

Barriers in Implementing Green Supply Chain Management in Construction industry

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Abstract

Green supply chain management (GSCM) has become an antidote for sustainability in an industry. Despite the benefits of GSCM, there is a paucity of research investigated drivers and barriers of GSCM in Nigerian construction industry. Cost reduction, brand image development and gaining a competitive advantage were the main drivers which encouraged corporate to adopt GSCM practices. Lack of resources, supplier resistance to change and lack of awareness were found to be the main barriers militating against adoption of GSCM practices. This research is intending to identify drivers and barriers of GSCM practices adoption in Nigerian Construction firms. Using qualitative approach, 28 participants from both public and private constructions firms have been investigated through a questionnaire. The research depended on descriptive analysis to conclude results. Research analysis indicated that lack of public awareness, Lack of knowledge and environmental impacts, Poor commitment by the top management and Lack of legal enforcement and Government represented the main barriers facing adoption of GSCM practices in Nigerian construction firms. This research gives ways to firms seeking GSCM practices adoption in Nigerian construction firms.

Keywords

Construction firms, Barriers, Green supply chain management, Nigeria and Sustainability.

1.0 Introduction

The concept of sustainable construction has emerged, and the expression has now passed into the mainstream of Construction Management vocabulary (Hill and Bowen, 1997; Ofori, 1998). Sustainable construction involves creating constructed items using best-practice clean and resource-efficient techniques from the extraction of the raw materials to the demolition and disposal of its components. It is sufficient to say here that construction activity will always involve some adverse environmental implications although 'sustainable construction should reduce it to an extent. The commercial merits of adopting policies of sustainability are clear (Hawken, 1993; Cairncross, 1995). Construction contractors can derive savings from the minimization of resource use; and improve their corporate image. The enterprises' compliance with regulations and codes would be facilitated, and risks and uncertainties reduced. However, in most countries, very few construction firms are convinced about the merits of sustainable construction. Building (1999) reports a general lack of awareness, interest or commitment to environmental issues among all but a few large UK contractors.

Green supply chain can be defined different ways depending on the investigator. Stivastasta in 2007 defines GSCM as integrating environment thinking into SCM, including product design, materials sourcing and selection, manufacturing processes delivery of the final product after its useful life. Another definition by Zhu and Sarkis (2006) is that GSCM ranges from purchasing to reverse logistics throughout the so called close loop supply chain. Lee & Klassen (2008) described GSCM as a buying organization plan and activities that integrate environment issues into supply chain management in order to improve the environmental performance of suppliers and customers.

For this study Strivastava's definition will be adopted. Green Supply chain management is a catalyst in construction to bring about sustainability. Despite the benefits of GSCM in constructions, there are factors militating against the implementation. This paper aim at investigating the barriers militating the implementation in Lagos Construction firms, so as to proffer a solution.

2.0 Literature Review

2.1 GSCM Drivers

Literature review and explorative study has identified several different drivers that promote green supply chain management. There are internal drivers in form of different organizational factors, while external drivers such as regulations, customer competitors, society and society.

Zhu et al., 2004 founded that there are some main drivers behind applying GSCM in Chinese manufacturing industry, such as straightforward cost reduction to facilitate the development of co-operative relationships with suppliers and encouraging life-cycle. On the other side, despite that there is an increasing environmental awareness; there is a slow implementation of GSCM across enterprises, and it is approved through the study that turning the awareness and pressures into practices and performance will take some time in Chinese manufacturing industry.

Zhu and Sarkis (2006) have investigated the occurrence of thirteen pressures and drivers for automobile industry and other industries in China. Results indicated that pressures and drivers for automobile industry in China are the greatest among other Chinese industries. Regulatory compliance is indicated as one from the main pressures on Chinese automobile industries due to China's entry to WTO. Results showed that automobile industry in China have a good opportunity in gaining a competitive advantage and being an environmentally aware industry which is considered in itself as a driver to green its automobile supply chain.

