



INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

IMPACTS OF SUSTAINABLE SUPPLY CHAIN ON A FIRM'S PERFORMANCE

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Abstract:

This paper examines the impacts of the sustainability of a supply chain on a firm's performance. I used related content analysis and many articles to identify the literature and to research the sustainability of the supply chain on firm performance or industry. This paper presents an analysis of the literature briefing about the impact of sustainability on the supply chain. Firms are using various kinds of social sustainability methods to reduce environmental harm and improve their image in front of their customers. Few researchers have studied the impacts of sustainability practices on the sustainability of the supply chain. I also found that, while implying risk mitigation strategies to reduce supply chain risk on the performance, they are effective when used with sustainability efforts. I have also found that risk mitigation efforts are only effective and preventive when used in mature supply chains such as the OECD countries. This study shows all the impacts on a firm's performance that are carried out by the sustainability of a supply chain.

Keywords:

Sustainability, sustainable supply chain, corporate financial performance, risk mitigating strategies, reactive risk mitigation, carbon footprints, OECD Countries.

Introduction:

Supply chain sustainability is applied in almost all firms including the manufacturing and service industry nowadays because of people's growing awareness of keeping their surroundings sustainable. According to Marry Huang, the topic of sustainability is defined as "The quality of not being harmful to the environment or depleting natural resources, and thereby supporting long-term ecological balance". Environmental harm from supply chains occurs due to many various issues like manufacturing waste, water pollution, deforestation, hazardous air emissions from industries and vehicles as well as greenhouse gas emissions

and energy used in industries. There is a need to apply eco-friendly methods in supply-chain management to keep the earth away from the pollution of the supply chain. The supply chain costs affect the environment because if we deliver products more productively, it can reduce the harm to our surroundings. Manufacturing and Service Industries are now introducing sustainability programs to help the environment by reducing production costs and reducing product waste and by introducing eco-friendly vehicles and packaging. Importers, exporters, suppliers, and manufacturers all are working together to attain sustainability -in the supply chain because all of them together can identify the sources of pollution and waste and together can apply the measures to attain sustainability internationally. Importers & exporters are merging with their suppliers to express their values towards sustainability and expectations in their sustainability efforts. Firms with sustainability measures will work with their partner companies to identify sources of pollution and waste to apply preventive measures toward sustainability. They would also guide suppliers to use eco-friendly vehicles and production to prevent pollution. The goal is to prevent the earth from supply chain harmful processes.

Methodology:

An analysis of various content was used to gather the relevant publications from the literature of various articles. The listing of collected literature has been gathered, which includes titles, journals, authors, years of publication, etc. In selecting the various literature that provides the study on the impact of sustainability practices in the supply chain, several keywords were used: sustainability, sustainability impacts, sustainability practices, CSR, economical sustainability, environmental sustainability, and social sustainability. Hard-working on article selection took place to shortlist articles related to the subject of the impact of a sustainable supply chain on a firm's performance. Methods used for the elimination and selection of articles are given below:

- Science Direct
- GOOGLE Scholar
- Springer Link
- Scopus
- ProQuest, etc.

Literature Review:

The sustainability of a supply chain has a great impact on a company's supply chain because it can help in promoting human rights, fair labor practices, environmental progress, and anti-corruption policies. Implementing sustainability in the supply chain has now become most important for the company's progress. The company's step towards sustainability expresses the company's values of business approach. Sometimes, the company is motivated by their customers or their competent companies to attend to

sustainability or sometimes due to traditional priorities like efficiency, quality, and cost regularity which also led to improving the working conditions and work surroundings. A supply chain is a factor in making the manufacturing company's input into output. Traditional priorities have led to a decrease in the cost of transportation, allowing on-time delivery, and a decrease in time taken for transportation which also led to fewer challenges in business. However, pressure from consumers and the cost of transportation has led many companies to attain sustainability in the supply chain allowing the company more margin. Supply chain network design also helps in taking strategic decisions on the number, location, capacity, and operation of distribution centers/production facilities. However, selecting the best partners and vendors like manufacturers retailers, etc. led to deciding the company to meet its goal and high margin. Facility location Design is the main part of a company to decide the supply chain network design. This also has a great impact on the company's choice of transportation or Cargo Volume that is to be transported. The first part of these research efforts consists of green product design and using green transportation in the supply chain and distribution green warehousing and reverse logistics too.

Companies wanting to implement sustainability in the down supply chain can use their purchasing power with suppliers and manufacturers to force them for implementing sustainability in their processes too. For managing the partners and vendor companies, the company can check for high-quality products, and the use of light and water should be less so that less pollution must be generated. Defects and Overproduction should also be checked this could also lead to pollution and wastage of electricity. A company should regularly check whether its suppliers are using sustainable supply chain metrics or not. To determine the impacts of a sustainable supply chain company has to gather the data to support the study. Sustainability in the supply chain also leads to customer satisfaction by implementing higher transparency in their working processes.

