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Digital and Automated Supply Chains in Modern Business Economics

Ligi George

Assistant Professor, Sahridaya College of Advanced Studies (Autonomous) Affiliated to, University of Calicut, India

Abstract-- Innovation in supply chain and logistics has now emerged as a significant element in organizational success in the new competitive and dynamic business world. The growing globalization, accelerated technological progress, and changing customer demands have put a lot of pressure on the conventional supply chain mode effective..

Is to make them quicker, flexible and cost-Keywords– Supply Chain Innovation, Logistics Management, Digitalization, Automation and AI, Sustainability, Operational economic Efficiency

I. INTRODUCTION

Supply chain and logistics systems are an important issue in the modern business environment as they dictate the level of organizational competitiveness and success in the market.

The technological changes that have greatly transformed the logistics operations include Artificial Intelligence (AI), Internet of Things (IoT), automation, robotics, blockchain and high-level analytics. These technologies facilitate real-time visibility, predictive demand forecasting, efficient transportation routes, and efficient inventory management and help organizations to react proactively to market changes.

Other than the technological developments, sustainability and resilience are also related to supply chain and logistics innovation. The growing environmental issues and regulatory pressures have been stimulating organizations to implement green logistics, including transportation that is fuel efficient, efficient packaging and reverse logistics. Meanwhile, the recent global upheavals have emphasized the need to create robust supply chains that can overcome uncertainties and risks. Organisational performance can be improved through adoption of innovations and new logistics models that will facilitate better decisions, performance and thriving in the global business landscape that is dynamic and constantly changing.

II. NEED OF THE STUDY

The significance of this study is explained by the increased relevance of the supply chain and logistics innovation to address the needs of the current business environment.

High-speed globalization, rising customer demands of quick and dependable delivery, and constant interruptions in the supply chains have revealed the weaknesses of the conventional logistics system. Organizations are being pressured to save on costs and increase efficiency, transparency

III. OBJECTIVES

1. To review the importance of supply chain and logistics innovation towards enhanced operational efficiency and responsiveness.
2. To examine how modern technologies like Artificial Intelligence, automation, and data analytics can improve the performance of the supply chain.
3. To determine the role of innovative logistics practices in enhancing sustainability, resilience and competitive advantage in organizations.

IV. REVIEW OF LITERATURE

1. Internet of Things Adoption and Service Quality in Manufacturing and Logistics

Ahmed Saqib and Berg (2026) investigated how the adoption of the Internet of Things (IoT) would lead to service quality and digital success in manufacturing and logistics services. Digital Transformation and Organizational Growth in SME

Kobusingye, Xiao, and Ntizoyimana (2025) examined how digital transformation contributed to innovation, market expansion capabilities and organizational growth by small and medium-sized enterprises (SMEs) in East Africa, namely, Uganda and Tanzania. Based on Dynamic Capabilities Theory, the article analyzed how SMEs can use digital change to develop innovativeness and enter new markets in managing turbulence due to new technology. QR Codes as a digital innovation and business process automation tool:

The article by Rai, Chaudhuri, Chatterjee, Vrontis and Galati (2025) focused on the capabilities of digital innovation and automation of business processes, by using Quick Response (QR) codes, in determining consumer preferences in shopping extra virgin olive oil (EVOO) in the Italian market.



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The research was based on the Means-End Chain (MEC) theory that evaluated the relationship between product characteristics, consumer values, and consumer preferences to purchase. The conceptual framework which included product information and marketing communication as a sensory and non-sensory aspect of consumption was formed and tested empirically based on covariance using covariance-based structural equation modelling (CB-SEM). The results have shown that the adoption of QR codes plays a great role in influencing consumer purchasing behavior and that the usefulness of QR codes and customer loyalty serve as significant mediating variables. The paper also drew special attention to the importance of open product information and effective communication in the formation of consumer trust and buying behavior. The extension of MEC theory by the research shows the contributions of digital technologies used to run business processes and revolutionize the food products distribution, namely, QR codes. This paper will add to the literature by establishing empirical evidence regarding technology-based innovation in consumer markets specifically in the case of conventional food commodities and the increasing significance of digital technologies in enhancing customer interactions and transparency of operations.

