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Sustainable Construction Supply Chain Management in India, an Industry Perspective

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Abstract: The built environment has a significant impact on both global and local environmental change. Every stage of the construction process has a substantial environmental impact. With growing environmental concerns, the construction sector is embracing a "go green" initiative. The proper execution of Supply Chain Management (SCM) in the industrial business has resulted in significant success. With the recent focus on environmental preservation and sustainability, as well as government pushes toward sustainable growth, firms are ready to use a green future strategy to increase market share and outperform competitors. The current study aims to provide an insight into the perspectives of various agents of construction supply chain and enhance the construction market sustainability. Further, the factors that influence supplier selection and sustainability are explored and the relevant supply chain participants' perspectives to the current state of sustainability in construction supply chains is investigated. In the current research the key trends in sustainable construction supply chain management are analysed using a sample of 279 responses from construction raw material manufacturers and suppliers, logistic teams, and end users. This study also will seek to determine how companies are understanding sustainable supply chain management processes and how it stands in their business in terms of cost, supply chain orientation and effectiveness. Relative Importance Index method (RII) is used to evaluate the responses of the survey. It was observed that the suppliers believe that they are doing enough to conserve resources and conserve the environment, while the clients perceive that the suppliers' efforts are insufficient. While the manufacturing industries claim that emissions are measured on a regular basis, but only a few of them publish emission reports on their websites. Although the industry believes that adopting sustainable practices in manufacturing and along the supply chain will result in future cost savings and increased market penetration in dynamic markets, it has been observed that the initial high investments and a lack of proven models are impeding the adoption of sustainable practices. This research was limited to a small group of lime mining teams, raw material suppliers, logistics team members and end users of construction sector from Southern part of India. This study provides an understanding of the perspectives of the different construction supply chain participants regarding the various aspects of environmental, social and economic sustainability.

Keywords: *Sustainable, Supply Chain Management, Construction, RII, Likert Scale, Construction Industry*

1. Introduction

The construction industry is one of the oldest in the world, and it is frequently underdeveloped in terms of information technology and management. India's construction industry has grown considerably and is predicted to increase at a rate of 15% over the next several years. The construction industry lags behind conventional industries in terms of supply chain management methods. It has been noticed that in a financial sense, it is beneficial for entities in need of goods and services, as well as those who can provide such services, to be part of an interconnected ecosystem. A competitive and successful firm includes ethical and ecologically responsible practises into its supply chain. Transparency is essential throughout the supply chain; sustainability activities must extend from raw material procurement to last-mile logistics, as well as product returns and recycling. As organisations attempt to become more efficient and environmentally friendly, sustainable construction supply chain management is an emerging subject in construction management. A sustainable supply chain is a key concern for all sectors of today's construction industry. There is an increasing focus on the importance of sustainable practices and solutions that provide better customer satisfaction and competitive advantage. To meet this growing demand, manufacturers, contractors, equipment providers, distributors, engineers and others need to work together to develop innovative ways to create more sustainable solutions within their supply chains.Despite the progress made in emerging economies such as India, sustainable construction supply chain management has not received the attention it deserves. For example, although consciousness about climate change was evident in these countries, there was no anticipated rise in supply chain sustainability since global economic crises dampened expectations. In addition, many international companies operating in these, and other markets have been slow to adopt a long-term strategy of sustainability mainly due to the high costs associated with such an activity.

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2. Supply Chain Management

The supply chain is an adapted idea from the manufacturing industry (Chen, Hall, et al., 2020), and it is traditionally constituted of all activities engaged in sourcing and procurement,

conversion, and all logistics management activities (Mentzer et al., 2001). Several studies have been conducted in recent years, including integrated construction supply chain logistics (Magill et al., 2020), third-party logistics in construction (Ekeskär and Rudberg, 2020; Akbari, 2018), and integrating 4D BIM-GIS for construction supply chain management (Deng et al., 2019), with the goal of providing frameworks for effective communication and information sharing, collaboration, and management of participating entities involved.

