

An Empirical Study to Identify the Barriers affecting Green supply Chain Management Implementation With Reference to Manufacturing Firms of Gujarat

Tripti Sharma

Research Scholar, School of Doctoral Research and Innovation Management, GLS University
tripti.gls369@gmail.com

Dr. Avni Patel

Assistant Professor, Faculty of Management, GLS University
avni.patel@glsuniversity.ac.in

Abstract

To focus on environmental challenges, manufacturing companies recently adopted green supply chain management. Industries are struggling to identify green supply chain management implementation challenges. This report identifies procurement-based hurdles to Green SCM deployment. Through literature, expert interviews, and a questionnaire survey from diverse industry sectors, 21 impediments were found.

Research Objective

Research objective is to identify the barriers in Green Supply Chain Management Implementation with reference to manufacturing firms in Gujarat.

Research Methodology

Current Study has adopted Single Cross Sectional Research design. Researcher has collected primary data using structured questionnaire.

Data Analysis and Implications

Data analysis is done using SPSS software. Research provides strong implications to firms, brands, society, marketers and government as a whole.

Originality/Value

Considering a strong research gap, this study contributes a value addition in the field of Green Supply chain Management.

Keywords: Green Supply Chain Management, Barriers, GSCM Practices, Manufacturing Firms

1. Introduction

Since the industrial revolution, industrial pollution has been a significant problem. Around the early 20th century, supply chain management attracted attention. This book berated DDT for its impact on both people and birds. Thus, industries' economic and environmental roles grew (Joseph Sarkis ,Qinghua Zhu , Kee-hung Lai, 2010).Customers from India and other countries want environmentally friendly items and pollution-reducing concepts. Green management helps enterprises attain a hazard-free environment. Researchers have given several definitions of GSCM. Scholars say GSCM combines economics and ecological in the supply chain. SCM describes all actions from raw material purchase through customer delivery and disposal. GSCM integrates the environment into SCM Within the context of an industrial system, GSCM seeks to confine waste and detrimental impacts on the environment, which in turn contributes to the conservation of energy and the prevention of pollution (Noorul Haq, K. Mathiyazhagan & A., 2013). GSCM is one of the methodical approaches that may be taken to preserve our resources and the surroundings that surround us in order to avert a decline in the quality of our lives (HokeyMin, 2012).

The world's greenhouse gas emissions in 2010 were the highest in history. The implications of this are still unknown, but research has shown that the climate changes we are experiencing today are a result of increased levels of gases in our atmosphere as a result of increased human activity following industrialization. The most serious problem that humanity is currently facing is a rise in the concentration of greenhouse gases present in the atmosphere, which results in global warming. An increase in supply chain activity is necessary given the speed of global industrialization. Green supply chain management combines supply chain management with environmental management principles and operations to improve or conserve the environment and stop further exploitation. Because of the competitive legal and social constraints it encounters, in the twenty-first century, green supply chain management is a significant and growing trend in all industrial activities. Greening their supply chains and removing or reducing waste of all kinds along the supply chain will help to address these major environmental concerns (Hervani, A. A., Helms, M. M., & Sarkis, J. , 2005).The supply chain's environmental impact is influenced by raw material extraction, production, use and reuse, recycling, and disposal.

GSCM is one of the finest solutions for reducing carbon emissions and improving sustainability since it can improve an organization's environmental performance

(Balasubramanian, 2012). As a result of the rapid changes taking place in the Environmental and social issues, as well as the global manufacturing landscape, are all gaining importance and necessary for administration of any business. A strategy known as "green supply chain management" (GSCM) tries to enhance product and process performance while abiding by the government's established environmental rules. Additionally, In order to save energy and prevent hazardous materials from leaking into the environment, it aims to keep wastes contained within the industrial system. This approach takes into account each stage of the product's life cycle, starting with the design phase and continuing through the production and distribution phases to the use phase. To create an environmentally sound supply chain, environmental impacts at each stage are minimised. To address an organization's environmental impact, supply chain management methods are combined with ecological considerations in GSCM. For a sustainable business strategy, organisations are realising how crucial it is to integrate supply chain and environmental management systems. Many people are trying to figure out how to build a sustainable supply chain. The finest supply chain for the business and the environment is one that is sustainable. The use of greener supply chain management techniques by businesses will give them a competitive edge as consumer awareness and regulatory requirements increase (Sunil Luthra, Vinod Kumar & Abid Haleem, 2011).

