



Impact of E-Commerce on Supply Chain Management

Rohan Vijay Sawant

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Abstract

This research investigates the transformative impact of e-commerce on supply chain management (SCM) distribution, specifically focusing on business entities in Chennai, India. By analyzing primary data from 30 stores and secondary literature, the study explores how e-commerce technologies influence procurement, selling processes, replenishment cycles, and operational costs. Hypothesis testing using Chi-Square analysis reveals that e-commerce significantly reduces supply chain costs and increases the speed of goods flow. The study concludes that e-commerce is a critical driver for enhancing efficiency, responsiveness, and the implementation of Just-In-Time (JIT) systems in modern business environments.

Chapter 1: Introduction

The internet has revolutionized global communication and business, offering customers significant liberty to improve their lifestyles through technology. In India, internet penetration has grown rapidly, reaching over 35.4 crore users and transforming conventional retail shopping into effortless online purchasing via e-commerce platforms. E-commerce is defined as the process of buying, selling, or exchanging products and services via computer networks.

The primary challenge addressed in this research is supply chain distribution, including reverse logistics. Traditional SCM in India has evolved into strategic SCM due to e-commerce, requiring companies to implement robust strategies to sustain competitiveness in a market accounting for 17.5% of the global population.

E-Commerce Classifications

- **B2B (Business to Business):** Transactions between organizations (e.g., Dell selling to other companies).
- **B2C (Business to Consumer):** Businesses selling to individual shoppers (e.g., Amazon).
- **B2B2C (Business to Business to Consumer):** Business providing products to a client business that maintains its own customers (e.g., Intel selling to HP).
- **C2C (Consumer to Consumer):** Consumers selling directly to others (e.g., eBay or OLX).



Chapter 2: Literature Review

Literature suggests that the web dissolves traditional barriers to supply chain integration, such as high transaction costs and poor information availability. Studies by Johnson and Whang highlight the significant impact of the web on firm-customer interactions. Lee and Whang emphasize that e-business approaches enable reduced costs, increased flexibility, and faster response times. Furthermore, technologies like RFID are identified as tools to reduce inventory losses and improve process speed.

Chapter 3: Research Methodology

The study employs a quantitative research design focusing on stores within the Medavakkam area of Chennai. A convenience sampling technique was used with a sample size of 30 stores. Data was collected through a structured questionnaire (Primary Data) and supported by journals and research articles (Secondary Data).

Chapter 4: Data Analysis and Interpretation

4.1 Descriptive Analysis

- Procurement: 92% of respondents prefer online procurement.
- Selling: 76.67% still prefer selling through physical stores, while 13.33% prefer online sales.
- Replenishment: 37% report a very high replenishment cycle, while 40% report low replenishment costs when using e-commerce.
- Technology: 90% use online tracking systems, specifically Barcodes, for inventory management.
- Efficiency: 86% believe online tracking increases the speed of goods flow.

4.2 Hypothesis Testing (Chi-Square)

Two primary null hypotheses were tested at a 5% significance level ($\alpha = 0.05$):

1. E-Commerce is not beneficial for cost reduction (H0).
2. E-Commerce is not beneficial for increasing speed (H0).

For cost reduction, the calculated Chi-Square value (23.86) exceeded the tabulated value (7.82). For speed, the calculated value (15.59) also exceeded 7.82. Consequently, both null hypotheses were rejected, confirming that e-commerce significantly benefits cost reduction and speed in the supply chain.

Chapter 5: Findings, Suggestions, and Conclusion

5.1 Major Findings

- Online procurement is perceived as the most effective method for product flow management.
- E-commerce successfully facilitates the implementation of Just-In-Time (JIT) systems.
- Cost reduction following e-commerce implementation is typically between 30% and 60% for a majority of respondents.
- Serviceability and responsiveness are greatly improved through e-commerce integration.

5.2 Conclusion

The research concludes that e-commerce plays a pivotal role in modernizing supply chains in India. It effectively reduces operational costs, increases the velocity of goods flow, and enhances overall system responsiveness. While physical retail remains dominant for selling, the backend supply chain is increasingly reliant on e-commerce infrastructure to maintain competitive advantages and meet customer demands.