Testa and Irlado (2010) have proved that there is a positive relationship between adopting GSCM practices and enhanced reputation and brand image of an organization. A sample of 4188 facility manager was investigated in seven OECD (Organization for Economic Co-operation and Development) countries. Although the results were positive from the perspective of enhancing reputation and brand image of an organization, it didn't imply that seeking for efficiency is the driver for adopting GSCM practices.

Using Interpretive Structure Modeling (ISM) through an Indian case study, Ali and Diabat (2011) have investigated eleven drivers to implement GSCM practices. Top drivers mentioned in the research were green design, integrated quality environmental management into the planning and operation process, reducing energy consumption, and reusing and recycling materials and packing drivers.

Large and Thomsen (2011) research results suggest that the degree of green supplier assessment and the level of green collaboration exhibit direct influence on environmental performance. Whereas commitment influences assessment directly, the impact of commitment on collaboration is mediated by the capabilities of the purchasing department. These results were based on 725 questionnaire sent and analyzed through using SEM (Sequential Equation Modeling).

2.2 Green Supply Chain Management in Lagos

Lagos State being the centre of business in Nigeria, is a good representation of Nigerian Scenario. Construction usually has a significant and irreversible impact on the environment. Impacts such as the massive use of natural resources, pollution of the environment, and high energy consumption are among the whole supply chain from production of construction materials to the end user (CIEC, 1992).

The study of supply chain management in Lagos, Nigeria is relatively new, especially in the construction industry (Olayiwola, 2008). The level of awareness of supply chain management is low in Nigerian construction industry and awareness campaign was proposed to sensitize all stakeholders in the construction industry (Ahiakwo et al., 2012)

2.3. Barriers militating implementation of GSCM

Many suggestions are made in the literature on elective measures which the construction industry can take to address the environmental implications of its activities. Building (1999, p. 3) uses the phrase 'joined up thinking' which 'seems to cover everything from committing the whole supply chain to making buildings more sustainable, to convincing individual firms that going green will not push them into the red'. It notes that UK developers who may be keen on 'green issues' are often thwarted by hostility from their own investors or tenants. Building (1999, p. 3) anticipates a tax on energy and aggregates, and amendments to the Building Regulations. It asks for government-subsidised innovative demonstration projects. Barrie (1999a) also notes that the UK government is committed to strengthening green legislation. Barrie (1999b) describes major green

initiatives by large UK contractors and clients. The contractors' measures include: having an environmental policy and publishing an environmental statement; incorporation into the annual report of an audit of the company's contribution to green causes; contribution to training in handling of materials and waste; undertaking environmental audits of their buildings; environmental impact assessment of some activities such as quarrying; and placing a main board member in charge of environmental issues. The CIBs `Agenda 21 on Sustainable Constructiona (CIB, 1999) seeks to create a global framework and terminology to facilitate initiatives at national and subsectoral levels; and outline research and development activities. Michel (1998, p. 27) puts at the top of eight major changes in the US construction industry in the past 25 years. Emergence of the environment and hazardous waste clean-up as a top national prioritya. He urged the conservation of worldwide resources through more e!ective recycling and more efficient use of resources; integration of environmental policies on a global scale; more research in the construction industry; new models of production and consumption (private partnerships; and more initiative from practitioners

Environmental issues have become more relevant in construction firms. Therefore construction companies need to focus on energy and resources for making environmentally sound supply chain.

3. Research Methodology

Past researches about drivers and barriers to GSCM practices were diversified in methodologies based on the difference in research questions. This research used qualitative methodology using a questionnaire as the primary source and past literatures as secondary source. Flexibility and its applicability on exploratory researches were the main reasons behind adopting such approach. The questionnaire was designed to assess GSCM in Nigerian construction industry, a section titled barriers to GSCM implementation was extracted for this paper. A total of 35 valid responses were received from the 100 questionnaires successfully emailed and sent out. Only 28 participant answered this section. While the response is perhaps a little dissapointing, its not surprising as the research focus is not a familiar to Lagos state Construction firm. Howeverr, the fact that our sample comprised responses from organizations representing a wide variety of sizes provides much assurance that our sample will give a clear representation.