2. Literature Review

In order to build an environmentally sound supply chain, each stage of the chain's environmental effects are minimised, and energy and resource use (within a firm) are prioritised. GSCM addresses the environmental impact of an organization's supply chain processes by fusing ecological concerns with supply chain management principles. Organizations are becoming more aware of the value of integrating environmental management systems with supply chains to support sustainable business strategies. Many people are currently looking for advice and suggestions for creating a sustainable supply chain. An efficient supply chain is gain for the company and is also the least harmful to the environment. As consumer awareness and regulatory requirements rise, businesses who embrace greener supply chain management practises will have a competitive advantage (Liu et. Al., 2011).

The goals of traditional SCM are to increase process and activity profitability, improve operating efficiency across all facilities, and strike a balance between the interests of various

stakeholders. The GSCM adopts a somewhat more constrained strategy, prioritising economic growth, social responsibility, and environmental issues. The process of integrating the sustainable strategy with GSCM is challenging. SMEs face a number of obstacles on their path to environmental sustainability that, in comparison to the world of giant corporations, are either negligible or non-existent. Seuring and Muller noted a number of obstacles to sustaining the supplier connection while taking environmental considerations into account. Numerous researches determined that the general public plays a smaller influence the promotion of sustainability. Similar to this, few researchers identified "eco-literacy" issues and a lack of familiarity with legal systems and environmental management as barriers. Lack of knowledge and information regarding the sustainability issue is a significant barrier. Information silos increase the gaps in GSCM execution (Hamel, G., Doz, Y. L., & Prahalad, C. K., 1989).

These incentives, which can be divided into three primary categories: recognition, simplicity of execution, and financial, should be aimed at lowering the hurdles that the industry must overcome. (Al Zaabi, S., Al Dhaheiri, N., & Diabat, A. , 2013) It identifies a number of problems that prevent the provider from meeting the buyer's sustainability demands. The opportunity is not always demoralised just means that there is a lack of capacity or motivation to engage. Second, obstacles posed by people, such as resistance to change, a lack of trained personnel and training programmes, a lack of comprehension, and an inability to plan, are all seen as major obstacles to the implementation of SSCM. (Zampou, E., Mourtos, I., Pramataris, K., & Seidel, S. , 2022) It has mentioned that while attempting to apply the SSCM idea, IT organisations frequently face resistance from middle management inside the organisation due to a lack of transparency. Insufficient IT implementation is a major barrier. Supply chain performance is improved through IT solutions that support collaborative supply chain procedures (Rogers, D.S., & R.S. , 1998). For the GSCM to be supported throughout an efficient IT system is essential at different phases of the product life cycle. Effective information systems are required to track and trace product returns and connect them to prior transactions (Ravi, V., & Shankar R., 2005) In order to create connections and establish effective automotive industry needs information assistance from GSCM. In order to effectively manage green SC, it is necessary to manage information flows related to the forward and backward flow of materials and other resources (AlKhidir, T., & Zailani, S., 2009).

Knowledge is one type of technology. An organisation will be more capable of technological innovation if it has a wealth of expertise applying and adopting related technology (Gant, 1996). When information can be communicated more easily inside the organisation, it will have a stronger capacity for innovation (Tsai, 1998). It is possible to enhance technology with greater transferability. Sharing technological transfer or more explicit technological knowledge is simple (Cooper, 1994). Technology and innovation infuse creativity into corporate culture, encouraging all of the company's employees to come up with new concepts, procedures, and solutions (Digalwar, A.K., &Metri, B.A., 2004). Organizational resistance to change manifests itself in resistance to the adoption of new technologies. An organizational barrier makes it challenging to accomplish major change within the organization. Improved communication and unofficial connections assist organisations in implementing Green's practises (Yu Lin, C., & Hui Ho, Y. , 2008). Green employees may receive awards from their employers. Employees may receive support in learning about environmental issues and assistance with environmental issues (Hsu, C.W., & Hu, A.H. , 2008).

