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Environmental Friendly Supply Chain Management - A Perception Analysis

Abhishek N.*, M. S. Divyashree**

**UGC-SRF Scholar, DoS in Commerce, University of Mysore, Mysore, Karnataka, India.*
Email: abhishekalmighty93@gmail.com
***Assistant Professor, Govt. First Grade College, Bilikere, Karnataka, India.*

Abstract

The success and failure of every business organisation depend upon the supply chain it is depending. The supply chain is the process which consists of a series of activities to be involved from the point of acquisition of materials, putting them into the production process and distribution of finished goods to the final customer. It is very important to develop and maintain the supply chain which creates the value and competitive advantage to the organisation. To achieve value and competitive advantage the supply chain of the organisation must be environmental oriented because environmental sustainability is the emerging issue and on which every business organisations are required to concentrate for the purpose accommodating the environment and its resources to the future generation. The present study is intended to analyse the perception of managers of manufacturing industries of Mysore city and found that the managers are having a positive attitude in having green supply chain management and they also opined that the requirement of legal obligation foe successful implementation of GSCM throughout the business environment.

Keywords: Supply Chain, Green Supply Chain Management, Environmental Sustainability, Green Supply Chain Management Guidelines

Introduction

The success and failure of every business organisation depend upon the supply chain it is depending. The supply chain is the process which consists of a series of activities to be involved from the point of acquisition of materials, putting them into the production process and distribution of finished goods to the final customer. The supply chain with minimal cost will create value for the organisation. To have the supply chain with the least cost the firm has to have a separate system that is popularly known as Supply Chain Management (SCM). SCM is the combination and harmonization of a series of business processes undertaken for fulfilling the needs of the final customer of the supply chain (Green et al., 2008). The combination and harmonisation of the business process must be among acquisition, production, marketing, and warehousing and information system to fulfil the customer's requirements in an efficient, qualitative and responsive manner (Zelbst et al., 2010). It is very important to develop and maintain the supply chain which creates the value and competitive advantage to the organisation. To achieve value and competitive advantage the supply chain of the organisation must be environmental oriented because environmental sustainability is the emerging issue and on which every business organisations are required to concentrate for the purpose accommodating the environment and its resources to the future generation. To get the supply chain that like environmental friendly requires the combined effort all the group of management (Vasileiou and Morris, 2006).

There are mainly two types of organisations one is manufacturing and another one is service-oriented organisation among these two manufacturing organisation is utilising and exploiting the natural resources of the particular environment for achieving the objective of its supply chain. So it is the time to have environmental friendly supply chain management by the manufacturing organisation voluntarily. Environmental friendly supply chain management is also known as Green Supply Chain Management (GSCM) which means the systems, mechanisms and practices involved during supply chain and ensures the environmental sustainability of the country in which it is operating. Some of the researchers argue that

environmental practices during supply chain management are more influenced by governmental regulation on environmental protection (Murray, 2000). To implement GSCM for environmental sustainability the manufacturers of the goods must work in coordination with the suppliers of materials and consumers of the finished goods. The measures undertaken by the business organisations to implement GSCM will impact on minimising air pollution through decreased carbon emissions, low waste, low consumption of chemicals, saving water etc., if this type of supply chain is implemented there may be a concern of the business organisation whether it will increase the earning capacity of the organisation or not but finally the earning capacity management totally lies in the hands of various managers involved during its supply chain mainly production and sales managers. For this purpose managers are must be capable of being making decisions by giving more preferences to supply chain rather than to organisation so they must work on the principle of success at the supply chain level leads to the success at the organisational level (Chopra and Meindl, 2004).

Nowadays we can observe governmental organisations and people across the globe demanding environmental practices. Governmental organisations are demanding for having a sustainable environment to accommodate the future generation whereas the public is demanding for their health and the concern on the environment in which they are leading their lives. To address this demand every business organisations working today are must focus on implementing the environmentally friendly practices at their supply chain level rather than on organisational level (Linton et al. (2007). To achieve at the supply chain level the firm must focus on undertaking eco-purchasing, eco-design and production, and coordination with consumers etc., these will definitely improve the economic and environmental performance of the organisation and ultimately creates the value for operations and organisation at the large.

The present paper is intended to analyse the importance having eco-friendly supply chain management by analysing the perception of the managers involved during the supply chain such as purchasing, production and sales managers of the manufacturing industries of Mysore city.

