

## SUPERVISOR VERIFICATION

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THE EXTENT USAGE OF GREEN SUPPLY CHAIN MANAGEMENT (GSCM)  
AND IMPACT ON ENVIRONMENTAL PERFORMANCE IN  
MANUFACTURING SMEs IN MELAKA, MALAYSIA.

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## STUDENT'S DECLARATION

I hereby declare that the work in this thesis is my own except for quotations and summaries which have been duly acknowledged. The thesis has not been accepted for any degree and is not concurrently submitted for award of other degree.

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## DEDICATION

I would like to dedicate this work to my lovely parents who have given me various supports such as financial and moral support. They also encouraged me to accomplish the task even it is tough and taught me to done it one step at a time. It is also dedicated to my friends who have always encouraged and support me throughout the process of completing this study.

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A project report is an assessment of one’s great skill and aptitude. One needs to devote immense patience, time and brains for the compilation of one such rewarding outcome of true efforts.

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Thank you very much

## ABSTRACT

The increased attention given to the topic of Green Supply Chain Management (GSCM) warrants the writing of this paper. The increase number of environmental problems due to the global warming phenomena is the key driver for the manufacturing SMEs to use the of Green Concept. The Government of Malaysia play the roles in overcome the problems by bringing a green initiative to the manufacturing SMEs. The study is focus on Melaka, Malaysia due to the Melaka is the first country in Malaysia used green initiatives. This study aimed to investigate the extent usage of Green Supply Chain Management (GSCM) and impact on environmental performance in manufacturing SMEs. The objective of this study was specifically; i) To examine the extent usage of GSCM practices (Green purchasing, Reverse logistics and Green manufacturing) in manufacturing companies. ii) To examine the impact of GSCM practices (Green purchasing, Reverse logistics and Green manufacturing) on environmental performance in manufacturing companies. The survey is conducted by using probability sampling methods under quantitative research. The sampling used is multiple cluster sampling to get primary data by using questionnaire. Respondents were encompassed of 234 manufacturing SMEs used green initiatives around Melaka, Malaysia.

## ABSTRAK

*Perhatian yang lebih mendalam diberikan kepada topik Pengurusan Bekalan Rantaian Hijau (GSCM) waran penulisan kertas ini. Bilangan peningkatan masalah alam sekitar disebabkan oleh fenomena pemanasan global adalah pemacu utama bagi PKS pembuatan menggunakan konsep hijau. Pihak kerajaan Malayisa memainkan peranan dalam mengatasi masalah ini dengan membawa inisiatif hijau kepada PKS pembuatan. Kajian ini difokuskan di Melaka, Malaysia kerana Melaka merupakan negeri pertama yang menggunakan inisiatif hijau. Kajian ini bertujuan untuk menyiasat sejauhmana pengurusan bekalan rantaian hijau dan kesan ke atas prestasi alam sekitar dalam PKS pembuatan. Objektif kajian ini adalah khusus; i) Untuk mengkaji sejauh mana penggunaan amalan pengurusan bekalan rantaian hijau dalam syarikat-syarikat pembuatan. ii) Untuk mengkaji kesan amalan pengurusan bekalan rantaian hijau ke atas prestasi alam sekitar di syarikat pembuatan. Kajian ini dijalankan dengan menggunakan kaedah persampelan kebarangkalian dibawah penyelidikan kuantitatif. Persampelan pelbagai kelompok yang digunakan adalah untuk mendapatkan data primer dengan menggunakan soal selidik. Responden merangkumi 234 PKS pembuatan sekitar Melaka, Malaysia yang menggunakan konsep inisiatif hijau.*

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**LIST OF SYMBOLS**

B	=	Beta
0	=	Null
%	=	Percentage
R	=	Point of Estimate
R <sup>2</sup>	=	Point of Estimate Square
P	=	Significance Value
=	=	Equal



**ABBREVIATION**

Universiti Teknikal Malaysia Melaka	=	UTeM
Green Supply Chain Management	=	GSCM
Supply Chain Management	=	SCM
Small Medium Enterprises	=	SMEs
Statistical Package for the Social Science	=	SPSS
Green Supplier Selection	=	GSS
Natural Resource-Based View	=	NRBV
Analytical Hierarchy Process	=	AHP
Total Quality Environmental Management	=	TQEM

## CHAPTER 1

### INTRODUCTION

#### 1.1 Background of Study

Nowadays, world is facing problem of environmental contamination that causes global warming phenomena. Malaysia also facing the same problem in global warming phenomena, manufacturing SMEs take the initiatives of Green Supply Chain Management (GSCM) to reduce the environmental contamination and balance the company performance with environmental performance.

