



Digital Supply Chain Management: A Review and Bibliometric Analysis

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ABSTRACT

Digital transformation in supply chain management has garnered significant attention from both industry and academia. Numerous studies have focused on the emerging concept of digital supply chain management (DSCM). In this research, the authors present a background and context of DSCM. Furthermore, they conduct a systematic bibliometric analysis encompassing a dataset of 1053 scholarly papers published from 1995 to 2021. During the literature review, various methods including network analysis, document co-citation analysis, author co-citation analysis, and journal co-citation analysis are employed. The results of the study provide an overview of the concept of DSCM and highlight key authors, affiliations, and countries in the field. Additionally, the study examines emerging research topics, including blockchain technology, digital twin, and circular economy, within the context of DSCM. Finally, limitations and potential direction for future studies are noted. The authors hope this research could provide a basic understanding of DSCM for industries and academics.

KEYWORDS

CiteSpace, Digital Supply Chain Management, Network Analysis, Systematic Review

INTRODUCTION

Market competition has gradually shifted from enterprises to their supply chains in the context of globalization (Christopher, 2000). Hence, supply chain management (SCM) can play a significant role in determining a company's competitive advantage, to a certain extent. With the development of a new generation of information technologies such as Radio Frequency Identification (RFID), the Internet of Things (IoT), cloud computing, blockchain, 3D-printing, and so on, traditional supply chain efforts would not be enough to meet the industry requirements of today (Wu et al., 2006). Thus,

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the utilization of information technologies into SCM has gained significant attention over last two decades (Subramani, 2004). In addition, the concept of Digital Supply Chain Management (DSCM) has been proposed in both industry and academic SCM research areas (Agrawal & Narain, 2018; Butner, 2010; Büyüközkan & Göçer, 2018; Garay-Rondero et al., 2019; Liu et al., 2023).

There has been a notable increase in the number of studies pertaining to DSCM in recent years. Some of this literature has conducted various overviews for the development process of SCM to DSCM (Agrawal & Narain, 2018; Iddris, 2018). Furthermore, others have concentrated on certain niche areas such as digital supply chain dynamic capabilities, which illustrates the changes of capability in digital transformation context (Queiroz et al., 2019), firm performance evaluation under the influence of digital transformation (Aimulhim, 2021), data-driven innovation in DSCM (Nica, 2019), security and trust problem in DSCM (Zhang et al., 2019), digital supply chain finance (Banerjee, 2021), and DSCM resilience and agility during the COVID-19 period (Ivano, 2021). It should be emphasized that the global supply chain suffered a serious breakdown at the beginning of the pandemic, identifying the importance of supply chain resilience. Experts in both the academic and industrial arenas are seeking ways to improve the stability of the supply chain through digital solutions (Wang, Xue, et al., 2023). The studies have illustrated deep insight into the relevance of the supply chain field. However, there is a lack of comprehensive analysis by using bibliometric tools which could provide a deeper understanding of DSCM. Bibliometric analysis refers to using mathematical and statistical methods to quantitatively identify and analyze an emerging research area (Martinez-Lopez et al., 2018). It is a comprehensive knowledge system which integrates mathematics, statistics, and quantification. It could identify researcher, affiliation, and keywords statistics. In addition, it can also conduct network analysis such as citation, co-citation, and cluster analysis, which help to explore significant research areas and major specialties with DSCM (Chen, 2017).

The rest of this paper is organized as follows. The second section illustrates the concept of DSCM and reviews related literature. The third section introduces the methodology used in this research, defines search terms, and refines literature scope. The fourth section makes a general analysis of author, affiliation, and keyword. A deep observation is conducted by CiteSpace and Hiscite tools to analyze citation, PageRank, and co-citation statistics. The fifth section explains analysis results, investigates research limitations, and proposes some directions for future studies.

Digital Supply Chain Management Background

Digital technologies have influenced various aspects of human life and has affected numerous industries. SCM is a crucial segment for these industries, and it can be defined as the integration of key business processes from end user through suppliers who provide goods, services, and information that adds value for customers (Janvier-James, 2012). The whole process of SCM would be influenced by digital technologies such as procurement, operation management, delivery, and service, which also indicates that digital technologies would have a significant impact on SCM such as efficiency, effectiveness, and vigor (Li, 2012). In addition, traditional supply chain operations lack certain attributes required for the business needs of today, as well as of the future. The digital transformation of the supply chain is aimed at breaking down these barriers and thus turning the supply chain into a seamlessly integrated system for optimal operation (Li et al., 2023). The concept of DSCM has gained much attention from the industry and academia with the bloom of digital technologies, especially after putting forward the notion of Industry 4.0 and Made in China 2025 (Lasi et al., 2014; Li, 2018).

DSCM remains a relatively novel concept, and there are some terms synonymous with DSCM such as smart supply chain management (Wu et al., 2016), intelligent supply chain management (Yan et al., 2014), and supply chain 4.0 (Alicke, 2017). Butner (2010) illustrates that supply chain must be a lot smarter to meet business requirements by introducing new technology. In terms of DSCM, six distinctive characteristics are identified by Wu et al. (2016) which are instrumented, interconnected, intelligent, automated, integrated, and innovative. This research provides a comprehensive introduction of DSCM. Agrawal and Narain (2018) state in their study that DSCM relies on innovative technologies

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