International Research Journal of Engineering and Management Studies (IRJEMS)
Volume: 03 Issue: 05 | May -2019 ISSN: 2395-0126

GREEN SUPPLY CHAIN MANAGEMENT PRACTICES & MSMEs: A SURVEY OF LITERATURE

Paramita Nath

Research Officer, International Management Institute

Abstract - *Following globalization and growth in competition, over the last few decades, firms worldwide, to be ahead of competition in producing world class quality and providing excellent service are strategizing to differentiate by adopting Green Supply Chain Management Practices. This is mainly done to achieve sustainable advantage in international business. However, penetration and adoption in MSMEs is still very limited. Research revealed numerous barriers and challenges are faced by these firms while implementing GSCM practices both in the developed and developing economies. A comprehensive literature survey forms the basis of theoretical background in the paper. On the basis of this, the resemblances and differences in the impediments faced by the companies in the developed and developing countries are identified. Our result shows that there are marked differences in the barriers faced by the firms in developed and developing countries.An explorative case study of an MSME's supply chain based in West Bengal is done and the analysis of primary data and secondary data led to the identification of the barriers faced by this particular firm to implement sustainable supply chain practices.*

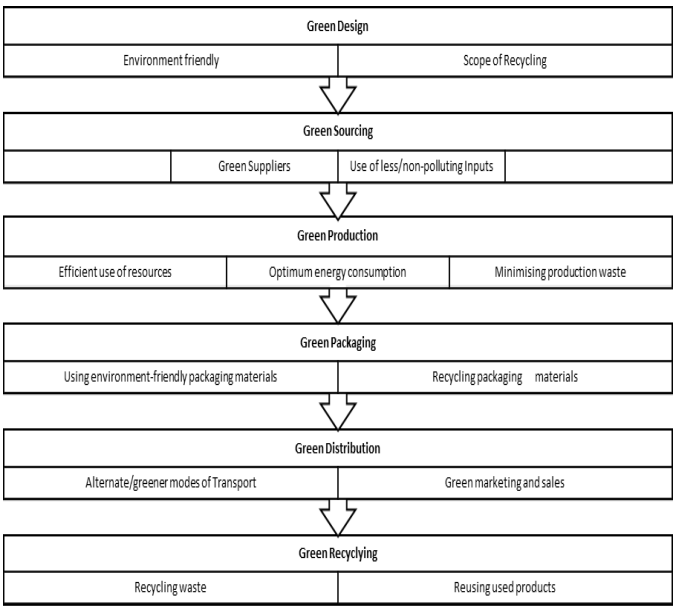
Key Words: Green Supply Chain Management, Barriers of implementing GSCM practices, MSME.

1. INTRODUCTION

In the age of globalized economies, businesses across the world are experiencing a high degree of competition. The sources of competition are many - fragmentation of markets (O'hara & Ye, 2011), a regime marked by transnational producers (Koneral, Jason, Mascarenhas, & Hatanaka, 2005), shorter product life cycles (Fliedner, Gene, and Robert J. Vokurka, 1997), increase in cost for technology development and deployment (Miles & Raymond, 1989) and also the ever increasing demands for maximizing customer service outputs. In addition, the climate change agenda has gained momentum and firms are urged to adopt mitigation measures (Edenhofer, et al., 2014). These factors are inducing organizations to become responsive and responsible towards environmental cause. As a matter of fact certain business organizations are considering environmentalism a strategy for gaining competitive advantage (Menon & Menon, 1997), particularly in the domain of international business (Ghosh & Roy, 2011). Several organizations have applied green principles and practices such as reduction in usage of fossil fuels, adopting environment-friendly technologies, recycling, using environment-friendly raw materials, etc. to their operations. They have extended green principles to many departments within the organization including supply chain (Beamon, 1999).On the other hand, consumers, across the world are also showing increasing responsibility towards environmental cause. Consumers are constantly asking firms about the extent and efficacy of their efforts to contribute to the sustainability paradigm. With supply chain being an emission intensive process, (Davis, J., Glen, & Caldeira, 2011) the consumers and other stakeholders are also interested in the extent of emission reduction in the domain of supply chain management. (Hervani, A., Helms, & Sarkis, 2005) Given such developments, the fear of losing markets to competitors who have already implemented green supply chain management practices is pushing many firms to follow and reengineer their supply chain management.

