

**ANALYSIS OF LOGISTICS CHALLENGES IN THE RAPID GROWTH OF E-COMMERCE****Dr. V. Saranya,**Associate Professor, Department of International Business,  
Dr. N.G.P Art and Science College, [saranya.v@drngpasc.ac.in](mailto:saranya.v@drngpasc.ac.in), 9842163099**Dharshini M. K,**Student, II<sup>nd</sup> M. Com International Business, Department of commerce International Business,  
Dr. N.G.P Art and Science College [dharshinimano74@gmail.com](mailto:dharshinimano74@gmail.com). 7868055769**Bhuvaneshwari.M**Student, 1<sup>st</sup> M.com International Business, Department of commerce International Business  
Chikkanna government art and science college [mbhuvaneshwaribhuvana30@gmail.com](mailto:mbhuvaneshwaribhuvana30@gmail.com) 7358899829**ABSTRACT:**

This study analysis the logistics challenges arising from the rapid growth of e-commerce. The expansion of online shopping has increased pressure on supply chain and delivery systems. Issues such as transportation delays, rising operational costs, and last-mile delivery inefficiencies have become major concerns. The research identifies key logistics barriers affecting service quality and business performance. It also examines the impact of these challenges on customer satisfaction, delivery speed, and profitability. The study highlights the role of technology in improving tracking, automation, and inventory control. Efficient supply chain planning and demand forecasting are emphasized as essential strategies. The research adopts a descriptive and analytical approach to evaluate these factors. The finding provides practical suggestions to enhance logistics efficiency and support sustainable e-commerce growth.

**INTRODUCTION:**

Logistics supply chain challenges involve complex disruption, rising costs, and evolving demand that hinder the smooth flow of goods, from raw material sourcing to final delivery, creating issues like lack of visibility, port congestion, labour shortages, and adapting to new tech. These obstacles, often amplified by global event require business to build resilience through digital transformation, strategic partnership, and agile processes to meet customer expectations for speed quality and sustainability. Forcing companies to seek resilience through technology, better planning, and agility to navigate volatility and maintain efficiency.

Logistics and supply chain challenges involve disruption, rising costs, visibility gaps, and complexity from global events, technology shifts, and customer demands, impacting everything from sourcing to delivery and requiring agile, tech-driven solution for resilience, efficiency, and adapting to factors like geopolitical tensions, extreme weather, and labour shortages to maintain smooth operations and meet expectations.

**OBJECTIVE:**

- To identify the major challenges forced in logistics and supply chain management.
- To analysis the impact of these challenges on business performance including customer satisfaction delivery speed and profitability.
- To understanding the role of technology in solving logistics issues like tracking automation and inventory control.
- To examine the importance of efficient supply chain planning including forecasting demand managing inventory and reducing waste.

**REVIEW OF LITERATURE:**

**Goncalves, Vanessa S.M Magalhaes (2024)** examines barriers to sustainable supply chain management in small and medium-sized enterprise. The study identified 80 barriers across nine categories, with 55 prioritized by SME experts using the best-worst method. From the top 15 key barriers, 24 improved strategies were developed based on literature and expert input. These strategies aim to help SMEs enhance social, environmental, and economic sustainability performance.

**Federico Solari, Eleonora Battini, and Giovanni Romagnoli (2024)** discuss sustainable logistics and supply chain management in the post-COVID-19 era. The special issues highlight new challenges and emerging trends caused by the pandemic and the 2022 global energy crisis. It explains that supply chain management coordinates operation to improve efficiency and reduce costs. Logistics focuses on planning and controlling the flow of goods, including transportation, inventory, and warehousing.

**Jeremie Katembo (2024)** review current supply chain challenges and how they are taught in universities and professional settings. Using a systematic literature review of 118 articles, the study identifies key issues such as supplier selection, quality management, supply chain networks, and sustainability. It highlights the importance of teaching methods that reflect real-world supply chain complexities. The study recommends using simulation games to cover concepts like the bullwhip effect, collaboration, lean system, supply chain 4.0, and humanitarian logistics.

