ISSN (ELECTRONIC): 2945-3135

Nagabhushana S (2026). *Multidisciplinary Approaches to Logistics and Supply Chain Management in India: A Global Perspective*. *International Journal of Multidisciplinary Research & Reviews, 5(si2), 302-307.*

INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY RESEARCH & REVIEWS

journal homepage: www.ijmrr.online/index.php/home

MULTIDISCIPLINARY APPROACHES TO LOGISTICS AND SUPPLY CHAIN MANAGEMENT IN INDIA: A GLOBAL PERSPECTIVE

Dr. Nagabhushana S

Assistant Professor, IQAC Coordinator, Department of Commerce, Government First Grade College, Harohalli – 562112, Bengaluru South District, Karnataka, India.

How to Cite the Article: Nagabhushana S (2026). *Multidisciplinary Approaches to Logistics and Supply Chain Management in India: A Global Perspective*. *International Journal of Multidisciplinary Research & Reviews, 5(si2), 302-307.*

https://doi.org/10.56815/ijmrr.v5si2.2026.302-307

Keywords	***Abstract***
Logistics, Supply Chain Management, India, Multidisciplinary Approach, Porter Value Chain, Sustainability, Resilience	This study examines logistics and supply chain management (LSCM) through a multidisciplinary framework with specific reference to India in the contemporary global context. Using Michael E. Porter's value chain as the conceptual foundation, the paper integrates insights from operations management, information technology, finance, human resource management, environmental studies, and public policy. Empirical evidence from the DPIIT–NCAER national logistics cost assessment is employed to analyze sector-wise logistics burdens, modal cost structures, and global benchmarking. The findings indicate that while India has achieved a significant reduction in logistics costs to below eight percent of GDP, structural inefficiencies persist in modal mix and sector-specific logistics practices. The study contributes to commerce and management literature by offering an India-centric, empirically grounded, and globally relevant framework to guide policy formulation, managerial decision-making, and future research.

Nagabhushana S (2026). *Multidisciplinary Approaches to Logistics and Supply Chain Management in India: A Global Perspective*. *International Journal of Multidisciplinary Research & Reviews, 5(si2), 302-307.*

1. INTRODUCTION

Logistics and supply chain management has evolved into a strategic determinant of national competitiveness and inclusive economic development. In the post-pandemic global economy, supply chains are increasingly exposed to systemic disruptions arising from geopolitical tensions, climate risks, and market volatility. For emerging economies such as India, improving logistics efficiency is central to reducing transaction costs, enhancing export competitiveness, and integrating rural producers into formal markets. Recent policy initiatives, including the National Logistics Policy and PM Gati Shakti, signal a paradigm shift towards coordinated, technology-enabled logistics development. Within this context, a multidisciplinary approach to LSCM becomes both analytically necessary and strategically relevant.

2. REVIEW OF LITERATURE

Recent literature on supply chain management emphasizes resilience, digitalization, and sustainability as central themes in the post-COVID period. Ivanov (2021) conceptualizes supply chain viability as the capacity to survive and adapt under severe disruptions. Queiroz et al. (2022) demonstrate that digital technologies such as analytics, blockchain, and the Internet of Things significantly enhance supply chain resilience. Dubey et al. (2023) highlight the role of dynamic digital capabilities in mitigating disruption risks. Sarkis (2021) argues that sustainability considerations must be embedded within supply chain decision-making rather than treated as peripheral objectives. Indian policy-oriented studies underscore the importance of infrastructure development, modal integration, and digital public platforms in reducing logistics costs and improving supply chain performance.

3. OBJECTIVES OF THE STUDY

The objectives of the study are: (i) to examine logistics and supply chain management as a multidisciplinary domain; (ii) to analyze sector-wise and modal logistics cost patterns in India; (iii) to benchmark India's logistics performance against global standards; and (iv) to derive policy and managerial recommendations based on empirical evidence.

4. RESEARCH METHODOLOGY

The study adopts a qualitative and descriptive research design based on secondary data. Empirical inputs are drawn from the DPIIT–NCAER Assessment of Logistics Cost in India (FY 2023–24), supplemented by peer-reviewed international literature published between 2020 and 2025. The analysis focuses on sector-wise logistics cost shares, modal cost structures, and global benchmarks. No primary data or econometric modeling is employed, consistent with the conceptual-empirical nature of the study.

