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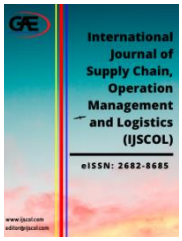

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A LITERATURE REVIEW OF ENVIRONMENTAL PERFORMANCE ON REVERSE LOGISTICS PRACTICES: THE PERSPECTIVE AND IMPACT

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Abstract:

Managing environmental performance is essential for an organization's value creation. Nonetheless, due to certain considerations that lead to socioeconomic and institutional factors, this process sometime become complicated. Reverse logistics is a green activity that can make a big difference in terms of environmental performance. Nowadays, most competitive countries tend to have better environmental performance. Reverse logistics can simply define as the return, exchange, refurbishment, remarketing, and disposition of products. The implementation of reverse logistics practices into business became a competitive advantage and it became strategic goals for the organization's economic benefits and somehow effects the environment legislation. Therefore, it is very important to understand how environmental performance can be improve through reverse logistics practices. The purpose and objective of this study is to understand the reverse logistics practices on environmental performance in view of comprehensive literature perspectives. To reach the objective, this study only explores secondary data which is review the literature as the research methodology. The findings of this research suggest that two factors namely the socioeconomic factor and institutional factor, can be used

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indicators and measurements for environmental performance in reverse logistics practices. The results are provided in a table.

Keywords:

Reverse Logistics, Environmental Performance, Impact, Literature Review

Introduction

Reverse logistics is not a new concept. However, environmental concerns have prompted an increase in the development of reverse logistics activities, in addition to economic considerations. The increased drive for global environmental awareness has been encouraged by government and legislative pressure. Concerns over declining landfill sites, resource depletion, and ozone layer damage, as well as environmental regulations, have prompted development for product life extension and recycling, both of which are related to reverse logistics (Bazan et. al., 2016). Due to increased environmental concerns, resource depletion, and regulatory regulations, reverse logistics has become more popular among businesses and stakeholders in recent years. (Vahabzadeh & Yusuff., 2015). Normally, reverse logistics occurs when a consumer returns goods to the manufacturers for a variety of reasons. Product return can occur for a variety of reasons and at different places along the supply chain including manufacturing, distribution, and customer related returns (Banihashemi et. al., 2019).

According to Huang et. al. (2015), return rates for catalogue and e-commerce retailers in the United States and other countries were about 15% for mass merchandisers and up to 35% for catalogue and e-commerce retailers. Aside from that, plastics account for 85% of all aquatic debris worldwide. The increasing use of plastics in the industry has resulted in air pollution that is harmful to human health, and the disposal of plastics shortens landfill lifespan (Penemontoya. et. al., 2020).

One of the good initiatives organized by Amway Thailand is that the company offers its personal and home care items in plastic bottles to consumers who receive discounts on their purchases if they return the empty containers to company salesmen who pick them up at regular intervals. These empty bottles will be remanufactured as reusable plastic bags. Consequently, this example highlights the value of implementing reverse logistics activities. (Rao, 2014).

In addition, return goods necessitated some investment from both the organization and the manufacturer due to the collection and reprocessing process. Aside from that, the reverse logistics systems must be managed, and the ongoing reverse logistics operations must be maintained. Some organizations may regard reverse logistics as a necessary evil rather than an opportunity for improved performance after going through the reverse logistics process.

Literature Review

The literature review describes the previous and this section covers the background and elements of reverse logistics practices and environmental performance.

Definition of Reverse Logistics

Reverse logistics activities that refer to all recovery actions in which a company obtains economic benefit directly or indirectly. It is a time-consuming and costly process that differs

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from forward delivery of a new product. The procedure varies in most cases depending on the reason for the return (Ramirez & Morales, 2014).