1.1 Green Supply Chain Management

Green Supply Chain Management (GSCM) can be defined as "the alignment and integration of environmental management with the supply chain management (Klassen & Johnson, 2004). Different countries in the European Union (EU) and the US are promoting industry induced pollution alleviation by requiring manufactures to practice green reverse logistics in recycling used-products (Cash, Dellovade, & Jackson, 1997). In the developed countries, it has been found that adopting green business principles (Reinhardt, 2000), creates an image which improves the competitive advantage of the firm, particularly by attracting the environmentally responsible customers. It improves or creates brand differentiation and wins customer loyalty by offering unique capabilities to address environmental related requirements and expectations. (Battaglia, Testa, Bianchi, Iraldo, & Frey, 2014).



A comprehensive literature review is done to identify various barriers faced by the MSME firms worldwide i.e. in both developed and developing economies to implement GSCM practices followed by a case study of an MSME firm (an oil mill situated in West Bengal).These challenges were identified finally and the similarities and dissimilarities of various barriers faced by the firms in developed and developing counties of the world were recognised. The very next section describes the survey of literature, and then we delve into the research methodology followed by the key findings and then the conclusion.

2. LITERATURE REVIEW

An exhaustive survey of literature has been done to identify the barriers faced by firms worldwide to adopt the sustainable supply chain practices.

(Walton et al., 1998) highlighted that increased government regulations and rising public demands for better environment forced various firms to adopt greener practices. Also, they stated that better services at reduced costs pressurised firms to improve their supply chain. Five case studies of five companies of furniture industry were conducted to identify the supply chain environment-friendly practices (EFP). They also emphasized the growing importance of management's commitment as well as the need to look beyond environmental compliance to achieve an eco-friendly supply chain. (Rao and Holt, 2005) highlighted some barriers facing GSCM practices as high cost of environmental programs, uneconomical recycling and reusing, lack of management commitment and lack of supplier's awareness. Researchers (Studer et al., 2005) had initiated a research to investigate incentives and barriers of adopting voluntary green practices by local small and medium enterprises (SMEs). A survey was conducted of more than 392 SMEs in Hong Kong and it was found legislation and stakeholders are the two main drivers for SMEs to adopt environmental practices in Hong Kong. But SMEs in Hong Kong would rarely adopt green practices. They considered organizations' lack of awareness regarding these changes as one of the main reasons.

(Walker, Sisto, & McBain, 2008) focussed on the internal and external barriers to adopt GSCM practices. The internal barriers costs and lack of resources whereas exposing poor environmental performance, lack of information, poor competition, procurement legislation and supplier's reluctance to change were considered as external barriers. (Revell, Stokes, & Chen, 2010) claimed that two-thirds of the small to medium enterprises considered high costs as the major obstacle for implementing sustainable supply chain activities.

(Xia & Tang, 2011) discussed the challenges faced by the automotive industry in the adoption of sustainable supply chain practices and focus on CSR. (Singh & Bhardwaj, 2011) revealed that more than 40% of the firms in the Indian manufacturing sector used new technologies to increase energy efficiencies in sourcing and procurement that were eco-friendly. High cost and complexity to adopt GSCM practices were identified as the major barriers to adopt sustainable SCM practices. They stated that green practices were mostly adopted where there is a direct relation to cost savings and efficiency, for eg: in inventory reduction, recycling of raw materials. (Luthra, Kumar, Kumar, & Haleem, 2011) identified numerous barriers as well as the contextual relationships among these barriers. Further those barriers were classified based upon their dependence and driving power. (Hoskin, 2011) suggested that lack of resources is a major barrier for environmental improvement in New Zealand SMEs and highlighted that governmental support in the form of technical advice, information and training programs are necessary for implementation of green practices.

