

THE INVESTIGATION OF REVERSE SUPPLY CHAIN MANAGEMENT IN MALAYSIA'S
AUTOMOTIVE INDUSTRY: THE CASE OF PROTON

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I hereby declare that I have checked this project and in my opinion, this project is adequate in terms of scope and quality for the award of the degree of Bachelor of High-Tech Marketing
(Honours)

Signature :

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Date :

DECLARATION OF ORIGINAL WORK

I declare that this project is the result of my own research except as cited in my references. The research project has not been for any degree and is not concurrently submitted in candidature of any other degree

Signature :

Name :

Date :

DEDICATION

This research paper is lovingly dedicated to my parents, who have been supported all along time I conduct my research. Not to forget my beloved siblings, who have always given me ideas and inspirations since the very beginning of my research. They have given me the drive and discipline to tackle any task with more patients. Without their love and support, this project would not been made possible. Besides that, I also wanted to give a thousand thanks to my supervisor for this research, Dr. Amiruddin, who have always help and guide me throughout my research. Not to forget my Final Year Project's mates who always give opinions, share information and support. Last but not least, my beloved classmates that have fought altogether with me all these years, thank you for your cooperation, support and opinion.

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ABSTRACT

In this day and age, reverse supply chain has become popular for most companies in order to increase the environmental awareness, regulatory initiatives and economic pressures. Given to the popular issues like environmental concerns and cost-effective from the reverse supply chain activity, it is important for the most companies that taking action to improve their supply chain activities by developing the reverse supply chain into their systems. Thus, the aims of this research study is to define the main issues that lead to reverse supply chain management, and to examine the activities of reverse supply chain management that has in Malaysian automotive industry. This research is conduct within the automotive industry in Malaysia which focuses in their manufacturing processes of supply chain management. The primary data was collected through a number of in-depth interviews with Malaysia's most popular local automotive firm, Proton, while the secondary data was analyzed in the literature review through the previous research in similar area by previous researchers. The research questions were generated as well as the suggestions for the future researchers in the similar topic.

Keywords: *Supply Chain Management, Reverse Supply Chain Management, Manufacturing Process, Automotive Industry Malaysia, and Reverse Supply Chain Activities.*

ABSTRAK

Pada era globalisasi kini, rantaian bekalan secara terbalik telah menjadi semakin popular untuk kebanyakan syarikat bagi meningkatkan kesedaran tentang alam sekitar, inisiatif undang-undang dan tekanan ekonomi. Mengikut masalah yang popular seperti keprihatinan tentang alam sekitar dan juga kos efektif melalui aktiviti rantaian bekalan secara terbalik, ia adalah sangat penting untuk kebanyakan syarikat untuk mengambil tindakan bagi meningkatkan aktiviti rantaian bekalan secara terbalik melalui menerapkan rantaian bekalan secara terbalik ke dalam sistem mereka. Oleh demikian, tujuan utama untuk melaksanakan kajian ini adalah untuk mengenalpasti masalah yang mendorong kepada penggunaan pengurusan rantaian bekalan secara terbalik, serta mengkaji aktiviti rantaian bekalan secara terbalik yang terlibat dalam industri automotif di Malaysia. Kajian ini dilaksanakan di dalam industri automotif dalam Malaysia yang mana menfokuskan dalam proses pembuatan dalam pengurusan rantaian bekalan. Data utama telah direkodkan melalui temuramah secara mendalam dengan syarikat automotif tempatan yang terkenal di Malaysia, Proton, sementara data sekunder dianalisa dengan kajian literature melalui kajian-kajian berkenaan yang telah dilaksanakan oleh pengkaji sebelum ini. Soalan kajian dan juga cadangan dijanakan untuk pengkaji-pengkaji yang akan datang yang ingin menceburi kawasan kajian yang sama.

