

The Effect of Green Supply Chain Management on the Construction Industry – A review

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Abstract - The building business has a considerable ecological footprint. Environmental issues are forcing the building industry to 'go green.' Green supply chain management can be a comprehensive method for facilitating sector transformation. Green supply chain management research in the building has grown over the years, but it has yet to be properly linked all together. Green supply chain management (GSCM) is an effective strategy for distinguishing a firm from its rivals, and it may have a substantial influence on planned achievement. GSCM has become increasingly essential as well as for Indian firms' business ethics as the necessity to comply with environmental regulations becomes more prominent. Firms adopting the commercial and operational effectiveness of GSCM approaches with a focus on distribution operations have improved significantly and ecological performance in a wide variety of areas. The study discusses India's current environmental performance index (EPI) as well as the four primary operations of green supply chain management, namely green purchasing, green manufacturing, green marketing, and reverse logistics.

Key Words: Supply chain management (SCM), green supply chain management, Construction industry, green purchasing, green procurement, Reverse logistics (RL)

1. INTRODUCTION

Consumers will ask additional inquiries about the things they buy as they become more interested in environmental concerns and climate change. Companies may expect questions about the environmental friendliness of their manufacturing processes and supply chain, as well as their environmental emissions and recycling practices. In process improvement and the supply chain, the green economy has achieved great gains in guaranteeing environmental and social sustainability. Development is defined as "development that serves the demands of the present without harming outcomes' potential." Economic, environmental, and social responsibility are all facets of durability.[1]

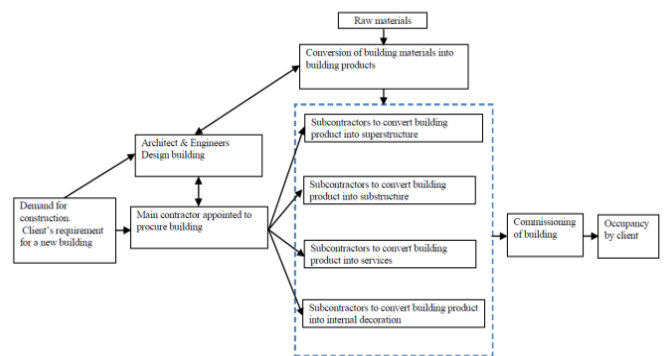


Fig-1. A typical supply chain network

Various forms of studies have attempted to apply the notion of GSCM in manufacturing to the building sector. The scope, objective, and conclusion of the studies varied. The advanced GSCM framework in the construction sector, which comprises five theories, is one technique of research that acts as the major source for this study, namely, green procurement, green purchasing, green design, green manufacturing, green construction, and green operation and maintenance, as shown in fig. 1.[2]

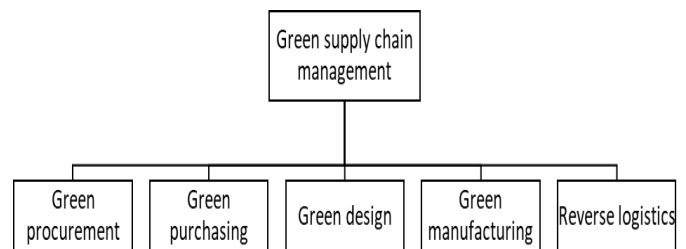


Fig-2. GSCM framework in the building sector

Green resources refer to how supply chain management and industrial buying innovations may be viewed from the perspective of the environment. Environmental supply chain management entails the buying unit participating in actions

such as item minimization, recycling, reuse, and replacement. Environmental performance in the supply chain is being evaluated and improved. Including environmental factors in supply chain management, for example, product design, green procurement and choice, production methods, overall product distribution to the client, and device final control after the product's usable life.[3]

Green Purchasing (GP) is identified as an ecologically sustainable acquiring strategy that seeks to verify that bought products satisfy sustainability goals established by the buy and maintain, such as eliminating waste causes, promoting recycling, reuse, resource reduction, and remanufacturing.[4]