V. METHODOLOGY

This paper will be structured into a methodology that is systematic and organized in investigating supply chain and logistics innovation with special focus on digital transformation, automation, and emerging technologies. The application of the methodology will be aimed at providing rigor, transparency, and replicability and synthesize the information found in the published scholarly literature.

Research Design

The study is based on a systematic literature review (SLR) design that allows conducting a clear and thorough synthesis of the current research on the topic of supply chain and logistics innovation. Such a design is suitable in describing patterns, theoretical underpinning, technological trends, and empirical results of two or more investigations. The peer-reviewed journal article analysis is done using a qualitative and descriptive method so that the understanding is deep and not a generalization based on statistics. The paper combines the ideas of operations management, digital transformation, innovation management, and logistics services in order to create a comprehensive view.

Search Strategy

An effective search strategy was created in order to find the available academic literature. Articles were retrieved in major scholarly databases including Scopus, Web of Science, ScienceDirect, Emerald Insight and Google Scholar. The keywords and search words have been adequately developed to reflect the area of the study, which includes the following terms: supply chain innovation, logistics innovation, digital transformation, IoT in logistics, automation in supply chain, business process management and service quality. The search results were narrowed down by the use of Boolean operator (AND, OR). The search complex was restricted by finding peer-reviewed journal articles published in 2015-2025 to make the findings relevant and ensure their currency.

Selection Criteria

Inclusion and exclusion criteria were developed in order to make sure that selected studies were relevant and of quality. The articles had to meet the following criteria to be included: (i) the article had to be dedicated to supply chain, logistics, business process innovation, (ii) the article had to discuss digital technologies, namely, IoT, automation, analytics, or QR codes, (iii) the article had to be empirical or conceptual, and (iv) the article had to be published in a reputable peer-reviewed journal. Articles were not classified as studies that were not journal articles, conference papers, editorials, and opinion pieces as well as those that were not clearly methodological. Articles that were not written in the English language as well as that which had no relevance to the context of operations and logistics were left out. This screening procedure was used to match the objectives of the research.

Data Extraction

Data was extracted through a standardized framework in order to have consistency in the studies. The important details each article brought out were the details of the authors, the year of publication, objectives of the research, theoretical framework, methodology, characteristics of the sample, critical findings, and implications to managers. Further focus was given to finding how digital innovation contributed to the efficiency of operations, quality of service, sustainability and performance of organisations. The extraction of data was arranged in a systematic manner in tabular and thematic form and was used to compare and synthesize results effectively.



Quality Assessment

A quality assessment process was carried out to make sure that the reviewed literature is credible and robust. The evaluation of each study was done on the basis of clear objectives of the research, suitability of the methodology, sufficiency of the sample, analytical rigor, and applicability of findings. Journals that have established impact factors were put on top of the list. There was also methodological transparency and logical consistency of arguments. The weight given to the studies during the synthesis process was of low weight because they proved to be weak empirically and lacked adequate methodological explanation.

Synthesis Approach

An integrated method of synthesis used was thematic synthesis to bring together the results of the studies chosen. The data that were extracted were coded and clustered into broad themes including the digital transformation, technological innovation, improvement in the quality of services, efficiency in operations, the sustainability, and organizational performance. The trends and patterns in studies were observed to create a coherent narrative. This method enabled the study to contrast findings in various industries and geographical settings and elicit universal forces and issues of the supply chain and logistics innovation.

Transparency and Replicability of the data collected

All methodology steps were then detailed in order to achieve transparency and replicability. The applied databases, keywords, selection criteria, and parameters of the quality assessment are clearly stated. A systematic approach was used to reduce bias by the researcher and enhance consistency. Through the conforming of standardized practices and a clear way of reporting of the methodological steps, the study can be reproduced or expanded by other researchers in the future. This openness improves the validity and scholastic honesty of the study results.

