INTERNATIONAL JOURNAL OF ACADEMIC RESEARCH IN BUSINESS & SOCIAL SCIENCES

Vol 16, Issue 2, (2026) E-ISSN: 2222-6990

The Role of Blockchain-Based Supply Chain Finance for Supply Chain Performance

Bayan Arab[1], Maizaitulaidawati Md Husin[2], Suzilawati Kamarudin[3]

[1,3]University of Business and Technology Jeddah Universiti Teknologi Malaysia, [2]Universiti Teknologi Malaysia

Email: b.arab@ubt.edu.sa, s.kamarudin@ubt.edu.sa, aidawati.kl@utm.my

DOI Link: http://dx.doi.org/10.6007/IJARBSS/v16-i2/27763

Published Date: 26 February 2026

Abstract

Blockchain is a promising, unique technology that enables decentralized, secure, and tamper-proof transactions. Blockchain technology is rapidly growing and being applied across various fields. Supply chain finance is an emerging financing model that optimizes financial flows between enterprises, as banks connect upstream and downstream entities. Traditional supply chain finance faces numerous challenges, such as double financing fraud and information asymmetry. Blockchain technology enhances the performance of conventional supply chain finance by improving the transparency and security of all financial transactions, thus elevating the quality of supply chain information. This improvement can lead to better overall supply chain performance and sustainability. Scholars have not thoroughly investigated the unique role of Blockchain technology in sustainable supply chain finance practices. This paper examines the effect of Blockchain-based supply chain finance systems on sustainable supply chain performance. The conceptual framework was developed based on the Resource-Based View theory (RBV) to underpin the role of Blockchain technology application in the supply chain finance to improve the supply chain performance. In addition, this paper investigates how Blockchain technology's trust and security features can enhance traditional supply chain finance practices, address challenges, and improve capital flow, ultimately contributing positively to overall supply chain performance. Finally, it emphasizes that the area of research on blockchain-based supply chain finance has potential for exploration.

Keywords: Blockchain Technology (BCT), Supply Chain Finance (SCF), Blockchain-based Supply Chain Finance, Supply Chain Performance

Introduction

Digitalization drives the need for digital transformation across all sectors, including supply chain management. Companies must adopt advanced technologies to stay competitive. The supply chain has shifted from traditional to digital, linking global parties (Ageron et al., 2020; Pawlicka & Bal, 2021). Technologies like blockchain (BCT) help manage

uncertainty by enabling real-time tracking, increasing transparency, and building trust (Difrancesco et al., 2022; Pattanayak et al., 2024). BCT is a decentralized database that improves data exchange (Ronaghi and Mosakhani, 2021). Additionally, Supply Chain Finance (SCF) allows buyers to pay suppliers immediately through intermediaries like banks, often with interest (Alora & Barua, 2019).

The BCT has characteristics like tractability, decentralization, and immutability (Shahid et al., 2020). Blockchain, a recent tech, aims to optimize supply chain finance (Pawlicka and Bal, 2021). Studies suggest blockchain can better address issues such as fraud, trust, and security (Kucukaltan et al., 2022; Gong et al., 2022; Shu et al., 2024). However, its impact on SCF is still emerging (Bai et al., 2022). Researchers are optimistic about its future role and call for further study (Du et al., 2020; Fu et al., 2022; Yang et al., 2022; Luo, 2024). Shu et al. (2024) noted the need to explore enterprise privacy and trust in SCF. Despite focus on blockchain and supply chain performance, more research is needed on how these technologies promote sustainable supply chain performance (Jia et al., 2020). This study aims to develop a framework to measure supply chain performance.

The study's main objectives are: (1) to examine how blockchain-based SCF systems improve supply chain performance; (2) to investigate blockchain's role in building trust and ensuring information security among supply chain members; and (3) to assess how trust and security influence supply chain performance.

Literature Review

Blockchain Technology in Supply Chain Management

Blockchain Technology (BCT), conceived by Satoshi Nakamoto in his 2008 paper "Bitcoin: A Peer-to-Peer Electronic Cash System," is a type of distributed ledger technology (DLT). Unlike traditional ledgers, BCT allows sharing among participants, functioning as a shared database or public ledger that distributes records, transactions, and events among blockchain parties (Crosby et al., 2016). The rise of Bitcoin and cryptocurrencies has made BCT more popular. As a decentralized database accessible to network members, data is typically secure, traceable, and maintained within a peer-to-peer network (Kouhizadeh and Sarkis, 2018). Most participants confirm transactions, and the information they enter tends to be permanent and retained (Crosby et al., 2016).