Abbasi and Nilsson (2012) identified the major challenges for a sustainable supply chain faces are huge costs, complexity, operational, mindset and culture changes and uncertainties. (Al Zaabi, Al Dhaheri, & Diabat, 2013) stated that as MSMEs face numerous challenges which were insignificant to large firms when they try to be more environmentally sustainable. (Dashore & Sohani, 2013) also indicated that the barrier, i.e., lack of training given to organisation employees deteriorated the overall performance of the existing supply chain and challenged the incorporation of green practices.

(Ojo, Mbowa, & Akinlabi, 2014) identified the drivers and barriers of GSCM practices adoption in Nigerian Construction firms. They used qualitative approach and investigated 28 participants from both public and private constructions firms. They indicated that lack of public awareness, lack of knowledge and environmental impacts, poor commitment by the top management and absence of legal enforcement and Government represented the main barriers facing adoption of GSCM practices in Nigerian construction firms. (Deepak, Haq, & Mathiyazhagan, 2014) summarized the various barriers in the perspective of GSCM adoption as financial (F), technological (T), outsourcing (O), knowledge (K) and involvement and support (IS) barriers. (Pereseina, Jensen, Hertz, & Cui, 2014) perceived the challenges on the regulatory and organizational levels. They stated that the major conflicts among the stakeholders though environmental and economic aspects resulted in a major impact. There were also numerous challenges in implementation of life-cycle solutions for the vehicles utilization, especially in the Chinese context. They suggested that to tackle conflicts of GSCM, intensified international collaboration on environment and traffic safety could have been helpful.

2. RESEARCH METHODOLOGY

For this article, thorough literature review of the past studies on Green Supply Chain Management has been done and the various parameters like drivers, barriers and challenges for adoption of GSCM have been identified. We have also identified the basic similarities and differences faced by these industries in developed and developing economies.Finally, an explorative case study of an MSME's supply chain based in West Bengal and identification of the barriers faced by this particular firm to implement sustainable supply chain practices is conducted. An exploratory interview process was followed to understand the supply chain and the

management and workers have been interviewed on the green initiatives, if any, undertaken by them. The managers have also been interviewed regarding their awareness of GCSM, problems faced by them for adoption of GSCM and their willingness to adopt the practice. Also, some amount of secondary data has been collected from the firm under the study. The secondary data has been collected from company manuals and annual reports.

3. RESEARCH FINDINGS

After an exhaustive survey of literature, the barriers faced by MSME firms worldwide to implement GSCM practices have been identified. The nature of these barriers of GSCM practices in advanced and emergent nations has been summarized in Table 1.

Impediments	Developed Economies	Developing Economies
Internal Impediments		
Dearth of management commitment	✓	✓
High cost of resources	✓	✓
Size of the firm	✓	✓
Lack of proper training to employees	✓	✓
Inability to adopt newer technologies		✓
Lack of IT integration		✓
Complexity of the process	✓	✓
High investments and less ROI	✓	✓
Higher cost of recycling/waste disposal	✓	✓
External impediments		
Stricter Government regulations		✓
Competitors' pressure	✓	✓
Lack of consumer awareness		✓
Supplier's reluctance and lack of commitment	✓	
Lack of legal enforcement		✓

Table 1: Impediments of implementing GSCM practices in developed and developing economies

The crucial impediments identified after the exhaustive survey of literature shows that there is very few difference in the nature of the barriers faced by the developed and developing economies in the world. Majority of the firms worldwide face two main kind of barriers i.e., external barriers that comes from outside the firm and internal barriers, that are the challenges which the firm face from within.

The major internal challenges are the lack of top management commitment to adopt green practices, higher cost of resources for green SCM, lack of proper training and consultation of employees towards greener practices. Also, size of the firm plays a paramount role, as sustainable supply chain practices implementation requires huge capital investment, i.e., a capital-intensive process as well as less ROI, smaller firms like SMEs find it difficult to adopt these practices whereas bigger firms with better turnovers and well-developed research and development centre are more likely to switch to greener practices. Inability to adopt newer technologies by the management due to its pre-conceived notion of higher costs associated with implementation of these nascent technologies do pose a challenge for these firms and many companies, especially in the developing economies, where small firms are still not geared up enough for implementing IT in their companies. The complexities of the green processes and higher renewal and disposal costs limits these firms to further undergo process re-engineering for sustainable supply chain practices. Also, at times, the typical mind-set of top level managers to stick to the traditional practices followed in general may result in non-adoptability of green practices in a firm.