By capturing and recycling the values of used goods, reverse logistics has proven to be one of the most effective ways to minimise environmental emissions and resource waste (Gao, 2019). In addition, reverse logistics is an important part of green supply chain management as it can help to minimise the waste by managing and disposing of returned and used products using a variety of disposal recovery options (Banihashemi et. al., 2019). After going through certain procedures, the used goods will provide a service and added value to organisations and somehow can give a profit to the organisations.

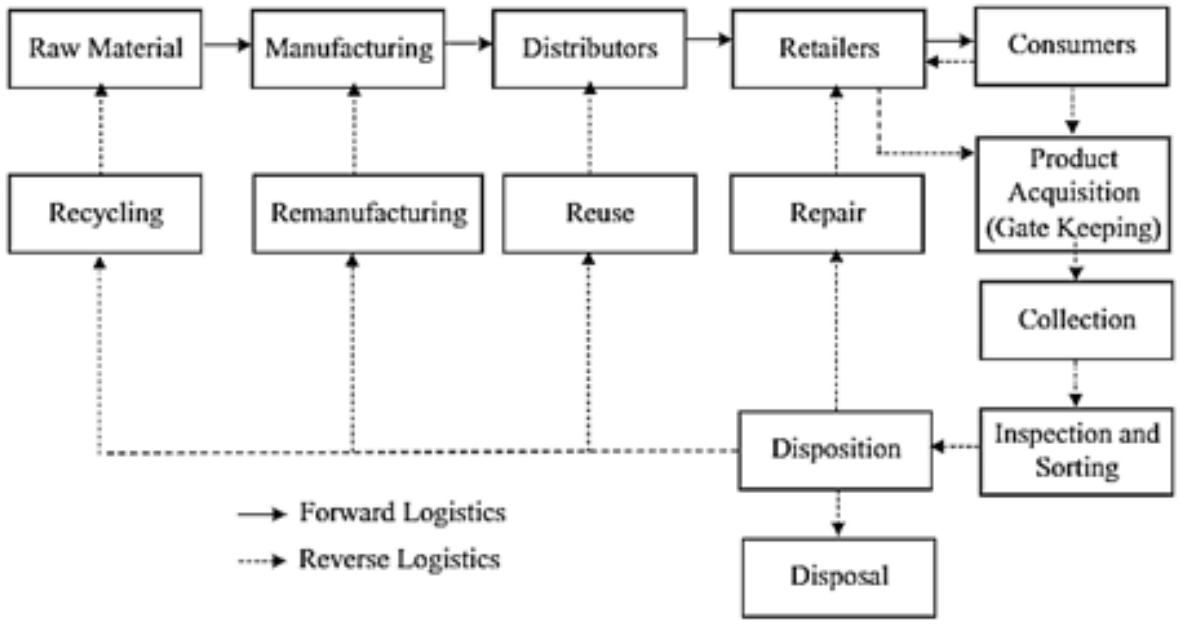

Figure 1: Fundamental Flow of Reverse Logistics and Forward Logistics Processes
Source: Banihashemi et. al. (2019)

Referring to the Figure 1, it shows the fundamental flow of reverse logistics and forward logistics. The reverse logistics process begins at the consumer's end, when manufacturers begin collecting unused or end-of-life items from them. The closed loop supply chain covers both forward and reverse logistics networks (Islam et.al, 2021).

Reverse logistics begins with the end users who are contacted to collect used or returned products, and then moves on to product acquisition, where the products are examined and classified into various groups, whereas forward logistics is the opposite. Reverse logistics is the process of designing, operating, controlling, and maintaining an effective and economic efficient flow of raw materials, parts, and components, finished products, in and /or post process inventories as well as relevant capitals and information starting from the end customers towards the initials suppliers to capture the remaining values of used products or waste disposal (Yu & Solvang, 2016).

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The authors Vaz et.al. (2013) compiled a description of reverse logistics, from the Council of Logistics Management perspective, it defined as the field of reverse logistics is broad and related to the skills and activities involved in the management of waste, movement and disposal of products and packages.

