

Impact of E-Commerce on Supply Chain Management in Bellary, Karnataka State, India

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Abstract- The rapid expansion of e-commerce has transformed supply chain management by enabling businesses to improve efficiency, reduce operational costs, and enhance customer satisfaction. This study examines the impact of e-commerce on supply chain management in Bellary, Karnataka, with particular emphasis on its influence on procurement, inventory management, warehousing, transportation, order fulfillment, and distribution. The study aims to assess how businesses in Bellary have adopted e-commerce technologies and the resulting changes in supply chain performance and competitiveness. The research is based on both primary and secondary data. Primary data were collected through structured questionnaires administered to business owners, managers, and consumers, while secondary data were obtained from books, journals, research articles, government reports, and online sources. Descriptive research methods and appropriate statistical tools were used to analyze the collected data and identify trends in e-commerce adoption and supply chain efficiency. The findings indicate that e-commerce has significantly improved supply chain operations by facilitating real-time inventory management, faster order processing, improved coordination among suppliers, and enhanced customer service. Businesses adopting digital platforms have experienced greater operational transparency, wider market reach, and increased responsiveness to customer demand. However, the study also identifies challenges such as inadequate logistics infrastructure, high transportation costs, limited digital literacy among small businesses, cybersecurity concerns, and the need for continuous technological investment. The study concludes that e-commerce has had a positive impact on supply chain management in Bellary by increasing efficiency, flexibility, and overall business

performance. To maximize these benefits, businesses should invest in advanced digital technologies, strengthen logistics networks, improve employee training, and enhance collaboration with supply chain partners. These measures will contribute to sustainable growth and improve the competitiveness of enterprises operating in the region.

Keywords: E-Commerce, Last-Mile Delivery, Bellary, Procurement, Online Retail, Order Fulfillment, Digital Transformation, Sustainable Supply Chain, Digital Commerce, Information Technology

I. INTRODUCTION

The India e-commerce market has transformed from a nascent digital retail segment to a cornerstone of the national economy, reshaping consumer behaviour and business operations across industries. The ecosystem encompasses diverse business models including horizontal marketplaces, vertical specialty platforms, social commerce channels, and emerging quick commerce services delivering products within minutes. Amazon announced it will invest more than \$35 billion in India to expand its operations, enhance artificial intelligence capabilities, strengthen logistics infrastructure, support small business growth, and create jobs, building on nearly \$40 billion the company has already invested. Market expansion is extending beyond metropolitan centres into tier-II and tier-III cities, where rising internet connectivity and smartphone penetration are creating new consumer cohorts. The integration of advanced technologies including artificial intelligence, machine learning, and augmented reality is enhancing shopping experiences through personalized recommendations and virtual product trials.

Infrastructure investments in logistics, warehousing, and last-mile delivery networks continue strengthening the foundation for sustained market growth. The emergence and accelerated growth of quick commerce platforms offering delivery within minutes has fundamentally transformed consumer expectations in the Indian market. In 2025, India's quick commerce sector accounted for over two thirds of all e grocery orders, with companies like Blinkit, Swiggy Instamart, and others driving this shift in consumer buying behaviour and expanding beyond groceries into broader product categories. These services have expanded beyond groceries to encompass diverse product categories including personal care, electronics accessories, and household essentials. The model leverages strategically located dark stores and micro-fulfilment centres to enable ultra-fast delivery promises. Consumer adoption is driven by convenience-seeking urban professionals and households valuing time savings over traditional shopping experiences.

II. OBJECTIVES OF THE STUDY

1. The purpose of this study is to look at how E-commerce affects Supply Chain Management methods in Bellary.
2. To analyze the effect of E-commerce on warehousing and inventory management
3. To assess the role of technology in E-commerce driven supply chains
4. To identify the major challenges faced by businesses in adapting to E-commerce supply chains
5. To examine the benefits and opportunities created by E-commerce for local businesses

III. RESEARCH QUESTIONS

1. Age
2. Gender
3. Department of the respondents?
4. How has E-commerce changed your organization's overall supply chain process?
5. What is the impact of E-commerce on order processing and fulfilment speed
6. How has E-commerce affected coordination between departments?

7. How has E-commerce affected customer satisfaction in terms of delivery?
8. How well does your current inventory system handle frequent small E-commerce orders?