External roadblocks faced by firms worldwide are stricter Government regulations which though help in promotion of green supply chain practices, at times do pose a threat to their implementation. Too much of Government interference also inhibit the process of sustainability. Though, various rules and regulations exist, lack of legal enforcement inhibits the embracement of greener practices. Pressures from competitor's who are pricing their products at much lower price due to non-implementation of green practices do deter these firms to rethink the adoption of eco-friendly SCM practices. Also, various stakeholders of the supply chain, for eg: suppliers and consumers make the task of implementation of eco-friendly practices difficult. Suppliers are not ready to switch to these costly practices as it may reduce their profitability whereas consumers, mostly in the developing economy are very little environment- conscious and hence, they are mostly unwilling to pay higher prices for an eco-friendly product.

It has been found out that almost all these barriers barring a few, exist both in advanced and emerging nations as GSCM is still a nascent concept and a costly affair from the supply chain management point of view. Only, a few developed economies have stricter rules and Government regulations like ISO 14001 certification; also, the mind-sets of their nationals are changing as they are willing to pay higher prices for non-polluting goods. At the same time these countries are upgrading IT integration throughout the various divisions in affirm to facilitate eco-friendly practices. As for example, different countries in EU and the US are promoting industry induced pollution alleviation by

requiring manufactures to practice green reverse logistics in recycling the used-products.

3.1 Case Study

Finally, a case study of a small oil mill in West Bengal has been done to understand the barriers faced by it and whether these are similar to those faced by any firm in a developing economy are identified. As the gross value of investment in plant and machinery for the oil mill was Rs 3, 42, 35,674 as on 31st March, 2014, from the definitions given by the Micro, Small & Medium Enterprises Development (MSMED) Act, 2006, it was clearly seen that the oil mill is a small enterprise. Also, various recommendations are suggested to overcome these barriers so as to implement GSCM practices in its operation.

The firm under study is a trailblazer in the manufacturing and marking of high grade, high quality mustard oil. Since its inception, oil is sold throughout West Bengal. Modernisation of the plant was done in the year 2000. New automatic packaging machine was installed along with a semi-automatic machine for extraction of edible oil cakes. The number of crushers was also increased to 8 in the same year. Raw materials are purchased from Madhya Pradesh, Rajasthan and West Bengal. The mode of transport is road transportation in Full Truck Load (about 15 tonnes per truck). There is an annual production of 1800-1900 quintals. There are 8 crushers of 12.5 kg capacity each. The electricity bill per year is about Rs 25,000 to Rs 30,000.The energy consumption trend of this firm for past three years (2012-2014) are summarized in Table 2, where it is clearly seen that the firm is trying to be energy efficient. Thus, there is a focus on being "green" in the energy usage.

Month	Units of electricity	Electricity Cost (Rs.)	Production (Quintals)	Electricity Cost/unit production (Rs./Quintal)
Jun'12	340	1670	155	10.77
Dec'12	280	1250	148	8.44
Jun'13	272	1250	150	8.33
Dec'13	258	1170	140	8.35
Jun'14	246	1120	145	8.06
Dec'14	233	1060	160	6.625

Table 2: Energy Consumption Trend for past three years (2012-2014)

The Figure 2 shows that the existing supply chain of the firm is far from being environment friendly and some process reengineering is needed to adopt green supply chain management. This is necessary to get competitive advantage over the competitors in the market and reduce extra costs.