Supply Chain Finance

Supply Chain Finance (SCF) allows a buyer to pay the seller immediately through a third party like a bank, improving financial flow among supply chain parties (Alora & Barua, 2019; Caniato et al., 2019). It offers solutions for common issues, such as enabling the buyer to delay payment while the supplier is paid faster by a third party (Rijanto, 2021). SCF can strengthen buyer-supplier relationships by resolving financial conflicts (Caniato et al., 2019). Differing from traditional loans, SCF is linked to supply chain management, offering broader financial services to stakeholders. Its main goal is to align financial flow with other supply chain flows (Du et al., 2020; Caniato et al., 2019).

Blockchain-Based Supply Chain Finance

BCT is a promising technology to enhance SCF operations, offering privacy and data flow control through its digital features (Luo, 2024; Fu et al., 2022). With transparency, BCT

addresses information asymmetry in supply chains, including warehousing, logistics, and financial data (Du et al., 2020). It records all invoices in a distributed ledger, accessible to shared parties, reducing double financing fraud and increasing security (Bai et al., 2022). Typically, SCF participants withhold sensitive data, but full financial exchange is essential for comprehensive business information (Du et al., 2020).

Underpinning Theory

The resource-based view (RBV) philosophy holds that a firm's resources play a significant role in determining the capabilities that yield the intended performance. Organizations can acquire and maintain a competitive edge by strategically allocating important resources (Wernerfelt, 1984; Olavarrieta and Ellinger, 1997). Businesses may deal with difficult conditions by maximizing their resources and competencies (Peteraf and Barney, 2003). Additionally, a firm's RBV demonstrates how turning its distinct resources into capabilities can give it a competitive edge. Businesses can obtain a competitive advantage by incorporating and rearranging resources in their operations and procedures (Fawcett et al., 2011; Madhani, 2021). In this regard, implementing sustainable supply chain management practices allows organizations to gain a competitive edge by utilizing effective methods for assessing asset efficiency (El-Garaihy et al., 2022). Therefore, this study utilizes the RBV to build a conceptual framework to examine the effect of the Blockchain-based supply chain finance system as a resource that can create capabilities of trust and information security, ultimately allowing the organization to gain a competitive advantage through optimized supply chain performance.

Discussion

Blockchain-Based Supply Chain Finance and Supply Chain Performance

SCF is vital for sustainable supplier finances, helping those with liquidity issues by speeding payments. It addresses economic, social, and environmental sustainability (Medina et al., 2023). Researchers increasingly focus on SCF's role in supply chain sustainability (Jia et al., 2020). Additionally, BCT offers tractability, decentralization, and immutability (Yadav et al., 2023), making it a recent tool to optimize SCF performance (Pawlicka and Bal, 2021). Studies suggest BCT can improve information authentication, prevent financing fraud, and reduce operational risks (Zhao et al., 2023). Based on this literature, the current study proposes a hypothesis on Blockchain-based supply chain finance and supply chain performance.

H1: Blockchain-based supply chain finance significantly influences supply chain performance.

Blockchain-Based Supply Chain Finance and Trust

SCF enables organizations to optimize working capital via external collaboration with suppliers and financial institutions, sharing information (Beka Be Nguema et al., 2021). Trust between members is crucial for efficiency. BCT ensures reliable, immutable data for secure transactions (Shu et al., 2024), offering transparency as a solution to trust issues in SCF (Bai et al., 2022). Studies show blockchain SCF can enhance trust, with Liu et al. (2021) citing its maturity and low cost as factors. Jiang et al. (2022) note BCT helps create a platform for better information sharing among parties, overcoming trust deficits. Wang et al. (2022) say blockchain builds a transparent, trust-free system recording transactions on a ledger, even among

strangers. This study hypothesizes that trust facilitates the adoption of supply chain finance.
H2: Blockchain-based supply chain finance significantly influences trust.

