

Uncertain Supply Chain Management

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Drivers and barriers in green supply chain management adaptation: A state-of-art review

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ABSTRACT

Due to the emergent government regulations and stronger public awareness about environment today organizations simply cannot discard environmental concern if these companies want to stay alive in the international market. Environmental management is becoming more and more important for companies for sustainable development. If the industries of developing countries have to export to developed nations they have to match up with developed countries' environmental standards. The emphasis on the environmental protection is not only due to organizational stakeholders but also governments, customers, employees, competitors and communities. Environmental issues in manufacturing sectors are not investigated appropriately in developing countries. The objectives of this paper are to review the literature on drivers and barriers for the implementation of Green Supply Chain Management (GSCM). After providing a background on GSCM, categories and review the literature on various issues/ factors for the recent GSCM, the concluding remarks for this review is also presented.

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1. Introduction

With the industrial revolution after Second World War and advancement in developed countries, world is facing severe environmental concern. In order to prevent environmental degradation, a number of legislations have been developed by developed as well as developing countries according to their requirements. In addition to environmental legislations, organizations need to develop strategies to reduce the impact of their products and services on the environment. The developed countries like European Union have taken initiative to reduce hazardous materials to save the environment, like European Union has imposed RoHS (Restrictions of the use of Hazardous Substances) directives on 1st July 2006. The European Union directive has banned electrical and electronic equipment containing lead, mercury, cadmium, Hexavalent Chromium, Polybrominated Biphenyls (PBB) and Polybrominated Diphenylethers (PBDE).

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The first most important standard to protect the environment came into existence in 1996. In this year, ISO established its environmental series standard ISO14000. The fundamental aim of ISO 14000 series is to address the environmental issues of the industries/ organizations. The organizations are audited and if they meet the ISO 14000 requirements, those organizations are certified by ISO 14000 certifications. These organizations can take the advantage of ISO 14000 certification by marketing that their operations are meeting the international standards of environmental management system. In this way they can take the competitive advantage over their competitors globally. Purchasing is the most important practice for measurement of accountability not only for purchasing of the raw materials but also for its disposal of the materials after the end of its useful life. The products should be designed such that the materials can be recycled and reused after its useful life, and second most important aspect is to give stress on the waste reduction. Reduction of hazardous waste is also stressed by the external agencies as well as the Environmental Protection Agency's (EPA). In China more than 40,000 companies have already implemented the environmental management system standard (ISO 14001); most of these companies are manufacturing firms.

The Green Supply Chain Management (GSCM) has originated from the supply chain management. The supply chain is the integration of manufacturing activities starting from the raw materials to the final products and then distribute to customers. In this definition, the supply chain management is only connected to manufacturing activities from purchasing of raw materials to delivery of final product. The difference between the supply chain management and green supply chain management is the environmental concern. GSCM starts from product design to end of useful life of the product to recycling or disposal taking environmental concern in each and every step of supply chain management. Research in the field of GSCM is getting attention by the researchers recently.

In this literature, GSCM drivers and barriers will be studied through the various research papers on global point of view. In developing countries like India, the main attention of the manufacturers is to reduce cost. They hardly give consideration to environment impacts of their business operations. The main focus of this research is to identify the major drivers and barriers in the organizations in implementing GSCM practices. These drivers and barriers are further classified into seven different subgroups. These drivers and barriers will be sub-grouped on the basis of internal, external, competitions, suppliers, customers, society and market.

2. Literature Review

A number of researchers have focused on green supply chain management over the past few decades. As a result GSCM is the potential research topic nowadays. Volkswagen's manufacturing in 1995 was among the first automotive manufacturing plants to put into practice environment management system in Europe. There are many regulatory and financial incentive schemes provided by companies like apple, Sony and Matsushitas. Moreover they invest an enormous portion of their budgets in design for environment (DfE) activities in order to green their supply chain. The developed countries have already implemented the GSCM but developing countries like India have just started implementing it to save the environment.

2.1 Literature review on drivers of GSCM

India's economy has grown rapidly in the last few decades. The issue of green supply chain management has received attention among the manufacturing practice and research in India that's why GSCM is the immediate growing research. It addresses the environmental issues, resource utilization efficiently in the whole supply chain management that makes it different from the conventional supply chain management. To gain the competitive advantage from their core competitors the firms are trying to reduce cost by greening their supply chain management. On the other hand the companies are taking advantage of the image of the product by green labeling. The automobile companies are facing a more

strict environmental emission norm which forces the Indian automobile manufacturing firms to emit less pollution in the environment.

