Review and Development Analysis: The Role of Blockchain Technology in the Halal Food Supply Chain

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Abstrak. This study aims to analyze the priority of integrating the halal supply chain in halal tourism, the opportunities and challenges faced by business actors, and the impact level of halal tourism on entrepreneurs, surrounding communities, and the government. Halal tourism is a tourism concept that provides services, facilities, and primarily to meet the needs of Muslim travelers. The research findings indicate that the current priority in halal tourism lies in enhancing competitiveness and achieving substantial financial benefits. This study seeks to identify priority factors in the integration of the halal supply chain within the tourism sector, focusing on key elements that support the creation of a sustainable halal tourism ecosystem. The research methodology employs a mixed methods approach, combining quantitative analysis through questionnaires distributed to supply chain actors (business owners, academics, tourists) and qualitative analysis through interviews with stakeholders.

Keywords: ***Blockchain; Halal Supply Chain; Halal Certification; Halal Industry***

INTRODUCTION

The development of the global supply chain has undergone a fundamental transition from traditional logistics systems to a dynamic and complex network based model (Xue et al., 2022). In the context of the halal industry, this complexity is further intensified by fluctuations in demand, fragmentation of raw material sources, and high supply risks (Yadav et al., 2024). These challenges not only cover the aspect of product availability, but also demand accuracy in guaranteeing quality, safety, and halal status consistently throughout the distribution channel (Ababou et al., 2023). The halal industry has unique characteristics that make it more vulnerable to ethical, legal, and consumer trust risks than the general food sector.

Global economic contraction (Guaita Martínez et al., 2022) Exacerbating the fragility of the halal supply chain, particularly for imported raw materials such as Australian beef and Middle Eastern dates. Disruptions in transportation and logistics can hinder the revalidation process of halal certification, trigger cross contamination risks, and weaken product accountability during cross border travel. Amid these pressures, digital innovation is key to strengthening. One example is blockchain technology, which is beginning to be used in halal distribution systems to improve visibility, efficiency, and data integrity (Tavana, 2022). Blockchain, as a distributed ledger, offers a transparent and tamper resistant record keeping system. With real time traceability and the use of smart contracts, this technology can automatically verify a product's halal status and maintain its logistics history from point of origin to end consumer (Prados Castillo et al., 2023). The immutability and decentralization properties of blockchain provide a strong foundation in preventing halal certificate forgery and avoiding audit data manipulation (Zhang & Ling, 2023), two critical issues in the sustainability of the global halal industry. Although extensive research on blockchain in the supply chain and food sectors has been conducted, most of the literature remains general and has not explored the specifics of the halal supply chain in depth (Mohammed et al., 2024)(Shevchuk et al., 2025). Research examining the integration of blockchain with multi country halal certification standards and the challenges of interoperability between systems is still limited. Yet, an open and decentralized blockchain system can be an effective tool for fostering collaboration and transparency between producers, auditors, regulators, and consumers within a single halal ecosystem (Benatiya Andaloussi, 2024). The main challenges at the implementation stage include scalability issues, the complexity of cross country regulations, and the absence of a global halal standards framework that can. be synergized with digital technology (Reis Marques et al., 2021). Nevertheless, initial findings from empirical studies indicate that the integration of blockchain technology in halal supply chain systems can substantially strengthen product tracking, simplify audit processes, and increase consumer confidence (Sundarakani & Ghouse, 2024).

While this article generally focuses on the agri food sector or digital supply chain in general, this research presents a novel contribution in the form of a systematic literature review that specifically examines the potential and challenges of implementing blockchain technology in the halal food supply chain. This study broadens the scope of the study by identifying the technical, regulatory, and social aspects that play a role in integrating technology with international halal certification. Furthermore, this study outlines a future research agenda that can serve as a reference in designing a digital based halal supply chain ecosystem that is sustainable, verifiable, and adaptive to technological developments. This research aims to answer several questions, including: 1) How can blockchain strengthen transparency and efficiency in the halal food supply chain? 2) What are the main challenges facing blockchain implementation for cross border halal certification? 3) To what extent does the current literature address blockchain integration in the halal industry?