According to Omar and Ballal, tapping into today's technocentric data platforms is the proposed method of expediting logistics processes, effective material delivery, and the best delay avoidance tool (2009). Sustainable Supply Chain Management (SSCM) is a business strategy that aims to improve overall performance. Some experts believe that in today's rapidly changing world, supply chain managers confront a new challenge: reconciling cost reduction with corporate challenges, according to Hamid Daneshwararigh and Terrany (2020). The writers provide a comprehensive definition of the SSCM as well as clarification of some of the subject's ambiguities. According to the studies cited during the authors' investigation, sustainability practises can be successfully implemented across a company's entire supply chain, including second and third levels of suppliers, in order to achieve positive social and environmental impacts while promoting a strong economic bottom line.

According to Shinde and Salunke (2018), the supply chain is relatively unstable, and the industry is project-based, with definite start and finish locations. The team identifies potential barriers to implementing the supply chain management concept in the construction industry. The SCM patterns used were explored, and recommendations for their potential future application were made, with a focus on the SCM idea in connection to the Pune flyover project. Furthermore, the researchers investigated the organisations' current approach for implementing chain management and supplier assessment practises, as well as the value of the project's major stakeholders, such as contractors, suppliers, and clients.

According to Mitra and Tan (2012), the Middle East and other oil-dependent nations began to diversify their economies by seeking alternative sources of funding in order to reduce their dependency on oil earnings. Following the development of building projects in the oil-rich Middle Eastern economies around 2000, there has been a surge in the use of non-standard, ad hoc methods and techniques in these construction projects. The fundamental challenge with construction projects is a lack of human and technical resources, materials and supplies, payment difficulties, and disagreements among numerous players. Project execution, customer happiness, and cost management have all suffered as a result of a lack of competent and quality project workers. Eleven people were interviewed for the study. According to the authors, research in the Middle East have revealed that, while managers and employees generally behave as in the West, there may be cultural differences because the Middle East is a highly diverse region with a multitude of different cultures. The study concludes that extending the scope of study to encompass varied projects and national contexts may boost the reliability of data obtained in order to advance the research.

Darko et al. (2016) assessed the major risks in Ghana's construction supply chain. Price variations, interest rate changes, material shortages, frequent changes in supply chain inputs, and unanticipated changes in demand are all identified as potential main dangers. There was no statistical difference in the perceptions of suppliers and contractors on the likely threats in the construction SC. The goal of this article is to identify potential main hazards in the construction Supply Chain (SC) to improve risk management activities. There have been identified 11 risk indicators that may affect the construction SC. This danger is most likely to be greatest when a single organised entity or supplier is in charge of supplying the business with critical raw materials.

According to Prasad et al. (2020), different core clusters that influence the performance of a sustainable supply chain are identified with the goal of identifying essential success elements and their interrelationships for the application of sustainable supply chain management strategies in the context of the Indian steel industry. The four fundamental clusters of CSFs are external forces, organisational environment, sustainable supply chain management approaches, and organisational sustainability performance. Sustainable shopping trends are influenced by cultural and societal viewpoints. There is no statistically significant difference between early and late respondents, according to the findings.

A team led by Amer Hijazi (2022) from the School of Engineering reported on a data model for combining BIM and blockchain to provide a single source of truth for building supply chain data delivery. Despite a considerable volume of BIM data at the handover stage, identifying and efficiently isolating valuable construction supply chain (CSC) data remains difficult. They propose a BIM single source of truth (BIMSSoT) data paradigm powered by blockchain to ensure consistent CSC data supply.

Lars Bankvall et al. (2010) described a case study approach that was utilised to demonstrate the production, subsequent delivery, and installation of plasterboards to a specific construction project. Their analysis reveals considerable coordination among several organisations and includes noteworthy examples of the repercussions of the found interdependencies. The fundamental theoretical argument advanced in this study is that SCM methods created for other industrial contexts, such as the automotive sector, are difficult to use in the construction industry.