Blockchain-Based Supply Chain Finance and Information Security

Different research articles highlighted the support of blockchain technology characteristics in overcoming SCF barriers. Tsai (2022) developed a blockchain-driven SCF model that can address the SCF issues of trust, transparency, and security. The author identified that blockchain features of transparency and trust can reduce SCF issues. Throughout the blockchain-driven SCF model, supplier financing is more transparent and immutable, thereby helping to address the SCF barriers. Furthermore, the BCT digital features can better address the issue of SCF security by eliminating paper-based documents, including invoices and warehouse-related documents. Thus, it increases data security and eliminates fraud (Gong et al., 2022). Usually, SCF participants screen sensitive business information of their corporations. SCF won't be able to ensure the comprehensiveness of business information without the full exchange of financial information (Du et al., 2020). Therefore, a blockchain-based SCF platform with full transparency is recommended to address the security issues associated with financial transactions (Tsai, 2022). Thus, the following hypothesis was developed:
H3: Blockchain-based supply chain finance significantly influences information security.

Trust and Supply Chain Performance

Trust is crucial for supply chain operations, affecting communication, costs, and performance. Lack of trust can cause major challenges (Khan et al., 2018), while trust improves collaboration, reduces uncertainty, and enhances organizational value (Owot et al., 2023; Baah et al., 2021). Researchers confirm that trust positively impacts overall supply chain performance. A hypothesis is formulated to assess this impact.
H4: Trust significantly influences supply chain performance.

Information Security and Supply Chain Performance

Security efforts target reducing risks like fraud, system misuse, and privilege abuse (Kolluru and Meredith 2001). Supply chain security helps cut disruptions and improve planning (Asamoah et al, 2021). Organizations must prioritize information security to protect interconnected technology systems (PN, 2014). Good security practices boost customer loyalty, satisfaction, and lower costs while aligning with supply chain goals (Sarathy, 2006). Securing the supply chain also enhances resilience, increases productivity, and reduces vulnerabilities (Gould et al., 2010). PN (2014) states that information security positively impacts supply chain performance, leading to the hypothesis that it influences supply chain performance.
H5: Information security significantly influences supply chain performance.

Findings

This study uses the RBV framework to examine how Blockchain-based supply chain finance fosters trust and information security within organizations, helping achieve a competitive edge by improving supply chain performance. The independent variable is Blockchain-based supply chain finance adoption; the dependent variable is supply chain performance, and trust and information security act as mediators. Figure 2.1 shows the research framework based on RBV theory.

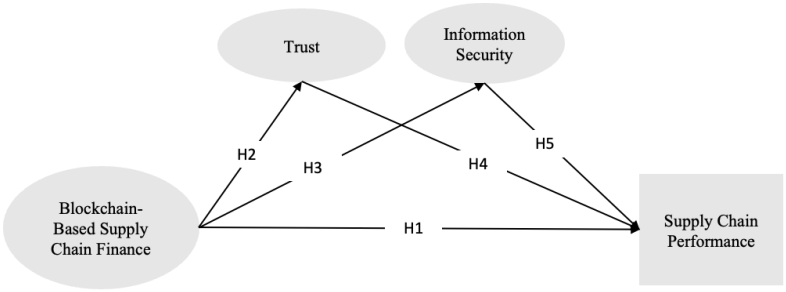

Figure 2.1 Research Framework based on the RBV Theory

Conclusion

The current paper discusses and highlights the potential role of a Blockchain-based Supply Chain Finance (SCF) system in enhancing overall supply chain performance based on the Resource-Based View (RBV) theory. The Blockchain Technology's (BCT) ability to record all supply chain data ensures the traceability of physical, informational, and financial flows within the supply chain, enabling BCT database participants to share and monitor supply chain-related invoices, payments, and auctions in a highly transparent manner. The BCT can automate traditional SCF practices to improve control over financial flows and address significant challenges related to fraud and corruption. This indicates that the Blockchain-based SCF system can provide a fully decentralized and shared database for all supply chain members.

This study adds to BCT, finance, and supply chain literature by proposing a framework to explore how Blockchain-based supply chain finance can improve supply chain performance. The supply chain is vital for competitive advantage, producing and delivering products/services. The paper examines how a digital, decentralized, and immutable financial system can optimize performance and organizational success. It also helps understand BCT's role in digitalizing transactions to prevent fraud, corruption, and data issues, offering a foundation for future research. Literature shows BCT can redesign processes and eliminate third parties via a decentralized ledger. It offers practical insights for managers to secure transactions, reduce fraud, enhance transparency, and share information across the supply chain. The framework guides organizations in improving performance, reducing data breach risks, fostering stakeholder collaboration, and strengthening trust and compliance.