IV. SCOPE OF THE STUDY

This research will help understand how E-commerce is reshaping procurement, warehousing, logistics, and customer service in Bellary, and provide practical suggestions for businesses to progress their supply chain performance. The scope of the study defines the boundaries and coverage of the research. This research is designed to understand how E-commerce has influenced supply chain operations in Bellary.

The study will focus on the following key areas of Supply Chain Management:

1. Procurement and Sourcing - Supplier selection, online ordering, vendor management
2. Warehousing and Inventory Management - Storage, stock control, warehouse technology
3. Logistics and Transportation - Delivery speed, last-mile delivery, distribution network
4. Technology Adoption - Use of ERP, WMS, order tracking, and data analytics

V. LIMITATIONS OF THE STUDY

1. Time constraints
2. All respondents are not ready to participate in the research
3. Sample size is limited
4. This research is limited to Ballari city only

VI. LITERATURE REVIEW

1. Ms. Debosree Ghosh (2023) E-commerce applications have emerged as a transformative force in the business landscape, disrupting global supply chain management practices. E-commerce's fast expansion has transformed the global commercial landscape. This article investigates the influence of e-commerce apps on industrial supply chain management in the West Bengal area. The research looks at the drivers, difficulties, and possibilities for integrating e-

commerce into the industrial supply chain, with an emphasis on procurement, inventory management, logistics, and customer service. This study, which analyses primary data from enterprises in the West Bengal area, gives significant insights into the transformational impacts of e-commerce on the industrial supply chain and makes suggestions for effective adoption.

2. Hao Sun (2022) The rise of the Internet influences customer wants and habits, hence affecting market patterns. In the changing economic climate, e-commerce firms face increased rivalry, which means that integrating e-commerce enterprises into their supply chains has become critical to gaining a competitive edge in the future. This paper primarily describes the three most common modes of e-commerce supply chain, analyzes their operation modes, and uses various e-commerce companies as examples to analyze the operation process of these three modes of e-commerce supply chain, identifying existing problems, summarizing them, and making recommendations.
3. SHREYA TIWARI.I (2023) Businesses must continually incorporate into a network of organizations in order to remain competitive. Any business that ignores this problem will definitely fall behind its competition. This paper concerns itself with the interplay between the environment and supply chain management (SCM). This paper addresses the impact of e-commerce on the supply chain and the future potential implications in answering several questions. The essay started to observe the numerous processes in the SCM process such as the movement of information, commodities and money.
4. Rohan Vijay Sawant (2026) This study investigates the transformational effects of e-commerce in SCM distribution with special reference to businesses in Chennai, India. The study explores the effects of e-commerce technologies on procurement, selling procedures, replenishment cycles and operational expenses with the help of primary data from 30 retailers and secondary literature. The hypothesis testing using Chi-Square analysis showed that e-commerce significantly reduces the supply chain costs and enhances the speed of goods flow.
5. Lavi Pawar (2023) This study project, named "Impact of Ecommerce in Supply Chain Management," seeks to discover more about the benefits of e-commerce in this area. The goal of this study was to understand more about how e-commerce affects the supply chain. The article also provides a comprehensive examination of how New Bel Road businesses have benefited from the development of internet shopping. The report contains a well-stated issue statement that acts as the foundation for the investigation.
6. Gulash Sisman (2025) In current market conditions, managing the supply chain from a customer-oriented approach a vital component of an organization's competitive practices. With this approach, reacting quickly and providing high-quality logistics services that satisfy the end customer. This paper aims to investigate how e-commerce supply chain agility and operational logistics service quality affect end-customer repurchase intention in a business-to-consumer (B2C) context.
7. Shivansh Agarwal (2024) The era that has arrived in which one can shop without having to go out of home and has reached the Indian retail industry too. The proportion of people shopping online has in the last decades risen steeply in the country due to enhanced internet connection, popularity of smart phones and enhanced earners or middle class. Amazon, the world's largest online shopping site, has intensified on the internet in India at its peak to take home this digital revolution. Following its entry Amazon escalated the development of the that connects all parts of this country. But then again, we are thus the festive seasons; Diwali, Eid, and Christmas present certain complications to e-commerce industries. These two are defined by a steep rise in the consumers' outlay as religious and culture encourages shopping during festivals in India.
8. Kasturi Kumari (2025) E-commerce has played a significant role in shaping SCM practices in India. With increased Internet penetration and digital transformation, e-commerce has emerged as a critical driver of supply chain growth and efficiency. The combination of internet platforms

and conventional retail channels has transformed how firms function in today's dynamic market climate.