Pham and colleagues (2022) published a paper on the impact of transformational leadership on green learning and green innovation in building supply chains. Their research will look into the effects of transformational leadership on green innovation and green learning in building supply chains. The study contributes to the advancement of construction leadership research by demonstrating the importance of leadership at the supply chain level.

In their research, Sam Solaimani and Jack Van der Veen (2021) described open supply chain innovation. Their research aims to provide a comprehensive understanding of how vertical and horizontal collaborations can be used to help supply chains become more innovative. They suggested a supply chain innovation conceptual framework based on three ambidextrous capabilities: purpose, span, and direction. Firms must employ all available sources to innovate continuously in the ever-changing dynamics of global commercial markets. They noticed how cooperative efforts between enterprises and their supply chain partners might drive supply chain innovation.

3. Sustainable Supply Chain Management

Adetunji et al. (2011) conducted a study based on substantial literature research and interviews with senior management teams in the UK construction industry to identify the causes and propose a strategy to attain SSCM. According to their findings,

integrating environmental/sustainability issues across the supply chain can provide corporate value. As a result, SSCM provides a once-in-a-lifetime opportunity to produce value; nevertheless, the construction sector must fully embrace SSCM if sustainable construction is to be achieved. This review, according to the authors, offered an additional research issue concerning the interplay of the method of cooperation in the setting of successful SSCM.

Dayal Prasad et al. (2018) investigated the key success factors for implementing sustainable supply chain management. From the perspective of a practitioner, sustainability is the ability to exist in the long run. The study focused on defining critical success criteria for long-term supply chain management in the Indian steel sector. When compared to external impacts, organisational characteristics were shown to be more relevant. Top leadership's commitment and support have a tremendous impact on building a favourable organisational environment.

According to a survey done by Mitra and Datta (2013), Indian firms are still in the early stages of adopting sustainable supply chain management (SSCM) methodologies. Ten hypotheses were evaluated using a 5-point Likert scale survey to assess the drivers of sustainable supply chain management, purchasing practises, manufacturing and logistic practises, and company success. Their efforts were limited to the environment. They discovered that organisations that value sustainability would benefit from documenting and communicating their SSCM procedures to their customers and competitors.

Helena Forslund et al. (2021) discussed the difficulties of expanding sustainability across a transportation supply chain. They saw that the focus of sustainability studies has shifted from individual enterprises to supply networks. Shippers may prioritise relationships with logistics service providers less than relationships with product suppliers. Sustainability techniques in the literature frequently oversimplify the fact that supply chains encompass numerous dyadic relationships with varying characteristics. One specific and pressing issue is the improvement of communication between the 3PL and the shipper. One issue is that shippers do not grasp the logic and structure of the transportation business.

According to Stefanella Stranieri et al. (2021), who reported on the adoption of environmentally friendly certifications, there are growing concerns about environmental change and resource depletion on the global arena. The group shed insight on how various types of transaction uncertainty and associated risks can impact the choice to implement alternative forms of governance. The findings indicate that treating environmentally friendly certifications as a type of governance can aid in deciphering their role as organisational tools. The researchers recommend that future research could increase the study's validity by looking into the uniformity of the topic across various food and non-food sectors. Future surveys could focus on longitudinal data in order to better capture and explain any path dependencies in the strategic variables driving the uptake of environmentally friendly certifications.

According to Verónica Bravo et al. (2021), enterprises involved in organic cocoa production and transformation in Ecuador mostly used a sustainability logic while conducting their sustainability and certification activities. They prioritised local development as well as the preservation of their traditional and cultural identities. Recognizing the local perspective and coexisting logics can help to improve the SSM process. The study provided a novel way to understanding the needs and expectations of the supply countries. The research context importance extends beyond this region to the interests of worldwide managers and researchers. According to the organisation, research should enhance the use of institutional logic to comprehend the interaction of various SCM members toward sustainability.