Keywords: *Pengurusan Rantaian Bekalan, Pengurusan Rantaian Bekalan Secara Terbalik , Proses Pembuatan, Industri Automotif Malaysia, Aktiviti dalam Pengurusan Rantaian Bekalan secara Terbalik.*

TABLE OF CONTENT

CHAPTER	TITLE	PAGE
	APPROVAL	
	DECLAIRATION	i
	DEDICATION	ii
	ACKNOWLEDGEMENT	iii
	ABSTRACT	iv
	ABSTRAK	v
	TABLE OF CONTENT	vi
	LIST OF FIGURE	ix
	LIST OF TABLE	x
CHAPTER 1	INTRODUCTION	
	1.1 Background of the Study	1
	1.2 Problem Statement	2
	1.3 Research Question	3
	1.4 Research Objective	3
	1.5 Scope & Limitation of Study	3
	1.6 Importance of Research	4
CHAPTER 2	LITERATURE REVIEW	
	2.1 Definition of Supply Chain Management	5
	2.2 Definition of Reverse Supply Chain Management	6
	2.3 Definition of Reverse Logistic	7

2.4 The Supply Chain Challenges	9
2.5 Benefits of Reverse Supply Chain Automotive Industry	10
2.6 Green Practices in Automotive Supply Chain	13
2.7 Theoretical Framework	14
CHAPTER 3 METHODOLOGY	
3.1 Introduction	18
3.2 Research Design	19
3.3 Research Method	20
3.4 Location of the Research	21
3.5 Research Strategy	21
3.6 Time Horizon	21
CHAPTER 4 ANALYSIS AND DISCUSSION	
4.1 Analysis of Reverse Supply Chain (Proton)	22
4.1.1 Resources Sufficiency	23
4.1.2 Environmental Impact	25
4.1.3 Government Policy	27
4.1.4 Competitor	29
4.1.5 Analysis Result	31
4.2 Discussion	32
4.2.1 The Definition of Reverse Supply Chain Management in Automotive Industry	32
4.2.2 The Driven-Factor of Reverse Supply Chain Management	33
4.2.3 Proton's Effort in Reverse Supply Chain Management	41

CHAPTER 5	CONCLUSION, LIMITATION, CONTRIBUTION AND RECOMMENDATION	
5.1	Conclusion	46
5.2	Limitation of Research	47
5.3	Contribution	47
5.3	Recommendation	47
	REFERENCES	48
	APPENDIX	53

LIST OF FIGURES

Figure	Title	Page
2.1	Flow of Goods in Reverse Logistic System (Dyckhoff et al., 2004)	8
2.2	Theoretical Framework	14
2.3	Research Flow of this Research	17
3.1	Deduction and Induction (Bryman & Bell, 2007)	19
4.1	Analysis Result	32

LIST OF TABLES

Table	Title	Page
2.1	Reverse Supply Chain Management/Green Practices in Automotive Supply Chain	15
4.1	Respondent Name	23

CHAPTER 1

INTRODUCTION

This chapter will briefly discuss about the background of study about supply chain management and reverse supply chain management in automotive industry, where to identify how does the supply chain and reverser supply chain works in automotive industry. Besides that, problem statement of the study, research question of the study along with the research objective, and the scope and limitation of the study will be discussed in this chapter. These would help to layout the purpose of this research and how this research will contribute to the problem.

1.1 Background of the Study

Over the last decades, the concept of reverse supply chain has been encouraged by the society to be applied into the individual business. Most of the reasons are due to the factor of environmental concerns, regulatory impacts, and the developing commercial recognitions (Blumberg, 2005). The reverse supply chains are becoming an essential part of business (Guide & van Wassenhove, 2002), especially for a growing number of technology companies in this country, in industries that ranging from carpets to computers. In some cases, companies are being forced to set up reverse supply chains because of environmental regulations or consumer pressures (Guide & van Wassenhove,

2002), where the logistic process moves oppositely from the general supply chain management. The uses of the reverse supply chain used by many manufacturers in Malaysia, in order to manage a good decision making processes as well as the sales. Kumar and Putnam (2008) clarify that there is a growing number of companies now start to focus a lot more on the reuses, remanufacturing, recycling and disposal of products and materials in their environmental management practices. To most companies, commercial product returns have viewed as a nuisance; consequently, their legacy today is a reverse supply chain process that was designed to minimize costs. Cost efficient supply chains are not necessarily fast; and, as a result, returns undergo a lengthy delay until they are reused, either as – is or remanufactured.