Quality human resources, however, are a barrier due to financial restrictions because they cannot easily learn new technologies, exchange their knowledge with one another, or apply them to solve problems (Yu Lin, C., & Hui Ho, Y. , 2008). Therefore, a significant obstacle to implementing GSCM in the Indian automotive industry is low human resource quality. Market unpredictability is particularly high in the current environment as a result of global competition and client demands (Wang, L. C., Lin, Y. C., & Lin, P. H., 2007). Develop and implement plans based on research and benchmarking against global competitors. The ability to innovate and the intention to accept both innovations and the external environment in which a company operates will be influenced by that environment (Hosseini, 2007).

As the Gov. establishes Government regulation and industry environmental standards can encourage or prevent the adoption of innovation (Scupola, 2003). The primary obstacle is the government's propensity to support outdated customs (AlKhidir, T., &Zailani, S., 2009). Therefore, a challenge to implementing effective GSCM Government support systems are lacking in the Indian auto industry. The explicitness of green practices and innovative green practices are correlated (Yu Lin, C., & Hui Ho, Y. , 2008). Organizations do, however, endeavour to cut costs due to market competitiveness

and cost repercussions. The initial investment required to implement GSCM processes is substantial. Implementing green techniques is also resisted due to financial restrictions (Ravi, V., & Shankar R., 2005).

For any strategic programme to be successful, top management support and dedication are required. For environmental measures like GSCM, top management backing is extremely beneficial. The organization's top management has a large amount of influence over, support for, and ability to actually design and implement green projects (Sarkis, 2009). For the successful implementation of the strategic plans and action plans, top management continuously supports GSCM (Zhu, Q., Sarkis, J. & Lai, K., 2007).

Cost has traditionally been the main performance indicator. Generally speaking, high costs are a significant burden in GSCM compared to traditional SCM. The initial expenditure needed for green approaches, such as green packaging as well as production, labeling, etc., is excessively large. Direct costs and transaction costs are the two different kinds of costs connected to environmental management. A significant barrier to using GSCM will likely be both of these types of expenses. Improved supplier relations lead to increase accuracy, cut costs, and lower inventory levels. The effectiveness of the chain as a whole is impacted by the suppliers' involvement in the technological and design processes. Due to traditional thinking and the fact that suppliers' interests don't align with the network as a whole, they are reluctant to adopt GSCM (Mudgal, R.K., Shankar, R., Talib, P., & Raj, T. , 2010). The development of a manufacturer's competitive edge is thought to depend most heavily on connections with suppliers and manufacturers. 2000 to 3000 suppliers are typically found in large automotive companies. Without cooperation from suppliers, manufacturers cannot make environmentally friendly products. In order to keep the business connections going, suppliers must fulfill the demands of the consumers. The main source of external pressure today is customer demands (Tsai, 1998). The corporation must modify its organization and technology in order to provide creative green products if the customer is aware and desires green items. However, car manufacturers are developing non-green items in the Indian automotive market since consumers are ignorant of the benefits of green products. Around 75% of American consumers report that reputation influences their purchases, and 80% say they would be prepared to pay extra for products that are more environmentally friendly (Lamming, R., & Hampson, J. , 1996).

There is a lack of knowledge and understanding among supply chain in carrying out GSCM (Daine Holt and Abby Ghobadian, 2009). Lack of nearby green professionals for a company (Yu Lin, C., & Hui Ho, Y. , 2008). This demonstrates the lack of training provided to the organization's employees, which hinders the improvement of the supply chain's overall performance and the adoption of green practises. (B. P. Sharma, M. D. Singh and Neha, 2012); (Daine Holt and Abby Ghobadian, 2009); (Yu Lin, C., & Hui Ho, Y. , 2008); (Bowen, F. E., Cousins, P. D., Lamming, R. C., & Farukt, A. C. , 2001); (Lambert, D. M., & Cooper, M. C. , 2000)

The absence of organization-wide internal sustainability audits shows the lack of integration of all departmental internal problems with supply chain cooperation. (Walker, 2008), (Min, H., & Galle, W. P., 2001), (Wycherley, 1999).

