© AUG 2026 | IRE Journals | Volume 10 Issue 2 | ISSN: 2456-8880
DOI: https://doi.org/10.64388/IREV10I2-1720295

A Study on Perpetual Mapping in Logistics Supply Chain Management in the Logistics Industry

S KISHORE KUMAR[1], DR. CHRISTOPHER RAJ D[2]
[1]*Student, Ballari Institute of Technology and Management, MBA Department Ballari*
[2]*Professor Ballari Institute of Technology and Management, MBA Department, BITM, Ballari*

Abstract- ***This study examines the role of perpetual mapping in enhancing logistics and supply chain management by providing real-time visibility, continuous inventory monitoring, and improved operational efficiency. With the increasing complexity of global supply chains and the rapid adoption of digital technologies, perpetual mapping has emerged as a valuable tool for reducing delays, improving decision-making, and strengthening supply chain resilience. The study aims to identify service gaps, evaluate resource allocation practices, analyze competitive benchmarking, examine customer-oriented logistics strategies, and assess risk and resilience planning in logistics organizations. The research adopts a descriptive research design using both primary and secondary data. Primary data were collected through a structured questionnaire from 200 respondents working in various logistics functions, while secondary data were gathered from books, journals, company reports, and websites. The collected data were analyzed using percentage analysis, tables, charts, and descriptive statistics.***

Key words- Perpetual Mapping, Logistics, Supply Chain Management (SCM), Logistics Industry, Real-Time Tracking, Supply Chain Visibility, Inventory Management

I. INTRODUCTION

The logistics and supply chain industry plays a vital role in ensuring the efficient movement of goods, services, and information from suppliers to end customers. With the rapid growth of globalization, e-commerce, and digital technologies, organizations are under increasing pressure to improve operational efficiency, reduce costs, and meet customer expectations for faster and more reliable deliveries. As supply chains become more complex, organizations require advanced systems that provide real-time visibility and accurate information to support effective decision-making.

Perpetual Mapping has emerged as a modern approach that continuously tracks and updates logistics and supply chain activities through technologies such as GPS, RFID, Internet of Things (IoT), Artificial Intelligence (AI), Warehouse Management Systems (WMS), Transportation Management Systems (TMS), and Enterprise Resource Planning (ERP). It enables organizations to monitor inventory, transportation, warehousing, and distribution processes in real time, helping identify service gaps, optimize resource utilization, minimize risks, and improve overall supply chain performance. This study examines the role of perpetual mapping in enhancing logistics supply chain management, its contribution to operational efficiency and customer satisfaction, and the opportunities and challenges associated with its implementation in the logistics industry.

Statement of the Problem

The logistics industry faces increasing challenges in managing complex supply chain operations while ensuring inventory accuracy, timely deliveries, operational efficiency, and customer satisfaction. Traditional logistics systems often lack real-time visibility, resulting in inventory mismatches, transportation delays, poor resource utilization, and disruptions in the supply chain. Although perpetual mapping provides continuous monitoring and real-time tracking of logistics activities, its successful implementation depends on factors such as technological infrastructure, data accuracy, employee competency, and organizational support. Therefore, there is a need to study how perpetual mapping influences logistics supply chain management, identify the challenges associated with its implementation, and evaluate its effectiveness in improving operational performance, reducing risks, and enhancing decision-making in the logistics industry.

Need of the Study

The increasing complexity of logistics and supply chain operations has created a need for advanced technologies that improve visibility, coordination, and operational efficiency. Traditional logistics systems often face challenges such as inventory inaccuracies, transportation delays, poor resource utilization, and limited real-time information. Perpetual mapping helps address these issues by providing continuous monitoring of inventory, warehouse activities, transportation, and distribution processes. It enables organizations to make timely decisions, improve supply chain visibility, reduce operational risks, and enhance customer satisfaction.

This study is needed to evaluate the effectiveness of perpetual mapping in logistics supply chain management and to understand its contribution to improving operational performance. It also helps identify the benefits, challenges, and factors influencing its successful implementation, enabling logistics organizations to adopt better strategies for achieving greater efficiency, resilience, and sustainable supply chain management.

Objectives of the Study

1. To identify service gaps in logistics supply chain management that require improvement to enhance operational efficiency.
2. To conduct competitive benchmarking by comparing logistics service performance and best practices with leading organizations in the industry.
3. To evaluate resource allocation practices and analyze how the effective utilization of resources contributes to supply chain performance.
4. To examine tailored segment strategies adopted by logistics companies to meet the needs of different customer and market segments.
5. To assess risk and resilience planning in logistics supply chain management and study its role in minimizing disruptions and ensuring business continuity.

Literature Review

Several researchers have emphasized the importance of supply chain visibility and digital technologies in improving logistics performance. Nandurkar (2025) highlighted that enhanced visibility increases transparency and accountability across supply chains, enabling organizations to identify operational challenges and improve coordination. Vikas Kumar (2025) examined horticultural supply chains and found that technology and efficient logistics play a crucial role in improving supply chain performance and supporting sustainable operations.