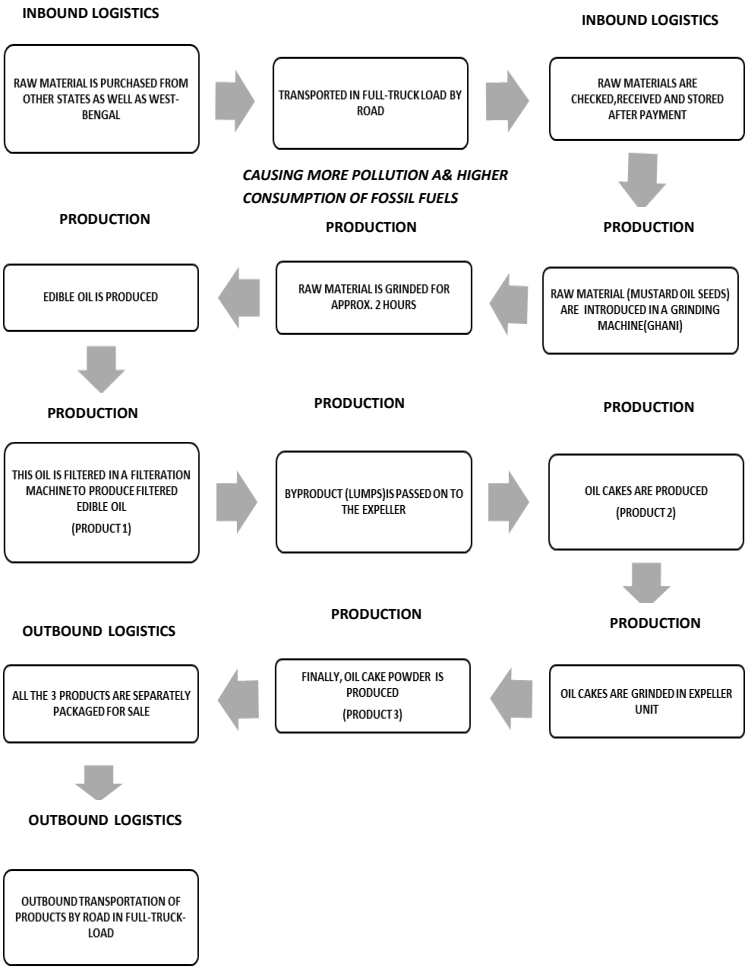


Figure 2 : Present Supply Chain of the Firm

Among the various green alternatives undertaken by the firm, it has been found that almost all the filament bulbs that were earlier used for illumination are now replaced by compact fluorescent lamps (CFLs). Already a "zero waste principle" is followed i.e. there is a wastage of only 2% per annum, rest of the by-products are reused to generate other final products.

The observations after the exploratory interview of the firm owners are listed in the following table:

Steps undertaken by the firm owners	Steps not undertaken by the firm owners
Zero waste principle	No energy audit is done.
	No replacement of highly polluting and energy consuming wooden crushers
Energy consumption is reduced by replacement of filament bulbs by CFLs	No capital intensive process, for e.g., buying a less polluting German expeller machine is undertaken
	No monitoring of energy usage in various production-related and general house-keeping activities
	Unwilling to undertake technology re-engineering processes

Table 2: Steps already taken and not taken by the firm

From the above observations, it can be interpreted that the "Zero waste principle" which is being followed with a mere wastage of only 2% as a part of process reengineering is mainly done as a part of cost savings. The reason for absence of regular energy audit is primarily owners' suspicion regarding the quality and the integrity of the consultants. They strongly believe that many consultants are "tied" to certain equipment manufacturers and in the disguise of professional advice try to "push" the equipment. The general opinion was that such audits involved official interference from government departments and Pollution Control Board and were hence unacceptable. Also, the management feared penal and legal actions as a consequence of the audit and hence showed no interest in audits. It was also observed, that the old wooden crushers were not replaced with the bearing fitted ones as the owners strongly believe that the quality of oil depends on its distinct odour which can only be produced by wooden crushers though these increase the cost of production. Though, it bearing fitted ones can further reduce the electricity consumption and increase the production. It was also seen that, though a new German machine costing Rs. 10 lakhs is available which can further reduce electricity consumption, the firm owners are not ready to go for such technology reengineering process as it is a capital intensive process. Unsure of the payback period, they are not ready to approach banks and financial institutions. As a part of process reengineering, the electricity cost per quintal has been reduced sharply from June 2012 to Dec 2014 from Rs 10.77/quintal to Rs 6.625/quintal due to replacement of filament bulbs gradually by CFLs. But, it is mainly done with the aim of cost savings which eventually led to an environment friendly initiative. Though, it is necessary to regularly monitor energy usage of a firm in the production process and general house-keeping activities to determine the source of any irregularity in its energy bill, it was found out that the firm that did not undertake monitoring as the management felt it unnecessary because they thought that energy cost is an insignificant proportion of the overall cost.