On the other hand, from European Working Group on Reverse Logistics it defined reverse logistics is involves all operations related with products and materials reuse as well as the logistics of collection, dismounting, and processing of products and used parts with the aim to assure their sustainable recovery without prejudicing the environment. According to European and American countries that have passed mandatory legislation in response to growing global environmental awareness, enterprises have placed a greater emphasis on reverse logistics and regard reverse logistics as extremely important as forward logistics in order to better integrate forward and reverse logistics. The use of reverse logistics in businesses can help to reduce environmental damage while also improving a business reputation (Hong & Huang, 2021).

Furthermore, reverse logistics includes the phase in the reproduction and reuse of a product or services which is including the acquisition of reused materials, remanufacturing, transportation, disposal, and recovery (Sun, 2017). Finally, the used products from customers are repaired and recovered back to the proper function at remanufacturing plants. After that, the recovered products can be delivered to the customer's locations and resold again (Gao, 2019).

Reverse Logistics Practices

According to De Brito & Dekker (2004), the first steps are collection followed by a combined inspection, selection, and sorting process, third steps are recovery and finally is redistribution.

The term collection may refer to the process of transporting goods from a customer to a point of recovery. The return goods are inspected, or their quality is evaluated at this stage, and a decision is taken based on the form of recovery.

The recovery options have been divided into three categories: direct reuse, product recovery management, and waste management. Direct reuse also known as
resale, refers to items that are still in good shape and can be reused again.

Repair, refurbishing, remanufacturing, cannibalization, and recycling are included in the second category of product recovery management, while incineration and land filling are included in the third category of waste management. In figure 2, reverse logistics processes are depicted as practices.

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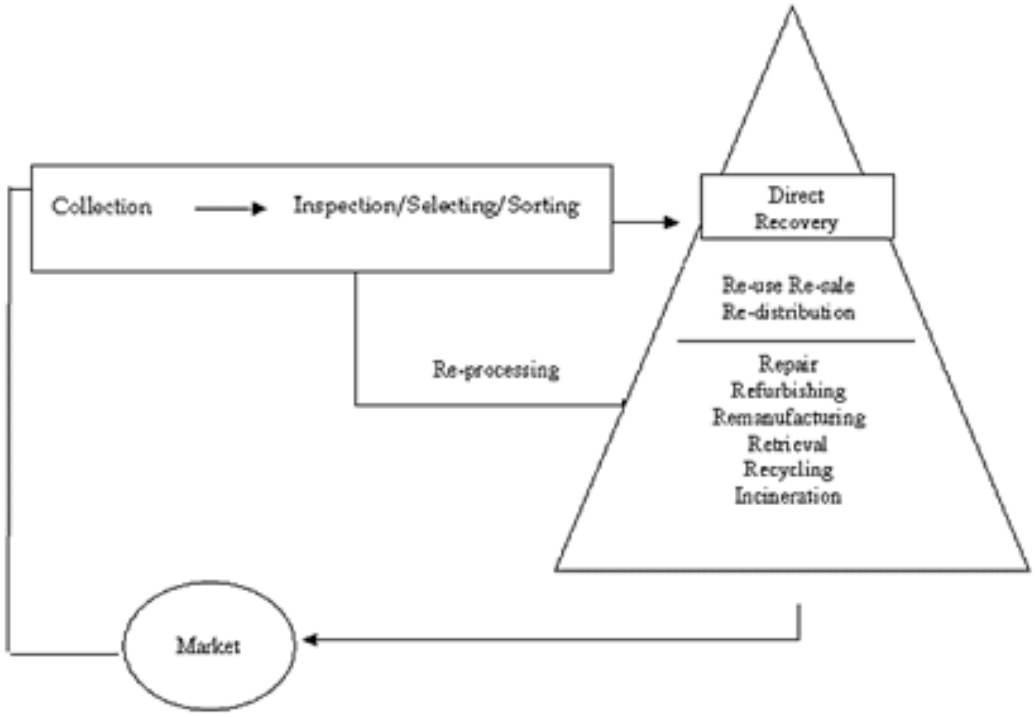

Figure 2: Reverse Logistics Processes

Source: De Brito M and Dekker R (2004)

In most cases, reverse logistics practises are implemented in five stages or phases. The first steps must be the acknowledgement of the need of return of goods. The second point to consider is collection. The third decision that must be taken is between two options: repair or reuse. The fourth step is to carry out the procedure, and the final step is reengineering, which involves an inspection of the goods to minimise product return over time (Vaz et.al., 2013).