4. Data Analysis

This section deals with transformation of data using SPSS (Statiscal Package Software For Social Sciences). Cross tabulation of variables will be used fro descriptive stataistics. This method of analysis has been emplooyed by other construction management studies. This results from the survey are presented in Table 1. The Bar chart of the findings is shown in Figure 1.

Table 1: Barriers to GSCM implementation

	Not a barrier	Somewhat barrier	Moderate barrier	Extreme barrier	Total
Lack of resources.	2	7	9	10	28
Lack of markets for recyclable materials.	5	9	6	8	28
Lack of knowledge about environmental impacts.	1	9	6	12	28
Lack of information sharing between construction firms and suppliers.	1	8	13	6	28
Poor commitment by the top management.	4	7	6	11	28
Lack of legal enforcement by the government.	1	10	6	11	28
Lack of sustainable practices in the organization's vision and mission.	3	7	9	9	28
Lack of demand.	3	10	9	5	27
Lack of public awareness.	1	6	5	14	26

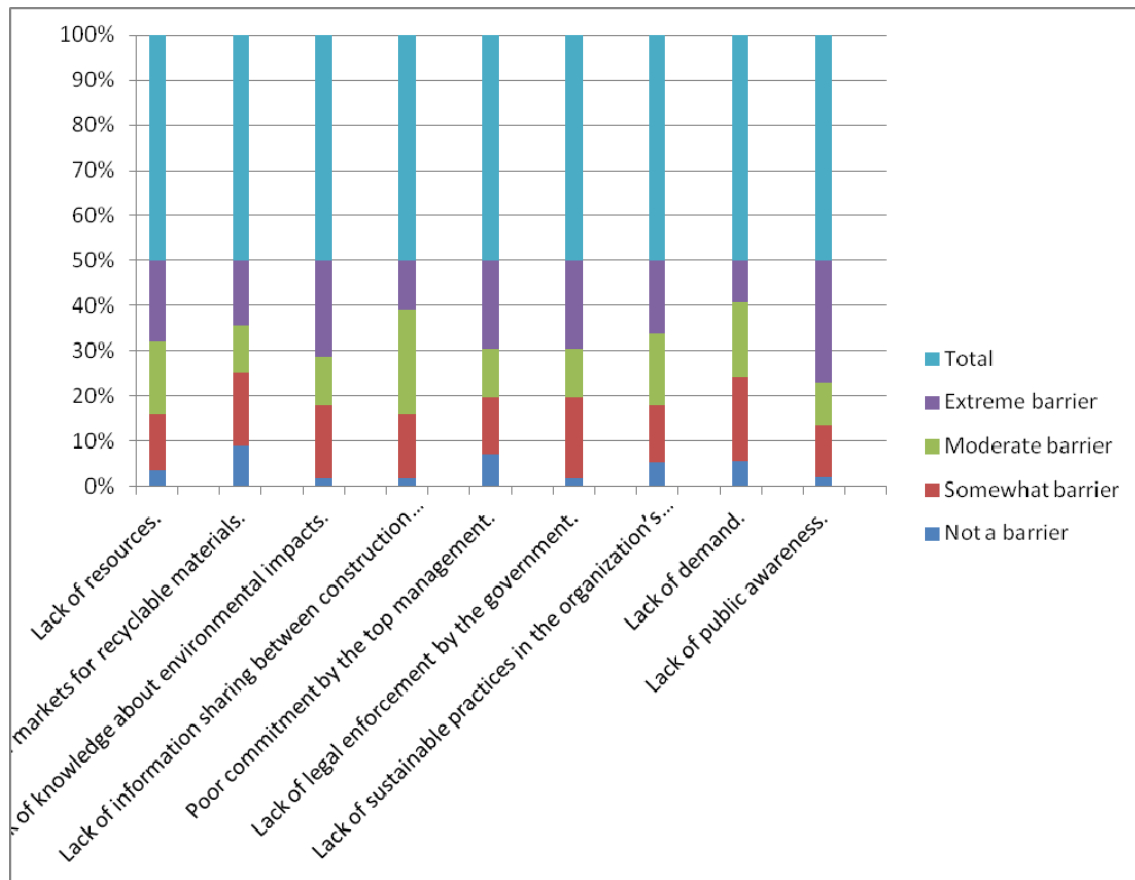


Figure 1: Barriers in GSCM

The barriers from the findings will be discussed from the highest frequent barriers to the lowest which will form a hierarchy model of barriers in Lagos State Construction firms as shown in Figure 2.