Lack of external sustainability audits for vendors and contractors displays the integration of all departmental outside issues connected to supply chain coordination (Walker, 2008); (Min, H., & Galle, W. P., 2001); (Wycherley, 1999) ; (Sharfman, M. P., Shat, T. M., &Anex, R. P., 2007).

A lack of ISO 14001-style sustainability certification speaks to the veracity of the quality of goods and services in accordance with established standards (B. P. Sharma, M. D. Singh and Neha, 2012); (Dube, A. S., & Gawande, R., 2014); (Xianbiag Liu, Jie Yang, Sixiao Qu, Leina Wang, Tomohiro Shishime and Cunkuan Bao., 2011); (Luthra, S., Kumar, V., Kumar, S., & Haleem, A. , 2011); (Linton, J. D., Klassen, R., & Jayaraman, V. , 2007).

Lack of expert care and long-term contracts from the government for GSCM adoption demonstrates inadequate Gov. oversight and assistance for GSCM practitioners (B. P. Sharma, M. D. Singh and Neha, 2012); (Linton, J. D., Klassen, R., & Jayaraman, V. , 2007); (Xianbiag Liu, Jie Yang, Sixiao Qu, Leina Wang, Tomohiro Shishime and Cunkuan Bao., 2011); (Luthra, S., Kumar, V., Kumar, S., & Haleem, A. , 2011); (Yu Lin, C., & Hui Ho, Y. , 2008); (Balasubramanian, 2012).

The absence of initiative management for logistics and transportation demonstrates inadequate organisational logistics management.. Additionally, The organization's ineffective waste and energy management demonstrates bad resource management on the part of the corporation (Daine Holt and Abby Ghobadian, 2009); (B. P. Sharma, M. D. Singh and Neha, 2012); (Dashore, K., & Sohani, N. , 2008), (Rogers, D.S., & R.S. , 1998).

Common hurdles have been discovered and grouped into three primary categories: the

technology barrier, the knowledge barrier, and the financial barrier. When implementing GSCM, industries must create and keep up with emerging technologies and trends (Mudgal, R.K., Shankar, R., Talib, P., & Raj, T. , 2010). The lack of financial support for environmental initiatives is typically regarded as the greatest obstacle (Zhang, X., Song, H., & Huang, G. Q. , 2009). Financial restrictions are the main barrier in this group. It demonstrates that Indian firms are unable to meet their financial demands and as a result do not invest much in the implementation of GSCM. The Knowledge barrier category includes five obstacles. Professionals' lack of exposure to green systems, i.e., Industry personnel has less exposure to green technologies. There is reluctance among industries environmental issues to adopt and update. It was a huge roadblock to raising revenue and decreasing waste. In the supply chain of the Indian automobile sector, a major hurdle to reverse logistics is the lack of understanding about its benefits (Mudgal, R.K., Shankar, R., Talib, P., & Raj, T. , 2010).

2.1 Need of the Study

One of the newest concepts for boosting supply chain management's capabilities is green supply chain management. GSCM enables firms to meet regulatory standards and maintain a competitive edge. Numerous obstacles make it difficult to develop and implement environmentally friendly corporate strategies. Initially, it is not possible to eliminate all of these barriers during GSCM adoption; therefore, industries must determine which barrier poses the greatest challenge to GSCM implementation. Understanding the degree of various obstacles is crucial for a successful deployment of GSCM. By having a clear understanding of the obstacles, organisations can identify the weaker areas and devise strategies to improve them, thereby enhancing the efficacy of their GSCM implementation programmes. Barriers are classed according to their level of importance, and industry should strive to overcome these obstacles in order to improve economic, social, and operational performance.