Life cycle analysis, green supply chain management design for environment, total quality management, and ISO 14000 standards are identified as green manufacturing practices (Sarkis, 1998). Chirstmann and Taylor (2001) found in their research that the two major drivers for improving the environment performance of the Chinese industries are export and sales to the foreign customers. Zutshi and Sohal (2004) recognized that Environment Management System (EMS) and its success, adaptation and prolongation mainly depend on management leadership and its support, learning & training, internal analysis and sustainability. Similarly understanding of environmental concern and its assurance to realization in the system depends on the top management and its support.

Zutshi and Sohal (2004) in their research in Australia found that the critical success factors that make the Environmental Management System implementation process faster and smoother, efficient and sustainable in organizations by reducing the various barriers practiced by the manager. These critical success factors found in their research are valid to every organization, irrespective of the size, sector or ownership. An et al. (2008) found that all new Electrical and Electronics Equipment that are entering to European Union market to be free of six toxic chemicals, like Lead, Cadmium. Zhu and Sarkis (2006) studied that the companies have already become conscious that they cannot sustain without eliminating the environmental hazards in their manufacturing/ production system.

Montabon et al. (2007) found that industries have begun to identify the benefits of practical approach to environmental policies. Industries can be transformed to environment friendly industries by taking advantages of better utilization of resources and thus have better corporate image. The adoptability of green practices, organizational support, human resources quality, pressure by regulatory authorities and support by the government have considerably encouraging influence on implementation of green practices for Chinese logistics companies.

Etzion (2007) found in his research that environmental regulations, stakeholder pressure, company size are the related environmental factors frequently appeared in the research. Verghese and Lewis (2007) found that the integration of environment, economic and social performances to achieve sustainable development is a major business challenge for the new century. Zhu et al. (2007) in their research brought into notice that market pressure is the most important driver for the adoption of the green supply chain management practices by Chinese automobile supply chain.

Miller et al. (2008) stated that United States had begun its environmental control since 1970 and the years since 1970 to 1984 are well known as the "Compliance Era". Major numbers of environmental regulations were made during this period and most of these regulations were focused on cleaning the past practices made by the industries. The past practices were those practices which resulted in contaminated land, dirty air, and polluted waterways. USA, Japan, and European countries are among the few countries that initiated and recognized the importance of environmental protection in their respective countries. In the above mentioned countries the European Union were the most dynamic in its environmental concern.

Zhang et al. (2009) studied various drivers of GSCM in Suzhou Industrial park China, and found that legal requirement is the most important driver. Customers are the most important driver of GSCM and green production to eliminate all waste. The increasing public understanding and a sense of social accountability are the drivers of green supply chain management in most of the companies. The commitment of the concern firm manager towards the environment is the main driver rather than the pressure of the environmental compliances. Many companies are approved by ISO 14001 certification to meet environmental requirement to their foreign customers, which helps them to market their product internationally. Fölster and Nyström (2010) found that the European Union environmental regulation

considered being the strictest in comparisons to the other nations or Asian countries. The European Union has set up an incredibly motivated target to cut emission with 20% by the year 2020. Toke et al. (2010) identified purchasing and in-bound logistics, production, distribution and out-bound logistics as four major drivers of green supply chain.

Luthra et al. (2011) identified in their research that there are eleven barriers to implement GSCM in Indian automobile industry. Market competition and uncertainties, cost implications, supplier unwillingness to change toward green supply chain management, lack of green practice implementing, unawareness of customers and cost implication have been recognized as the dependent variables. Lack of government support systems, lack of top management commitment and lack of its implementation have been identified as the driver variables. Resistances to technology advancement adoption, lack of organization encouragement and poor quality of human resources have been identified as the linkage variables. Bhateja et al. (2011) said that cost and complexity are supposed as the biggest barriers to implement green supply chain management and brand building is one of the top incentives of the green supply chain management.

Gangele and Verma (2011) recycling and reuse of the raw material and components are the two top green manufacturing and production focused suggestion in their research. Pressure from environmental regulations is the highest with a mean value of 4.11 Indian pharmaceutical industries. Bhateja et al. (2012) in their research found that export pressure is the second important driver for Indian Pharmaceutical supply chains to implement Pharmaceutical GSCM. Acceptance of green supply is maximum in area where there is an association to efficiency and cost saving and lowest in areas where there is no direct cost or efficiency benefits in manufacturing sector.

