

Study on the Green Supply Chain Practices of Textile Industries in India

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Abstract: Green Supply Chain is a practice adopted by organizations to become sustainable from the source till the product is delivered to the customer. The objective of the study is to determine the practices adopted by the textile industry to implement green supply chain as well as the barriers to it. The paper also aims at finding out the effectiveness of the green supply chain practices adopted the companies. For the purpose of the study, responses were collected from 10 textile oriented businesses in India. The study concludes that recycling of returned products or scrap material, Reduce energy consumption in manufacturing and buildings, and Eliminate/Reduce or re-purpose manufacturing waste are some of the practices adopted by companies to implement green supply chain and the challenges faced by most of the organizations are high cost of environment friendly packaging and High cost of production of green products. The organizations post the implementation of green supply chain practices experience effectiveness in the organization in the form of drastic reduction in customer complaints, an improvement in the brand loyalty and corporate advantage for the firm.

Keywords: Green Supply Chain, Textile Industry, Sustainability, recycling.

1. INTRODUCTION

With the increase in environmental pollution corporates have begun using eco-friendly methods for conducting business. Worldwide there has been a shift from traditional supply chain to green supply chain practices. Environmental impacts from adopting green standards have become common and known to all. All stakeholders have become aware and tend to support a greener lifestyle. Green supply chain is considered to be a form of natural supply chain where environmental awareness is given top priority at each stage of supply chain. Green Supply Chain Management (GSCM) is one of the recent innovation for environment preservation. Adopting GSCM not only helps the companies improve organizational efficiency but helps in profitability as well.

As textile industry in India is one of the largest sectors and plays a very important role in the economy, efficient supply chain management needs to be followed. Natural resources such as air, water and energy are consumed to a greater extent by the textile industry which results in environmental pollution. To adopt green clothing, effective management is needed at all levels starting from outlining the environment, acquiring raw materials, manufacturing garments, distributing them to channels and stores and moreover considering their reverse logistics. Experience tells that the organizations planning functional integration tend to outperform those coordinated for functional excellence in a dynamic environment. Management of the supply chain is all about functional integration indeed.

Need for the study

Due to increase in the environmental issues, it is important for businesses to adopt green practices in their day to day business activities. Green Supply chain in an organization helps minimizing wastage, cost of transaction and water disposal as well as risk of interruption in the business due to factors such as compliance barriers, spills, boycott and strike from workers and NGOs. Textile is such as industry which is said to harm the environment right from the source till the product reaches the customer.

The industry faces a lot of criticism from the customer's end as well as the government. Many norms and regulations have been imposed on the industry so as to reduce its harmful impact on the environment and to promote sustainable business. To create a brand image and project a positive image in the minds of the consumers, many organizations have shifted to green supply chain. Thus it becomes important to study the factors that affect the implementation of these practices and the challenges faced by the organizations.