2.2 Scope of the Study

- The study's focus will be on the four major cities of Gujarat: Ahmedabad, Surat, Vadodara, and Rajkot.
- Only Barriers in manufacturing companies would be examined in this study.
- The conceptual range of the study is to identify Barriers in green supply chain implementation
- A variety of statistical components, such as an individual's demographics, are taken

into consideration.

2.3 Research gap

This is the first study to incorporate GSCM obstacles using data gathered from Indian manufacturing industries. As a result, it will guide future study toward formulating recommendations or solutions to get around these obstacles.

3. Research Methodology

3.1 Statement of problem

The relevance of green supply chain management (GSCM) has increased as a result of the past few decades' environment's ongoing degradation, including rising pollution, resource depletion, wildlife extinction, and adverse consequences on humans. It is seen that industries are becoming more cognizant of the need to apply GSCM. Numerous obstacles prevent the successful application of GSCM.

3.2 Objectives of the study

To identify obstacles to the development of green supply chains in Indian manufacturing enterprises.

3.3 Research Design

The research design has the most fundamental influence on the ability to infer the reason behind any discernible disparities in a dependent measure is known as internal validity. Data analysis is inseparable from research design. Data analysis is inseparable from research design. (Barnett, M. W., & Miller, C. J., 2000).

This investigation employs a descriptive research design. According to (Sunil Luthra, Vinod Kumar & Abid Haleem, 2011), the fundamental objective of Descriptive research is used to assess the validity of theories developed to reflect the state of the world. This kind of research focuses on the past or the present while providing information on the current state of affairs, such as the standard of living in a community or consumer attitudes toward marketing initiatives. current study was carried out using both quantitative and qualitative methods for social research design.

3.4 Sampling design

The current study's target population is the manufacturing companies that follow green supply chain serving as sampling unit. A range of secondary sources, including books,

magazines, newspapers, journals, and websites, were used to collect the data. The Primary Data was gathered through a consumer survey. Quantitative survey was used to obtain the study's data. Prior to the creation of the instruments for collecting quantitative data, a variety of literature was reviewed. A closed-ended structured interviewing tool was used to speak with the consumers.

4. Data Analysis

4.1 Demographics

The respondents' socio-demographic details were considered crucial in determining barriers of GSCM. All the respondents are aware and have implemented GSCM practices in their organizations. 71.2% [n=280] respondents face problems during use of sustainable supply chain management techniques. 30% of those surveyed belong to the age group of 49-58 , out of which almost all the owners. And almost 40% of the respondents have completed their Graduation.

4.2 Reliability

In statistics and psychometrics, a measure's general consistency is referred to as reliability. If a measurement consistently yields results that are similar, it is considered to have higher reliability. To assess reliability, Cronbach's alpha was used. Nunnally (1978) provided a general rule of thumb, stating that an alpha value of at least 0.70 is a reliable internal consistency. Alpha values were discovered to be 0.973. As a result, variables with alpha values larger than 0.7 showed very good dependability.

Reliability Statistics	
Crobach's Alpha	N of Items
0.973	21

4.3 Mean Test

Mean Test					
	N	Minimum	Maximum	Mean	Std. Deviation
There is lack of integration of IT system in my organization	393	1.00	5.00	2.0407	1.25087
There is low acceptance of advancement of new technology in my organization	393	1.00	5.00	2.0967	1.31933
There is Poor organizational culture in GSCM	393	1.00	5.00	2.7405	1.39563
There is Lack of skilled human resource professionals in sustainability and GSCM	393	1.00	5.00	2.7430	1.39518
There is lot of Uncertainty and competition in Market	393	1.00	5.00	2.4682	1.08779
There is Lack of government initiatives system for GSCM practitioners	393	1.00	5.00	2.6972	1.31025
There is Poor implementation of green practices within a supply chain	393	1.00	5.00	2.7405	1.39563