Nimawat and Namdev (2012) found that in India there is a need to increase awareness of GSCM in Indian Manufacturing sector to take cost and efficiency improvement benefits because the Environmental Performance Index (EPI) rank of India is worst, this ranking shows that awareness of GSCM is very poor. Pandya and Mavani (2012) found that pharmaceutical manufacturers in Gujarat are forced by the pressure or driver from environmental regulations, suppliers, consumers and community stakeholders to implement GSCM Practices.

Bhool and Narwal (2013) studied the drivers for implementation of green supply chain management in Indian manufacturing industries in various sectors likewise, two wheeler, four-wheeler, and general manufacturing. Xianqmeng et al. (2015) Chinese manufacturing SMEs are under pressure to implement GSCM from a number of sources which includes customers, government regulations, suppliers and public awareness. In addition to these pressures, different industrial sectors have different drivers and pressures to implement GSCM.

2.2. Classification of drivers for GSCM

Drivers of green supply chain management mean the factors which motivate the manufacturing industries to reduce their environmental hazardous substances in their supply chain management. There are numerous motivation for firms to employ GSCM practices like economic benefit, reduce pollution, green image of the firm etc. Driver of GSCM can be classified based on internal factors, external factors, customers, competition, marketing and suppliers. With the economic development, our environment is suffering from various serious environmental problems such as air pollution, water pollution, waste etc. In order to decrease these environmental dreadful conditions, a number of environmental policies and various legislations have been developed by the government. The companies operating all over the globe have begun to adopt the environmental management practices. The firms have become more environment conscious. The significance of the environmental concern at every level of their operations and the company's environmental policies are not only influenced by

government regulations but also by stakeholders, trade organization association, employee and neighborhood occupant.

2.2.1. Internal driver for GSCM

The driver which does exist inside the Organization itself is known as the internal driver. There are a number of different organization related GSCM drivers which includes environmental mission of organization, employee involvement/ motivation, desire to reduce cost, investor etc. Policy of the entrepreneurs/ environmental mission, employee involvement/ motivation, desire to reduce cost, Cost of disposal of harmful materials etc. are known as internal drivers of GSCM. Carter et al. (1998) found that personal and the ethical values of the founder of the organization, not only the top management but also middle management supports is positively associated to environmental purchasing.

2.2.2 External factors

Government regulation and legislation appears to be a strong driver for GSCM, especially if firms are positive and innovative in their approach to regulatory compliance. Zhu et al., (2005); and Beamon, (1999) concluded in their research that the main driver for GSCM effort in companies is government regulation and legislation.

2.2.3 Customers

Customers play a very key role in green supply chain management, and there are many interesting issues regarding customers as a driver of GSCM practices. The Pressure of the customers to produce environmental friendly products and the environmental awareness of customer's that forces industries to adapt GSCM practices

2.2.4 Competition

Many researchers in literature acknowledged that competition is a driver for GSCM. Competition with the core competitors plays a major role in adopting GSCM practices and helps to improve firm performance.

2.2.5 Marketing

Potential for receiving publicity and market pressure play an important role in adopting GSCM.

2.2.6 Suppliers

GSCM plays a vital role in selection of green supplier. It is observed that suppliers can help to provide important ideas used in the realization of environmental projects, services to the customers. Table 1 shows the detail work done by the various authors on various drivers for the implementation of green supply chain management

2.3. Literature review for barriers of GSCM

The industries may understand the importance of GSCM but most of the time it may not be possible to put into practice. There may be various reasons/ barriers like, lack of infrastructure, government legislation, organizational factors, high cost etc. Those factors which obstruct or prevent the successful implementation of GSCM practices are identified as "barriers". There are a number of barriers that

restrict the implementation of GSCM. The proper knowledge of these barriers is required to apply GSCM practices successfully.

