

The Impact of Supply Chain Integration and Environmental Management Practises on Technological and Innovative Performance

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Abstract

In the research study, the researcher has discussed and also shown the impact of integration of supply chain and also the practices of the management of the environment based on the performance of innovative and also technology. In this research study, the researcher also has shown the impact and sustainability of the environment and integration of the supply chain. Technological and innovative performance has shown the impact of the environment and the supply chain. The study has shown many issues such as delivery of raw materials on time, logistics issues, cost overrun issues and others that are highly related to the stakeholders. The stakeholders have not shown any interest when the company's profits have also decreased.

Keywords

Environmental management practises, Supply chain integration, technological performance.

INTRODUCTION

The research article will highlight supply chain integration along with practices of environmental management upon technological as well as innovative performance. Environmental management practices include environmental design, environmental management quality, life cycle analysis of products and services, supply chain management for the requirements of environmental management. Environmental management can revolve around some

practices such as carbon emission reduction, waste management, water usage and others along with consulting with stakeholders, suppliers, distributors, resource management, transportation, and others within the supply chain to enhance performance. A technology can either malfunction or effectively function along with effective product development as part of innovative performance in case of improvement within supply and management of the environment through environmental practices.

Problem rationale

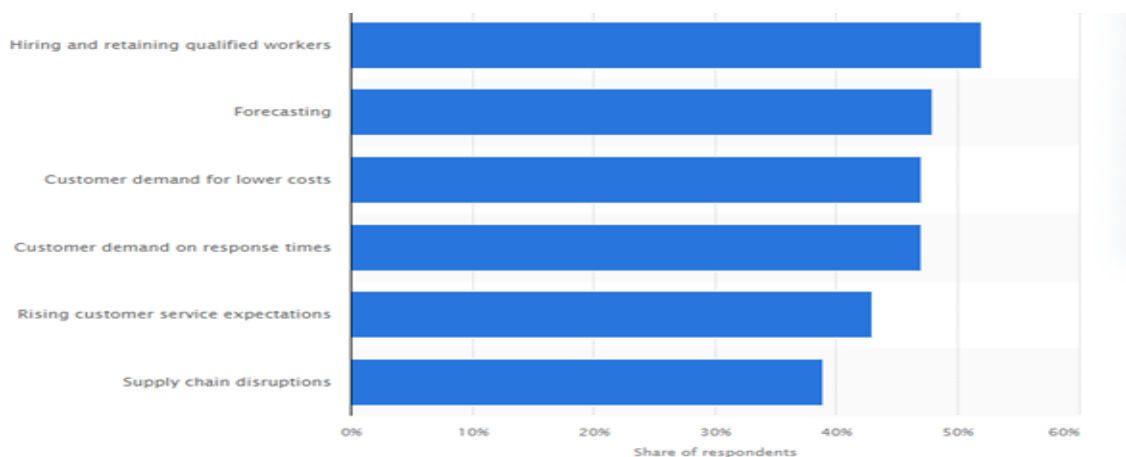


Figure 1: Disruptions in supply chain causes disruptions in integration of supply chain

(Source: [7], 2021)

There are several challenges faced by many global organisations such as *Amazon, Macdonald's* and other companies due to *high carbon emission, waste management* and also *not using non-renewable energy* and others. Amazon has faced an issue where the organisation has faced *inflation upon the cost of labour, transportation, and*

supply of raw materials that has an adverse effect on organisational profit as the company has to pay an additional amount of around *\$4 billion* (Edition, 2021). The disruption for COVID-19, frays the supply chain of Amazon. The disruption is highly affecting Amazon's business which relates to the company's supply chain. The above image

shows that the main causes of disruption in the supply chain are hiring and retaining qualified workers, customer demand for lower costs, supply chain disruption and others. Above 50% of respondents have responded in terms of hiring and retaining qualified workers ([7], 2021). The graph shows issues within supply chain integration where most of the organisations fail to integrate supply chains to meet customer needs.