There is Lack of top-level management Commitment	393	1.00	5.00	2.7557	1.38740
Due to high initial Cost of implementation for GSCM	393	1.00	5.00	2.7405	1.39563
Suppliers don't have flexibility to change towards GSCM	393	1.00	5.00	2.5115	1.41259
Customer are unaware of GSCM products and services	393	1.00	5.00	2.6947	1.31258
There is Lack of knowledge and Experience	393	1.00	5.00	2.5267	1.14059
There is Lack of green architects, consultants, green developers, contractors in the region	393	1.00	5.00	2.6972	1.31025
There is Lack of training in GSCM	393	1.00	5.00	2.6285	1.28349
There is Lack of internal sustainability audits within the organization	393	1.00	5.00	2.5674	1.23972
There is Lack of external sustainability audits for suppliers and contactors	393	1.00	5.00	3.9466	1.24117
There is Lack of sustainability certification like ISO 14001	393	1.00	5.00	2.6972	1.31025
There is Lack of professional treatment and long-term contracts for adopting GSCM from government	393	1.00	5.00	2.7405	1.39563
There is Lack of management initiatives for transport and logistics	393	1.00	5.00	2.7557	1.38740
There is Lack of energy management and waste management of the organization	393	1.00	5.00	2.7405	1.39563
Valid N (listwise)	393				

4.4 Hypothesis Testing

H₀₁ : There is no Significant Difference between Age and Barriers of GSCM

ANOVA

	S O S	df value	M Square	F-value	Sig.value
Between Groups	25.032	4	6.258	5.607	.000
Within Groups	293.536	263	1.116		
Total	318.567	267			

The null hypothesis is rejected at a 5% level of significance since the P-values for the barriers of the GSCM attributes were found to range between 0.000 and 0.05, which is less than 0.05. As a result, It concluded a significant difference between age and GSCM Attribute Barriers.

H₀₂ There is no Significant Difference between Education and Barriers of GSCM

ANOVA

	S O S	df value	M Square	F-value	Sig.value
Between Groups	29.178	4	7.294	10.997	.012
Within Groups	174.449	263	.663		
Total	203.627	267			

P-values for the GSCM Barriers The range of attributes that were discovered to be less than 0.05. The lternate hypothesis is accepted at a 5% significance level. As a result, there is a Significant Difference between Education and Barriers of GSCM.

H₀₃ There is no Significant Difference between employee involvement with the organization and Barriers of GSCM

ANOVA

	S O S	df value	M Square	F-value	Sig.value
Between Groups	25.032	4	6.258	5.607	.000
Within Groups	293.536	263	1.116		
Total	318.567	267			

P-values for GSCM Awareness The range of attributes discovered to be less than 0.05. Alternate hypothesis is accepted at a 5% significance level which indicates a Significant Difference between employee involvement with the organization and Barriers of GSCM.

H₀4 There is no significant impact of Attributes of GSCM Barriers on overall perception of GSCM

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.901 ^a	.812	.811	.54849

The coefficient of determination (R²) of the model was.812 according to the model summary of general knowledge of GSCM and awareness qualities. As a result, It concludes an impact of attributes of GSCM barriers on overall perception of GSCM.

The relevance of the regression model is evaluated using the ANOVA Table. A p-value of 0.000 was discovered for an F-value of 307.358. P-value at the $\alpha = 0.05$ level is less than 0.05., which is sufficient proof that the model is significant.

5. Managerial Implications

The managerial perspective directs the marketing manager to develop social campaigns by enabling suppliers to fulfil their resources in terms of financial support programmes or by providing a platform for enhancing their business entities. By giving policymakers a thorough understanding of the advantages and underlying costs, this work supports practical

implications associated with the adoption of GSCM practises, as well as the challenges to supply chain sustainability.

6. Conclusion

Barriers should be reduced in order to integrate GSCM practises into traditional supply chains, with a focus on sectoral and economic factors. The government should work to promote green laws and policies in India along with stricter implementation and control systems, not just at the business level but also at the consumer level. Campaigns for raising awareness over social and digital media are required as global cause of sustainability necessitates buyer-manufacturer-supplier integration. Standards should be created specifically for manufacturing countries and facilitated implementation in the manufacturing firms at a subsidised cost.

