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Systematic Approach for Sustainable Construction Supply Chain Management

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***Abstract*— Sustainable construction supply chain management (SCSCM) is crucial for ensuring the environmental, social, and economic sustainability of construction projects. This paper proposes a systematic approach for SCSCM to address the complexities and challenges inherent in the construction industry. The approach encompasses three main phases: (1) Assessment and Planning, (2) Implementation and Monitoring, and (3) Continuous Improvement. Through the systematic approach outlined in this paper, construction stakeholders can enhance their capacity to manage supply chains in a sustainable manner, leading to improved project outcomes, reduced environmental impact, and enhanced social responsibility.**

***Index Terms*— Sustainable construction, Supply chain management, Sustainability**

I. INTRODUCTION

Sustainable construction supply chain management (SCSCM) has emerged as a critical strategy for promoting environmental stewardship, social equity, and economic viability within the construction industry. As the demand for sustainable building practices continues to rise, construction stakeholders are increasingly recognizing the importance of integrating sustainability principles into supply chain management processes. This paper presents a systematic approach for SCSCM aimed at enhancing the sustainability performance of construction projects. By adopting a structured framework encompassing assessment, planning, implementation, monitoring, and continuous improvement, construction stakeholders can effectively manage their supply chains in a sustainable manner. Through strategic collaboration, performance measurement, and innovation, this systematic approach enables stakeholders to address key sustainability challenges and achieve tangible improvements in project outcomes, environmental impact, and stakeholder satisfaction.

With growing emphasis on sustainable development and responsible resource management, the adoption of a systematic approach for SCSCM offers construction stakeholders a pathway towards building a more sustainable future.

II. LITERATURE REVIEW

Sustainable construction supply chain management (SCSCM) has garnered significant attention in recent years as construction stakeholders seek to mitigate environmental impact, promote social responsibility, and enhance economic viability throughout the project lifecycle. This section reviews existing literature related to SCSCM, focusing on key themes, challenges, and strategies for achieving sustainability objectives within the construction supply chain. the literature highlights the importance of SCSCM in advancing sustainability goals within the construction industry. By addressing challenges, adopting collaborative approaches, leveraging technology, and implementing effective performance measurement systems, construction stakeholders can achieve greater sustainability outcomes throughout the supply chain.

III. OBJECTIVE

1. How can supply chain management support the sustainability in construction industry? And, what are the main elements to be considered to manage the construction supply chains, which will ensure the sustainable performance along the entire lifecycle of a building?
2. How does construction industry manage its supply chain? What are the existing practices adopted in managing the construction supply chain?
3. What is construction industry lacking in managing its supply chain? And how can construction supply chain management be improved towards the achievement of sustainability?

IV. RESEARCH GAP

Despite the growing interest in sustainable construction supply chain management (SCSCM), there remains a notable research gap in the identification and evaluation of effective strategies for implementing systematic approaches to SCSCM. While existing literature provides insights into the importance of sustainability principles and the challenges associated with SCSCM implementation, there is limited empirical research on the development and application of structured frameworks for managing construction supply chains in a sustainable manner.

Furthermore, empirical studies evaluating the effectiveness and applicability of systematic approaches for SCSCM are scarce. While theoretical discussions and case studies offer valuable insights, empirical research is essential for validating the efficacy of proposed frameworks in real-world construction projects. Research that examines the practical challenges, implementation barriers, and performance outcomes associated with systematic SCSCM approaches would contribute significantly to bridging this research gap and informing industry practices.

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the research gap lies in the development, validation, and application of structured frameworks for sustainable construction supply chain management. Empirical studies that evaluate the effectiveness of these frameworks, consider industry-specific challenges, and explore the role of technology in facilitating sustainability goals are needed to advance knowledge and practice in this area.

V. CONCLUSION

In conclusion, the adoption of a systematic approach for sustainable construction supply chain management (SCSCM) holds significant promise for advancing sustainability goals within the construction industry. By integrating environmental, social, and economic considerations into supply chain processes, construction stakeholders can mitigate environmental impact, promote social responsibility, and enhance economic viability throughout the project lifecycle.

Through the systematic approach outlined in this paper, construction stakeholders can effectively manage their supply chains in a sustainable manner. The structured framework encompassing assessment, planning, implementation, monitoring, and continuous improvement provides a roadmap for aligning sustainability objectives with strategic decision-making processes. By engaging stakeholders, setting clear goals, and implementing sustainable practices across the supply chain, construction projects can achieve greater efficiency, resilience, and stakeholder satisfaction.

Moreover, the systematic approach for SCSCM enables construction stakeholders to address key challenges and barriers hindering the adoption of sustainable practices. By fostering collaboration, transparency, and innovation, stakeholders can overcome fragmentation, logistical complexities, and regulatory constraints to drive tangible improvements in sustainability performance.

However, while the systematic approach offers a promising pathway towards sustainable construction supply chain management, its successful implementation requires concerted effort and commitment from all stakeholders involved. Collaboration among governments, industry players, researchers, and civil society organizations is essential for creating an enabling environment and supporting the adoption of sustainable practices across the construction sector.

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