#### METHODOLOGY:

This study follows a descriptive and analytical research design to examine the logistics challenges, arising from the rapid growth of e-commerce.

It focuses on identifying key factors such as transportation, warehousing, inventory management, last-mile delivery and technology adoption that influence logistics performance. The study collects data from e-commerce businesses, logistics service providers, and SMEs through structure questionnaires and interviews.

The analysis aims to evaluate the impact of these logistics' factors on cost efficiency, service quality, and overall supply chain performance.

Various statistical tools are employed to analyze the collected data. Percentage analysis, Anova, Chi-square test and ranking analysis.

#### 1. SIMPLE PERCENTAGE

S No	PARTICULARS	FREQUENCY	PERCENT
1	Male	9	20.0
2	Female	36	80.0
	<b>Total</b>	<b>45</b>	<b>100.0</b>

#### INTERPRETATION

Out of 45 respondents, 36 (80%) are female and 9 (20%) are male. This shows the sample is mainly female. Therefore, the results are likely to reflect women's views more than men's.

S NO	PARTICULARS	FREQUENCY	PERCENT
1	Below 25 years	40	88.9
2	25-34 years	1	2.2
3	45-54 years	4	8.9
	<b>Total</b>	<b>45</b>	<b>100</b>

#### INTERPRETATION

Most respondents (88.9%) are below 25 years, showing the sample is mainly young people. Only 2.2% are aged 25–34, and 8.9% are 45–54 years. This indicates very low representation from older age groups.

S NO	PARTICULARS	FREQUENCY	PERCENT
1	Undergraduate	24	53.3
2	Postgraduate	19	42.2
3	Professional degree	2	4.4
	<b>Total</b>	<b>45</b>	<b>100.0</b>

#### INTREPRETATION

The majority of respondents are undergraduates (53.3%), followed by postgraduates (44.4%). Only a small percentage (2.2%) have a professional degree.

#### 2. ANOVA

**2.1 LOCATION OF THE ORGANISATION AND TRANSPORTATION DELAYS**

H0: There is no significant difference between Location of the organization and Transportation delays

H1: There is significant difference between Location of the organization and Transportation delays

	<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
<b>Between Groups</b>	3.123	2	1.562	1.507	.233
<b>Within Groups</b>	43.521	42	1.036		
<b>Total</b>	46.644	44			

**INTERPRETATION**

The ANOVA test shows a significance value of 0.233, which is greater than 0.05. Therefore, there is no significant difference between the location of the organization and transportation delays. Hence, the null hypothesis (H0) is accepted and the alternative hypothesis (H1) is rejected.

**2.2 SIZE OF THE ORGANISATION AND LACK OF COORDINATION**

H0: There is no significant difference between Size of the organization and Lack of coordination

H1: There is significant difference between Size of the organization and Lack of coordination

	<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
<b>Between Groups</b>	.735	2	.367	1.054	.358
<b>Within Groups</b>	14.640	42	.349		
<b>Total</b>	15.375	44			

**INTERPRETATION**

The ANOVA test shows a significance value of 0.358, which is greater than 0.05. This means there is no significant difference between the size of the organization and lack of coordination. Therefore, the null hypothesis (H0) is accepted and the alternative hypothesis (H1) is rejected.

**RANK ANALYSIS**

<b>S NO</b>	<b>PARTICULARS</b>	<b>MEAN RANK</b>	<b>RANK</b>
<b>1</b>	Demand forecasting	1.32	5
<b>2</b>	Inventory Management	2.43	4
<b>3</b>	Transportation planning	3.47	2
<b>4</b>	supplier coordination	4.40	1
<b>S5</b>	Better inventory control	3.38	3

**INTERPRETATION**

The mean rank shows that supplier coordination (4.40) is the most important factor, followed by transportation planning (3.47) and better inventory control (3.38). Inventory management (2.43) ranks next, while demand forecasting (1.32) has the lowest rank. This indicates that supplier coordination is considered the top priority among the factors.