1.2 Problem Statement

The primary purpose of supply chain management is to achieve sustainable competitive advantages and long-term profitability for the individual companies within the supply chain (Ballou, 2004). One of the best way to reach this goal is by reducing the costs while increase more revenues of the sales. In other words, the companies should enhance and maximize its efficiency and effectiveness of the production, by lowering down the cost while contribute to the increases in quality. There is evidence that the tendency of many automotive companies to seek out low-cost solutions may have led to leaner but also vulnerable supply chain (Azevedo et al., 2008; Svensson, 2000) Thus, it is vital to put in more attempt in the research of the reverse supply chain, in order to realize and achieve the efficiency and effectiveness as well as sustainable competitive advantages concerning not only through forward supply chain, but also in reverse logistic system. However in United States, companies have become increasingly interested in reverse supply chain for economic reasons, and in the European Union (EU), companies have become interested because of legislation (Guide and Van Wassenhove, 2003).

1.3 Research Questions

- a. What are the main issues affecting the reverse supply chain management in Proton?
- b. What are the activities of reverse supply chain management involved in Malaysia Proton?

1.4 Research Objectives

According to Saunders et al. (2012), research question allows you to say what the issue or problem is that you wish to study. Research objective allow you to operationalise your question – that is, to state the steps you intend to take to answer it. The research objectives of this study are as following.

- a. To define the main issues lead to reverse supply chain management in automotive manufacturer.
- b. To examine the activities of reverse supply chain management in Malaysian Automotive industry.

1.5 Scope and Limitation of Study

Scope

The scope for reverse supply chain involves the activities of transportation, warehousing, sourcing, manufacturing and inventory management. Reverse supply chains are increasingly being considered and prioritized as a corporate strategy to stay

competitive (Marien, 1998, and Genchev, 2009). Reverse supply chain has been well-known to most of automotive companies especially in other countries like Brazil and China. Thus, this study shall involving Malaysian Automotive industry which is Proton, which emphasized into the manufacturing area.

Limitation

To complete this study, in-depth interview methods need to be done to the related automotive industry in Malaysia. It takes a long period to collect the primary data from the related companies. Besides that, it is also possible to get lesser responses than expectation regarding the data collection.

1.6 Importance of the Study

This research is to determine the challenges of reverse supply chain management in Malaysia, where this study can be use as the references for the related local firms especially technology companies. This study is to contribute to the local existing technology companies to understand more about the importance of the challenges that occurred in reversed supply chain.

CHAPTER 2

LITERATURE REVIEW

2.1 Definition of Supply Chain Management

Supply chain management is defined as ‘the integration of key business processes from end-users through original suppliers that provide products, services, and information and add value for customers and other stakeholders’ (Lambert et al., 1998). However, the definition of Supply Chain Management has changed over time as the component of supply chain has evolved (Snyder & Max Shen, 2011). Another authoritative definition can be clarified by Council of Supply Chain Management as follow:

“Supply chain management encompasses the planning and management of all activities involved in sourcing and procurement, conversion, and all logistics management activities. Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third party service providers, and customers. In essence, supply chain management integrates supply and demand management within and across

companies.” (Council of Supply Chain Management Professionals (CSCMP), 2011).

From the statement above, supply chain management can be defined as the management of the moving goods from the channel of suppliers, manufacturers, intermediaries, and finally to the customers. It is important for most of firms for having a department which to control the moving goods from raw materials until the finished products. By having this department the process of the moving materials can be monitored in an easier manner.