Green design is an activity that displays the impact of a product on the environment and resources when that is developed and improves interconnected constituents to reduce the aforementioned impact across the product's overall lifespan. The constructing process will start with uniformity, modularization, setup, and recovery in companion design.[5]

Green Manufacturing is a critical component of green purchases. The solutions for minimizing energy and resource consumption in streams to minimize the usage of sustainable materials are based on three study areas: pinch analysis, industrial energy and energy, and life cycle analysis.[6]

Reverse logistics (RL) is a method of addressing wastes issues that arise even during the construction stage. RL is a green supply chain activity that takes place during the green design and development phase. In RL, threads include recycling, reuse, and teardown.[7]

The goal of GSCM is to make the whole supply chain better ecologically friendly. Industries can choose whether to integrate GSCM for a multitude of reasons, including being pressured to do so by legislation, using GSCM to distinguish themselves in a competitive market by being eco-sustainable, and finally, implementing GSCM to continue to compete if your contenders here have implemented GSCM. Enterprises using greener supply chain management techniques will have competitive completed enterprises that are hesitant to implement GSCM as consumer engagement and regulatory norms rise. As a result, there is a change in the company's priority on GSCM delivering value to the customer and shareholders.[8]

1.1 Objectives:

In India, GSCM methods have arisen as a methodical way of balancing enterprises' ecological sustainability. The research attempts to highlight the advantages of using the GSCM idea. It also strives to realize this need for encouraging and facilitating the execution of GSCM activities to boost Indian

industrial performance. And to comprehend the issues, significant revelations, and obstacles linked with GSCM, as well as the accompanying advantages for interacting entities.

1.2 Need for study:

GSCM will assist current manufacturers in taking measures to turn their traditional SC (supply chain) into a far more responsible GSC (green supply chain). Without a certainty, at a moment like this, the status of the ecology and the future are dependent on our actions today, and by recognizing the attributes or four activities of a GSC, we can begin to execute the measures required to make this transfer feasible.

2. LITERATURE REVIEW:

GSCM is a developing idea derived from the confluence of two critical business techniques, namely output enhancement and environmental preservation. The economy serves as the groundwork for continual progress, whereas environmental regulation serves as the platform for long-term growth.

2.1 Supply chain management

Zhang, et al., (2011) described CSC with a system model may assist grasp diversity, facilitating re-configuration, detecting obstructions, optimizing corporate resources, and bringing value to construction project management.[12]

Behera, et al., (2015) has maintained the constant of CSCM using a descriptive method of trilateration using basic fundamental study design in a coal-fired thermal power plant project to justify its complicated CSCM systems and have also outlined that a classic CSCM environmentalist for the energy thermal power building projects as the unit can be regarded to operate as a system with inter-as perception stage, sourcing phase, assembly process, setup stage. [10]

Taticchi et al., (2015) has been stated that sustainable supply chains (SSC) are an important factor for sustainability in achieving corporate stability. To stay viable, supply chain participants must address not just monetary but also health and environmental factors while meeting the needs of stakeholders. As a result, firms using SSC Management (SSCM) must achieve various and competing goals such as higher revenue while decreasing costs, conserving natural resources, and enhancing well-being (according to traditional concepts of goal swap).[11]

Kim, et al., (2020) has discovered the impediments and found the fundamental connections between them the study's findings revealed that the five most important impediments were a paucity of direction, a lack of competency among SCM parties, poor knowledge of the distribution network notion, inactive contractors and consultants, and institutional hostility to SCM. The basic links between the obstacles were revealed within the context

of five variables: Inadequate understanding and competence, insufficient provision and dynamic participation on the side of the parties, confrontational environment and contentious attitude, contracting system flaws, and intrinsic challenges in SCM. These insights may aid practitioners in properly comprehending the obstacles and devising suitable procedures for encouraging the creation of the CSCM. It contributes to the body of sense that the former the CSCM. [9]