Table 1
Drivers of green supply chain management

Drivers	S. No.	Drivers of Green Supply Chain Management	Description
Internal	1.	Investor pressure	The pressure exerted by the investor on the company to adopt the green supply chain management
	2.	Policy of the entrepreneurs/ Environmental mission	Internal policies of the entrepreneurs or their environment mission can help the industries to adopt green supply chain management
	3.	Employee involvement/ motivation	Awareness and consciousness of the company employees about the environment which acts as driver to adopt GSCM practices.
	4.	Desire to reduce cost	Companies are willing to change environment friendly material to reduce cost of their product/services
	5.	Potential liability for disposal of harmful materials	Companies use very harmful products and they have liability to dispose this harmful products /waste due to environmental regulations
	6.	Enterprise's environmental mission	The enterprise's environmental mission is the key factor driving factor for adaptation of GSCM
	7.	Cost of disposal of harmful materials	Due to environmental regulations, the harmful products/ waste must be disposed. The cost of disposal of harmful products /waste is high. To reduce cost firm implements GSCM.
	8.	Cost related to eco-friendly goods	The customer may pay the higher cost for the products which are more eco friendly
	9.	Improve firm performance	Those green practices which improve the firm performance are more often and easily adopted by the companies.
External	10.	Centre government environmental regulations	The main driver of the GSCM is considered to be the central governmental environmental regulations that forces the industries to go green
	11.	Regional environmental regulations	Regional / State government regulations play a deciding role to protect environment
	12.	Legislative regulatory of compliance	Legislative regulatory of compliance forces the industries to adopt green supply chain management
	13.	ISO 14001 certification	Most of the Industries going for ISO 14001 certification and to have this certification they have to adopt Environment Management Program
	14.	Import countries regulation/ Export countries regulation	Import country legislation forces the industries to match their product on their environment standard/norms
	15.	Product potential conflicts in law	The product used/ made by the company is hazardous and conflict with law made by central/state
	16.	Government Supports/encouragement	Government provides tools, training and financial help to the industries and help them to reduce waste
	17.	Environmental subsidies	The various kind of subsidies are provided by the government to the industries and these subsidies depends on the nature of industry
	18.	Stakeholders Pressure	Stakeholders Pressure is considered to be the main driver to implement the GSCM practice into the industries
Customers	19.	Pressure of the customers to produce environment friendly product	Pressure developed by the customers on the industries are considered to be the important driver
	20.	Customers demand	Demand of environment friendly goods is increasing in the age of twenty first century
	21.	Collaboration with customers	Collaboration with customers means that they have mutually agreed to provides environment friendly goods and services to the customers
	22.	Export and sales to the foreign customers	If Industries want to export and sales to the foreign customers they have to matchup the standards of export country rules and regulation
	23.	Reduced risk of customers criticism	If the product or services of the company are hazardous to the environment then the customers may criticize the product/services
Competition	24.	Environmental awareness of customers	Customer awareness in environmental friendly good forces the supplier to produce environment friendly products
	25.	Taking competitive advantage	This is the strategy of entrepreneur to take competitive advantages from their core competitor
	26.	Desire to improve firm performance in with core competitors	Industries are trying to improve their firm performance to reduce the various types of waste using GSCM
	27.	Competitor green strategies	Competition between the core competitors forces the adopt GSCM Practices
Marketing	28.	Industrial professional group activities	A group of industries decided to remove waste and sign an EMU with each other either to reduce waste or to improve environmental efficiency
	29.	Potential for receiving publicity	The publicity may be again by advertising that their products and services are environmentally conscious
	30.	Establishing enterprise's green image	To improve the enterprises image in the market, they need to adopt GSCM practices
Society	31.	Sales to foreign customers	The industries have to make their products to match the international standards to trade in the foreign countries
	32.	Society pressure	Due to the awareness in the society the society ask the industries to provide environment friendly products and services
	33.	Social responsibility requirement	The Industries understand the responsibility to keep the environment clean for the betterment of the societv
	34.	Demand from NGO's	There may be demand from the non-government Organization to keep the environment neat and clean
	35.	Pressure by environment advocacy groups	The pressure may be put by a specific environment groups on the industries against the specific environment pollution to keep the industries aware as well as the environment clean
Suppliers	36.	Collaboration with suppliers	The different groups or the suppliers have mutual understanding between them to adopt GSCM Practices
	37.	Supply integration	The suppliers group together and opt for the GSCM practices
	38.	Suppliers advances in developing environmentally friendly goods	Supplier adopt for eco-friendly goods then the groups of industries have to select for the same to stay in the business
	39.	Environmental partnership/Certification with suppliers	Environmental partnership with the supplier forces each other to adopt green supply chain management practices
	40.	Suppliers advances in developing environmentally friendly packing	Suppliers advances in the eco-friendly packing forces the other groups of suppliers
	41.	Making sure that suppliers will remain in business	To keep the suppliers remain in the business the groups of industries sign agreement with each other to go green

Min and Galle (2001) found in their research that lack of knowledge in society means, customers are still not conscious of green products and their benefits to the society. Walker et al. (2008) found that there are a number of complications such as fear of poor environment performance disclosure, lack of confidentiality & information. Wang et al. (2008) identified lack of strategic planning; improper industrial structure, lack of knowledge in technology and management; lack of trained manpower, lack of public involvement, high investment risk, lack of suitable production technology, lack of energy saving support in China, lack of financial support and difficulties, insufficient data and information, objection from the vested groups, are as the main barrier for GSCM in China. Walker et al. (2008); Zhu and Sarkis (2006) found in their research that that different sector/ Industries have different barrier in adaptation of GSCM, which depends on the type and nature of the firm.