Generally, GSCM is an innovation from Supply Chain Management (SCM) and defined as modern management approach where supply chain is combine of economy and ecology. From the combination, its integrates environmental thinking into SCM. Other than that, GSCM aims to minimize or eliminate wastages including hazardous chemical, emissions, energy and solid waste along supply chain such as product design, material resourcing and selection, manufacturing process, delivery of final product and end-of-life management of the product” (Thoo *et al.*,2015). GSCM is the key of influencing the total environmental impact of any firm involved in supply chain activities and thus contributing to sustainability performance enhancement.

In this research study, the scope is focused on environmental issues facing in manufacturing SMEs in Melaka, Malaysia. Malaysian Government enforce environmental incentives and regulations to overcome the issues of limited number of resources and increase of environmental contamination (Chin-Chun and Keah, 2012).

According to the Kaur (2011), the Malaysian Government instated an award for private sectors to motivate organizations in Malaysia to offer innovative to tackle environmental problems such as Prime Minister's Hibiscus Award and Malaysia's private sector environmental award. Award winners serve as role models for other firms in the implementation of successful environmental management systems.

Moreover, manufacturing SMEs have taken a step ahead to 'green' their operational systems through ISO14000 series and ISO14001 is the most important standard within the ISO14000 series. According to the Handfield *et al.* (2005), use of ISO14000 is to guide the manufacturing SMEs to implement EMS to improve environment performance only within the firm's operation boundaries instead of through the supply chain.

The manufacturing SMEs in Malaysia play a vital role in the Malaysia economy. SMEs in Malaysia can be defined according to size, turnover and activity (Goh and Suhaiza, 2010). To be more specifically, Manufacturing, manufacturing-related services and agro-based industries consists of full-time employees not exceeding 150 employees and the annual sales turnover not exceeding RM25 million and for the services, primary agriculture, information and communications technology consists of full-times employees not exceeding 50 employees and annual sales turnover not exceeding RM5 million.

Moreover, cost reducing is become the main objectives for manufacturing SMEs in increasing the awareness of GSCM. The advantage of GSCM initiatives lead manufacturing SMEs to contribute in environmental performance.

## **1.2 Problem Statement**

According to Smith & Perks (2010), customers nowadays have become aware the damage being inflicted on the environment by businesses. Other than that, pressure from customer and government regulatory drove many businesses to aggressively adopt GSCM practices. According to Verdiem Corporation (2008), sustainability has

become a focus for businesses or company, as it was discovered that sustainable practices can strengthen reputation, improve employee morale, lead to cost savings and benefit the environment. Businesses value sustainable growth either by force of regulation, or because they see an economic opportunity in preventing pollution or recognising the strategic importance of environmental issues (Hendry & Vasilind 2005).

According to Ranjith (2011), manufacturing SMEs are lack in considered about environmental and the knowledge in GSCM. The industries pollute the environment to great extent knowingly and unknowingly, if knowingly they pollute what would be the reason behind it and why they are forced to do so. The industries experience lean wastes in their manufacturing process, so how could they identify the lean wastes in their process and eliminate it.

The problems that faced by manufacturing SMEs such as diminishing raw material resources, overflowing waste sites and increasing levels of pollution was a key driven to participation GSCM. In fact, it is a business value driver and not a cost centre (Wilkerson 2005). Therefore, it's important for firms to understand all the elements of green supply chain to ensure that they implement them comprehensively.

Greening the supply chain consist of few advantages to the manufacturing SMEs, ranging from cost reduction, to integrating suppliers in a participative decision-making process that promotes environmental innovation (Bowen, F.E., Cousins, P.D., Lamming, R.C. and Faruk, A.C., 2001; Hall, 2003; Rao, 2002). A growing number of corporations are developing company-wide environmental programs and green products sourced from markets around the world (Min and Galle, 1997).

Manufacturing SMEs can carry out a set of efforts to reduce the negative environmental impacts associated with the entire life cycle of products or services which starting from design to purchase raw materials for the use and disposal of the product (Zsidisin and Siferd, 2001). GSCM initiatives appear costly and offer uncertain returns (Linton *et al.*, 2007; Vachon and Klassen, 2006; Bowen *et al.*, 2001; Min and Galle, 2001). Firms also must confront a potential lack of green resources,

expertise and capabilities (Rao, 2006), and the complexity of green supply chain relationships (Matos and Hall, 2007).