The organisation of successive section of the paper is a literature review, methodology, results and discussions, findings, conclusions and direction for future research.

Literature Review

This part of the paper focuses on studying the existing literature on the environmental supply chain management to identify the research gap.

Giuliano et al., (2017) analyzed the relationship between the lean shop floor and lean supply chain management and their impact on quality and inventory turnover. For this purpose, data is collected through a survey with the help of a structured questionnaire from 110 plants of Brazil. The results revealed that the relationship between lean supplier with Lean floor management positively impacts on the inventory turnover and quality.

Joanita et al., (2019) investigated the individual performance contribution of interrelated members of the supply chain to its process partners across dairy products. They collected perception from the dairies in Uganda and found that individual chain member's perception towards the individual supply chain is relatively high. Further, they found that there were significant differences between individual chain members and the perceived chain contributions and it is also found that there are no differences in internal chain analysis.

Kenneth et al., (2012) analyse the impact of green supply chain management on the economic and environmental performance of the organisation. For this purpose, they collected data from 159 managers of manufacturing firms and to analyse the collected data structural equation model was used and they found that GSCM will improve the economic and environmental performance of the organisation and which in turn improves the operational and organisational performance.

Kristina et al., (2018) examined the role of green supply chain management system in food retailing sector and also analysed the impact of GSCM on economic and environmental performance of the business. They found that there is a positive relationship between green in-store activities and Green Supply Chain Management in food retailing sector in relation to environmental and economic performance of the business.

Lisa and Ala (2019) focused on analysing necessity for undertaking innovation for having green supply chain management. For this purpose, they individually studied the 11 different cases and found that digitalization of operations; inter-connectivity business environment

and big data system are the pivotal tools to improve the environmental sustainability and also noted that technologies will produce large gains in relation to optimum utilisation of resources, efficiency in energy utilisation, avoiding emissions and encourages recycle production management.

Marek et al., (2018) examined the non-linear aspects of the relationship between asymmetry and performance in supply chain management under varying different collaboration and integration. For this purpose, they studied 66 Spain companies supply chain management and conclude that the influences of asymmetry on business performance in different collaboration and integration contexts are not stable and have non-linearity. They also noted that it is not suitable for all firms to collaborate or integrate continual basis and creates complexity in supply chain management.

Rosanna cole et al., (2019) analysed the impact of block chain technology on operations and supply chain management and opined that Block chain technology enhances the product safety and security system, improves the quality system, minimizes illegal counterfeiting, improves sustainable supply chain management system, it also helps in advancing inventory management and replenishment system, it minimizes the role intermediaries, positively impacts on new product design and development mechanism, and finally reduces the overall cost of supply chain transactions.

Vikas Kumar et al., (2019) analyzed the impact of supply and manufacturing risk management on the performance of businesses within the context of Chinese supply chains. For the study, they have gathered the data with the help of semi-structured questionnaires and the results revealed that there is a high correlation among business and manufacturing risk performance. More importantly, they found that there is no significant impact of supplier dependency, purchasing, production and human resources.

From the analysis of existing literature, it reveals that only a few studies have focused on analysing the perception managers and no studies have focused on analysing the requirement of a legal obligation to promote eco-friendly supply chain management to create the green business environment. So the present study is intended to analyse the perception of managers of manufacturing industries in Mysore city regarding the importance of having environmental-friendly supply chain management and to emphasize on having a legal framework for complete implementation of the green supply chain in the industrial environment.

Research Questions

Based on the literature gap the study framed the following research questions:

- What is the perception of managers regarding the importance of Environmental-friendly Supply Chain Management System?
- What is the perception of managers on legal framework requirements for Environmental-friendly Supply Chain Management System?

Research Objectives

With the help of research questions study framed the following two objectives:

- To study the perception of managers regarding the importance of Environmental-friendly Supply Chain Management System.
- To analyze the perception of managers on legal framework requirements for implementing Environmental-friendly Supply Chain Management System.

Hypotheses

To achieve the objectives study framed the following hypotheses are developed:

- H_0 - "The managers are not having a positive perception regarding the importance of Environmental-friendly Supply Chain Management System".
- H_0 – "There are no requirements of any legal framework for implementing Environmental-friendly Supply Chain Management System".