7. Future Scope

Future studies might think about creating ISM analyses for fewer barriers or concentrate on each internal and external barrier separately in order to decrease the complexity of ISM analyses and improve their accuracy. Validation using either the linear structural relationship approach or structural equation modelling (SEM) is strongly advised because the ISM analysis tech.

8. Bibliography

1. AlKhidir, T., &Zailani, S. (2009). Going Green in supply chain towards Environmental Sustainability. . *Global Journal of Environmental Research*, 3(3), 246-251.
2. Al Zaabi, S., Al Dhaheri, N., & Diabat, A. . (2013). Analysis of interaction between the barriers for the implementation of sustainable supply chain management. . *The International Journal of Advanced Manufacturing Technology*, 68(1), 895-905.
3. B. P. Sharma, M. D. Singh and Neha. (2012). Modeling the Knowledge Sharing Barriers using an ISM Approach. *International Conference on Information and Knowledge Management (Vol. 45)*, 233-238.
4. Balasubramanian, S. (2012). A Hierarchical Framework of Barriers to Green Supply Chain Management in the Construction Sector. . *Journal of Sustainable Development.*, .

5. Barnett, M. W., & Miller, C. J. (2000). Analysis of the virtual enterprise using distributed supply chain modeling and simulation: an application of e-SCOR. In 2000 winter simulation conference proceedings. 352-355.
6. Bowen, F. E., Cousins, P. D., Lamming, R. C., & Farukt, A. C. . (2001). The role of supply management capabilities in green supply. . *Production and operations management, 10(2)*, 174-189.
7. Cooper, J. (1994). *Green logistics, European logistics: markets, management and strategy*. Oxford: Blackwell Business.
8. Daine Holt and Abby Ghobadian. (2009). An Empirical Study of Green Supply Chain Management Practices Amongst UK Manufacturers. *Journal of Manufacturing Technology Management (Vol. 20), no.7*, 933-966.
9. Dashore, K., & Sohani, N. . (2008). Green supply chain management: A hierarchical framework for barriers. *J. Sustain.*
10. Digalwar, A.K., &Metri, B.A. (2004). Performance Measurement Framework for World Class Manufacturing. *International Journal of Applied Management and Technology, 3(2)*, 83-101.
11. Dube, A. S., & Gawande, R. (2014). Barriers for green supply chain management implementation. In 3rd International Conference on Recent Trends in Engineering and Technology . 28-36.
12. Gant, R. M. (1996). Prospering in dynamically-competitive environments: Organizational capability as knowledge integration. *Organizational Science, 7(4)*. 375-387.
13. Hamel, G., Doz, Y. L., & Prahalad, C. K. . (1989). Collaborate with your competitors and win. . *Harvard business review, 67(1)*, 133-139.
14. Hervani, A. A., Helms, M. M., & Sarkis, J. . (2005). Performance measurement for green supply chain management. . *Benchmarking: An international journal*.
15. HokeyMin, I. K. (2012). Green supply chain research: past, present, and future. 39-47.

16. Hosseini, A. (2007). Identification of Green Management of system's factors: - A Conceptualized Model. . *International Journal of Management Science and Engineering Management*, 2(3), 221-228.
17. Hsu, C.W., & Hu, A.H. . (2008). Green Supply Chain Management in the Electronic Industry. . *International Journal of Science and Technology*, 205-216.
18. Joseph Sarkis ,QinghuaZhu , Kee-hungLai. (2010). An organizational theoretic review of green supply chain management literature . *Int. J. Production Economics* , 1-15.
19. Lambert, D. M., & Cooper, M. C. . (2000). Issues in supply chain management. . *Industrial marketing management*, 29(1), 65-83.
20. Lamming, R., & Hampson, J. . (1996). The environment as a supply chain management issue. . *British journal of Management*, 7(1).
21. Linton, J. D., Klassen, R., & Jayaraman, V. . (2007). Sustainable supply chains: an introduction. . *Journal of Operations Management*, 25(6), 1075-1082.
22. Luthra, S., Kumar, V., Kumar, S., & Haleem, A. . (2011). Barriers to implement green supply chain management in automobile industry using interpretive structural modeling technique: An Indian perspective. . *Journal of Industrial Engineering and Management* .
23. Min, H., & Galle, W. P. (2001). Green purchasing practices of US firms. *International Journal of Operations & Production Management*, 21(9), 1228-1232.
24. Mudgal, R.K., Shankar, R., Talib, P., & Raj, T. . (2010). Modeling the barriers of green supply chain practices: an Indian perspective. . *Int. Journal of Logistics Systems and Management*, 7, 81-107.
25. NoorulHaq, K. Mathiyazhagan& A. (2013). Analysis of the influential pressures for green supply chain management adoption—an Indian perspective using interpretive structural modeling. *Int J Adv ManufTechnol* 2013 68:, 817–833.
26. Ravi, V., & Shankar R. (2005). Analysis of interactions among the barriers of reverse logistics. *International Journal of Technological Forecasting & Social change*, 72(8), 1011-1029.