2.2 Definition of Reverse Supply Chain

Reverse Supply chain is the coordination and control, physical pickup and delivery of the material, parts, and products from the field to reuse, repair, recycle, refurbish, remanufacture and cannibalize, and subsequent returns back to the field where appropriate (Mahapatra et al. 2013). Meanwhile, Steven (2003) explains that reverse logistic comprises all activities involved in managing, processing, reducing and disposing of hazardous or non-hazardous waste from production, packaging and use of products, including the processes of reverse distribution. The theory of reverse the supply chain proposes that the product life cycle does not actually end with its delivery to end-customers, but still continues as the end-of-used that would be brought back from the end customers upwards to the manufacturers or suppliers along the supply chains for reuse, repair, recycle or disposal (Álvarez-Gil et al., 2007). Another definition from Guide and Van Wassenhove (2002) explains that the reverse supply chain is refers to the series of activities required to retrieve a used product from a customer and either dispose of it or reuse it. Prahinski & Kocabasoglu (2006) clarified that the scope of reverse supply chain in somehow a little broader than reverse logistic. Based on this, reverse logistic can be seen as one of the components in reverse supply chain. In the context of cognizant, reverse supply chain refers to the movement of goods from customer to

vendor. This is the reverse of the traditional supply chain movement of goods from vendor to customer. Reverse supply chain design decisions should reflect, and be driven by, differences in the marginal value of time among products.

To put it simple, the process of reverse supply chain differs with supply chain management in forms on the moving direction, where reverse supply chain moving oppositely in terms of the processes which start from the finished goods/returned products. It works differently from supply chain management where it is depending on the repairs, remanufacture, and recycle on the finished products, and reused by the customers. Thus, reverse supply chain plays an important role for the environmental impact that happening today because it has 'green' purposes which it helps reducing the hazardous and non-hazardous wastes from the production.

2.3 Definition of Reverse Logistic

Reverse Logistic (RL) was firstly called as 'reverse distribution', which is approximately the same research area with reverse supply chain, is referring to the retro-movement of outdated or damaged products and later including the retro-movement of end-of-life products for recycling as well (Brodin, 2002). Vogt et al. (2002) explains that the scope of the definition has now been expanded to encompass all the activities in the whole logistics system in the opposite direction of forward logistic flow. Reverse logistic, which is the management or return flow due to product recovery, goods return, or overstock, from a closed loop supply chain (Jayant et al., 2012). Another definition that broadly clarified as below:

"... the logistic management skills and activities involved in reducing, managing, and disposing of hazardous or non-hazardous waste from packaging and

products. It includes reverse distribution, which causes goods and information to flow in the opposite direction of normal logistic activities.” (Kopicki et al., 1993)

In other words, RL also has been defined as the process of moving goods from their typical final destination for the purpose of capturing value or proper disposal. There are many other definitions that emphasize the RL deals with goods and relevant information flow in the opposite direction comparing with the forward logistic flow, which aims to reduce and control the generation and disposal of wastes and to maximize the long-term profitability of the business (Vogt et al., 2002). The general RL system is shown in figure 1.