After the exhaustive survey of literature, it is observed that firms all over the world mainly face three kinds of barriers such as financial barriers, technological barriers and psychological or behavioural barriers.

To make the supply chain of the firm in question eco-friendly, various green initiatives should be undertaken at each of the phases of the supply chain as illustrated in the Figure 3 below:

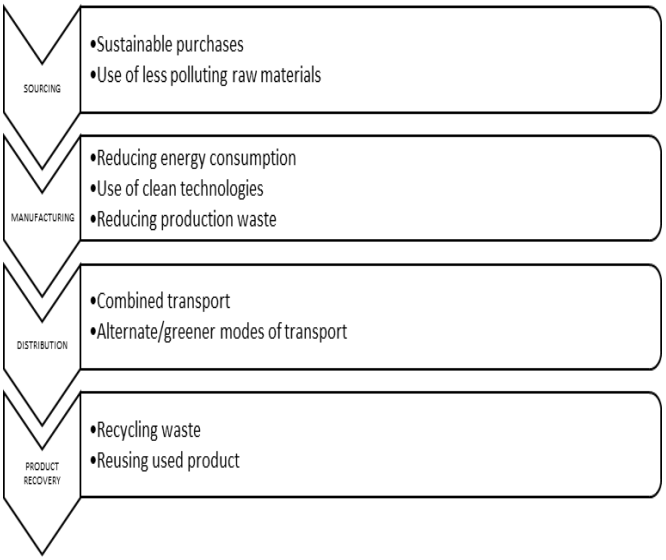


Figure 3: Stages of supply chain incorporating eco-friendly measures

Some scopes of implementation of GSCM in the small firm are identified. Mainly, the management should go for process reengineering which is less costly and will be easier to be attempted by the firm. As for example, we can see from the present supply chain of the firm (Figure 2) that the firm uses a grinding machine or "wooden crushers" which takes about two hours for grinding the same amount of raw material or mustard seeds that can be grinded by a bearing-fitted grinding machine in half-an hour. This consumes much more electricity. This not only saves time but also reduces air and noise pollution. So, the firm can purchase the bearing-fitted grinding machines to make its supply chain more environment-friendly.

Also, installation of energy efficient machines like the German machine can be done to reduce energy consumption by about 35%.Also, streamlining of housekeeping practices like use of daylight, use of natural ventilation, use of compact fluorescent lamps (CFLs), replacing old fans with new ones can be done as they are less costly process.

But, technology reengineering should also be attempted by the owners to reduce energy consumption. Up gradation of existing technology used in operation or adoption of new

environment-friendly technologies should be encouraged by the management.

Also, use of cheaper alternate fuels for inbound and outbound transportation by the small firm can be encouraged. At the same time, for packaging, introduction of cheaper alternatives like aluminium containers and paperboard containers like bag-in-box are suggested to reduce the packaging cost.

3. CONCLUSION

This study enhanced our understanding of the possible conflicts and challenges to adopt sustainable supply chain practices faced by the firms worldwide. This paper also helps to analyse how to overcome these barriers to create an eco-friendly environment keeping in pace with the rapid industrialization for good economic growth. The differences of the nature of barriers faced by the firms in both the developed and developing economy are also identified.

It is therefore suggested that more and more emphasis should be given on the awareness of GSCM practices and the benefits of its implementation in growing economies for their economic progress as well as their environmental development.