2. LITERATURE REVIEW

Ersöz, F., & Lotero, L., (2019). The aim of this paper is to distinguish sustainable and efficient performers from the average performers in the Indian manufacturing sector and to understand the degree of effect of supply chain management green practices based on their contribution to sustainable environment. In this paper the concept of CHAID (Chi-Square Automatic Interaction Detector) analysis is applied to define green logistics as the main driver for achieving ecological damage reduction and improving business performance. **Surmacz, T. (2017).** The author focuses mainly on the evaluation of the performance of green supply chain management. With the help of this paper, author tries to explain the importance of green supply chain management in the companies and measures its performance to better track their efficiency. The study resulted in the optimum functioning of value chain and identification of green supply chain goals. **Sharma, M. M. (2013).** This paper emphasizes the application of Supply Chain Management and adds to it the 'Green' dimension to illustrate the need for environmentally friendly systems. The authors have made efforts to research the systems' supply chain with an emphasis on its optimization and execution. Therefore, from the point of view of the company, implementing the green supply chain management practices to protect the environment becomes of utmost importance. **Zhang, Y. (2016).** This article builds a scorecard to synthetically assess company logistics and green supply chain system performance from four perspectives that are clients, finance, flow management, learning and development. The study resulted in the reliability and effectiveness of the scorecard to be an effective tool to analyse green supply chain performance in the organizations. Moreover the results showed that there was no direct relationship between planning and executive capacity, and IT applied skill, so the acting relationship between them is excluded and the confirmatory factory analysis between them shows a great relationship. **Liu, P., & Yi, S. (2016).** The author have proposed an algorithm to evaluate the performance of green supply chain in an uncertain environment. This research addressed and measured the advantages and disadvantages of the current performance evaluations and algorithms for GSC performance assessments. The results show that the proposed system has a high convergence speed and precise predictive performance. The theoretical model has been checked for its reliability and effectiveness. **Khiewnavawongsa, S. (2011)** in his paper states that the industries in the US have become more environment friendly with the increase in awareness among the people across the globe. The author analyses the barriers in the Green Supply Chain Management in the electronics industry. The study concludes that finances were the major barrier to the implementation of green supply chain as many organizations especially small sized organizations tend to find it very expensive and not cost effective. **Sang, S. (2018)** in his paper determines the influence of reference price effect and fairness concern on the green supply chain strategies adopted by organizations. The author in the paper determines three game theory models that are manufacturer-stackelberg (MS), Retailer-Stackelberg (RS) and Vertical- Nash (VN). The study concludes that the retail price and the wholesale price are the barriers of applying green supply chain practices. **Padaro, P. (2019)** studies the challenges in green supply chain in USA of retail food chains. The author states that though organizations are trying to effectively apply the green supply chain practices in the organization but the traditional approach and the attitude of the vendors forms a barrier to it. The conclusion of the paper is that companies adopt supply chain practices to build the image of the company and give it back to the society. **Bag, S. (2014)** in his paper describes the evolution in the supply chain management and highlights the industrial revolution. The author bifurcates the sustainable supply chain in three categories such as economic, environmental and social. The paper concentrates on leadership as the core concept and the factors that affect the performance post the application of green supply chain practices. **Ansari, Z. N., & Qureshi, M. N. (2015)** determines the core focus of organizations today which is to attain cost leadership i.e to keep the cost of goods low and to provide quality services to the customers. Organizations are moving towards green supply chain but barriers like unavailability of natural resources, government regulations as well as providing effective services to the customers. The paper aims at getting an understanding of the current trend with respect to green supply chain practices. **Udeogalanya, K. I. (2015)** in his paper aims at determining the factors that affect the implementation of green supply chain management. The paper proposes strategies that help understand the working of supply chain in an organization with an added importance given to the environment. The paper throws light on the ways in which the green supply chain can be adopted by organizations so as to improve efficiency. **Montshiwa, A. L. (2018)** determines the layout for the adoption of green supply chain in the areas which are generally not addressed to so as to fill the gap and establish strategies that lead to the

successful implementation of green supply chain in the organizations. The study gives out the conclusion that cooperation in supply chain is the key element that that result in a successful supply chain operation.

Objectives

1. To determine green supply chain management practices implemented by the Indian textile industries.
2. To establish the challenges faced by the organizations in the implementation of GSCM.
3. To study the effectiveness that GSC practices have on the organizations.

3. RESEARCH METHODOLOGY

This section determines how the study was conducted. The research design, sample size and the data collection will be described to outline the direction of the research conducted.

Research Design: The research design used in this study is referred to as ‘non-probability’ sampling as not every organization has a chance to be part of the sample. 10 responses were collected from the textile companies having their operations in India as well as abroad. The sample collected is restricted to the companies in Bengaluru; this classifies as convenience sampling.