References

Ageron, B., Bentahar, O., & Gunasekaran, A. (2020). Digital supply chain: Challenges and future directions. *Supply Chain Forum: An International Journal, 21*(3), 133–138. https://doi.org/10.1080/16258312.2020.1816361

Alora, A., & Barua, M. K. (2019). Barrier analysis of supply chain finance adoption in manufacturing companies. *Benchmarking: An International Journal, 26*(7), 2122–2145. https://doi.org/10.1108/BIJ-08-2018-0232

Asamoah, D., Nuertey, D., Agyei-Owusu, B., & Acquah, I. N. (2021). Antecedents and outcomes of supply chain security practices: The role of organizational security culture and supply chain disruption occurrence. *International Journal of Quality & Reliability Management, 39*(4), 1059–1082. https://doi.org/10.1108/IJQRM-01-2021-0002

Baah, C., Acquah, I. S. K., & Ofori, D. (2021). Exploring the influence of supply chain collaboration on supply chain visibility, stakeholder trust, environmental and financial performances: A partial least square approach. *Benchmarking: An International Journal, 29*(1), 172–193. https://doi.org/10.1108/BIJ-10-2020-0519

Bai, Y., Liu, Y., & Yeo, W. M. (2022). Supply chain finance: What are the challenges in the adoption of blockchain technology? *Journal of Digital Economy, 1*(3), 153–165. https://doi.org/10.1016/j.jdec.2022.12.002

Beka Be Nguema, J.-N. (2021). Exploring the factors influencing the adoption of supply chain finance in supply chain effectiveness: Evidence from manufacturing firms. *Journal of Business & Industrial Marketing, 36*(5), 706–716. https://doi.org/10.1108/JBIM-01-2020-0047

Caniato, F., Henke, M., & Zsidisin, G. A. (2019). Supply chain finance: Historical foundations, current research, future developments. *Journal of Purchasing and Supply Management, 25*(2), 99–104. https://doi.org/10.1016/j.pursup.2019.02.002

Crosby, M., Pattanayak, P., Verma, S., & Kalyanaraman, V. (2016). Blockchain technology: Beyond bitcoin. *Applied Innovation, 2*, 71–80.

Difrancesco, R. M., Meena, P., & Kumar, G. (2022). How blockchain technology improves sustainable supply chain processes: A practical guide. *Operations Management Research, 16*(2), 620–641. https://doi.org/10.1007/s12063-022-00343-y

Du, M. (2020). Supply chain finance innovation using blockchain. *IEEE Transactions on Engineering Management, 67*(4), 1045–1058. https://doi.org/10.1109/TEM.2020.2971858

El-Garaihy, W. H. (2022). Driving sustainability in supply chain management for a more inclusive and responsible future. *International Journal of Productivity and Performance Management, 73*(1), 43–84. https://doi.org/10.1108/IJPPM-01-2022-0028

Fawcett, S. E. (2011). Information technology as an enabler of supply chain collaboration: A dynamic capabilities perspective. *Journal of Supply Chain Management, 47*(1), 38–59. https://doi.org/10.1111/j.1745-493X.2010.03213.x

Fu, J. (2022). BFS: A blockchain-based financing scheme for logistics company in supply chain finance. *Connection Science, 34*(1), 1929–1955. https://doi.org/10.1080/09540091.2022.2088698

Gong, Y., Zhang, Y., & Alharithi, M. (2022). Supply chain finance and blockchain in operations management: A literature review. *Sustainability, 14*(20), 13450. https://doi.org/10.3390/su142013450

Jia, F., Zhang, T., & Chen, L. (2020). Sustainable supply chain finance: Towards a research agenda. *Journal of Cleaner Production, 243*, 118680. https://doi.org/10.1016/j.jclepro.2019.118680

Jiang, R., et al. (2022). A trust transitivity model of small and medium-sized manufacturing enterprises under blockchain-based supply chain finance. *International Journal of Production Economics, 247*, 108469. https://doi.org/10.1016/j.ijpe.2022.108469

Khan, M., Hussain, M., Papastathopoulos, A., & Manikas, I. (2018). Trust, information sharing and uncertainty: An empirical investigation into their impact on sustainability in service supply chains in the United Arab Emirates. *Sustainable Development, 26*(6), 870–878. https://doi.org/10.1002/sd.1856

Kolluru, R., & Meredith, P. H. (2001). Security and trust management in supply chains. *Information Management & Computer Security, 9*(5), 233–236. https://doi.org/10.1108/09685220110408031

Luo, Z. (2024). A survey on blockchain-based supply chain finance with progress and future directions. *arXiv*. http://arxiv.org/abs/2408.08915

Madhani, P. M. (2021). Enhancing supply chain capabilities with blockchain deployment: An RBV perspective. *IUP Journal of Business Strategy, 18*(Issue unavailable).