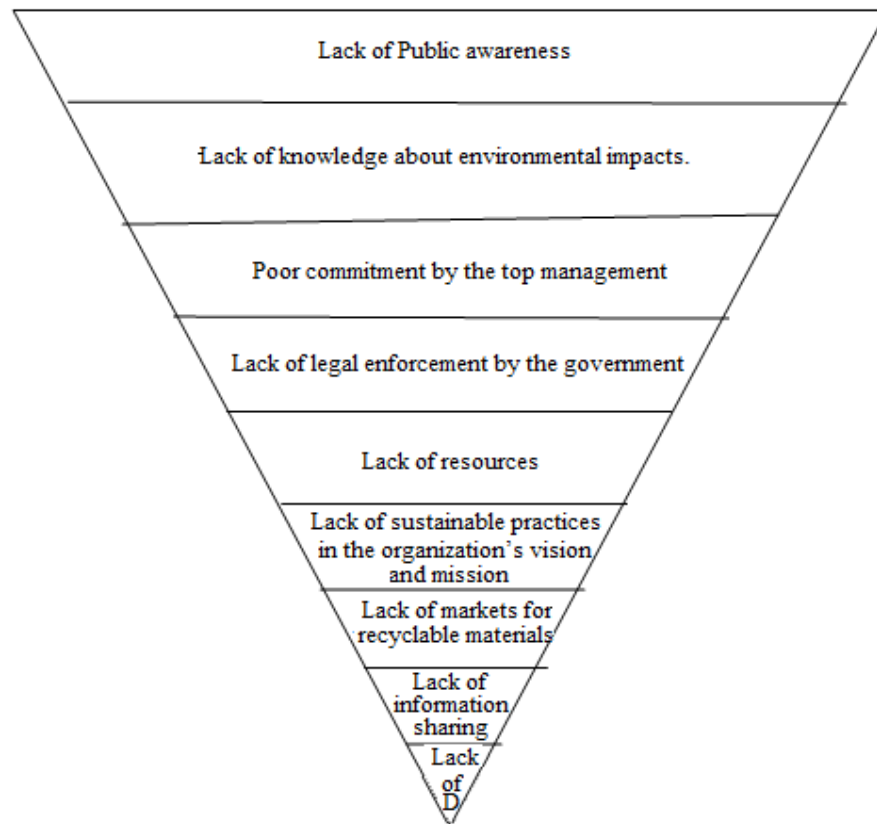


Figure 2: Hierachy Model of GSCM Barrier in Construction Industry

4.1 Lack of Public awareness.

Out of 28 professionals that answered the question, 26 professional agreed that lack of public awareness is an extreme barrier. Customer's awareness means if customers's demands green products, the company has to change technology and organization for innovative green products (luthra et al, 2010). In U.S.A, an estimated 7s% of consumers claim that their purchases are influenced by reputation and 80% would be willing to pay more for environmentally products. (Lamming & Hmapson, 1996). Thus, this supports the findings from this study that lack of awareness is a major barrier to implement GSCM in construction firms.

4.2 Lack of knowledge about environmental impacts.

The result showed that out of 28 proffessionals, 12 professionals identified lack of knowledge about environmental impacts as an extreme barrier. Knowledge is power and informative. In a situation whereby environmental impacts of constructionis is not known, precautions will not be taken against it.

4.3 Poor commitment by the top management.

11 out of 28 professionals identified poor commitment by the top management as an extreme barrier. Top management commitment is necessary for any strate gic program sucess (Hamel& Prophalad, 1989, Zhu & Sarkis, 2007). Top management commitment is essential for environmental practices such as GSCM, it has the ability to influence, support actual formation and implementation of green initiatives acrosss the organizations (Sarkis, 2009) and also provides supports for GSCM in the strategic plans and action plans for sucessfully implementing them (Ravi & Shankari, 2005). All these supports the results that poor commitment by top management is a major barrier in GSCM implementation in Nigerian Construction firm.