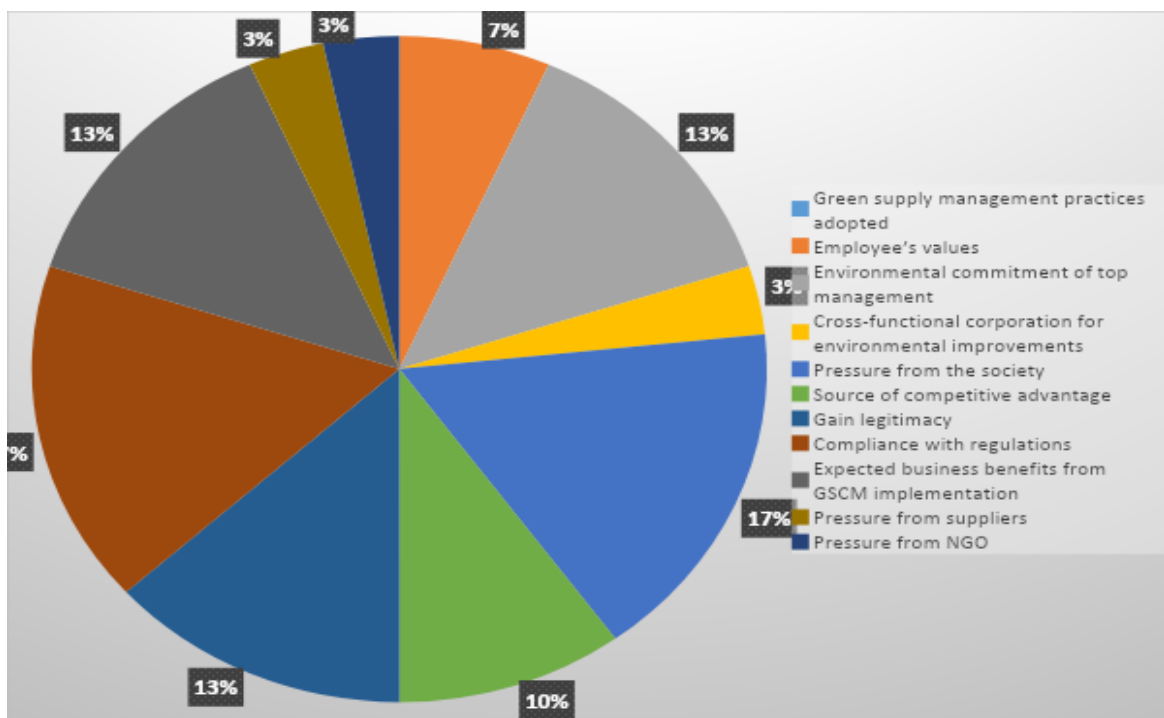
Sampling:

The green supply chain practices of the Indian textile industries will be researched with the help of primary as well as secondary data. Secondary data is analysed through literature reviews and primary data is collected through a set of structured questionnaire. Questionnaires are an ideal tool to collect the necessary primary data. Secondary data includes data that is already compiled, reported by others, and distributed by other researchers and organisations. This secondary data formulates a flow and enables us to form a basis for the study as a whole, to understand the areas of the topic that have been investigated and need more insight. This study uses secondary information from different journal articles, books, and literature.

The study uses a number of statistical tools to interpret the acquired data, effectively. Basically, the data collected will be analysed using SPSS and Ms-Excel.

