Chapter 13
The Potential Role of Blockchain in Supply Chain Management in the Automotive Industry

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ABSTRACT

The complexity of automotive supply chain management presents significant challenges, demanding rigorous coordination of tasks to ensure efficiency in its operations. This chapter examines the potential benefits of adopting blockchain technology in supply chain management. The study employs a case study methodology, focusing on a prominent European automotive company that, compared to its major competitors, appears hesitant to integrate blockchain into its supply chain management practices. The analysis relies on secondary data and utilizes a range of strategic analysis tools to gain deeper insights into the advantages that blockchain technology could offer in supply chain management. Based on the findings, this chapter offers 12 strategic recommendations pertaining to blockchain technology, which can aid the company in addressing various management issues by enhancing security, efficiency, and technological advancements.

INTRODUCTION

The rapid development of blockchain technology continues to progress at a fast pace. While initially associated with the financial sector as the foundation of Bitcoin and cryptocurrency solutions, blockchain has swiftly demonstrated its potential across a wide range of industries. As a result, interest in blockchain technology has surged among managers in various sectors. One context that shows great potential for blockchain technology is supply chain management. According to Difrancesco et al. (2022), globalization has led to increasingly complex supply chains. Consequently, firms must proactively adapt to customers' diverse requirements, necessitating fast, agile, and dynamic supply chains. To survive, firms must consider factors such as efficiency, effectiveness, speed, and transparency in their supply chains, as these are crucial in today's business landscape (Difrancesco et al., 2022).

The automotive industry, renowned for its technological sensitivity, has witnessed significant advancements through breakthrough technologies and the industrialization of production processes (Fabbe-Costes & Lechaptois, 2022). Supply chains within the automotive industry are notably intricate, involving multiple layers of suppliers for raw materials, components, and systems. However, this complexity also introduces inefficiencies and vulnerabilities, including the risk of counterfeit parts infiltrating the system Blockchain technology offers effective means of collecting, recording, and sharing data across various levels of supply chain management, thus addressing these issues.

Nevertheless, the full extent of the benefits of blockchain technology in this industry remains underexplored. To help fill this gap, the main objective of this chapter is to investigate the applicability of blockchain technology in supply chain management and provide managers with valuable insights into its implementation, which is crucial for decision-making. The chapter adopts a case study approach, focusing on the Peugeot case, given its apparent reluctance to embrace this technology compared to its competitors. The analysis relies on secondary data obtained from public sources such as scientific articles, industry reports, and the company's website and annual reports. To systematize the collected data, a range of strategic analysis tools commonly employed by managers for strategy planning and monitoring are utilized. Overall, these tools enable a deeper understanding of the advantages that blockchain technology can offer in supply chain management.

The present research is divided into six sections. It begins with a theoretical background, highlighting key contributions from the literature, followed by a presentation of the research methodology. Subsequently, the results are presented, incorporating the analysis conducted using strategic tools. The paper then discusses solutions and recommendations, with a particular emphasis on strategic

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