Conceptual Framework: Porter Value Chain Approach

Nagabhushana S (2026). *Multidisciplinary Approaches to Logistics and Supply Chain Management in India: A Global Perspective*. *International Journal of Multidisciplinary Research & Reviews, 5(si2), 302-307.*

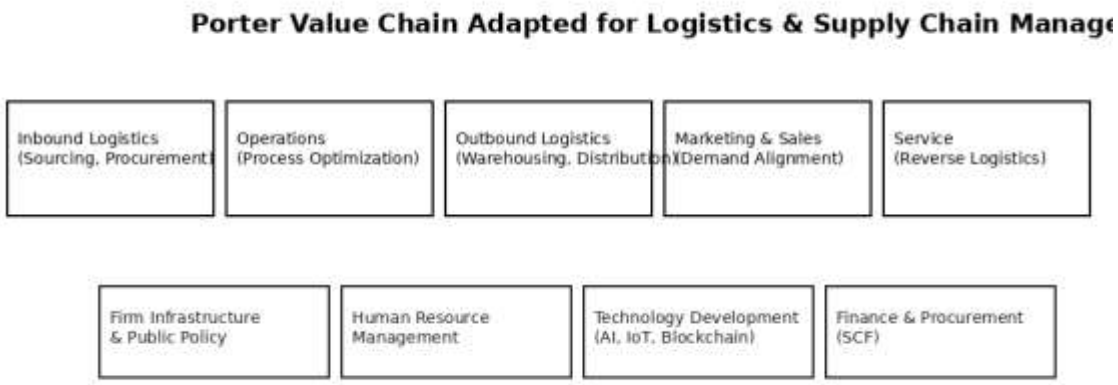

Figure 1. Porter Value Chain adapted for Logistics and Supply Chain Management.

This study adapts Michael E. Porter's value chain model to logistics and supply chain management. Primary activities correspond to inbound logistics, operations, outbound logistics, marketing, and service, while support activities include technology development, human resource management, finance, and public policy. The framework demonstrates how multidisciplinary inputs across the value chain contribute to efficiency, resilience, and sustainability outcomes in supply chains.

5. RESULTS AND DISCUSSION

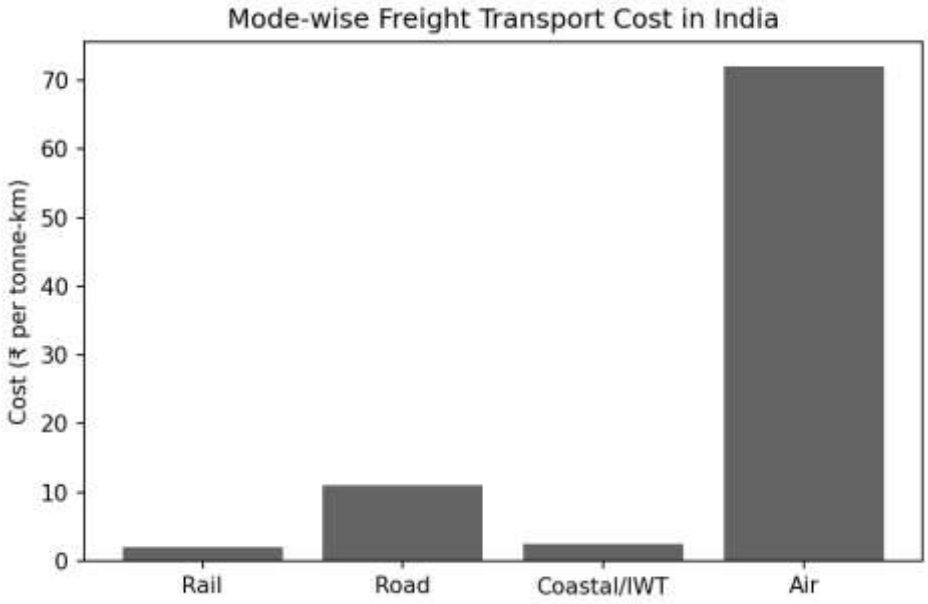

Figure 3. Mode-wise Freight Transport Cost in India (₹ per tonne-km). Source: DPIIT–NCAER.

Nagabhushana S (2026). *Multidisciplinary Approaches to Logistics and Supply Chain Management in India: A Global Perspective*. *International Journal of Multidisciplinary Research & Reviews, 5(si2), 302-307.*

Figure 2. Sector-wise Logistics Cost Burden in India (% of output). Source: DPIIT–NCAER trends.