Muhammad Shujaat Mubarik (2023) explained that supply chain mapping significantly enhances supply chain visibility and resilience by identifying critical supply chain elements and improving decision-making. Jeetu Rana (2022) emphasized that Artificial Intelligence (AI) and Machine Learning (ML) support digital transformation by reducing supply chain costs, improving customer service, and creating intelligent supply chains. Similarly, Imen Zrelli (2024) reported that Internet of Things (IoT) applications have transformed logistics by improving operational efficiency, security, and sustainability. These studies collectively indicate that perpetual mapping, supported by advanced digital technologies, strengthens logistics operations through real-time visibility, better resource utilization, improved risk management, and enhanced overall supply chain performance.

Research Methodology

The study adopts a descriptive research design to examine the role of perpetual mapping in logistics supply chain management. The research aims to understand existing logistics practices, identify operational issues, and evaluate the effectiveness of perpetual mapping in improving supply chain performance.

The study is based on both primary and secondary data. Primary data were collected through a structured questionnaire administered to 200 respondents working in logistics organizations. Secondary data were gathered from books, research journals, published articles, company reports, websites, and other relevant sources related to logistics and supply chain management.

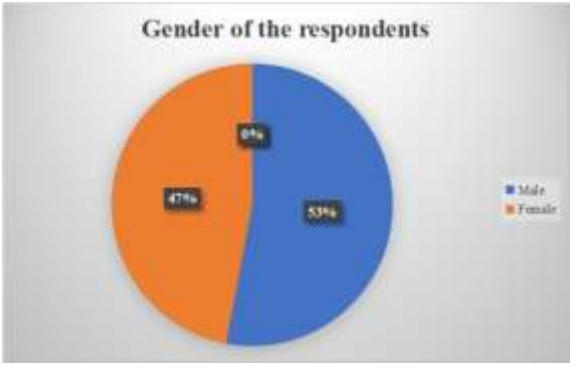
The study is confined to selected logistics organizations. A structured questionnaire was used as

© AUG 2026 | IRE Journals | Volume 10 Issue 2 | ISSN: 2456-8880
DOI: https://doi.org/10.64388/IREV10I2-1720295

the primary data collection instrument, covering demographic details and aspects such as inventory management, logistics operations, resource allocation, service quality, and risk management. The collected data were analyzed using percentage analysis, descriptive analysis, tables, and charts (bar charts and pie charts) to interpret the findings and draw meaningful conclusions.

1. Gender of the respondents?

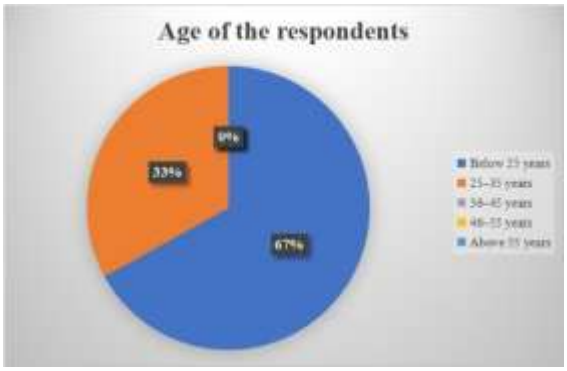
Particulars	No of respondents	Percentage
Male	106	53%
Female	94	47%
Total	200	100



Interpretation: The respondent base is fairly balanced, with 53% Male and 47% Female participants in the study on perpetual mapping in logistics supply chain management in the logistics industry.

2. Age of the respondents?

Particulars	No of respondents	Percentage
Below 25 years	134	67%
25–35 years	66	33%
36–45 years	00	00%
46–55 years	00	00%
Above 55 years	00	00%
Total	200	100%



Interpretation: The majority of respondents are young professionals, with 67% aged Below 25 years and 33% in the 25–35 years bracket in the study on perpetual mapping in logistics supply chain management. 0% responses were recorded for 36–45 years, 46–55 years, and Above 55 years, showing no participation from older age groups.

3. Educational Qualification of the respondents?

Particulars	No of respondents	Percentage
Diploma	00	00%
Undergraduate	90	45%
Postgraduate	90	45%
Professional Qualification	20	10%
Others	00	00%
Total	200	100%

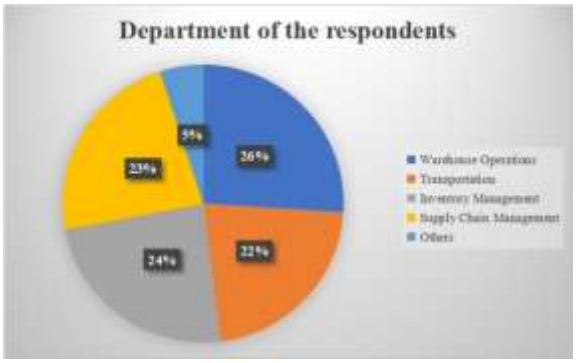
Interpretation: The respondents are well-educated, with 45% Undergraduate and 45% Postgraduate qualifications, forming the bulk of the sample in the study on perpetual mapping in logistics supply chain management. 10% hold Professional Qualification,

© AUG 2026 | IRE Journals | Volume 10 Issue 2 | ISSN: 2456-8880
DOI: https://doi.org/10.64388/IREV10I2-1720295

adding specialized expertise, while 0% fall under Diploma and Others categories.