9. Jigar Vyas (2025) The e-commerce sector's rapid expansion has made supply chain management a critical factor for success. This abstract explores the future trends shaping e-commerce supply chains, emphasizing the need for agility, resilience, and sustainability. The convergence of technology, evolving consumer expectations, and global disruptions necessitates a comprehensive understanding of emerging strategies.
10. Sushil Shaw (2025) This research article provides a thorough examination of the transformative impact of e-commerce on logistics and supply chain management. Traditional supply chain models are undergoing significant changes in a rapidly evolving digital landscape, prompting an exploration of current trends that may shape the industry's future.

VII. RESEARCH METHODOLOGY:

The methodology comprises of both primary and secondary research. The study has been carried out in Ballari city.

Research Design

Descriptive Research Design is used for the study

VIII. DATA COLLECTION

1. Primary data

Structured questionnaires were used to collect information directly from respondents.

2. Secondary data

Data collected from books, journals, research papers, firm reports, websites, and e-commerce platforms.

3. Target audience

The population includes all retail businesses, distributors, manufacturers, and logistics companies in Bellary city that are engaged with E-commerce in their supply chain.

Sample Size: 200 respondents

Sampling Technique: Convenience Sampling

Tools for Data Collection

Google Forms

Statistical tools used for study:

- MS Excel
- MS Word
- Tables
- Percentage Analysis

IX. FINDINGS

54%, belong to the age group of 18-25 years, followed by 36% in the 26-35 years group. Only 6% are in the 36-45 years category and 4% are above 45 years.

The data reveals that 59% of the respondents are female, while 41% are male.

30% of respondents are from Sales/Marketing, followed by 26% from Logistics and 22% from Procurement. Warehousing and Administration have 13% and 9% respondents respectively.

52% of respondents have 1-3 years of experience, and 43% have less than 1 year of experience in the business. Only 5% of respondents have 4-7 years of experience, and none have above 7 years.

30% of respondents are from Retail, followed by 26% from Logistics and 22% from E-commerce companies. Wholesale/Distributor and Manufacturing have 17% and 5% respondents respectively.

52% of respondents feel E-commerce has "Highly Improved" their organization's supply chain process, while 35% said it has "Somewhat Improved". 13% reported "No Change", and none reported disruption. 52% of respondents feel E-commerce has made order processing and fulfilment "Much Faster", while 34% said it is "Slightly Faster". 14% reported no change in speed, and none reported slower processing.

52% of respondents feel E-commerce has "Improved" inter-department coordination, and 43% said it has

"Greatly Improved". Only 5% reported "No Impact", while no one reported worsened coordination. 48% of respondents are "Satisfied" and 43% are "Highly Satisfied" with customer delivery performance post E-commerce adoption. 9% of respondents remain "Neutral", while no one reported dissatisfaction.

48% of respondents feel E-commerce has Reduced Costs Slightly and 39% said it Reduced Costs Significantly. 9% reported No Change and 4% said costs Increased Slightly.

65% of respondents made Minor Changes to warehouse layout due to E-commerce, while 30% did a Major Redesign. 5% reported No Change, and no one selected Planning to Change or Don't Know. 54% of respondents reported inventory holding costs Reduced by 10-20%, and 18% saw a reduction of >20%. 19% reported No Change, while 9% said costs Increased by 10-20% or >20%.

48% of respondents feel their inventory system handles frequent small E-commerce orders Very Well, and 39% said Well. 13% rated it as Average, while no one reported Poor or Very Poor.

48% of respondents use a Barcode/Scanner system and 35% use a Real-time Digital System for inventory tracking. 13% still rely on Manual Register and 4% use an ERP System.

57% of respondents replenish warehouse stock Weekly, 26% do it Daily, and 17% do it Bi-Weekly after adopting E-commerce. No respondents reported Monthly or As and when required replenishment.

44% of respondents use WMS and 26% use ERP in their supply chain. 17% use Order Tracking Software and 13% use Data Analytics.

52% of respondents consider data analytics Very Important and 30% find it Extremely Important for demand forecasting in E-commerce. 13% rated it Moderately Important and 5% Slightly Important.