4. Research Approach

This study relies on questionnaire responses from suppliers, logistics teams, and end users such as architects, engineers, and execution teams. A standardised questionnaire was developed after a review of the literature. In order to generalise the context-specific data and meet the study's aims, the questionnaire was divided into four sections based on the research topics. The first three sections investigate the respondents' understanding of the environmental, economic, and social consequences of their engagement in the supply chain. A separate part is offered to access the outcomes of the lessons learnt from this experience by observing the impact of Covid-related lockdowns. In the current study, a 5-point Likert scale rating was employed, with the third point denoting a neutral attitude on that particular Likert item. Likert Scale was introduced by Rensis Likert (1932) and is considered as a benchmark for evaluating opinion of participants of a survey.

The survey responses are evaluated using the Relative Importance Index technique. It is a tool for determining the relative importance of certain quality qualities. The number of points on the Likert scale used equals the value of W, the responder's weighting of each element. Aditya Mudigonda et al. (2016) explored on how a 5-point Likert scale can be used in conjunction with Relative Importance Index Method to evaluate the causes for delays in Hyderabad construction market. The Relative Importance Index can be calculated using the equation below (RII).

$$RII = \frac{\sum W}{A \, . \, N}$$

Where, W is the respondent weighting for each item, A is the highest weight, N is the total number of responses

5. Survey Design

The survey was designs to incorporate the requisite items in the individual categories of environmental, economic and social sustainability based on the literature survey. Table 1 showcases the areas in which the questions were drafted for the survey. It is noted that the final questions in these areas are expressed differently under each category to extract organic responses and a comparison of views of the supply chain players.

The current poll uses a 5-point Likert scale to assess participants' agreement on each question: Strongly Agree, Agree, Neutral, Disagree, and Strongly Disagree. The present scale was chosen for its ease of comprehension, shorter time to finish the survey, neutrality potential for survey respondents, and reliability and relative ease of analysis.

Table 1

S No	Parameters
	Environmental Aspects
1	Environmental Policy
2	Certifications
3	Waste Reduction
4	Efficient Energy Utilization
5	Compliance to Environmental Standards
6	Biodiversity
	Economic Aspects
1	Cost of implementation
2	Impact on price
3	Delivery and reliability
4	Market Share
5	Competitive Advantage
	Social Aspects
1	Work/life balance
2	Child and Forced labour
3	Employee perspective
4	Training and Development
5	Community Impact
6	Water, Sanitation and Hygiene

The total questions designed under each category for manufacturers, logistics and end users are shown in table 2.

Table 2 Questions in the Survey

Category	Environmental	Economic	Social	Covid	Total
Manufacturer / Supplier	14	13	18	2	**47**
Logistics	10	12	13	3	**38**
End Users	10	13	18	4	**45**

An online form was generated to request responses from the participants of the survey using Microsoft forms. Based on the pilot study performed, it was identified that direct interviews to be performed in manufacturer and logistics categories to procure information for the survey. The following classification of experts were considered in each category for the survey:

a) Manufacturer / Supplier: Lime mining organizations, Cement Plants, RMC Plants, Wholesale material suppliers, Retailers
b) Logistics: Transportation Offices, Logistics Advisors
c) End Users: Architects, Engineers, Contractors

6 Data Collection

400 forms were given to various building supply chain partners as part of the study. Table 3 shows the number of responses received in each sector.

Table 3 Number of responses for the Survey

Category	Manufacturer / Supplier	Logistics	End Users	Total
Responses	**40** (7 Form submissions + 33 Interview responses)	**30** (2 Form submissions + 28 Interview responses)	**209** (195 Form submissions + 14 Interview responses)	**279**

7 Reliability Analysis

The Jamovi (2021) toolset is used to evaluate answers from manufacturers or suppliers, logistic teams, and end users. To aid calculation, the questions asked to respondents are recoded. EN denotes environmental questions, EC denotes economic questions, S denotes social questions, and COV denotes covid impact and lessons related questions. The reliability of the survey replies is demonstrated in table 4.