27. Rogers, D.S., & R.S. . (1998). Tibben- lembke, Going Backwards: Reverse Logistics Trends and Practices. Reverse Logistics Executive Council, Pittsburgh, PA.
28. Sarkar, A. &. (148-163). Evaluation of supplier capability and performance: A method for supply base reduction. . *Journal of Purchasing and supply management*, 12(3), 2006.
29. Sarkis, J. (2009). A Boundaries and Flows Perspective of Green Supply Chain Sarkar Management. *GPPI working papers. No-7, October 2009*.
30. Scupola, A. (2003). The adoption of internet commerce by SMEs in the South of Italy: an environmental, technological and organizational perspective. . *Journal of Global Information Technology Management*, 6(1), 52-71.
31. Sharfman, M. P., Shat, T. M., &Anex, R. P. (2007). The road to cooperative supply-chain environmental management: trust and uncertainty among pro-active firms . *Business Strategy and the Environment*, 18(1), 1-13.
32. Sunil Luthra, Vinod Kumar & Abid Haleem. (2011). Barriers to implement Green Supply Chain Management in automobile industry using Interpretive Structural Modeling (ISM) Technique An Indian Perspective, 2011. *Journal of Industrial Engineering and Management*.
33. Tsai, W. &. (1998). Social Capital and Value Creation: The Role of Intrafirm Networks. *Academy of Management Journal*, 41, 464-476.
34. Walker, H. &. (2008). Fostering sustainability through sourcing from small businesses: public sector perspectives. *Journal of Cleaner Production*, 16(15), 1600-1609.
35. Wang, L. C., Lin, Y. C., & Lin, P. H. (2007). Dynamic mobile RFID-based supply chain control and management system in construction. . *Advanced Engineering Informatics*, 21(4), 377-390.
36. Wycherley, I. (1999). Greening supply chains: the case of theBody Shop International. . *Business Strategy and the Environment*, 8(2), 120-127.
37. Xianbiag Liu, Jie Yang, Sixiao Qu, Leina Wang, Tomohiro Shishime and Cunkuan Bao,. (2011). Sustainable Production: Practices and Determinant Factors of Green

Supply Chain Management of Chinese Companies, 2011. *Business Strategy and the Environment*, 21, 1.

38. Yu Lin, C., & Hui Ho, Y. . (2008). An Empirical Study on Logistics services provider, intention to adopt Green Innovations. . *Journal of Technology, Management and Innovation*, 3(1), 17-26.
39. Zampou, E., Mourtos, I., Pramadari, K., & Seidel, S. . (2022). A design theory for energy and carbon management systems in the supply chain. . *Journal of the Association for Information Systems*, 23(1), 329-371.
40. Zhang, X., Song, H., & Huang, G. Q. . (2009). Tourism supply chain management: A new research agenda. . *Tourism management*, 30(3), 345-358.
41. Zhu, Q., Sarkis, J. & Lai, K. (2007). Green Supply Management: Pressures, Practices and Performance within the Chinese Automobile Industry. . *Journal of Cleaner Production*, 15(11-12), 1041-1052.