Nakamoto, S. (2008). *Bitcoin: A peer-to-peer electronic cash system*.

Nozari, H., & Ghahremani-Nahr, J. (2022). Assessing key performance indicators in blockchain-based supply chain financing: Case study of chain stores. *International Journal of Innovation in Engineering, 2*(3), 42–58. https://doi.org/10.59615/ijie.2.3.42

Olavarrieta, S., & Ellinger, A. E. (1997). Resource-based theory and strategic logistics research. *International Journal of Physical Distribution & Logistics Management, 27*(9/10), 559–587. https://doi.org/10.1108/09600039710188594

Owot, G. M., Okello, D. M., Olido, K., & Odongo, W. (2023). Trust, but what trust? Investigating the influence of trust dimensions on supply chain performance in smallholder agribusinesses in Uganda. *Journal of Agribusiness in Developing and Emerging Economies*. https://doi.org/10.1108/JADEE-09-2022-0196

Pattanayak, S., Ramkumar, M., Goswami, M., & Rana, N. P. (2024). Blockchain technology and supply chain performance: The role of trust and relational capabilities. *International Journal of Production Economics, 271*, 109198. https://doi.org/10.1016/j.ijpe.2024.109198

Pawlicka, K., & Bal, M. (2021). Supply chain finance and challenges of modern supply chains. *Logforum, 17*(1), 71–82. https://doi.org/10.17270/j.log.2021.525

Peteraf, M. A., & Barney, J. B. (2003). Unraveling the resource-based tangle. *Managerial and Decision Economics, 24*(4), 309–323. https://doi.org/10.1002/mde.1126

PN, S. (2014). Impact of information security initiatives on supply chain performance. *Information Management & Computer Security, 22*(5), 450–473. https://doi.org/10.1108/IMCS-05-2013-0035

Rijanto, A. (2021). Blockchain technology adoption in supply chain finance. *Journal of Theoretical and Applied Electronic Commerce Research, 16*(7), 3078–3098. https://doi.org/10.3390/jtaer16070168

Ronaghi, M. H., & Mosakhani, M. (2021). The effects of blockchain technology adoption on business ethics and social sustainability: Evidence from the Middle East. *Environment, Development and Sustainability, 24*(5), 6834–6859. https://doi.org/10.1007/s10668-021-01729-x

Sarathy, R. (2006). Security and the global supply chain. *Transportation Journal, 45*(4), 28–51. https://doi.org/10.2307/20713653

Shahid, A., Almogren, A., Javaid, N., Al-Zahrani, F. A., Zuair, M., & Alam, M. (2020). Blockchain-based agri-food supply chain: A complete solution. *IEEE Access, 8*, 69230–69243. https://doi.org/10.1109/ACCESS.2020.2986257

Tsai, C.-H. (2022). Supply chain financing scheme based on blockchain technology from a business application perspective. *Annals of Operations Research, 320*(1), 441–472. https://doi.org/10.1007/s10479-022-05033-3

Wang, L., Luo, X. (Robert), Lee, F., & Benitez, J. (2022). Value creation in blockchain-driven supply chain finance. *Information & Management, 59*(7), 103510. https://doi.org/10.1016/j.im.2021.103510

Wernerfelt, B. (1984). A resource-based view of the firm. *Strategic Management Journal, 5*(2), 171–180. https://doi.org/10.1002/smj.4250050207

Yadav, N., Luthra, S., & Garg, D. (2023). Blockchain technology for sustainable supply chains: A network cluster analysis and future research propositions. *Environmental Science and Pollution Research, 30*(24), 64779–64799. https://doi.org/10.1007/s11356-023-27049-3

Yang, W., Ziyang, W., Xiaohao, Z., & Jianming, Y. (2022). The optimisation research of blockchain application in the financial institution-dominated supply chain finance system. *International Journal of Production Research, 61*(11), 3735–3755. https://doi.org/10.1080/00207543.2022.2087567

Zhao, H., Liu, J., & Zhang, G. (2023). Blockchain-driven operation strategy of financial supply chain under uncertain environment. *International Journal of Production Research, 62*(8), 2982–3002. https://doi.org/10.1080/00207543.2023.2190816