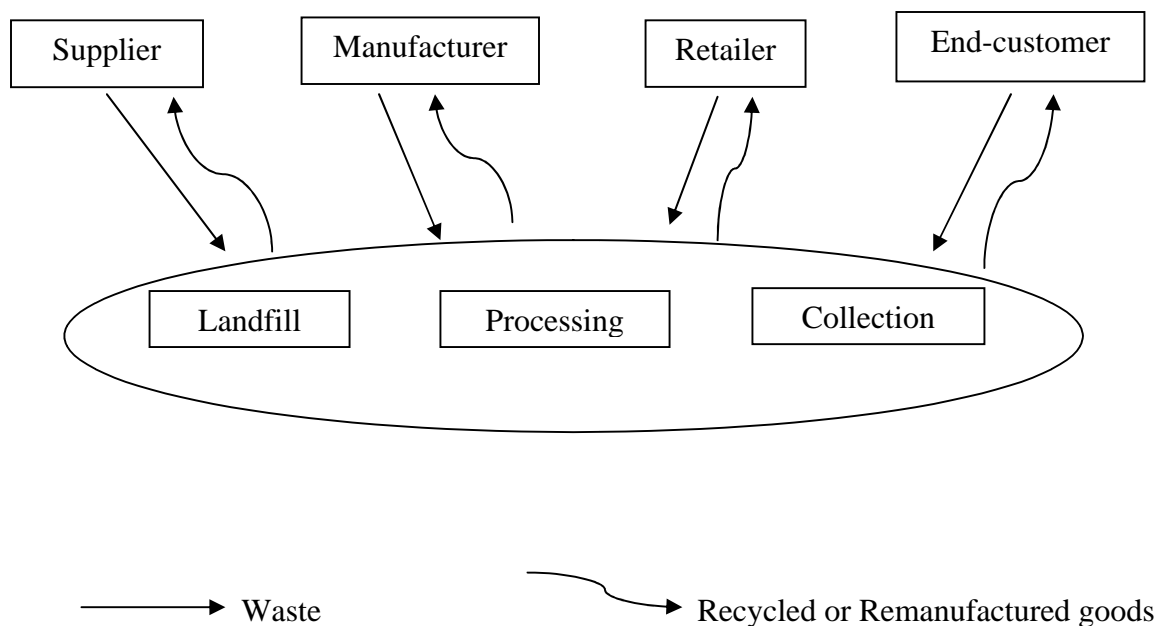


Figure 2.1: Flow of Goods in Reverse Logistic System (Dyckhoff et al., 2004)

2.4 The Supply Chain Challenges

A number of key supply chain challenges have emerged in recent times. These challenges are business-, consumer-, and government-driven (Hines, 2012). Globalization and the changing nature of conditions in world markets and the impact upon local supply present another major challenge (Hines, 2012). The local and global market are now becoming more environmentally aware of the spoil towards the environment nature which caused by the industrial activities. Designing green, ethical, customized value-added and efficient supply chain strategies is the management challenge for decades to come (Hines, 2012).

Mass customization is the first challenge of supply chain, it is known as the fulfillment of customer-specific orders for defined segments of mass markets, the cost and lead times that communicate value rather than an associated penalty for personalization or order size (Kodzi et al., 2007). The objective of producer, supplier, or retailer is to attract as much customers as possible to ensure profitability. The value can be mined through the customer offerings from what they want (customization, lower volumes, higher prices, higher margins), or through offering usual products to many (standard items, high volumes, lower production costs, lower prices, lower unit margin but reasonable total margin owing to sales volume). Customer has become demanding from time to time in terms of requiring new features or adaptations to a standard product and a bundle of services that are perceived desirably. Thus from here, the producer or supplier has to do act in fulfilling the demand profitably by integrating the supply chain processes. However, Hines (2012) clarifies that the problem for retailers and suppliers is how to design, configure, calibrate, integrate and synchronize supply chain processes to deliver the customer-focused marketing strategy we recognize as 'mass-customization' without incurring higher costs in inventories or 'make-to-order' production processes.

Many of the challenges of supply chain are interrelated and none more so than globalization. The effect of globalization can be seen everywhere. Mass customization is both contribution and also consequence of to the global transform. Bookbinder (2012) explains that the effects of globalization, such as international supply and distribution

channels and complexity of the structure of logistics networks, will greatly influence supply chains in the future. In contrast, factors such as a shift of centre of gravity of supply chain activities to China and India, and obstacles to world trade, including legislation and tariffs, will have a medium level of impact on supply chains (Bookbinder, 2012). Globalization and consolidation in supply chains have caused to an enhance in complexity especially in terms of stock keeping units (SKU), locations of customer or supplier, transportation requirements, trade regulations, taxes and so on. Therefore, companies need to take steps to simplify, as much as possible, the various aspect of their supply chains (Langley et al., 2009).

According to Langeley et al. (2009), the network facilities (plant, distribution centers, terminals, etc.) and the supporting transportation services have long been considered important. However, the network system in a dynamic, global environment is critical. One of the biggest challenges is the rapid changes especially in technology. The organizations require a network system or technology that is flexible and compatible to respond and evolve with the actives of the marketplace whether in the short run or long run. Technology companies, for example, may have to move manufacturing operations to a different country in six to nine months because of changes that can occur which affect their cost and/or customer service.