2.2 Green supply chain management

Sarkis (2003) Analyses and develops the major corporate strategy aspects for a platform to assist managers in assessing green supply chain choices. [14]

Mingqiang, et al., (2011) claimed that building supply chain management offers a new technique for cutting production costs and enhancing the exploitation of dependability and availability in construction. The construction supply chain is the independent marketing unit of complex systems for the effectiveness of all these operations. [15]

Mohanty, et al., (2014) includes that GSCM may be thought of as a technique for improving economic and energy impacts to promote overall advancement. It is the use of optimal environmental and performance approaches, technology, and management systems in the production of eco-sustainable commodities. [16]

Che Razak, et al., (2020) has said that good leadership, modifications in current policies and technology, increased knowledge of environmental concerns, development, education, and adoption of the most optimal waste and waste security solutions are the major initiatives for improving GSCM practices in the construction industries.[13]

Yubing Yu, et al., (2021) enhance understanding of the implications of green management at the supplier, internal, and customer levels on innovative performance as well as providing scientific data that supplier, internal, and customer eco-friendly governance are positive way relating to financial results, indicating that instituting GSCM allows a supplier to compete effectively.[17]

2.3 Reverse logistics

Gu, et al., (2019) identified that major corporations were under larger amounts, of electoral, and social stresses to improve their logistical methods, he presented a revised blueprint with six dimensions: financial, societal, conservational, government support, company's internal processes, and outside of the mechanics of competition. [18]

Wardani, et al., (2021) said that green material management concert evaluation must include characteristics of suppliers or site building contractors, therefore reverse logistics must also be examined at the same time.[7]

2.4 Green procurement

Wong, et al., (2016) said that green concepts and approaches to mitigate environmental consequences are essential aspects of boosting green procurement in the building process. Enterprise and society generally efforts or ideas, The administration's green supply chain legislation and requirements. [20]

Rais, et al., (2018) have disclosed that the major problems with adopting green purchasing are insufficient knowledge and an absence of clear rules. He will assist stakeholders in undertaking the project and taking actions to address the challenges in sustainable building.[19]

2.5 Green purchasing

A.S. Dube, et al., (2016) The integrated model of GSCMEs is built using ISM and the fuzzy MICMAC approach, and it may be valuable to GSC executives in identifying and categorizing the essential GSCMEs for their needs, as well as showing the consequences of each GSCME on the GSCM accomplishment. [21]

Setyaning, et al., (2020) said green purchasing techniques include the purchase of biodegradable and non-items, related conditions training, supplier adoption of pollution prevention such as ISO 14000, and supplier environmental assessment. [4]

3. COMPARISON OF SUPPLY CHAIN AND GREEN SUPPLY CHAIN MANAGEMENT:

Table -1: comparison of supply chain and green supply chain management

Element	Supply chain management	Green supply chain management
Time horizon	Short term	Long term
Total cost approach	Minimize firm costs	Channel-wide cost efficiencies
Objectives and values	Economic	Economic and ecologic
Speed and flexibility	High	Low
Supplier selection criteria	Price switching suppliers' short-term relations	Ecological aspect, long term relations
Amount of sharing risks and rewards	Each on its own	Risks and rewards shared over the long term

4. CONCLUSION

GSCM has the potential to minimize the environmental impact of industrial processes while preserving value, rate, consistency, productivity, and energy consumption savings. GSCM addresses a wide range of concerns for professionals, academics, and scientists. The purpose of this research is to provide a brief overview of the literature on green supply chains. According to the report, GSCM has helped to reduce the environmental impact of industrial processes. Several key scholars have defended various perspectives on GSCM. Green Procurement boosts a company's economic and environmental performance. It is vital to analyse GSCM to guarantee that conservational and SCM are implemented smoothly. Because the dynamic and volatile aspects of GSCM are significant, evaluating the value chain can be beneficial and relevant for managers to develop more informing and trustworthy judgments about possible changes in economies.

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