4. Department of the respondents?

Particulars	No of respondents	Percentage
Warehouse Operations	52	26%
Transportation	44	22%
Inventory Management	48	24%
Supply Chain Management	46	23%
Others	10	05%
Total	200	100%



Interpretation: Respondents are spread across core logistics functions, with 26% from Warehouse Operations, 24% from Inventory Management, 23% from Supply Chain Management, and 22% from Transportation. 5% fall under Others, indicating a small share from allied or support departments.

Data Analysis and Interpretation

The data collected from 200 respondents were analyzed using percentage analysis, descriptive statistics, tables, and graphical representations. The analysis revealed that 53% of the respondents were male and 47% were female, indicating balanced participation. Most respondents (67%) were below 25 years of age, while 45% were undergraduates and 45% were postgraduates. The majority worked in warehouse operations, inventory management, transportation, and supply chain management, with 70% having less than one year of work experience.

The findings showed that 75% of the organizations use perpetual mapping in logistics and supply chain operations. Around 70% of respondents considered perpetual mapping effective in identifying ser…

Findings

1. The study found that 75% of the organizations use perpetual mapping in their logistics and supply chain operations.
2. 70% of the respondents believed that perpetual mapping is effective in identifying service gaps and improving operational efficiency.
3. Inventory Management (30%) was identified as the area requiring the greatest improvement, followed by Warehouse Operations (23%) and Transportation (20%).
4. 75% of the respondents stated that their organizations regularly benchmark logistics performance against competitors, with Delivery Speed (42%) being the most important performance indicator.
5. 68% of the respondents agreed that resources are effectively allocated, while Human Resources (52%) were identified as the area requiring better allocat…

CONCLUSION

The study concludes that Perpetual Mapping plays a significant role in improving logistics and supply chain management by providing real-time visibility, enhancing inventory accuracy, and supporting effective decision-making. The findings indicate that organizations using perpetual mapping experience better operational efficiency, improved resource utilization, stronger risk management, and higher customer satisfaction. It also helps identify service gaps, optimize logistics operations, and reduce supply chain disruptions through continuous monitoring and timely information.

The study further reveals that the successful implementation of perpetual mapping depends on technological infrastructure, employee competence, and organizational support. W…

REFERENCES

[1] Nandurkar. (2025). Peeling the Layers of Visibility Regimes: Adopting a Critical-Communicative Lens to Examine Onion Supply Chain in India.

[2] Vikas Kumar. (2025). Do Supply Chains Work for Farmers? A Perception-Based Analysis of Horticultural Logistics and Price Discovery.

[3] Arshad Hussain. (2023). Supply Chain Mapping for Supply Chain Visualisation: Muga Silk Industry in Assam.

[4] C. Muralidharan. (2021). Perceptual Mapping Using Principal Component Analysis in a Public Sector Passenger Bus Transport Company.

[5] Arnold Maltz. (2021). How Managers Make Sourcing Decisions About Low-Cost Regions: Insights from Perceptual Mapping.

[6] Muhammad Shujaat

[7] Mubarik. (2023). Supply Chain Mapping for Improving "Visilience": A Hybrid Multi-Criteria Decision-Making Methodology.

[8] Srichandan Sahu. (2021). The Thematic Landscape of Literature on Supply Chain Management in India: A Systematic Literature Review.

[9] Imen Zrelli. (2024). A Bibliometric Analysis of IoT Applications in Logistics and Supply Chain Management.

[10] Rohit Sharma. (2022). The Role of Artificial Intelligence in Supply Chain Management: Mapping the Territory.

[11] Jeetu Rana. (2022). Mapping the Role and Impact of Artificial Intelligence and Machine Learning Applications in Supply Chain Digital Transformation: A Bibliometric Analysis.

[12] [12:54 pm, 31/07/2026] الطاف : Bibliography

[13] Books on Logistics and Supply Chain Management.

[14] Research papers published in national and international journals.

Articles from Google Scholar.

[15] Shodhganga Research Repository.

ResearchGate publications.

[16] Company reports and industry publications related to logistics and supply chain management.

[17] Government reports and logistics policy documents.

[18] Internet sources related to Perpetual Mapping, Artificial Intelligence (AI), Internet of Things (IoT), RFID, GPS, and Supply Chain Management.

[19] Previous books, project reports, and academic records.

[20] Official websites and online resources related to logistics and supply chain management