Chapter 10
Impact of Digital Technologies on Procurement and Supply Chain Management in the Manufacturing Sector

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ABSTRACT

Digital technologies have been studied and applied in manufacturing. However, organisations face challenges in implementing digital technologies, particularly at the procurement and supply chain levels. The purpose of this chapter is to understand the motivations of organisations to adopt digital technologies, the implementation effects on procurement and supply chain management, and the challenges in adopting them. Hence, a thorough review of the topic is necessary to understand the scholarly work in this area. The study employs the systematic literature review (SLR) to extract data from Scopus, ABI/Inform collection, and EBSCOhost databases from 2013-2023. Sixty articles were reviewed. The descriptive and thematic analyses have identified the key factors driving the adoption of digital technologies in global manufacturing, the key opportunities and challenges in procurement and supply chain management, and recommended strategies to overcome these challenges. The authors then propose a conceptual model of digital technology implementation in procurement and supply chain management.

1. INTRODUCTION

Cost advantage through locating manufacturing in low-cost countries is one of the main advantages in global procurement and supply chain management (Ng & Wai Hung, 2001). However, the cost savings generated by traditional global manufacturing are insufficient because firms face numerous challenges

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in more complex and dynamic environments (Frank et al., 2019). In a market with intense rivalry and escalating customer service demands, businesses are eager to stand out to maintain a competitive position. As a result, businesses are investing more attention in digital technologies related to Industry 4.0 on procurement and supply chain management (Taghipour et al., 2022; Fatorachian & Kazemi, 2018). Strategic procurement activities include tactical activities such as production, supplier selection, contract agreement and operational activities such as ordering and supplier evaluation (Weele, 2018). Supply chain management (SCM) entails activities such as planning, controlling, monitoring, and enhancing material and information flows between upstream suppliers and downstream customers via a network of interconnected organisations (Christopher, 2011).

Many digital technologies, such as the Internet of Things (IoT), additive manufacturing, big data, robotics, and cloud computing, are critical to Industry 4.0 (Lu, 2017). The main objectives of Industry 4.0 are process automation and increased operational productivity (Thames & Schaefer, 2016). The use of digital technologies in Industry 4.0 can revolutionise systems and processes and improve and optimise procurement and supply chain efficiency and flexibility (Taghipour et al., 2022; Caiado et al., 2022; Fatorachian & Kazemi, 2018). That's why firms in the global manufacturing sector are investing more in adopting digital technologies associated with Industry 4.0. However, procurement and supply chain firms face challenges in adopting these technologies. As a result, academics are paying close attention to the implementation challenges in the manufacturing and supply chain processes. Current academic studies are primarily concerned with the implications and impacts of digital technologies in the manufacturing process (Chauhan & Singh, 2019). Hence, this research aims to investigate and identify the impact of digital technologies on PSCM in the global manufacturing sector, as well as to provide practical recommendations for successfully implementing these industry 4.0-related digital technologies in manufacturing (Taghipour et al., 2022). Numerous publications examine the effects of Industry 4.0-related digital technologies on production and supply chain procedures. However, limited studies have analysed digital technologies that affect supply chain management and strategic procurement in the global manufacturing sector. This study aims to close the gap by answering research questions and recommending PSCM for successfully managing the implementation of digital technologies in the global manufacturing sector.

RQ 1. What factors drive the adoption of digital technologies in PSCM in the global manufacturing sector?
RQ 2. What are the opportunities and challenges of digital technologies to improve PSCM performance in the global manufacturing sector?
RQ 3. What strategies can be recommended to overcome the challenges associated with digital technology implementation for PSCM in the global manufacturing sector?

The chapter is structured as follows: we offer a brief description of the systematic literature review followed by our analyses. Then, we start with the descriptive analyses of the literature and then thematic analyses to proceed with the conceptual framework and finalise the conclusion along with research limitations and suggestions for future research.