2.5 Benefits of Reverse Supply Chain Automotive Industry

Researchers and practitioners working on reverse supply chains can learn from practices used in forward supply chains, but first they need to adopt a business approach to the entire process (Guide and Van Wassenhove, 2003). According to Kumar et al. (2011), there are various types of reverse supply chains, and they arise at different stages of the product cycle; however, most return supply chains are organized to carry out five key processes:

1. Product acquisition: Obtaining the used product from the user by the reseller or manufacturer.
2. Reverse logistic: Transporting products to a facility for inspecting, sorting and disposition.
3. Inspection and disposition: Assessing the condition of the return and making the most profitable decision for reuse.
4. Remanufacturing or refurbishing: Returning the product to its original specifications.
5. Marketing: Creating secondary markets for the recovered products.

(Kumar et al., 2011)

The automobile industry can be known as one of the biggest industries, in the world, that deals with the most expensive goods. Thus, reverse logistic is considered to be a famous trend as well as a significant subject for this industry. The reverse logistics plays an important role in these main areas which are:

- Salvage of parts and materials from end-of-life vehicles.
- Remanufacturing of used parts.
- Stock-balancing returns of new parts from dealers.

According to Lee (2008), the main factor facilitating the participation of small and medium-size suppliers in green supply chain initiatives is inter-organizational initiatives, which attempt to improve environmental performance throughout the supply chain. However, these initiatives have primary origins stemming from external pressures such as regulations on take-back and the use of certain hazardous substances. Some authors defend such initiatives, asserting that this is mainly due to the following reasons: 1. Disruption risks engendered by environmental issues can be passed on through suppliers; and 2. There is a broad range of practices from green purchasing to integrated supply chains flowing from suppliers to customers and to the reverse supply chain,

effectively “closing-the-loop” (Zhu and Sarkis, 2004, 2006). In terms of closed-loop supply chain management (CLSCM and Srivastava (2007) defined green supply chain management as “integrating environmental thinking into SCM, including product design, material sourcing and selection, manufacturing processes, final product delivery, and end-of-life management of the product after its useful life.” The meaning of end-of-life vehicles (ELVs) is returns generated at the product’s end of life stage. Since closing the loop involves the implementation of an effective and efficient reverse logistics, CLSCM will be a source of competitive advantage (Hervani, 2005; Rao, 2002). In the same light, it has been stated that an increase in the cost associated with disposal of waste and acquisition of landfills has led manufacturing organizations to intensify efforts at exploring economically viable alternatives (Von, 2006). Therefore an efficient CLSCM is economically advantageous. It has been observed that closing the loop is very instrumental towards achieving a complete green supply chain management (GSCM) (Efendigil, 2008). Since one of the major reasons for GSCM is to eliminate or minimize waste in the form of energy, emission, hazardous chemical and solid waste (Hervani, 2005), CLSCM will invariably boost the actualization of this objective.

Although some organizations have adopted ecologically responsive practices to meet legislative requirements, ecological responsiveness can also lead to a sustained competitive advantage thus improving their long-term profitability (Paulraj, 2009). As evidence, Brazil’s case studies on the automotive sector, remanufacturing in Brazil is under development and its growth has been stimulated by discussion concerning the international trade of these types of goods, among other factors (MDIC, 2010). Remanufacturing of automotive products can be considered an effective strategy for promoting and increasing sustainability in the automotive industry. Recently, closed-loop SCs, which involve the simultaneous consideration of forward and reverse flows, have become an alternative for cost-effective management of reverse logistics operations (Ilgin and Gupta, 2010). Research involving reverse logistics in a SC context is also increasing (Lee, 2008; Murphy and Poist, 2003; Sahay et al., 2006; Zhu et al., 2007; Zhu and Sarkis, 2006). Research on reverse supply chain has been growing since the Sixties and research on strategies and models on RL can be seen in the publications in and after the Eighties. Due to the environmental concerns, the management of the Reverse