Data and Methodology

The present study is empirically based on both primary and secondary data. Primary data is collected through a survey method with the help of structured questionnaire from the Purchasing, Production and Sales managers of industries of Mysore city. For data collection managers were selected based on the convenience sampling method. The respondent's details were indicated in the following table.

Table 1: Respondent's Details

Sl. No.	Respondents	No. of. Questionnaires Distributed	No. of. Responses Collected	The Response Rate in %
1	Purchasing managers	12	09	75%
2	Production managers	19	14	73%
3	Sales managers	16	13	81%
	Total	47	36	76%

Source: Author compiled

The managers are identified in the industries of Mysore city such as Decorative Laminates Ltd., Pyramid Timbers Ltd., ITC Ltd., TVS Company Ltd., Automative Axels Ltd., Plymould Ltd., Kirloskar Ltd., Rane Madras Ltd., Mass Furnitures Ltd., following table shows the classification of respondent's based on actual data collected through survey.

Table 2: Segregation of Respondents of the Managers of Manufacturing Industries of Mysore City

Sl. No.	Manufacturing Companies Selected for the Study	Purchase Manager	Production Manager	Sales Manager	Total
1	Decorative Laminates Ltd.,	01	01	01	03
2	Pyramid Timbers Ltd.,	01	01	02	04
3	ITC Ltd.,	01	02	01	04
4	TVS Company Ltd.,	01	02	01	04
5	Automotive Axels Ltd.,	01	01	02	04
6	Plymould Ltd.,	01	02	02	05
7	Kirloskar Ltd.,	01	01	01	03
8	Rane Madras Ltd.,	01	01	02	04
9	Mass Furniture's Ltd.,	01	02	02	05
Total		09	13	14	36

Source: Author Compiled

Table 3: Results of One-Sample T-test at the 5% Significance Level in Regarding Perception of the Managers on the Importance of Environmental-Friendly Supply Chain Management System

Perception Variables Regarding the Importance of Environmental-Friendly Supply Chain Management System	N	Mean	Standard Deviation	t-value	Sig. (Two-Tailed test)
GSCM is supported to contribute to the environmental sustainability of the business organisation	36	3.9167	1.10518	4.977	.000
GSCM makes the internal environment as eco-friendly	36	4.5278	.99960	9.170	.000
It needs a separate information system for managing environmental practice and its outcomes	36	4.4722	.81015	10.903	.000
It promotes paperless internal management system	36	3.9722	.87786	6.645	.000
It needs to separate mechanism to cooperate with suppliers for developing environmentally sustainable materials	36	4.5278	.87786	10.442	.000
It needs customers supports for designing environment-friendly production process in producing green products	36	4.5278	.87786	10.442	.000
The separate packing methodology is needed for green packing and which needs customer supports	36	4.1111	1.34754	4.947	.000
It needs a green product designing team in an organisation	36	4.8333	.37796	29.103	.000
Green products design helps to minimize the consumption of material and other resources	36	4.6944	.62425	16.286	.000

Perception Variables Regarding the Importance of Environmental-Friendly Supply Chain Management System	N	Mean	Standard Deviation	t-value	Sig. (Two-Tailed test)
GSCM eliminates the use of hazardous materials or products within the production system	36	4.4167	1.18019	7.202	.000
GSCM enhances the environmental sustainable capacity of the firm which reduces the air pollution, industrial waste and chemicals to be used in the process	36	3.9167	1.42177	3.868	.000
GSCM also contributes to minimizing the cost of materials, energy usage and waste management	36	4.6667	.95618	10.458	.000
GSCM also creates goodwill to the firm by recognising in society as a green producer.	36	4.2222	1.26742	5.786	.000

Source: Primary Data

Results and Discussions

This section of the paper deals with analysing the results of primary data and discuss the results to prove or disprove the hypotheses of the study.

Table 3 shows the results of one-sample t-test at the 5% significance level in regarding perception of the managers on the importance of Environmental-friendly Supply Chain Management System and which indicates all the perception variables shows the p-value less than 0.05. Hence null hypothesis "H_0 - The managers are not having the positive perception regarding the importance of Environmental-friendly Supply Chain Management System" is rejected and alternative hypothesis "H_1 - The managers are not having the positive perception regarding the importance of Environmental-friendly Supply Chain Management System" is accepted. It means the managers opines that having environmental supply chain management firm can enjoy the benefits in various aspects such as it reduces the cost and maximise the value and also ensures the sustainable environment.