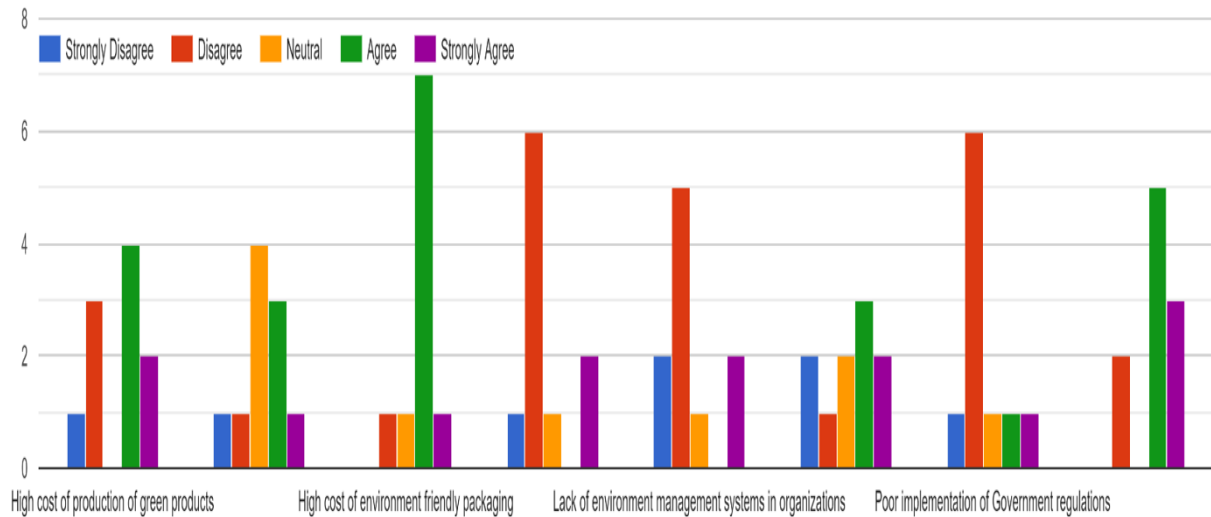
Analysis and Interpretation

1. Green supply chain practices adopted by companies.



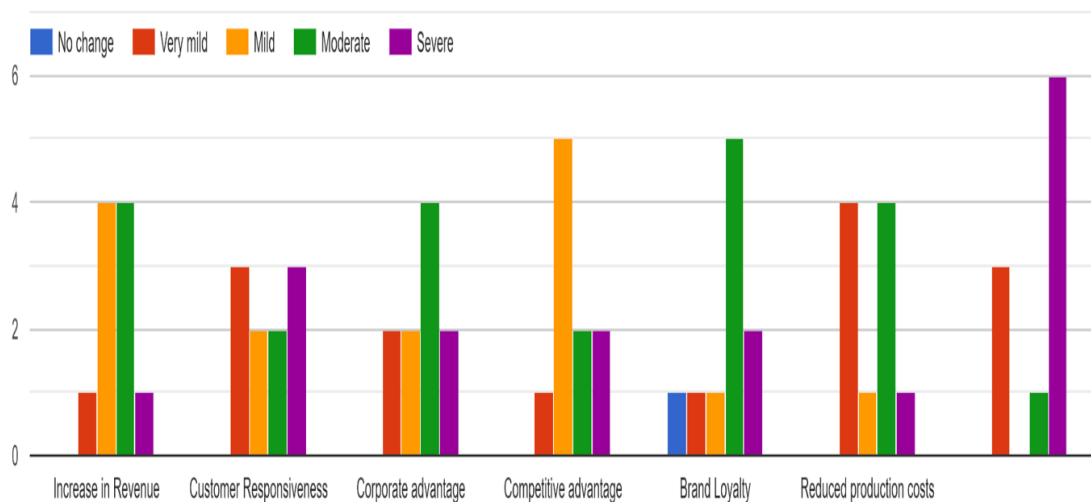
From the above figure, it can be interpreted that most of the green supply chain practices adopted by companies are Recycling of returned products or scrap material, Reduce energy consumption in manufacturing and buildings, Increase the use of renewable energy sources, and Eliminate/Reduce or re-purpose manufacturing waste. And it is also found that in order to adopt these practices in their organizations the most influential factors are Environmental commitment of top management team, Pressure from society, Compliance with regulations, and Expected business benefits from GSCM (Green Supply Chain Management) implementation.

2. Challenges faced by the organizations in the implementation of GSCM.



From the above graph, it can be inferred that most companies face challenges to shift from Supply Chain Management to Green supply chain management and those challenges are mostly due to the High cost of environment friendly packaging, Lack of compromise by customers on product attributes such as convenience, availability, price, quality and performance and High cost of production of green products. It is also found that factors like Lack of commitment from senior managers, Poor implementation of Government regulations and Lack of environment management systems in organizations are not of much challenging to the organizations to implement green supply chain practices in their organizations.

3. The effectiveness that GSC practices have on the organizations.



From the above chart, it can be inferred that the organizations adopting the green supply chain practices have seen a change in the various areas of their operations like there is a drastic reduction in customer complaints, an improvement in the brand loyalty and corporate advantage, and mild to normal improvement in the increase in revenues. These parameters have influenced the effective green supply chain management.

4. RECOMMENDATIONS

Based on the study conducted the following are some of the recommendations that can be used for the by the textile companies in India:

- Firms in India should classify the internal and external challenges faced by organizations in the implementation of green supply chain practices.
- Firms should recognize the practices that provides value addition to the organization and thus promotes its growth and development.
- The practices adopted should not be merely for the purpose of adhering to government regulations but rather to give out to the environment.
- The practices should be supported by the entire organization and the top management should be supportive to the environmental policies adopted by the companies.

Limitations to the Study

Time constraint was the major limitation of the study and the geographical location for the purpose of the study. The textile industries in other parts of India would bring about interesting findings for the study. Further, the number of respondents was a constraint which can be increased to derive better conclusions. The paper does not use any statistical tool for the purpose of analysis.

Future Scope

The study focuses on textile industry in India to derive conclusions, other industries in India can be explored for the purpose of the analysis. The scope of the study can be broadened to understand varied challenges and practices that are adopted by organizations to implement green supply chain. More practices with reference to Green Supply chain practices can be explored through conducting more studies and literature reviews.

5. CONCLUSION

The study was aimed at determining the practices adopted by the textile companies in India to adopt Green supply chain as well as the barriers to the adoption of the practices. The aim of the paper is to derive the effectiveness that is derived from the adoption of the green supply practices by the organization. Textile industry in India face challenges such as increased costs, lack of management support, uncooperative vendors, etc.