The empirical findings discussed in this section are supported by visual evidence through the adapted Porter value chain framework (see Figure 1), the mode-wise freight transport cost comparison (see Figure 2), and the sector-wise logistics cost distribution (see Figure 3).

Empirical findings from the DPIIT–NCAER assessment provide a robust basis for analyzing India's logistics performance at national, sectoral, and modal levels.

Table-1: Sector-wise Logistics Cost Burden in India (Indicative)

Sector	Relative Logistics Cost Burden	Key Drivers
Manufacturing	High	Complex supply chains, multiple handling stages
Agriculture	Moderate to High	Fragmented markets, cold-chain gaps
Services	Moderate	Lower physical movement, digital delivery

Table 1 indicates that manufacturing and agriculture experience higher relative logistics cost burdens compared to services. Manufacturing logistics are affected by multi-tier supplier networks, while agriculture faces inefficiencies due to inadequate cold-chain and storage infrastructure. These sectoral differences underscore the need for customized logistics strategies.

Table - 2: Mode-wise Freight Transport Cost in India

Mode of Transport	Cost per tonne-km (₹)	Implications

Nagabhushana S (2026). *Multidisciplinary Approaches to Logistics and Supply Chain Management in India: A Global Perspective*. *International Journal of Multidisciplinary Research & Reviews, 5(si2), 302-307.*

Rail	1.96	Most cost-efficient for bulk freight
Road	11.03	Flexible but high-cost
Coastal / IWT	1.8 – 3.3	Cost-effective but underutilized
Air	~72.0	High cost, limited to time-sensitive goods

Table 2 highlights significant cost differentials across transport modes. Despite rail and waterways being substantially cheaper, road transport dominates India's freight movement due to network reach and last-mile connectivity. Correcting this modal imbalance is critical for reducing aggregate logistics costs and emissions.

6. RECOMMENDATIONS

Based on the empirical analysis, the study recommends: (i) accelerating multimodal logistics integration through rail and waterways; (ii) expanding digital supply chain technologies for visibility and coordination; (iii) strengthening sector-specific logistics infrastructure, particularly cold chains for agriculture; and (iv) supporting MSMEs through supply chain finance and shared logistics platforms.

7. CONCLUSION

The study demonstrates that India has made measurable progress in reducing logistics costs to near-global benchmarks. However, persistent sectoral and modal inefficiencies necessitate a multidisciplinary approach to logistics and supply chain management. By integrating Porter's value chain framework with empirical evidence, the paper provides a coherent analytical foundation for advancing efficient, resilient, and sustainable supply chains in India.

8. AUTHOR(S) CONTRIBUTION

The writers affirm that they have no connections to, or engagement with, any group or body that provides financial or non-financial assistance for the topics or resources covered in this manuscript.

9. CONFLICTS OF INTEREST

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

10. PLAGIARISM POLICY

All authors declare that any kind of violation of plagiarism, copyright and ethical matters will\take care by all authors. Journal and editors are not liable for aforesaid matters.

11. SOURCES OF FUNDING

The authors received no financial aid to support for the research.

Nagabhushana S (2026). *Multidisciplinary Approaches to Logistics and Supply Chain Management in India: A Global Perspective*. *International Journal of Multidisciplinary Research & Reviews, 5(si2), 302-307.*

REFERENCES

[1] DR. B.T. Ramappa and others (2013) "Cost Cultivation of arecanut Non-Traditional Region of Karnataka -An Analysis" International Journal of Pharmaceutical Science Invention ISSN: 2319 6718 & 2319 670X, Page No 25-31.

[2] Mr. Bangarappa Bankapur and others (2018) "Growth in Area for Arecanut Cultivation and Production in Shivamogga and Uttara Kannada Districts: A Comparative Study" Journal of Emerging Technologies and Innovative Research (JETIR), Volume 5, Issue 8, ISSN-2349-5162.

[3] N. Ashoka and others (2021) "Arecanut (Areca catechu L.) Plantation for Enhancing Farmer's Income: An Evidence from Karnataka State" Indian Journal of Extension Education Vol. 57, No. 4, ISSN 0537-1996 & 2454-552.

[4] Janmejay Kumar and others (2023) "Marketing pattern of areca nut in Tumkur district of Karnataka" The Pharma Innovation Journal 2023; 12(3): ISSN (E): 2277-7695 ISSN (P): 2349-8242, Page No 3198-3201.

[5] Fully revised estimates report on area, production and yield of principal crops in Karnataka 2022-23 directorate of economics and statistics Bengaluru.