Environmental Performance

According to Gallego Alvares et. al. (2014), society has recently become more interested in environmental issues. The environmental gain attention from the stakeholders for both levels which is for micro-economic and macro-economic. As a result, there is a growing focus on environmental conservation from government and environmental organisations, as well as related norms, which means that businesses are under the pressure to protect the environment (Chuang & Huang, 2018).

In term of microeconomic perspective, stakeholders strongly believe that environmental performance of companies is expressed in investments. However, from macroeconomic perspective, the environmental performance of countries can be defined as a country's ability to produce environmental public goods. In addition, a good corporate environmental performance can effectively reduce energy use and waste generation and directly enabling businesses to achieve cost savings.

Usually, most of the enterprises producing green products intend to project a perception of a strong sense of environmental responsibility which is expected to increase demand. Producing the green products can give a beneficial advantage to organizations such as establish green

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corporate image, achieve sustainable development, improve competitiveness and others (Chen et. al., 2018).

Besides that, the economic benefits from waste reuse and recycling activities, public concern about the environment, and positive social effects on these issues have all become major motivators for reverse logistics implementation to achieve sustainable development (Yu & Solvang, 2016).

Based on the above circumstances, the performance indicators will be established based on the activities and interactions between the activities, so it is allowing environmental performance indicators to be linked to reverse logistics (Sangwan, 2017). According to Lambert et. al. (2011), the indicator of measurement that need to be considered include conformity with environmental regulations, improving and strengthening customer relations, asset recovery, cost control, increase in profitability, and the overall efficiency of the reverse logistics system. There are two types of factors that are important to this study that can be grouped as socioeconomic factors and institutional factors.

According to Selvam et. al., (2016), the performance of firm is an important construct since it is widely used as a dependent variable all over the world. The specifics of the findings will be discussed in the main finding's column.

Research Methodology

The forms of qualitative and quantitative designs that provide precise direction for the procedures in the research approach are referred to as research methodology. Simply said, research methodology refers to the procedures used to respond to a set of research questions and objectives. The approach used is crucial since it might influence the research process and the quality of the findings. (Zalavadia et. al., 2018).

The most of literature reviews are qualitative in nature. A process for finding, analysing, and understanding the existing body of original work created by researchers and scholars that is systematic, explicit, thorough, and reproducible (Govindan & Bouzon, 2018). To reach the objective, this study only explores secondary data which is review the literature as the research methodology. As a result, the data used for this study was gathered from secondary sources such as online journals and book sections. Based on the keywords of reverse logistics, reverse practises, and how environmental performance influences reverse logistics practises, the journal was chosen. The outcomes of this study imply that two aspects, namely the socioeconomic and institutional factors, can be considered as indicators and measurements for reverse logistics practises' environmental performance. The findings are presented in a table. The findings may contribute to a greater demand for reverse logistics study in this area.

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Result and Findings

Table 1: Indicators and Measurement of Environmental Performance in Socioeconomic Factors and Institutional Factors

Factors	Variations	Measurement
Socio-economic Factors	Wealth or Economic Development	• Number of projects to improve/ recover the environment/ disposing capacity. • Level of recycle materials/ recycling level/ material utilization. • Level of energy intensity • Reuse of residuals level • Volume of energy consumption • Number of environmental lawsuits
	Education	• Well educated trained regarding environment performance
Institutional Factors	Government Effectiveness	• Country's internal characteristics • Measured by index EPI • Environment Indicators • Environment policy, audit review, audit report

This section summarises the findings and contribution made to the indicators and measurement of environmental performance shown in Table 1. It is intended to satisfy regulations while retaining the country's efficiency and productivity. The most significant factors are classified into two categories which is socioeconomic factors and institutional factors. Socioeconomic factors are concerned with wealth income or economic development and education whereas institutional factors are concerned with government effectiveness.