The study gives the conclusion that high cost of packaging, lack of compromise by customers on product attributes such as convenience, availability, price, quality and performance and high production costs are the major challenges that organizations face in the implementation of Green supply chain practices whereas, factors like lack of commitment from senior managers, poor Government regulations and lack of environment management systems in organizations do not form a hurdle to the organizations in the implementation of Green Supply Chain.

The practices that are followed by the organizations to implement green supply chain are recycling of returned products or scrap material, reduction of energy consumption in manufacturing and buildings, increased usage of renewable energy sources as well as eliminate/reduce or re-purpose manufacturing waste also the factors that promote the adoption of these practices are recognised as environmental commitment of top management team, pressure from society, compliance with regulations and Expected business benefits from GSCM (Green Supply Chain Management) implementation.

Post the implementation of Green supply chain, organizations have experienced the effectiveness from the adoption of the practices in the form of huge decrease in customer complaints, an improvement in the brand loyalty, corporate advantage and average improvement in the increase in revenue. Thus it can be seen that though the adoption of green practices are challenging for the organizations but most companies are moving towards it as it not only provides corporate advantage but also promote the brand and attracts customers as now a days customers are environmentally aware.

REFERENCES

- [1] Ersöz, F., Lotero, L., & Gerhard-Wilhelm Weber. (2019). Evaluation of the effectiveness of green practices in manufacturing sector using CHAID analysis. *Journal of Remanufacturing*, 9(1), 3-27. doi:<http://dx.doi.org/10.1007/s13243-018-0053-y>
- [2] Surmacz, T. (2017). Performance evaluation of green supply chain management. *Gospodarkaw Praktycei Teorii*, (46), 74-82. doi:<http://dx.doi.org/10.18778/1429-3730.46.06>
- [3] Sharma, M. M. (2013). A study on the concept of green supply chain management. *Journal of Supply Chain Management Systems*, 2(1), 1-7. Retrieved from <https://search.proquest.com/docview/1490542045?accountid=38885>
- [4] Zhang, Y. (2016). Research on the measuring performance of green supply chain management: In the perspective of china. *International Journal of Engineering Research in Africa*, 27, 167-178. doi:<http://dx.doi.org/10.4028/www.scientific.net/JERA.27.167>
- [5] Liu, P., & Yi, S. (2016). New algorithm for evaluating the green supply chain performance in an uncertain environment. *Sustainability*, 8(10), 960. doi:<http://dx.doi.org/10.3390/su8100960>
- [6] Khiewnavawongsa, S. (2011). Barriers to green supply chain implementation in the electronics industry (Order No. 3481050). Available from ProQuest Dissertations & Theses Global. (904661825). Retrieved from <https://search.proquest.com/docview/904661825?accountid=38885>
- [7] Sang, S. (2018). Optimal policies in a green supply chain with reference price effect and fairness concern. *IAENG International Journal of Applied Mathematics*, 48(4), 1-9. Retrieved from <https://search.proquest.com/docview/2317017762?accountid=38885>
- [8] Padaro, P. (2019). Implementation of green and sustainable supply chain management (Order No. 27670190). Available from ProQuest Dissertations & Theses Global. (2333673160). Retrieved from <https://search.proquest.com/docview/2333673160?accountid=38885>
- [9] Bag, S. (2014). IMPACT OF SUSTAINABLE SUPPLY CHAIN MANAGEMENT ON ORGANIZATION PERFORMANCE: MEDIATING EFFECT OF LEADERSHIP. *Indian Journal of Management Science*, 4(3), 10-25. Retrieved from <https://search.proquest.com/docview/1640732700?accountid=38885>
- [10] Ansari, Z. N., & Qureshi, M. N. (2015). Sustainability in supply chain management: An overview. *IUP Journal of Supply Chain Management*, 12(2), 24-46. Retrieved from <https://search.proquest.com/docview/1700066607?accountid=38885>
- [11] Udeogalanya, K. I. (2015). Green supply chain management (Order No. 10020623). Available from ProQuest Dissertations & Theses Global. (1771508824). Retrieved from <https://search.proquest.com/docview/1771508824?accountid=38885>
- [12] Montshiwa, A. L. (2018). Green supply chain management (GrSCM) implementation strategies in a globalized world. Manchester: The International Society for Professional Innovation Management (ISPIM). Retrieved from <https://search.proquest.com/docview/2170358073?accountid=38885>