



Barriers to product return management in automotive manufacturing firms in Malaysia



Suhaiza Zailani ^{a,*}, Kannan Govindan ^b, Mohd Rizaimy Shaharudin ^c, Elisa Eg Lay Kuan ^a

^a Faculty of Business and Accountancy, Universiti Malaya, 50603, Lembah Pantai, Kuala Lumpur, Malaysia

^b Center for Engineering Operations Management, Department of Technology and Innovation, University of Southern Denmark, Campusvej 55, DK-5230, Odense M, Denmark

^c Faculty of Business Management, Universiti Teknologi MARA, 08400, Merbok, Kedah, Malaysia

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ABSTRACT

The increasing of global warming and depletion of natural resources has become a concern for society, government and industry. There is a growing importance on recovery of used materials and products amongst industry players. The Malaysian government has conducted many green campaigns and provided incentives for some green practices; however, the adoption of product return and recovery management is still low amongst automotive manufacturers. Therefore, it is important to understand the obstacles towards product return adoption so that the countermeasures can be thought of to overcome this situation. The objective of this paper is to investigate the barriers of product return management amongst automotive manufacturing firms in Malaysia. A total of 228 automotive manufacturers and assemblers were identified as the sampling frame, which was selected based on the census sampling method due to the limited sample size of the study. The data was analysed using the Partial Least Squares (PLS) with the measurement model had shown sufficient model fit and the structural model revealed that the data supported the hypothesised model. The large effect size and higher than zero values of the predictive capabilities imply that the model has sufficient variance explained for the predictive capability of the hypotheses testing of the study. Based on the results, this study has found that the resource barrier has a significant effect on the level of adoption of product returns. Specifically, the resource barrier and the extent of the manufacturing return adoption were positively related ($\beta = 0.361$, $p < 0.01$), resource barrier and the extent of the distribution returns ($\beta = 0.252$, $p < 0.05$), and resource barrier and the extent of the customer returns ($\beta = 0.333$, $p < 0.01$). The result reflects that automotive manufacturers have a lack of resources to afford the product return implementation; as a matter of fact, high initial investments in terms of finances, human resources, and time are required for the product return adoption. Other variables of the study, such as the attitudinal and perception barrier, information barrier, and technical barrier, were found to be insignificant with the adoption of product return management. As a conclusion, this study discovered that the resource barrier was the major obstacle that impeded the automotive manufacturers in Malaysia from adopting the product return management. The outcome is expected to help policy makers, manufacturers as well as stakeholders in setting appropriate policies and strategies to improve the product return and recovery management adoption.

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1. Introduction

In order to sustain in the long run, sustainable business practices are essential and additional attention to natural resources and

being more sensitive to the environmental issues are also important. Increasing awareness in the re-use of products and materials is one of the consequences of the growing environmental concern throughout the past decades. On the basis of this, many manufacturing firms are striving to achieve competitive advantages and improve performance by taking green aspects into consideration due to customer pressure and market demand. Besides environmental concern, waste reduction has a direct relationship with economic concerns as well. According to [Lai and Cheng](#)

* Corresponding author.

E-mail addresses: shmz@um.edu.my (S. Zailani), kgov@iti.sdu.dk (K. Govindan), rizaimy@kedah.uitm.edu.my (M.R. Shaharudin), elisa@gmail.com (E.E.L. Kuan).

(2009), waste means greater economic loss. Therefore, it will create more value to the organisation if manufacturing firms are able to reduce waste and fully utilise all their resources.

Nevertheless, it is not easy for an organisation to change its business processes because it usually involves time and cost, therefore, this attitude is causing needless pollution and waste (Wooi and Zailani, 2010). One example given in their study was related to the ineffective processes in the US automotive industry, in which this ineffectiveness caused them to retreat from the market leader board and later on be replaced by Japanese automakers that have better innovation. In order to adopt green innovation and improve business practices, firstly, firms need to review their existing processes along the supply chain and later on, to identify which area can be improved. This will help to eliminate the inefficiencies that might occur along the supply chain.

Malaysia is well established as a developing country and the key to achieving its goal of becoming a developed nation by the year 2020 lies on the government's concerted efforts in nurturing the industrial sector. It would be irrational, however, to undiplomatically aim to become the world's leading industrialised nation without considering the current global environmental condition and without calculating at what environmental cost this aim can be met. The Malaysian government has adopted important measures to address the issues concerning the waste management and conservation that might severely impact on the long-term sustainable development of the country in order to stand as a leading 21st century industrialised nation (Shaharudin et al., 2015a,b). According to JAS (2011), the total wastage generated by Malaysia's businesses had increased from 1.1 million in the year 2006 to 1.8 million tonnes in the year 2011. In addition, manufacturers in Malaysia contribute to at least thirty percent of the nation's total solid waste (Nasir et al., 1998), which is estimated to increase at approximately four percent per year. Having exerted an increasing pressure for environmental sustainability, organisations are expected to implement new practices and strategies to reduce the environmental impacts of their products and services produced/supplied (Sarkis and Cordeiro, 2001; Laurent et al., 2012; and Lemming et al., 2012).

