


Chapter 13

Innovation in Supply Chains

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ABSTRACT

This chapter examines the literature on innovation in supply chain management as a key driver for enhancing operational efficiency, achieving resilience, and building a sustainable competitive advantage in the contemporary business environment. It explores the various dimensions of innovation in supply chain management and highlights the growing role of modern digital technologies such as the Internet of Things (IoT), artificial intelligence (AI), cloud computing, blockchain, and digital twins in improving overall supply chain visibility, supporting data-driven decision-making, and enhancing predictive capabilities and risk management. The chapter also discusses the impact of innovation on achieving sustainability and resilience, particularly in the context of global crises and disruptions. It concludes that innovation in supply chain management is a strategic imperative for organizational success in the modern era.

1. INTRODUCTION

Supply chain innovation has also become critical in enhancing the efficiency and effectiveness of the supply chain management. This is what makes a difference between successful and unsuccessful companies; their capacity to come up with creative solutions and convert them into processes and practices that will generate differentiation and fulfil the needs of the market. It is also a strategic pillar in business contemporary context where organizations are experiencing fast dynamic challenges

DOI: 10.4018/979-8-3373-6950-1.ch013

due to globalization, digitalization, market shocks and rising environmental pressures. Thus, it is essential to create and innovate smarter, more resilient and sustainable supply chains in order to achieve a long-term competitive advantage. Supply chain innovation is the introduction of new technologies, practices or operating models which make processes more effective, economical, responsive and provide greater capability to handle challenges presented in a world where change is increasing rapidly and technological progress is constant.

A number of concepts of innovation in supply chain management have been introduced in specialized literature, among which include: Innovation in supply chain management refers to the implementation of new practices or technologies that enhance the flow of materials and information in the chain causing a reduction in costs, improving efficiency and flexibility of operations. (Wong, He & Lai, 2020) Supply chain innovation can be defined as the incorporation of progressive digital technologies, including the Internet of Things (IoT), the big data, artificial intelligence (AI), and blockchain to build the chain capabilities in terms of forecasting, tracking, and decision-making, and increase transparency and productivity. (Ivanov & Dolgui, 2021; Hamid & Alemu, 2025) Innovation in supply chains This refers to redesign of chain structure and chain operation model using innovative approaches that enable quick response to variation, disruption and world crisis and business continuity. (Queiroz, Wamba, Jabbour & Dubey, 2022) Supply chain innovation is the process whereby the integration of partners has been improved by adopting new technological and information collaboration mechanisms which has enabled real time sharing of data and also increased synergy in planning, production and distribution processes. (Barratt & Oliveira, 2020) In the definition of sustainable innovation, the introduction of environmentally friendly practices and technologies in the supply chain, including green design, clean production and low-emission transport is defined, with a view to balancing the performance of the economic sphere and environmental accountability. (de Sousa Jabbour et al., 2019) Supply chain innovation is the transformation of the overall chain approach by developing new business models utilizing the digital transformation and customer value, thus generating a competitive advantage that is hard to reproduce. (Sweeney, Grant & Mangan, 2021) Supply chain innovation is a concept that can be described as the systematic usage of novel practices and technologies to enhance the circulation of materials, information, and resources through the logistics system.

This comprises of technological innovation, organizational innovation and strategic innovation. The Essential Supply Chain Management role of Innovation: Better operational effectiveness: Innovation makes things simpler, less time, less effort, and less cost with the aid of automation and ongoing improvement. Improved predictability: With advanced analytics and artificial intelligence, it is possible to predict demand, supply chain disruptions and make proactive decisions. Greater

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