VI. RESULTS

The research demonstrates that the Indian quick commerce industry achieves operational success through technology integration which serves as its fundamental operational base. The research findings show that real-time tracking systems and AI-based route optimization and process automation technologies function as essential elements that drive performance improvements and better customer experiences.

The technologies function as essential elements that boost delivery speed and operational productivity and service dependability, which results in stronger competitive advantages for businesses operating in markets that require quick response times.

Impact of Digital Transformation on Supply Chain Performance

The study results show that digital transformation directly improves supply chain performance through its implementation. The supply chain processes become more transparent and organized and responsive to changes through the implementation of IoT and automation and data analytics and digital platforms. The organizations that implemented digital solutions experienced better economic performance in delivering products and maintaining inventory and making business decisions. The results show that digital transformation allows companies to handle market shifts and operational disturbances in an active manner.

Role of Innovation and Automation in Operational Economic Efficiency

Two factors which combine to create operational economic efficiency through logistics and supply chain operations. The research demonstrates that innovation and automation drive operational efficiency gains within logistics and supply chain operations. Automated warehousing systems and smart transportation systems and process automation systems enable organizations to decrease their dependence on human workers while they decrease operational interruptions and their manual error rates. The research shows that automation leads to cost savings and higher output because it enables companies in e-commerce and logistics to operate more efficiently during peak times.

Influence of Digital Technologies on Service Quality and Customer Satisfaction

Digital technologies lead to better service quality and higher customer satisfaction according to the results. The combination of real-time tracking and digital communication tools and technology-enabled transparency features enables customers to gain better trust and satisfaction. The studies which examined IoT and digital service platforms demonstrated how these technologies enhanced service delivery and helped businesses meet their customer service goals.



Contribution of Supply Chain Innovation to Sustainability and Resilience

The research shows that supply chain innovation creates two benefits for organizations which are environmental sustainability and operational resilience. The findings show that supply chain innovation through technology development creates benefits for businesses.

VII. DISCUSSION

The study results show that technological developments function as essential components which businesses in the Indian quick commerce sector require to achieve their competitive edge.

Technology Integration as a Strategic Enabler

The findings confirm that technology integration is not merely an operational tool but a strategic enabler of supply chain success. The combination of real-time tracking and AI-driven systems together with automation creates better coordination and decision-making capabilities which improve responsiveness throughout logistics networks. The research supports existing literature which shows digital infrastructure functions as the basic component responsible for delivering speed and accuracy and scalability during modern supply chain operations.

AI and Automation in Enhancing Operational Efficiency

The study demonstrates that AI-based route optimization together with automation technology results in better operational performance through faster delivery times and reduced operational costs and decreased human mistakes. The findings match previous research which demonstrates that intelligent automation helps organizations handle high-order volumes while adjusting to changing demand needs particularly in quick commerce and last-mile logistics.

Impact of Digital Innovation on Service Quality

Digital innovation functions as an essential factor which enhances service quality through improvements in three areas: reliability and fulfillment and customer satisfaction. The combination of real-time visibility and automated processes creates better transparency which leads to more consistent operations that enhance customer trust. The results reinforce previous studies that link digital technologies with enhanced service performance and improved customer experience.

The discussion shows that sustainable practices together with innovative supply chain methods produce both environmental sustainability and sustainable operational capacity.

The use of optimized routes together with automated systems helps organizations decrease their resource wasting activities while achieving environmental protection goals.

VIII. CONCLUSION

The research demonstrates that supply chain and logistics innovation must use advanced technology to build quick commerce business operations which will determine their success in economic India. The research shows that real-time tracking systems and Artificial Intelligence-based route optimization systems and automation technologies serve as essential tools which build operational efficiency and service quality and customer satisfaction

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