Chapter 7
Logistics Management Using Blockchain:
A Review of Literature and Research Agenda

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ABSTRACT

As logistics companies continue to expand due to the revolution of Logistics 4.0, the complexity of the multiple connected organizations makes it impossible for a clear view of logistics operation. Since customer information is shared between companies, unauthorized access to personal information is inevitable, and it poses several threats to customers. To address this challenge, blockchain with some fascinating properties like enhanced security and transparency will be deployed. Blockchain is a technology that can be used to improve efficiency, visibility, and security in logistics management. This chapter will explore the current applications of blockchain in logistics management based on an analysis of the findings of several scholars. The change from traditional logistics to digital logistics, digital logistics issues, as well as blockchain principles, this study also provides useful insights into how blockchain can disrupt conventional operations in logistics management. It also lays the groundwork for future study into blockchain's applicability in digital fleet management.

INTRODUCTION

Due to the industry 4.0 revolution (Kshetri, N, 2017), modern logistics operations keep expanding but a lot of challenges confront its operations such as a lack of operation visibility from beginning to end due to enormous multiple agents involved within the logistics management framework, Increasing complexity in supply chains has made it difficult for logistics companies to identify the root cause of problems, thereby hindering the organization from taking fast and reliable decision. Traditional logistics management information systems have flaws like lack of openness, security issues, and unreliable ((Wang, Y., Hugh Han, 2019), unauthorized disclosure of personal information is the order of the day as information are shared and transferred between the logistics enterprises thereby resulting in to increase in frauds and other social vices during the operational process. The engagement of Blockchain which is innovation will offer solutions to these problems.

Blockchain is a p2p (peer-to-peer) network designed to run a decentralized ledger (S. Nakamoto, 2008) and is not under the direction of a centralized authority. Participants in the Blockchain network have complete transparency and can view and check the ledger at any moment. Blockchain is quickly becoming one of the most popular academic topics. Studies have recently focused on Blockchain from a variety of perspectives, comprising the design of systems, theoretical investigations, and frameworks for making decisions.

Bitcoin, a kind of crypto (digital) currency, was first presented in 2008. To complete a transaction on the internet between two parties, Bitcoin uses cryptographic evidence. It is regarded as the ignitor of Blockchain, allowing transactions to be completed without the use of a third party (Casino, F, Dasaklis, T., 2019).

From (FINTECH), Financial Technology to Supply Chain and Logistics Management, Blockchain innovation is embracing a variety of sectors. Blockchain can alter existing systems, streamline procedures, and increase operational efficiency. According to a survey by PwC, 84 of 600 executives from a range of industries stated that their company has been working with Blockchain technology since 2018. The financial sector, supply chains, and energy industry are the top three businesses embracing this innovation, according to the survey (Davies, S., & Likens, S, 2018). The management of supply chains and logistics with Blockchain will enable the creation of traceable supply chain systems while maintaining the immutability of any data recorded in the ledger (Rao, J. J., & Kumara, V, 2017) Through the development of trust models between supply stakeholders, protection of asset transactions, enabling real-time communication, improving quality management, and improving forecasting and inventory management are all ways to improve supply chain management, Blockchain has the potential to add economic value to solve critical Supply chain concerns (Mohanta, B. K., Jena, 2019).

Blockchain uses a consensus process to safeguard and store data in a shared database. Block networks are built by representing the data owners and data sources with an information grid.

Several pilot-size projects based on Blockchain adoption in the management of logistics and supply chains have recently attempted to capitalize on the technology's usefulness. Big industry leaders like IBM (International Business Machines) have some famous successful cases.

IBM was one of the first companies to develop Blockchain innovation. Recently, IBM launched the first Blockchain-based system for tracking and tracing vaccines along the distribution chain, from production to administration. This solution helps manufacturer's monitor the supply chain to improve recall management and build trust between the government and the private sector. The system provides preemptive detection and notification of supply chain problems, fraud, and storage conditions (IBM, 2020).

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