### **1.3 Research Objectives**

From the concept of GSCM, objective of this research is to investigate and measuring the extent usage of GSCM and impact on environmental performance in manufacturing SMEs. The objectives of this study are as below:

- i. To examine the extent usage of GSCM practices (Green purchasing, Reverse logistics and Green manufacturing) in manufacturing SMEs.
- ii. To examine the relationship impact of GSCM practices (Green purchasing, Reverse logistics and Green manufacturing) on environmental performance in manufacturing SMEs.

### **1.4 Research Questions**

The research question is related to the problems that facing by manufacturing SMEs in practices GSCM. There are several research questions as below:

- i. To what extent usage of GSCM practices (Green purchasing, Reverse logistics and Green manufacturing) in manufacturing SMEs?
- ii. What is the relationship impact of GSCM practices (Green purchasing, Reverse logistics and Green manufacturing) on environmental performance in manufacturing SMEs?

## **1.5 Scope of Research**

This study aimed to determine the extent usage of GSCM and impact on the environmental performance in manufacturing SMEs. This study is about investigation what the factors that use by manufacturing SMEs in participate the GSCM, the impact of GSCM towards environmental performance in manufacturing SMEs and the level of acceptance GSCM in manufacturing SMEs. The result of the objectives makes the researcher focused on the scope of the research. The geographical areas are focused in Melaka, Malaysia. Currently, Melaka is the only country in Malaysia that implement GSCM practices by manufacturing SMEs due to the government initiatives which is 'Go Green' Initiatives. Therefore, there a lot of manufacturing SMEs qualified with ISO14001 that uses the government initiatives. Besides, the respondent of this study can be differentiated by type of manufacturing SMEs, level of worker and performance. The information collected from several methods which are survey and questionnaires.

## **1.6 Research Contribution**

In this context, research contribution of this study is about to overcome the problem in manufacturing SMEs to reduce the environmental problems. In this process, researcher became detailed in finding the main factor that brings manufacturing SMEs to the GSCM.

### **1.6.1 Theoretical Contribution**

In applying GSCM, the manufacturing SMEs create the strategies in internal and external of the firms. With this concept of GSCM practices, the manufacturing SMEs become more environmental friendly and at the same times manufacturing SMEs can reduce the operation costs. The result from this study is drove manufacturing SMEs to the high income and productivity process also become

smoother without having any waste from the operations process that can harmful to the environmental performance.

### **1.6.2 Practical Contribution**

According to Sheila (2016), “Proactiveness in a supply chain refers to the ability of managers to identify and anticipate current and future environmental management problems and opportunities”. In other words, managers identify problems and opportunities through systematically examining the environment (Hughes, 2007). When owner/managers identify the environmental problems and opportunities, they initiate proactive environment management strategies to resolve the problems and exploit the potential environmental management opportunities (Tang *et al.*, 2014; Meng *et al.*, 2013). Although proactiveness may lead to adoption of green practices, proactiveness is taken to be a preventive approach to environmental pollution in green supply chain management and therefore lacks the entrepreneurial aspect.

Managers are increasingly giving importance to environmental issues. According to Van Hoek (1999), 60 per cent managers have considered environmental issues to be highly important and 82 per cent have expected that the importance would further increase in the coming years. GSCM has emerged as an important component of the environmental and supply chain strategies for a few organisations.

Besides, the manufacturing SMEs become more environmental friendly and at the same times manufacturing SMEs can reduce the operation costs. The result from this study is drove manufacturing SMEs to the high income and productivity process also become smoother without having any waste from the operations process that can harmful to the environmental performance.

## 1.7 Summary

Environmental performance is the ultimate test of whether a GSCM are succeeds to the manufacturing SMEs. Thus, manufacturing SMEs around Melaka should be more focused to the environmental performance especially overcome the environmental problems. The result and the data from the concept of GSCM practices help manufacturing SMEs in balancing the performance of the firms and environmental performance. Malaysia manufacturing SMEs industries especially in Melaka become more easily to implement the government initiatives. From the point view, the concept of GSCM can be useful to the manufacturing SMEs firms to reduce the environmental problems and increase the sales of business.