Table 4: Results of One-Sample T-test Regarding Perception on the Requirement of the Legal Framework for Environmental Friendly Supply Chain Management

Perception Variables on the Legal Framework for Environmental-Friendly Supply Chain Management System	N	Mean	Standard Deviation	T-value	Sig. (Two-Tailed)
GSCM requires standard guidelines from the government regulators	36	4.1111	1.25988	5.292	.000
GSCM requires additional research and development support	36	4.6944	.62425	16.286	.000
There is a legal obligation to implement GSCM system in Indian scenario	36	4.2500	1.25071	5.997	.000
Global Reporting Initiatives standards can be used as implementing GSCM in an organisation	36	4.5556	.73463	12.705	.000
The implementation GSCM will helps to contribute for SDGs of UNO	36	4.4722	.69636	12.685	.000

Source: Primary Data

Table 4 shows the results of one-sample t-test at the 5% significance level in regarding perception on the requirement of the legal framework for Environmental Friendly Supply Chain Management implementation in manufacturing industries and which indicates all the perception variables shows the p-value less than 0.05. Hence null hypothesis H_0 – "There are no requirements of any legal framework for implementing Environmental-friendly Supply Chain Management System". And alternative hypothesis "H_1 - There is a need of having requirements of the legal framework for implementing Environmental-friendly Supply Chain Management System" is accepted. It means to implement Environmental Friendly Supply Chain Management successfully in all the manufacturing industries in a particular business environment, it is necessary to have a separate legal framework. Because voluntary implementation of ESCM will not yield good result in building sustainable environment If any legal obligation is imposed then manufacturing industries commits to make the business

environment as environmentally friendly and which will contribute to supporting Sustainable Developmental Goals set by UNO.

Findings

This section of the paper reveals the outcomes of the study in the form of findings which are presented here based on objectives and general observation made during the study:

Based on Objectives

Concerning first objectives study found that the managers of the manufacturing industrial organisations of Mysore city are opined that adopting of Environmental Friendly Supply Chain system during the acquisition of materials, production process, warehousing and selling the products to customers to achieve its objectives. Further, it helps minimise the waste and maximizes the benefits to the organisation.

Concerning second objective study found that opined that it is necessary to have a legal obligation to compulsory implementation of Environmental Friendly Supply Chain system. The legal obligation compulsions the industries to follow the green process and hence it makes build green business environment. Here GRI (Global Reporting Initiatives Standards) are the best guidelines for guiding the green supply chain management and government can take it seriously to pass a separate law to induce all the business organisations to follow the green process in achieving their objectives.

Based on the Observations

The study found that business organisations operating today are more value-based and not environmental supporters. Further, only a few organisations give equal importance to organisational goals as well as sustainable environmental goals these are not enough to build a sustainable environmental economy to accommodate the future generation and build healthy environment so the government and other regulatory authorities must focus on compulsory imposition on the firms to have green processes. This will create a supportive environment to achieve Sustainable Developmental Goals set by UNOs.

Conclusions

Today we can observe every people living in a green manner to sustain their life. In such a way it is necessary to make business organisations operating running behind and around us as environmentally friendly manner. If this is will become the reality definitively waste becomes wealth in the form of recycling the wastages of industries into usable commodity. For this purpose, one and only the alternative we are having is making the industries supply chain as environmental friendly through adopting the green systems across the supply chain and which helps the business houses to cooperate with suppliers to supply eco-raw materials without chemicals, cooperate with consumers to design green products, efficient management of waste etc., these type of initiatives will creates the goodwill to the organisation and helps to survive in the long-run. Finally, the study concludes that the findings of the study is one of the evident for the business houses and it will suggest them for adopting Green Supply Chain Management and which will helps for sustainable economic and environmental development and also it will indirectly contributes to the Sustainable Developmental Goals set by United Nations Organisation.

Limitations of the Study

The study is not exception it also suffered from some limitations such as it only analysed the perception of the managers and not considered the practical issues in the factories, the methodology used for the study suffers from its own limitations and it may affect on the results.

Scope for Future Research

The study only analysed the perception of the managers and tried to analyse the green supply chain in practical and this will become the future research direction.

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