Del Rio et al., (2010) found that Lack of public pressure, Low public pressure is a barrier to Green Manufacturing implementation. The absence of pressure by key social sectors like local communities, media, NGOs, banks, insurance companies or politicians may not provide the necessary push for companies to eco-innovate. Massoud et al. (2010) found out the various barriers which hinder the implementation of ISO 14001 and Environment Management System (EMS) in Lebanese food industry. These barriers are: time demand, lack of knowledge, lack management priority, cost of certification, lack of customer demand, not required for export, lack of government support, benefits not clear, not legal requirement and lack of government supports. Koho et al. (2011) identified as lack of customers/consumers demand, lack of standardized metrics/ performance benchmarks, lack of specific ideas are considered as the main barriers to GSCM. Nevertheless, top management commitment, technology risk, tradeoffs and law enforcement are few more barriers.

Singh et al. (2012) in their research identified twelve barriers which obstruct or prevent the successful implementation of GSCM practices in Indian manufacturing environment. These barriers were: lack of empirical research; lack of awareness in customers, suppliers, shareholders; increased cost; lack of companies awareness, management commitment, necessary tool, coordination between different departments; slag government legislation, necessity of improvement of new analytical tools and models, lack of management skill and knowledge; incompatibility with different management and manufacturing system necessary tools; fail to implement necessary environment treatment measures. Muduli and Barve (2013) studied in Indian mining industries that information gap, lack of social concern, poor legislation and capacity constraint are identified as barriers. Abdullah et al. (2015) did a survey of 153 manufacturing companies in Malaysia and found that environmental resources issue, approach and awareness, government support, and demand from customer are the main barriers. This study gives an idea that attitude and perception, poor external partnerships, lack of customer demand, business practices, insufficient information and environmental commercial benefits are affecting green innovation.

2.3.1. Internal barriers

The obstacles which prevent the adoption of GSCM practices and that exist within the organization itself are known as internal barriers of GSCM. Lack of understanding to incorporate green buying, inappropriate organizational structure and cost reduction at the cost of environment are known as internal barriers of GSCM. According to Min and Galle, (2001) in their research in US firms found that cost concern is the most severe hindrance for employing environmental aspects into account in purchasing process.

2.3.2. External barriers

Slack government regulation considered to be strong barriers for GSCM, especially if firms are positive and innovative in their approach to regulatory compliance. According to Dashore and Sohani, (2013), unwillingness to exchange trade information, lack of skilled human resource are hindrances in implementation of GSCM.

2.3.3 Customers

Customers play a very key role in adoption as well as obstruction in implementation of GSCM practices. To produce economical goods at the cost of the environment that forces the industries not to adopt GSCM practices. Lack of demand and public awareness play a major problem in implementing of GSCM.

2.3.4 Competition

Due to very high market uncertainty and competition in the international market it is very hard for the industries to keep the cost lower and implement GSCM at the same time. That is why competition plays a very important role in adoption and non-adoption of GSCM practices.

2.3.5 Society

Lack of awareness of environment friendly goods and services in the society act as barriers in adopting environment awareness practices. According to Min and Galle (2001), lack of knowledge in society means that customers are still not conscious of green products and their benefits to the society.

2.3.6 Suppliers

Lack of understanding and knowledge among suppliers act as barriers for the implementation of GSCM practices. Poor supplier commitment/ Reluctant to change towards GSCM (unwilling to exchange information), lack of understanding among supply chain stakeholders etc. are the barriers related to suppliers.

2.3.7 Industry Specific Barriers

It is observed in research that different industries have different barriers in implementing the green practices. According to Zhu and Sarkis (2006), different industrial sectors have different barriers for adoption of GSCM practices. Table 3 shows the detail work done by the various authors on barriers which hamper the implementation of green supply chain management.