Table 4 Cronbach's Alpha

Category	Cronbach's Alpha
Manufacturer	0.95
Logistics	0.916
End Users	0.85

8 Results

Table 5 shows the top ranking environmental, economic and social factors assessed by the majority of suppliers in order of priority.

Table 5 Ranking on Manufacturer/Supplier Responses

Question	RII	Rank
Environmental Aspects		
Energy and Water wastage containment measures are in effect	0.87	1
We regularly measure our emission output	0.85	2
We implement efficient resource utilization	0.85	2
Economic Aspects		
Implementing environmentally friendly and sustainable practices is an economic burden	0.89	1
Economic impact is the highest priority before any policy changes in our organization	0.84	2
We consider the economic performance of our supply chains	0.84	2
We feel there are cost benefits in the future by having a sustainable manufacturing and supply chain	0.84	2
Social Aspects		
We strictly avoid child and forced labour	0.99	1
We provide and encourage our partners to provide WASH (Water, Sanitation and Hygiene) services in our workplaces	0.87	2
We have a strong policy for the health protection of our employees	0.86	3
We frequently measure and evaluate our customer satisfaction	0.86	3
There is a pressure from NGOs and third parties for the implementation of sustainability	0.86	3

Table 6 shows the top ranking environmental, economic and social factors assessed by the majority of logistics teams in order of priority.

Table 6 Ranking of Logistics Teams Responses

Question	RII	Rank
Environmental Aspects		
We try to contribute towards environmental protection.	0.85	1
We regularly measure the emission output of our vehicles	0.81	2
We have efficient fuel wastage containment measures.	0.78	3
Economic Aspects		
Increasing prices of traditional fuels like petrol and diesel are encouraging us to look towards alternate fuel-based vehicles.	0.83	1
Migrating towards an eco-friendly transportation system is an economic burden.	0.81	2
By implementing sustainable transportation strategies, we can enter new markets.	0.77	3
Social Aspects		
We strictly avoid child and forced labour	0.89	1
We ensure equal opportunity in our supply chains	0.83	2
We have continuous quality improvement programs	0.77	3

The top ranking environmental, economic and social factors assessed by the majority of the end users are shown in table 7.

Table 7 Ranking of End User responses

Question	RII	Rank
Environmental Aspects		
We try to contribute towards environmental protection.	0.82	1
We try to reduce the environmental impact at our end by efficiently utilizing our procured material.	0.80	2
We are concerned about the material wastages in construction sites.	0.80	2
Economic Aspects		
We feel that by implementing sustainable strategies, we can improve the innovation potential in our supply chains	0.86	1
By having a sustainable supply chain, we can provide an improved and reliable delivery and customer service	0.82	2
We feel that by increasing adaptation of sustainable strategies by the supply partners, will create new dynamic markets.	0.79	3
Social Aspects		
We expect the supply chain to meet the environmental and safety regulations.	0.82	1
We maintain long-term partnerships with our suppliers.	0.79	2
We feel that it is the social responsibility of the end-user to force the supply chain to adapt sustainable strategies.	0.78	3

9 Discussions

Based on the responses from the manufacturers or suppliers, the following are the findings.