Transparency in the working of a supply chain has a great impact on consumers who give support at the end by their end. Negative impacts can lead to a reduction in the stock value of that company which can have a negative image on their customers also.

Ramudhin et al. (2009), developed a comprehensive framework for sustainable supply chain network design. He proposed a multi-objective mixed-integer linear programming model as a decision support tool for the selection of suppliers and sub-contractors, product allocations to sites, capacity utilization, and transportation configuration as also decisions regarding the reduction of their supply chain's carbon emissions on one hand or the purchase of carbon credits on the other.

Impacts of Logistics on the Environment

Roadways Logistics has a great impact because it is most harmful and extremely widespread and least organized.

Aviation Logistics has an impact also because it produces numerous pollutants. Logistics also produces harmful gases like water vapor, carbon, Sulphur dioxide, hydrocarbon, and lead.

Railways logistics is the least harmful and it impacts the immediate surroundings only.

Logistics by marine also have impacts because it uses unrefined fuel oil heavily and produces a large amount of Sulphur and nitrogen oxide.

Methods of using technology for the prevention of environment via supply chain management:

The best methods of using technology for the prevention of environment via supply chain management are:

Demand & Supply Balancing: -

Planning the best usage of balanced demand and supply leads to better efficiency and also has a positive impact on the environment. Generally, it is too difficult to balance both demand and supply at the same time. The imbalance can lead to excess or shortage of raw materials, finished products and which can also disturb the transportation time and transportation and warehousing costs. This has a great impact on the environment also due to wastage in terms of excess raw materials. Through technology such as AI (artificial intelligence) and Machine Learning, the balancing of demand and supply chain can be done.

High Transparency: -

Transparency of how suppliers and companies are working to finish goods is important to show whether the company is following the sustainability practices or not. Suppliers can make use of advanced technologies to keep the track of their work and provide higher transparency.

Optimization of Routes for transportation: -

Manually plotting routes requires many labor hours. Choosing the right route management software is extremely important to improve last-mile delivery operations. Removing any speed bumps along the way tends to improve fuel efficiency and increase the number of customers we can serve. It will also help in enabling more stops with fewer vehicles. This could also help in preventing the environment from pollution and traffic ensuring on-time delivery.

Implementing changes in the Supply Chain:

Smaller changes can help the supply chain to be more efficient. Any change that leads to a reduction in wastage and pollution from the resources is valuable for bringing sustainability to the supply chain and ensuring on-time delivery too.

Conclusion

Logistics will have a positive or negative impact on the environment. With increasing awareness about sustainability among partner companies and end-consumers regarding the manufacturing and distribution of goods; advancements in technology should be used to build a sustainable supply chain for the future that improves the environmental conditions, along with profitability.

Benefits from Logistics Sustainability:

Reduction of Emissions:

Emission of carbon is mainly done through vehicles and transportation of goods from one place to another is the main part of logistics, being transportation as the major part, companies should ensure the lowest emission of carbon footprints to maintain sustainability globally. Using eco-friendly vehicles may be a good option for implementing sustainability in the supply chain across businesses. Furthermore, transportation through ships abroad and eco-friendly vehicles may help in the making of a sustainable supply chain.

Reduction of Amount of Waste Products:

Talking about transportation, transportation's main cost is fuel cost but vehicles do contain many more products like gallons of fuel, six to eight tires, and which are for a finite time. So, if transportation is not done inefficient way, this could lead to the replacement of these products which could increase the number of waste products. Thereby efficiently using transportation is much important to reduce the number of waste products.

Following Government Regulations

Talking about government regulations, following regulations issued by the government is more important because it could lead to heavy penalties and fines. However, following the government regulations can lead to attaining a sustainable supply chain depending on the company's will. For example, if a company is located in No entry for heavy vehicles area, this could help in using eco-friendly vehicles which have low carbon emissions and are also cost-efficient. So, following the regulations issued by the government company will not only save the transportation cost but also prevent themselves from these potential consequences.

Spreading awareness among Customers of being Sustainable:

Customers are nowadays becoming too attentive to the product they buy and about the operations of the brand of which they buy the product. Sharing the company's operations has become now very useful. Customers are also attentive to the operation through which their products are delivered and the type of operation through which the company is helping in being sustainable. Using a carrier or 3PL focused on logistics sustainability and optimization company can help minimize the scrutiny of your operation and can improve the public perception of their company. Sustainability is helping us by saving the resources for our future generations. Applying sustainability in the supply chain can increase the cost but the rewards gained by the sustainability will exceed the cost and changing customers' perception of the company will always lead to customer satisfaction and customer loyalty toward the product. This would also have a positive impact on their competent companies to attain sustainability in their operations.

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