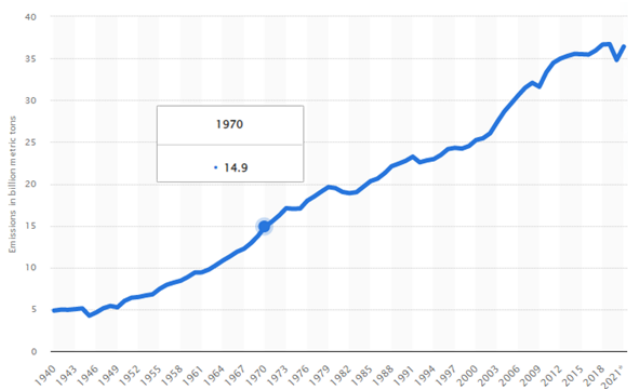


Figure 2: Increase of Carbon emission level in 2021
(Source: [8], 2022)

The above graph shows that from the year 2020 to 2021, the amount of carbon emission level has increased. From the data, it is understood that the supply chain has not managed properly ([8], 2022). As a result, global warming is increasing day by day and the snow is melting into water. All countries should take the necessary steps to prevent this carbon emission otherwise the earth will move to destruction. The technological performance of integration of the supply chain will be improved for reducing the carbon emission level.

Aim and objectives

In this study, the integration of supply chain and practices within environmental management resulted upon enhancement of technology along with innovative performance. The objectives of the research will be as follows:

- To understand the concept of supply chain and environmental management
- To evaluate effect of integration within supply chain and practises within environmental management for management of performance
- To analyse the sustainable management of supply chain and environment

LITERATURE REVIEW

Concept of supply chain integration and environmental management practises

Supply chain integration can be defined as integration of computers along with an information system involving every stakeholder in every stage of planning, execution, as well as completion of product and service development. [2], (2018),

opined **stakeholders, suppliers and distributors** can be brought in a specific platform to fulfil the needs of customers through computer and information technology. The integration within the supply chain offers enhanced solutions to every issue within an organisation such as **cost and time overrun issues**. The system supply chain integration requires communication between sellers and buyers through the goal where both benefit from the relationship. The process also takes the formation of the desegregated computer system. Supply chain integration provides superior performance within supply chain management and ensures a transparent relationship between customers and suppliers. **Manufacturing, distributing, supplying, and developing end products** through integrated communication is defined as integration of the supply chain.

Environmental management practices have a good effect on innovation and technological performance. [9]. (2020), argued that many organisations in society want **'green'** products and services. It is about management as well as the interaction between human activities and the natural environment. During the time of production of products, manufacturing has an effect on the environment. The environment management practises highlight organisational practices to **curb carbon emission, wastage, water usage** and others to enhance organisational performance. [1]. (2021), stated that the technological and also innovative performance **ensures that technology that has been used for producing products does not emit carbon dioxide in the environment**. In society, organisations are taking many steps to reduce environmental pollution, water usage, reduce carbon emission, waste management and others with the help of many technologies.

Impact of supply chain integration and environmental management practises on technological and innovative performance

In the market, the results of supply chain integration have improved the ability to respond to rapid changes in the market. [6]. (2021) stated organisation makes others, especially **manufacturers, distributors, stakeholders, suppliers, and employees** of supply chain integration aware of the needs of the customers. Supply chain integration needs **good relationships among all the participants** of the supply chain. Supply chain participants may not have enough information when the **organisation wants to be more responsible based on customer needs**. The supply chain integration's flexibility grants various parties to help each other's progress efficiency and the levels of productivity. The integration encourages the translucence capabilities that increases productivity, effectiveness, and efficiency of the supply chain. The **coordination within the flow of raw materials has been delayed** and the **formation of products and services sometimes face communication issues** that cause disruption in the supply chain. On the other hand, **carbon emission has increased during the production process** indicating mis practice of environmental management.

Proper communication, maintenance of coordination, avoiding of delay of raw materials and others enhances performance within the supply chain to further improve performance. [4]. (2019), argued that use of information management through *information technology (IT)* and *information and communication technology (ICT)* within the supply chain is to disseminate information with important members. Waste-generation technology that generates large amounts of waste and even uses electronic gadgets, which are destroyed when the technology becomes obsolete. Bibri, (2020), opined that as *information is disseminated within stipulated time with proper usage of IT and ICT and environmental footprints are reduced* within an organisation that further results in effective performance. Conversely, with *no usage of technology* within the supply chain, *circulation of inappropriate information and increase of environmental footprints* can decrease technological as well as innovative performance. As per Triple bottom-line theory, an organisation to gain profit, ignores the planet and people.

Sustainable management of supply chain and environment management

Environmental management connects *regulatory pressure, customer pressure, environmental uncertainty, and governmental support*. [11]. (2020), opined that the supply chain needs to be transparent and environmental management needs to be sustainable to ensure that organisational activities do not harm the surrounding environment. In this respect, both integration within the supply chain and environmental management can be sustainable. The maintenance of transparency between *stakeholders, employees* and others ensures proper *flow of information* indicating adoption of a sustainable approach in the supply chain. [12]. (2020), stated that the *sustainable development standards (SDG)* proposed by the *United Nations (UN)* ensures *transparency in the supply chain* and also *protects the environment* for better performance. Some possible technological advancements such as *artificial intelligence (AI technology), internet of things, social media, autonomous vehicles, robots*, have become effective to establish long-term relations between manufacturers and customers within such integration.