- 52.5 percent agree, with 42.5 percent strongly agreeing, that suppliers or manufacturers have strong energy and waste containment methods. 57.5 percent of respondents agree, and 37.5 percent strongly agree, that they regularly measure pollution outputs at their plants. It is one of the top three environmental factors, with 37.5 percent strongly agreeing and 47.5 percent agreeing that they have effective resource utilization.
- In comparison, only 35% of respondents strongly agreed that the industry is aware of environmental certifications, 37.5 percent disagreed, and 12.5 percent strongly disagreed that suppliers or manufacturers are aware of environmental certifications such as ISO 14001. Only 25% of respondents selected their supply chain partners based on their environmental performance. Only 15% of respondents strongly agreed with the proposal of preserving biodiversity in the vicinity of the manufacturing site, while 32.5 percent were unconcerned.
- According to 60% of participants who strongly agree and 25% who agree, environmentally friendly actions are a burden on the organization. 57 percent strongly agree, and 25 percent agree that the economic impact on the organization is assessed first before any policy changes are implemented. 72.5 percent of interviewees said they investigate their partners' economic success before creating supply networks. 47.5 percent of participants believe, with 40% strongly agreeing, that changing to a sustainable manufacturing and supply network may result in future cost reductions.
- When asked if sustainable techniques may help them enhance their market presence in the future, 55% of participants said no. While half of the participants believe that building sustainable supply chains can boost the possibility for innovation, the other half disagree. According to 92.5 percent of respondents, there is no forced or child labour in the sector.
- 90% of respondents say that adequate WASH facilities are available on manufacturing locations. With 57.5 percent agreeing and 37.5 percent strongly agreeing, the industry maintains a strict health policy for its personnel. 72.4 percent agree, with 27.5 percent strongly agreeing, that consumer input and satisfaction are important to the sector. 82.5 percent of participants say that NGOs and third parties are putting a lot of pressure on companies to incorporate sustainability across the supply chain.
- Only 12.5% of interviewees strongly feel they evaluate the impact of sustainability on their customers. 35% of respondents were uninterested in training their supplier partners about the necessity of sustainable supply chain operations, whereas 47.5 percent stated that they try to educate their supply partners. While 65 percent of respondents say COVID experiences have boosted supplier chain commitment to sustainable practises, just 12.5 percent believe their commitment to a sustainable supply chain has strengthened.

The following are the findings from the analysis of the logistics teams responses.

- 90% of respondents say they contribute to environmental protection within their field of work. 63.3 percent of participants are confident that trucks in the supply chain are regularly inspected for emissions and properly maintained to keep emissions levels under control. Eighty percent of logistic team members feel they adhere to high fuel-efficiency criteria from the producer to the end user. 43.3 percent of respondents strongly disagree that they measure or consider the sustainability of supply chain teams.
- Sixty-six percent of respondents say that the supply chain lacks effective environmental practices. 76.7 percent of respondents say that no decisions in logistics and transportation are made with the environment in mind. 76.6 percent of participants agree that alternative fuel cars should be researched and considered by the industry. While rising gasoline costs are prompting the industry to examine alternate fuels, 76.6 percent feel the move will be expensive in terms of investment. A sustainable transportation network, according to 63.3 percent of those polled, permits the industry to expand into new markets.
- 43.3 percent of participants strongly disagree, whereas an equal amount strongly believe that the organization's economic impact is the most crucial factor before making any decision. 56.6 percent of transportation teams believe it is vital to assess the economic health of a company before joining the supply chain. Sixty percent of respondents believe that moving to a sustainable transportation network will result in future cost savings. According to the survey, 56.7 percent agree and 43.3 percent strongly agree that child or forced labour is not used in the logistics industry.
- Ninety percent of respondents say that the transportation sector offers equal opportunity for advancement without bias. According to 76.5 percent of respondents, the industry engages in frequent quality improvement programs. In terms of a good work-life balance in the industry, 56.6 percent of respondents say the statement is inaccurate. 60% of respondents are unsure or disagree that the industry regularly solicits client feedback. Fifty percent of respondents say the industry has good social accountability, while thirty percent disagree. While 63.3 percent of participants say their Covid experiences taught them that having a sustainable transportation network can help offset any unforeseen challenges, 70% believe it has strengthened their commitment to migrate to a sustainable logistics network.

In contrast to the findings from the manufacturer and logistics teams, the response from the end users offers a differing perspective.