The New Straits Times newspaper published on 22 July 2014 reported that the Malaysian Automotive Association (MAA) forecasted a high total industry volume (TIV) of 693,500 vehicle sales in 2015; 708,000 units in 2016; 723,700 units in 2017; and 740,400 in 2018 as a result of the Malaysian government pragmatic policies, political and economic stability, sound economic fundamentals, well-developed infrastructural facilities, also the educated and skilled labour force. Furthermore, the MAA also highlighted that the automotive sector is one of the key industries in Malaysia that contribute enormously to the country's GDP. However, the emergence of the automotive manufacturing sector in Malaysia has generated a substantial volume of waste. Based on the Malaysian Quality Environmental Report issued by the Ministry of Natural Resources and Environment, in the year 2010, the automotive sector and its related industry produced a total of 107,020.65 (5.69%) metric tonnes of scheduled waste ranked at number 5 from 14 identified high waste generation sectors. Hence, the rapidly expanding automotive industry in Malaysia needs to be given more attention, particularly on green sustainability issues, to reduce the waste generation as well as minimise the waste disposal and incineration.

Manufacturers in Malaysia will be less competitive if green practices are still not adopted as part of their business strategy, especially with the increasing trend of awareness on the global environmental protection. At the same time, the Malaysian government has emphasised sustainability and planning to be enforced on the Extended Producer Responsibility (EPR)

regulations in the near future. There are concerns about the social responsibility and extended producer responsibility (EPR) for waste minimisation management strategy when considering the aspect of sustainable development (Ferguson and Browne, 2001; Sundarakani et al., 2010). Furthermore, waste disposal and operating costs associated with virgin material usage are steadily increasing (Das and Chowdhury, 2011). Thus, the call for minimising the disposal of used products in landfills has become more pressing (Krikke et al., 2004; Gottberg et al., 2006; and Gonzalez and Adenso-Diaz, 2005). Having been aware of this inevitable demand, the manufacturers have been moving towards that direction. Whilst this was being observed, many Malaysian manufacturers did not pay much attention to product returns and waste recovery (Eltayeb and Zailani, 2009; Eltayeb et al., 2011; and Nik Ab Halim et al., 2011). From the research conducted by Eltayeb and Zailani (2009), the low adoption of green supply chains can most probably be explained by the lack of regulations and firms' capabilities, the high adoption cost, and low level of green awareness from customers as well as less attention to the social responsibility. The latest study by Shaharudin et al., 2015a,b revealed that the major obstacles derived from external causes were due to the difficulty in acquiring appropriate timing and the volume of the returns.

Nevertheless, it is not easy to implement sustainable manufacturing practices as it involves organisations' inter or intra-organisational activities that are related to the supply chain management processes. There are also manufacturers who succumb to the misconception that they are able to handle the product returns in the same way as they are handling the traditional forward flow of the supply chain. Manufacturers should be aware of the consequence of having an inefficient recovery system of the reverse supply chain process, where it is capable in reducing the return value and increasing the overall cost of goods sold by a firm (Guide and Van Wassenhove, 2009). According to Wooi and Zailani (2010), it is not easy for an organisation to change its business processes because it usually involves time and cost, and therefore, this attitude causes unnecessary pollution and waste. One example given in Wooi and Zailani (2010) study was related to the ineffective processes prominent in the US automotive industry, where this ineffectiveness forced them to retreat from the market leader board and later on be replaced by Japanese automakers that evidently have better innovation. In order to adopt green innovation and improve business practices, firstly, firms need to review their existing processes along the supply chain, and later on identify which area can be improved. This will help to eliminate the inefficiencies that might occur along the supply chain.

Despite all this, manufacturing firms should start to think of green practices and should engage in product return and recovery management in order to sustain themselves in the long run. With the increasing pressure for environmental sustainability, organisations are expected to implement new practices and strategies to reduce the environmental impacts of their products and services produced/supplied (Lewis and Gretsakis, 2001; Sarkis, 1995; and Sarkis and Cordeiro, 2001). According to Rao and Holt (2005), green supply chain practices enable organisations to achieve substantial cost savings, and at the same time it would also enhance sales, market shares, exploit new market opportunities and help them stay competitive in the market, which altogether leads to greater profit margins. All these benefits contribute to better economic performance of the organisation and also create job opportunities in the market which subsequently facilitates the economic growth of the country.

Product returns and recovery are in-line with environmental objectives that mitigate waste and maximise the amount of reusable parts in the production process. Recovered parts or materials can be resold or used to manufacture other products (Gungor and

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