**FINDINGS**

- The majority of respondents (80%) are female and 88.9% are below 25 years, indicating that the study mainly reflects the views of young female participants.
- The study identifies transportation delays, rising operational costs, and lack of coordination as major logistics challenges affecting e-commerce growth.
- ANOVA results show no significant relationship between:
  - Location of the organization and transportation delays (Sig = 0.233 > 0.05).
  - Size of the organization and lack of coordination (Sig = 0.358 > 0.05).
- Rank analysis reveals that supplier coordination (Mean Rank = 4.40) is considered the most important factor in improving logistics performance.

- Transportation planning and better inventory control are also identified as key contributors to logistics efficiency.
- Demand forecasting received the lowest rank, indicating it is currently given less importance compared to coordination and transportation planning.
- Logistics challenges directly impact customer satisfaction, delivery speed, and profitability of e-commerce businesses.

**SUGGESTIONS**

- E-commerce companies should strengthen supplier coordination through digital platforms and real-time communication systems.
- Organizations should adopt advanced technologies such as:
  - GPS tracking systems
  - Warehouse automation
  - AI-based inventory management
- Businesses must improve transportation planning by optimizing delivery routes and using efficient last-mile delivery strategies.
- Companies should invest in proper inventory control systems to reduce stockouts and excess inventory.
- Government support is necessary to improve infrastructure such as roads, transportation networks, and warehousing facilities.
- Firms should implement effective demand forecasting techniques using data analytics to reduce uncertainty and improve planning accuracy.
- Continuous training programs should be conducted for logistics staff to improve coordination and operational efficiency.
- If you want, Zia, I can also format this in a journal publication style (with headings like Managerial Implications and Policy Recommendations) to make it more professional for submission.

**CONCLUSION**

This study highlights that the rapid growth of e-commerce has significantly increased pressure on logistics systems, creating challenges such as transportation delays, rising fuel and operational costs, poor infrastructure, lack of coordination among supply chain partners, and technology integration issues. These challenges directly affect delivery speed, cost efficiency, customer satisfaction, and overall supply chain performance. The analysis shows that improving infrastructure, adopting advanced technologies, enhancing coordination, and optimizing logistics operations are essential to manage the growing demand effectively. Therefore, strategic planning and continuous innovation in logistics management are crucial to sustain the long-term success of the expanding e-commerce sector.

**REFERENCE**

- 1) **Goncalves, Vanessa S.M Magalhaes (2024)** Overcoming Barriers to Sustainable Supply Chain Management in Small and Medium-Sized Enterprises: A Multi-Criteria Decision-Making Approach MDPI 16,506
- 2) **Federico Solari, Eleonora Battini, and Giovanni Romagnoli (2024)** Sustainable Logistics and Supply Chain Management in the
- 3) Post-COVID-19 Era: Future Challenges and Challenging Futures MDPI 17, 1772
- 4) **Abirami Raja Santhi, Padmakumar Muthuswamy (2022)** Pandemic ,War, Natural Calamities, and Sustainability: Industry 4.0 Technologies to Overcome Traditional and Contemporary supply chain challenges MDPI 10.3390
- 5) **SATYA SHAH, VIVEK PATIL (2024)** Exploring the Challenges and Opportunities for Globalisation of Logistics and Supply Chains
- 6) WSEAS TRANSACTIONS on BUSINESS and ECONOMICS 2224-2899
- 7) **David Olanrewaju Olutimehin (2024)** THE ROLE OF TECHNOLOGY IN SUPPLY CHAIN RISK MANAGEMENT: INNOVATIONS AND CHALLENGES IN LOGISTICS International Journal of Management & Entrepreneurship research 2664-3596