- 81.4 percent of end users agree that they are contributing to environmental conservation within the boundaries of their industry. 24.4 percent strongly agree, and 56.9 percent agree, that there is an ongoing effort to reduce environmental impact through efficient material utilisation. 16.3% of participants are

unconcerned about the site's material waste, while 77% believe they are actively working to reduce waste. According to 78.9 percent of participants, there is a lack of formal environmental policy implementation in building supply chains.

- Industry partners, according to 55% of participants, are unaware of environmental certifications. While 58.3 percent of respondents claim they evaluate a manufacturer's or supplier's environmental performance before picking a supply chain, the remainder respondents disagree. Using sustainable approaches, according to 90% of participants, can stimulate innovation in construction supply chains. With the help of a strong, long-term supply chain, 63.2 percent agree, and 26.8 percent strongly agree that reliable product delivery is possible in the construction industry.
- According to 78.9 percent of respondents, the implementation of sustainable strategies by supplier partners has the potential to establish new dynamic markets. According to 53.1 percent of those asked, being an early adopter in the market for an ecologically friendly product has a substantial economic impact. 55.5 percent say that decision makers' current approach to supplier selection is based entirely on economic policy rather than environmental performance.
- Similarly, 58.9% of end consumers believe that moving to greener products will be costly. According to the study findings, 85.2 percent of end customers want suppliers and logistics teams to adhere to environmental and safety standards. 85.7 percent of respondents emphasised the current industry practise of creating long-term partnerships with suppliers. According to 73.7 percent of respondents, it will not be achievable until end users put pressure on suppliers and logistical teams to use sustainable practises.
- 52.6 percent of participants say that NGOs and third parties are not putting enough pressure on suppliers and manufacturers to shift toward sustainable goals. 59.8 percent of end users say that the industry is unconcerned with employee viewpoints before implementing regulatory changes that may harm their livelihoods. 60.8 percent of respondents are sceptical of the industry's stance on child and forced labour. They claim that there are unreported cases of child and forced labour in the industry.
- End users believe that, while the covid pandemic demonstrated a lack of preparedness in supply chains, because it was a black swan event, the industry has not learned any lessons or is unwilling to implement changes that may overcome any such unforeseen blunder.

10 Conclusions and Future Scope

While this study attempts to conduct an examination of the supply chain actors in the Indian construction sector, the findings are constrained by the huge disorganised and fragmented components of the construction supply chain. Due to their restrictions in the disorganised supply chain, the majority of suppliers and logistical teams are unable to answer queries. Previous studies were limited in their ability to acquire information from a single supply chain player, which this study solves by assessing the opinions of all major building supply chain partners. While responses from manufacturers and logistics teams tends to support their point of view, end users disagree on a range of topics. Even while suppliers believe they are doing enough to conserve resources and conserve the environment, clients perceive their efforts are insufficient. While the industries all agree that emissions are measured on a regular basis, only a few of them publish emission reports on their websites. Although the industry believes that adopting sustainable practises in manufacturing and along the supply chain will result in future cost savings and increased market penetration in dynamic markets, it has been observed that the initial high investments and a lack of proven models are impeding the adoption of sustainable practises.All of the supply chain's primary participants have stated that WASH facilities, or Water, Sanitation, and Hygiene facilities and levels, have improved in the supply chain. This shift has been attributed to the Government of India's Swachh Bharat Abhiyan, as well as non-governmental organisations (NGOs) such as Rotary International. Based on the study findings, it can be concluded that the majority of end users expect manufacturers to be honest about their practises. It is suggested that manufacturers should have an open data policy that discloses their activities and reflect their transparency. It is also recommended that while industries compete for expanding their market, but knowledge transfer of best environmental practises among various agents is essential for the advancement of the construction sector as a whole. While adequate environmental regulations exist for organisations, it is suggested that there should be equal participation of the industry and end users in framing and implementation of environmental policy. Further it has been recognised that adoption of sustainable practises may be an economic burden for the construction sector, but the intervention of policymakers through incentives for the industry will pace-up the clasping of the sustainable practises.

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