Sustainable supply chain management connects viable practices and also integrates environmentally into the lifecycle of the supply chain from *product development, design, manufacturing, transportation* and also *raw material selection*. Sustainability can be reduced by the supply chain and also focus on the efforts with the help of manufacturing products, raw material suppliers and also the retailers to increase sustainability.

MATERIALS AND METHOD

In this research study, the researcher has shown the different methods for collecting data from the valuable findings of the firm of Malaysia. In this research study, the researcher has surveyed the participants from *Carlsberg*

Brewery Malaysia Berhad. The researcher has conducted the *pilot test method by using 28 participants*. The researcher has shown 128 responses obtained through mail, *1000 responses* by the help of phone calls. At the final stage, the researcher collected *285 responses* that have been used in this study and also tested for the study's conclusion. The direction of integration of supply chain and environmental management focuses on *eco dimension* and also *performance based on technology*. The performance of supply chain integration and environmental practices have been based on technology that improves performance on technology and innovation. Secondly, the study has shown the independent variables such as organisation learning and management support.

FINDINGS AND DISCUSSION

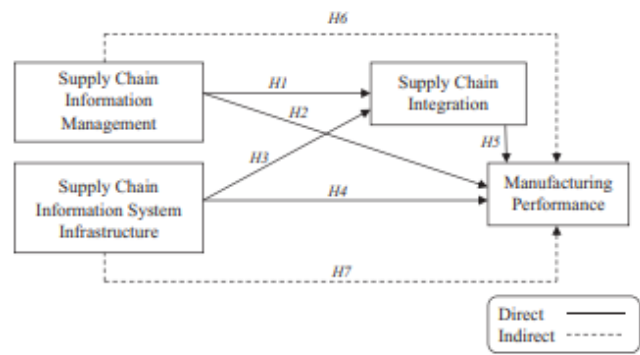


Figure 3: Connection between supply chain integration and others

(Source: Influenced by [10]. 2018)

The supply chain integration and management practices are based on technological performances. The management practices within the innovative and technological performance provides great opportunities for the sellers and the buyers that helps both to enhance the innovative and technological performance. The management of the supply chain is designed to also measure the importance of an organisation's information management. The organisation also has the scheduling and production planning programme between the *marketers, distributors, suppliers*, and others. The supply chain management's information is available for the right decision making in the organisation. It is important for an organisation to improve manufacturing performance through inclusion of manufacturers and suppliers ([10]. 2018). The integration was designed to measure the organisation's capacity. The performance of manufacturing was also designed to identify the ability of an organisation for managing the activity of manufacturing items. The internal consistency scale is 0.919 for these criteria. It can be seen in the image above that if information has been managed then only supply chain integration is possible to improve manufacturing performance.

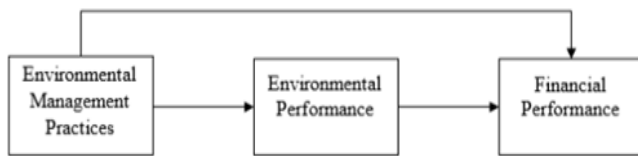


Figure 4: Effect of practices of environmental management
(Source: Influenced by [10]. 2018)

In this research study, the statisticians have recommended a test through the collected data that can be used for the analysis. The quality of raw materials is required to be improved through incorporating IT and other forms of technologies to further incorporate innovation and technological performance. From the research study, the researcher has found the value of p, the value is $P > 0.05$ ([10]. 2018). There is a negative aspect witnessed in this study's results if "technological and innovative performance" is considered as a dependent variable and "impact of supply chain integration and environmental management practices" has been considered to be an independent variable. The organisational activities need to be improved to enhance financial performance according to *triple-bottom-line theory*. Innovative financial performance is possible if the organisation manages the environment and supply chain.

CONCLUSION

The above research study is all about the integration of supply chains and the impact of environment management practices on the performance of innovative technology. The study focused on the problem of the disruption of the supply chain that causes the disruption of the supply chain. In the part literature review, the researcher has discussed the concept and also impact of environmental management and integration of supply chains based upon the performance of technology and innovation. The researcher has realised that the process of supply chain integration needs better relationships among the supply chain participants. In society, many organisations want 'green' products and services for the environment.

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