The indicators of wealth and economic development were measure based on number of projects to improve, number of projects to recover the environment, level of energy intensity, the level of use of recyclable materials, volume of energy consumption, number of environmental lawsuits. Besides that, for education factors the indicators were measured by well-educated trained regarding environment performance to the employees at the organization. This is highlighted by Islam et al. (2021), a theoretical underpinning relationship between stakeholder pressure and environmental practice adoption. They also stressed the need for training that

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mediates and enhances the relationship between stakeholder pressure and environmental practice adoption.

The institutional factors are concerned about government effectiveness. The indicators were measured included country's internal characteristics, environment performance index (EPI), environment policy, audit report and environment review. The environmental performance measures were determined based on the above factors. Islam et al. (2021) found in their research that environments logistics performance indicators have a positive influence on economic growth. Furthermore, further evidence by Oliveira Neto & Correia (2019), the introduction of reverse logistics by Brazilian construction and recycling companies resulted in benefits for both. The importance of supply chain sustainability has risen slightly due to increased public concern about the environment, organisations' adoption of green strategies and recognition of their social responsibility, and their need to respond to legislation aimed at reducing environmental impacts, as well as the realities of challenging market and economic competition (Banihashemi et. al., 2019). Once the organization understands the environmental and economic benefits of adopting reverse logistics, they will see economic benefits as reverse logistics is very attractive to both the manufacturer and the recycler.

In fact, reverse logistics is a logistical function that focuses on the backward movement of products from customers to suppliers, and these findings are consistent with those found in the literature. It's a key aspect of green supply chain management since it may help reduce waste by processing and disposing of returned and used products through a variety of dispute resolution methods. Green supply chain management is a systematic approach to supply chain management that incorporates environmental issues. It is a critical strategy for businesses to accomplish profit and market share goals by reducing environmental risk and effect (Multingi, 2014). Reverse logistics activities that are efficiently managed and properly handled can lead to long-term growth and generate a competitive advantage through increased profit, cost reduction, and improved customer satisfaction (Banihashemi et. al., 2019).

Therefore, this can provide an opportunity to improve profitability and awareness of protecting natural resources and reducing their solid waste emissions. Because business performance is a subset of organizational effectiveness that includes both operational and financial results, further research is needed to assess the impact and effectiveness of implementing reverse logistics.

Conclusion

Change in climate, societal pressure, scarcity of resources, competitive situations, and customer awareness have all contributed to the growing importance of reverse logistics around the world. The effect of reverse logistics practises on environmental performance was the subject of this paper. In order to meet the demands of their target customers and to safeguard the environment, competitive industries frequently adopt reverse logistics techniques, recycle, and reuse their products (Waqas et. al., 2018).

The success of activities related to materials and product reuse determines the efficacy of a reverse logistics strategy. To improve environmental performance and further reduce carbon emissions, the higher investments are needed and beneficial because more advance remanufacturing technologies can be applied in a reverse logistics system. The implementation of reverse logistics in organizations are act as the norms associated with environmental treaties of growing international importance.

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Besides that, the implementation reverse logistics has become increasingly strict, producing an enormous impact on the business environment such as good corporate image, enabling businesses to achieve cost savings either initial investment cost, long term recovery cost and direct costs such as waste treatment technology. The purpose and objective of this study is to understand the reverse logistics practices on environmental performance in view of comprehensive literature perspectives has been identified and explained, However, further research is required to fine tune the positive impact of reverse logistics on the success of organizations.

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