REFERENCES

[1] M. Abbasi and F. Nilsson, "Themes and challenges in making supply chains environmentally sustainable. Supply Chain Management, An International Journal, Vol. 17 Issue 5, 2012, pp. 517 – 530.

[2] S. Al Zaabi, N. Al Dhaheri and A. Diabat, "Analysis of interaction between the barriers for the implementation of sustainable supply chain management", International Journal of Advanced Manufacturing Technology, 68(1-4), 2013, pp. 895-905.

[3] M. Battaglia, F. Testa, L. Bianchi, F. Iraldo, and M. Frey, "Corporate social responsibility and competitiveness within SMEs of the fashion industry: Evidence from Italy and France", Sustainability, 6(2), 2014, pp. 872-893.

[4] B. M. Beamon, "Designing the Green Supply Chain Management", Logistics Information Management, 1999, PP.332-342.

[5] D. J. Bowersox and D.J. Closs, "Logistical Management" New Delhi: Tata McGraw-Hill Publishing Company Limited, 2000, pp. 239-255.

[6] R.M. Cash, D.R. Dellovade and D.P. Jackson, "Promoting Extended Product Responsibility in the United States; A Nonregulatory Strategy" (No. LMI-IR704R1), Logistics management inst mclean va .,1997.

[7] K. Dashore and D.N. Sohani, "Green Supply Chain Management - Barriers & Drivers: A Review", International Journal of Engineering Research & Technology Vol.2 - Issue 4, 2013.

[8] J.S. Davis, P.P. Glen and K. Caldeira, "The supply chain of CO2 emissions", Proceedings of the National Academy of Sciences 108, no. 45, 2011, pp. 18554-18559.

[9] M. Deepak, N.A. Haq and K. Mathiyazhagan, "Identification of pressures, barriersand drivers for the implementation of green supply chain management", 5th International & 26th All India Manufacturing Technology, Design and Research Conference (AIMTDR 2014), IIT Guwahati, Assam.

[10] O. Edenhofer, R. Pichs-Madruga, Y. Sokona, E. Farahani, S. Kadner et al., "Climate change 2014: mitigation of climate change", Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change, 2014, pp. 511-597.

[11] D. Ghosh and A. Ghosh, "Drivers and abrriers for Experiments Related to Sustainability Energy Management Practices: Case of MSME Firms in India", 2011.

[12] D. Ghosh and J. Roy, "Approach to energy efficiency among micro, small and medium enterprises in India: Results of a field survey", 2011, United Nations Industrial Development Organization.

[13] A. Hervani, M. Helms and J. Sarkis, "Performance measurement for green supply chain management", Benchmarking: An international journal 12, no. 4 , 2005, pp. 330-353.

[14] S. Ho and A. Tseng "Opportunities in Green supply chain management" The Coastal Business Journal, 2005.

[15] D. Holt and A. Ghobadian, "An emperical study of green supply chain management practices amongst UK manufacturers", Journal of Manufacturing Technology Management, Vol. 20, Issue 7 , 2009, pp. 933-956.

[16] P. Hoskin, "Why Business Needs to Green the Supply Chain" University of Auckland Business Review, Vol. 13, No. 1, 2011, pp. 16-18.

[17] S. Khiewnavawongsa and E. K. Schmidt, "Green power to the supply chain", In Advances in Marketing. Annual meeting of the Association of Collegiate Marketing Educators, West Lafayette , IN: Purdue University, 2008, pp. 244-259.

[18] R.D. Klassen and P.F. Johnson, "The green supply chain.Understanding Supply Chains: Concepts, Critiques, and Futures", Oxford, UK: Oxford University Press, 2004, pp. 229-251.

[19] J. Koneral, M. Mascarenhas and M. Hatanaka, "Governance in the global agro-food system: Backlighting the role of transnational supermarket chains", Agriculture and Human Values 22, no. 3, 2005, pp. 291-302.

[20] G. S. Kushwaha, "Sustainable development through strategic green supply chain management", International Journal of Engineering and Management Sciences, 1(1), 2011, pp. 7-11.

