environment Programme.
- Lo, C. K., Yeung, A. C., & Cheng, T. C. (2011). The impact of environmental management systems on financial performance in fashion and textiles industries. *ScienceDirect*.
- Maier, S., & Vanstone, K. (2005). Do good environmental management systems lead to good environmental performance? *Ethical Investment Research Services (EIRiS)*.
- Mangra, M. G., Cotoc, E. A., & Trăistaru, A. (2014). Sustainable Economic Development Through Environmental Management Systems Implementation. *Social Science Research Network (SSRN): Journal of Studies in Social Sciences, 6(1)*, 1-14.
- Monczka, R. M., Handfield, R. B., Giunipero, L. C., & Patterson, J. L. (2009). *Purchasing and Supply Chain Management 4th Edition*. South-Western: Cengage Learning.
- Muduli, K., Govindan, K., Barve, A., Kannan, D., & Geng, Y. (2013). Role of behavioural factors in green supply chain management implementation in Indian mining industries. *ScienceDirect*.
- Nunes, B. T., Júnior, S. M., & Ramos, R. E. (2004). A Theoretical Approach for Green Supply Chain.
- OECD. (2012). Mapping Global Value Chains. *OECD - Policy Dialogue on Aid for Trade*.
- OECD-FAO. (2015). *Agricultural Outlook 2015-2024*. Paris: OECD Publishing.
- PalmOilToday. (2015, July 6). *A Crepe to Defend Nutella*. Diambil kembali dari Palm Oil Today: <http://palmoiltoday.net/a-crepe-to-defend-nutella/>

- Phan, T. N., & Baird, K. (2015). The Comprehensiveness of Environmental Management Systems: The Influence of Institutional Pressures and the Impact on Environmental Performance. *ScienceDirect*.
- Rao, P. (2001). Impact of Implementing Environmental Management Systems in Different Countries Across SouthEast Asia: An Empirical Approach. *Ninth International Conference of Greening of Industry Network*.
- Rao, P. (2005). The Greening of Suppliers in the South East Asian Context. *Journal of Cleaner Production* 13, 935-945.
- RT. (2015, June 17). *Nut spat: Stop eating Nutella and save forests, French ecology minister says*. Diambil kembali dari RT Question More: <https://www.rt.com/news/267763-nutella-environment-france-minister/>
- Sarkis, J. (2006). *Greening the Supply Chain*. London: Springer.
- Shela, A. (2015). ISO 14001 Certification - A Step Ahead Towards Implementation of Green Supply Chain Management Practices in Chemical Industries. *International Journal of Scientific Research - IJSR*.
- Statzer, J. H., & Baldwin, M. J. (2011). Environmental Management Systems: Key Issues on Design, Value & Implementation. *E.Vironment, LP, Tombal, Texas, U.S.A.*
- theguardian. (2015, June 17). *Stop eating Nutella and save the forests, urges French ecology minister*. Diambil kembali dari theguardian: <http://www.theguardian.com/environment/2015/jun/17/stop-eating-nutella-and-save-the-forests-urges-french-ecology-minister>
- Watson, K., Klingenberg, B., Polito, T., & Geurts, T. G. (2004). Impact of environmental management system implementation on financial performance. *Management of Environmental Quality: An International Journal* Vol. 15 No. 6.
- Wei, P., & Bentlage, J. (2006). *Environmental Management Systems and Certification*. Uppsala: The Baltic University Press.
- Worland, J. (2015, June 17). *Why the French Ecology Minister Just Said We Should Stop Eating Nutella*. Diambil kembali dari Time: <http://time.com/3924050/french-ecology-minister-nutella/>