4.4 Lack of legal enforcement by the government.

Lack of legal enforcement by the government is also identified by 11 professionals out of 28 professionals as an extreme barrier. Governement regulations can encourages or discourage the adoption of innovation, as governement sets the environmental regulations for industry (Scupola, 2003). Time Consuming regulatory requirements, fees or levies may discourages smaller firms. Tax structures that distort incentives can discourage

industry to implement GSCM (Luthra et al, 2011). Government institutions are considered as a barriers to the development in the environmental management in the sense that institutional process for implementing GSCM are going on but very limited institutional process for implementing GSCM (Luthra et al., 2011). The tendency of government to encourage old practices is a major barrier (Alkhdrir & Zalani, 2009). This supports the findings that lack of legal enforcement by the government is a barrier in GSCM implementation in construction firm.

4.5 Lack of resources

Out of 28 professionals, 10 professional pointed lack of resources as an extreme barrier. Walker et al., (2008) identified lack of resources as an internal barrier. The initial investment requirement by green methodologies are expensive (Luthra, 2011). Engaging in environmental management involves cost which constitute a vital barrier in GSCM implementation. IT enablement, Technology advancement adoption hiring good quality of employees, motivating and training of employees towards GSCM will require high initial investments. Lack of resources is a major barrier.

4.6 Lack of sustainable practices in the organization's vision and mission

Out of 28 professionals, 9 identified lack of sustainable practices in the organization's vision and mission as an extreme barrier. Sustainability practices could be termed as green practices cos the word green is sometimes used interchangeably with sustainability. Innovative green practices are associated with the explicitness of green practices accumulation of green related to knowledge, organizational and quality of human resources. (Ynlin & Hu, 2008). Innovative green practices involves hazardous, solid waste disposal, energy, reusing and recycling of materials. Implementation of GSCM practices initially involves high investment.

4.7 Lack of markets for recyclable materials

8 professionals identified lack of markets for recyclable materials as an extreme barrier. Recycling has economic and environmental benefits for communities. Recycling reduces the need for new landfills and their associated costs and can support industrial development as the recycled materials serve as raw materials for manufacturing and other uses.

4.8 Lack of information sharing between construction firms and suppliers

6 professionals out of 28 professionals stated that lack of information sharing between construction firms and supplier is an extreme barrier. Information linkages and improved communication helps the organizations to adopt green practices (Yu Lin & Hui Ho, 2008). Training and education are the prime requirements for achieving successful implementation of GSCM in any organization. (Ravi & Shak, 2005)

4.9 Lack of demand

Out of 28 professionals, 5 identified lack of demand as an extreme barrier. Its the lowest in the hierarchy.

5. Conclusion

Several literatures on GSCM barrier have been reviewed and the findings corresponded with findings from the survey. It was concluded that the major barriers facing GSCM in Lagos, Nigeria are public awareness, lack of knowledge about environmental impacts, poor commitment by top management and lack of legal enforcement by the government, while lack of resources, lack of sustainable practices in the organization's vision and mission, lack of market for recyclable materials, lack of information sharing between construction firms and suppliers and lack of demand were also identified as barrier. Environmental issues have become more relevant in construction firms, therefore construction industries need to focus on energy and resources for making environmentally sound supply chain. To attain environmentally sound supply chain in construction, barriers in GSCM must be averted.

Recommendations

This study provided an insight to the barriers militating implementation of Green supply chain management in Lagos State construction firms. The result showed that there is gap between awareness of GSCM and adoption of such practices. This study is one of the efforts to determine the barriers of GSCM in construction and is recommended to use the hierarchy model proposed to solve the problem and also a platform for further research in GSCM practices in Lagos State, Nigeria.

Acknowledgement

This research is supported by the University of Johannesburg research fund.

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Biography

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