5. Conclusion

In this paper, an attempt has been made to review the literature on drivers and barriers of GSCM. In this paper we have classified the literature on factors effecting the green supply chain management. These are on the basis of driver which forces the industries to adopt GSCM, barriers which hinder the industries to adopt GSCM. We have classified the drivers and barriers of green supply chain management in six sub streams i.e. internal, external, customers, competition, market and suppliers.

We hope this study will contribute to a better understanding of the directions in GSCM research. It is encouraging noting that in most recent years the consciousness about the environment has increased and thus dramatic increase in GSCM exploratory research. Indian government rolled out a new quality index in 10 nation's cities. Prime Minister advocated Indians curtail waste and conserve resource, in order to prevent an environmental catastrophe (Financial Express, 7th April 2k15). Finally, even though we have identified the drivers and barriers, researcher in GSCM could be able to study these factors in the industries and help the industries to adopt GSCM. This paper can be served as a good foundation for those researchers who are seeking to study the various factor affecting the industries to adopt or not to adopt GSCM. We did not thrash out different methodologies and tools that could be used to explore the GSCM. We believe that significant research and development in this world exist as awareness about the environmental concern is increasing and this increase in research of these important environmental-based organizational research fields.

Table 3
Barriers of green supply chain management

Factors	S. No.	Barriers of GSCM	Description
Internal Barriers of GSCM	1.	High cost	Investment cost is high to implement green practices like eco design, green manufacturing etc.
	2.	Lack of understanding to incorporate green buying	The organization are deficient in getting the concept of green buying due to lack of understanding
	3.	Inappropriate organizational structure	Most of organization could not adopt the GSCM due to inappropriate organizational structure
	4.	Cost reduction at the cost of environment	Industries have pressure of lowering the prices at the cost of environment for their survival
	5.	Lack of management commitment	Lack of management commitment is major hurdle in implementing the GSCM
	6.	Lack of adaptation of advancement in technology/Manufactures reluctance to change	Most of the small and medium sized companies are reluctant in adaptation to advancement in Technology
	7.	Lack of training	Lack of training is the main barriers in GSCM implementation in Industries
	8.	Too complex to implement	The GSCM practices are too difficult/complex to implement
	9.	No/ low return from investment	Low or no return from the investment considered to be major hurdle in implementing the GSCM
External Barriers of GSCM	10.	Cost of eco-friendly packaging	The cost of adopting the green packaging materials is quite high
	11.	Lack of technology infrastructure	Lack of technological infrastructure is considered as GSCM barrier
	12.	Inhibits innovations	Lack of technological innovation is considered to be the GSCM barrier
	13.	Lack of skilled human resource in implementation of GSCM	GSCM could not be affectively implemented till the industries get the skilled manpower for the same
	14.	Poor supplier commitment	Suppliers do not show commitment in supplying the environment friendly goods/ services
	15.	Not willing to change trade information	The industries are reluctant to exchange their trade information with each other
	16.	Lack of government support	Government regulation can discourage the adoption of innovation, as Government sets the environmental regulations for industry
	17.	Lack of Information Technology	Lack of IT implementation is an important barrier to achieve efficient GSCM
Customers	18.	Lack of ethical standards and corporate social responsibility	Ethical values and social accountability are missing most in the business houses
	19.	Pressure for lower price	The demand of cheaper products in the market at the cost of environment
Competition	20.	Lack of demand and public awareness	A major barrier of GSCM seen in Indian automobile industry is lack of awareness of customers about the benefits of green products.
	21.	Competition and uncertainty	Competition and Uncertainty in the market is very high due to international competitiveness, and changing requirements of customers
Society	22.	Pressure for lower price with competitors	It is very difficult for suppliers to keep the prices lower and implement GSCM simultaneously as GSCM practices very expensive like green design, green manufacturing, green packing etc.
	23.	Lack of awareness in the society	Unawareness in society means that customers are still unaware of green products and their benefits
Suppliers	24.	Poor supplier commitment/ Reluctant to change towards GSCM (unwilling to exchange information)	Suppliers do not give assurance to adopt GSCM means do not involve themselves in design process and technology, which affects overall performance of chain
	25.	Lack of knowledge and experience among suppliers	Industries are deficient in information and skills which resist them to go green
	26.	Lack of understanding among supply chain stakeholders	Lack of understanding about the GSCM among the groups of suppliers
Industry Specific Barriers	27.	Different sectors have different challenges	Different sector/ Industries have different barrier in adaptation of GSCM

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