82% of respondents provide "Yes, Real-time Tracking" to customers, and 18% offer "Yes, Basic

Tracking". No respondents reported "No Tracking Facility".

56% of respondents mainly use Digital Payment + E-invoice for E-commerce orders, followed by 26% using Digital Payment + Paper Invoice. 18% use COD + E-invoice, while no one uses COD + Paper Invoice. 61% of respondents reported Much Better Accuracy and 35% saw Slightly Better accuracy in demand forecasting due to E-commerce. 4% reported No Change, while no one selected Worse Accuracy.

X. CONCLUSIONS

The study concludes that E-commerce has significantly transformed traditional supply chain practices in Bellary. The shift in customer expectations toward faster delivery, wider product variety, real-time tracking, and hassle-free returns has compelled businesses to re-engineer their procurement, warehousing, inventory, logistics, and customer service functions.

E-commerce adoption has largely resulted in improved order processing speed, better inter-department coordination, and enhanced demand forecasting accuracy. It has also led to cost reductions and more efficient inventory management through frequent replenishment and technology adoption like WMS, barcode systems, and real-time tracking.

Many businesses are still relying on manual systems and have made only minor changes to warehouse infrastructure. Limited use of advanced technologies such as ERP and data analytics, along with a workforce that has relatively less experience in E-commerce operations, presents both a challenge and an opportunity. To remain competitive, companies need to invest in digital technologies, upgrade warehouse layouts, strengthen workforce skills, and standardize digital payments and invoicing. With these improvements, businesses can better leverage E-commerce opportunities while addressing the associated operational challenges.

BIBLIOGRAPHY

- [1] Hao Sun (2022) A Literature Review of E-commerce Supply Chain Management

- DOI:10.54691/bcpbm.v20i.1023 License CC BY 4.0.
- [2] SHREYA TIWARI (2023) MPACT OF E-COMMERCE ON SUPPLY CHAIN MANAGEMENT Volume 11, Issue 4 April 2023 | ISSN: 2320-2882
- [3] Rohan Vijay Sawant (2026) IMPACT OF E-COMMERCE ON SUPPLY CHAIN MANAGEMENT DOI: <https://doi.org/10.55041/ijcope.v2i5.474> Volume 02, Issue 05 Published on: May 2026
- [4] Lavi Pawar (2023) IMPACT OF E-COMMERCE ON SUPPLY CHAIN MANAGEMEN Volume 10 Issue 5 May-2023 e-ISSN: 2349-5162
- [5] Gulash Sisman (2025) The impact of e-commerce supply chain agility and logistics service quality Volume 36, Issue 4 24 June 2025
- [6] Shivansh Agarwal (2024) Impact of E-Commerce Expansion on Amazon's Supply Chain Resilience in India During Festive Season e-ISSN:2278-487X, p-ISSN: 2319-7668. Volume 26, Issue 8. Ser. 12 (August. 2024), PP 38-50.
- [7] Kasturi Kumari (2025) The role of E-Commerce in modern supply chain management practices ISSN: 2455-1627 Received: 05-07-2025, Accepted: 04-08-2025, Published: 19-08-2025 Volume 11, Issue 8, 2025, Page No. 153-156
- [8] Jigar Vyas (2025) Future Trends of E-commerce Supply Chain in India. Volume 3, Issue 2, Mar-Apr-2025, PP: 223-231
- [9] Sushil Shaw (2025) A Comprehensive Analysis of E-Commerce Impacts on Logistic and Supply Chain Management Volume 13, Issue 2 February 2025 | ISSN: 2320-2882
- [10] Dr. Rakesh Patra (2023) Impact of E-Commerce on Supply Chain Management and Logistics Vol. 18, Issue No. 2, August-2023, ISSN 2249-4510
- [11] Dr. Neha Kumari (2024) Exploring the Impact of Supply Chain Management on Customer Satisfaction in Indian E- Commerce 2024, 9(4s) e-ISSN: 2468-4376.
- [12] Harsh Singh (2025) Impact of E-Commerce on Traditional Supply Chain Models Volume 03 Issue 6 (06 - 2025) 10/06/2025.
- [13] Somil Singh (2026) Research Paper Impact of E-Commerce on Traditional Supply Chain Vol 7, Issue 6, pp 921-926 June, 2026 ISSN 2582-7421