[21] S. Luthra, V. Kumar, S. Kumar, and A. Haleem, "Barriers to implement green supply chain management in automobile industry using interpretive structural modeling technique-An Indian perspective", JIEM , 2011, pp. 231-257.

[22] A. McKinnon, S. Cullinane, M. Browne, and A. Whiteing, "Green logistics", Improving the environmental sustainability of logistics, 2010, pp. 31-49.

[23] A. Menon,"Enviropreneurial marketing strategy: the emergence of corporate environmentalism as market strategy", The Journal of Marketing, 1997, pp. 51-67.

[24] Miles and E. Raymond,"Adapting To Technology And Competition: A New Industrial Re.", California Management Review 31, no. 2, 1989, pp. 9.

[25] C. Ninlawan, P. Seksan, K. Tossapol, and W. Pilada, "The implementation of green supply chain management practices in electronics industry" In the Proceedings of International Multiconference of engineers and computer scientists, Vol. 3, 2010, pp. 17-19.

[26] M. O'hara and M. Ye, " Is market fragmentation harming market quality?", Journal of Financial Economics ,2011, pp. 459-474.

[27] E. Ojo, C. Mbowa and E.T. Akinlabi, "Barriers in implementing green supply chain management in construction industry" International Conference on Industrial Engineering and Operations Management, 2014.

[28] V. Pereseina, L.M. Jensen, S. Hertz and L. Cui, "Challenges and Conflicts in Sustainable Supply Chain Management: Evidence from the Heavy Vehicle Industry", In Supply Chain Forum: an International Journal, Vol. 15, No. 1, 2014, pp. 22-32.

[29] P.H. Rao, "Greening the supply chain- A Guide for Asian Managers", California: Sage Publications Limited, 2008.

[30] P. Rao and D. Holt, "Do green supply chains lead to competitiveness and economic performance?", International Journal of Operations & Production Management, Vol. 25 Issue 9 , 2005, pp. 898-916.

[31] F. L. Reinhardt, "Down to earth: Applying business principles to environmental management", Harvard Business Press, 2000.

[32] A. Revell, D. Stokes, and H. Chen, "Small businesses and the environment: turning over a new leaf?", Business Strategy and the Environment Volume 19, Issue 5, 2010, pp. 273-288.

[33] L.P. Singh, S. Singh, and A. Bhardwaj, " Role of Logistics and Transportation in green supply chain management: An exploratory study of Courier service industry in India", IJAET , 2011, pp.260-269.

[34] S. Singh and A. Bhardwaj, "Current Status of Green Supply Chain Practices and Initiatives in the Indian SMEs: An Exploratory Study", International Journal of Engineering, Business and Enterprise, 2011.

[35] S.K. Srivastava, "Green supply-chain management: A state-of-the-art literature review", International Journal of Management Reviews, Volume 9, 2007, pp. 53-80.

[36] S. Studer, R. Welford and P. Hills, " Drivers and barriers to engaging small and medium-sized companies in voluntary environmental initiatives", Hong Kong: The Centre of Urban Planning and Environmental Management,2005.

[37] F. Teuteberg and D. Wittstruck, "A systematic review of sustainable supply chain management", Multikonferenz Wirtschaftsinformatik , 2010, pp. 203.

[38] Vadera and Kulshreshtha,"Role of SMEs Sector in the Emerging Indian Economy", Materials Management Review, 2011, pp. 30-31.

[39] R. J. Vokurka, " Agility: competitive weapon of the 1990s and beyond?", Production and Inventory Management Journal 38, volume 3 ,1997, pp. 19.

[40] H. Walker, L. Sisto and D. McBain, "Drivers and barriers to environmental supply chain management practices: Lessons from the public and private sectors", Journal of Purchasing & Supply Management, volume 14, 2008, pp. 69-85.

[41] Y. Xia and T.L.P. Tang, "Sustainability in supply chain management: suggestions for the auto industry", Management Decision, Vol. 49 Issue 4, 2011, pp. 495-512.