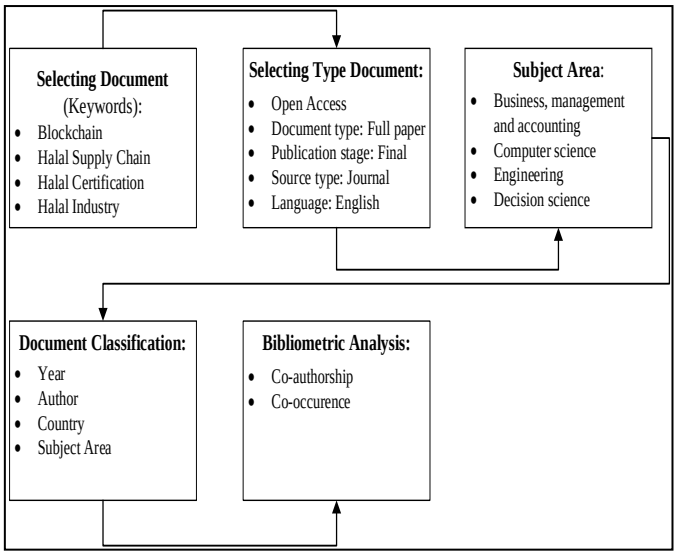
RESEARCH METHODS

This systematic literature review follows the main steps described by (Catur et al., 2025). Through mapping scientific references, this method identifies trends, patterns, novelty, and obsolescence in knowledge. Consequently, it provides a crucial foundation for future research and reduces the risk of researchers duplicating existing findings (Dewi, 2024). The literature selection process is explained in Figure 1.

To conduct a comprehensive literature review, we utilized Scopus, a leading database known for its extensive collection of high quality, peer reviewed scholarly publications. Using the keywords “blockchain,” “halal supply chain,” “halal certification,” AND “halal industry,” this study aimed to identify studies that specifically examine blockchain implementation in the halal food supply chain. In Figure 1, to focus the analysis on the most relevant and impactful publications, four subject areas with the highest publication volumes related to blockchain in the halal food supply chain were identified: Management & Accounting, Computer Science, Engineering, and Decision Sciences. This focused approach allowed for a more in depth investigation of core areas of blockchain application in the industrial sector. Articles were included based on the following criteria: 1) Open. Access: To ensure accessibility and broad replicability of research findings. 2) Full Text Availability: To enable comprehensive analysis and objective evaluation of content. 3) Peer Reviewed Journal Publication: To ensure the quality and validity of the research. 4) English Language: To ensure clear and easy understanding of the information by researchers.

The next step involved categorizing the selected articles based on publication year, author, country, field of study, and number of citations. This classification provides a comprehensive perspective on the dynamics of blockchain research in the halal supply chain, enabling the identification of emerging trends and dominant topics. To further analyze the research spectrum, Vosviewer software was applied, a tool for visualizing the connectivity between publications, researchers, and research themes (Che Hassan & Osman, 2024).

Figure 1. Literature review framework



RESULTS AND DISCUSSION

This systematic literature review aims to identify relevant research on the interrelationships between blockchain, halal supply chains, halal certification, and the halal industry. A comprehensive search in Scopus, conducted on July 7, 2025, yielded 17 articles published between 2019 and 2025. For precise analysis, articles were rigorously screened based on open access, full text availability, peer reviewed journal publication, and English language. This screening procedure produced a final dataset consisting of 17 articles spanning 10 subject categories. To ensure emphasis on high impact studies, the analysis concentrated on four academic fields with the highest publication volume, namely Management & Accounting, Computer Science, Engineering, and Decision Sciences. This selection process narrowed the dataset to 17 articles, which subsequently became the basis for a more comprehensive analysis.

The findings of this research are organized into three main sections. Segment 3.1 provides an overview of the distribution of articles by dimensions such as publication year, country of origin, journal, author, and citations. Segment 3.2 examines bibliometric analysis using Vosviewer to identify patterns and trends in the research field. Meanwhile, Segment 3.3 outlines prospective research directions and potential areas for future exploration.

3.1 Article Distribution

A systematic literature review was conducted to identify relevant studies related to the implementation of blockchain technology in the halal food supply chain. Although the search process did not impose a specific time restriction, the earliest publications related to this topic were traced back to 2019.

Figure 2 illustrates the rapid expansion of research on blockchain applications within the food supply chain from 2019 to 2025. Within this period, the number of publications showed an average yearly increase of 91.4%, with the highest publication volume recorded in 2024, accounting for 41.2% of total studies. The growing academic interest in blockchain indicates broader technological progress and increasing industry adoption trends. The years 2023 to 2024 were characterized by a notable expansion in blockchain implementation across multiple industries. This growth was driven by the swift advancement of decentralized finance (DeFi) platforms and the emergence of distinctive digital assets, particularly non fungible tokens (NFTs), as a newly recognized asset class. Furthermore, there was growing interest in cryptocurrencies, particularly Bitcoin, which reached record highs during this period, and the rise of blockchain based projects.

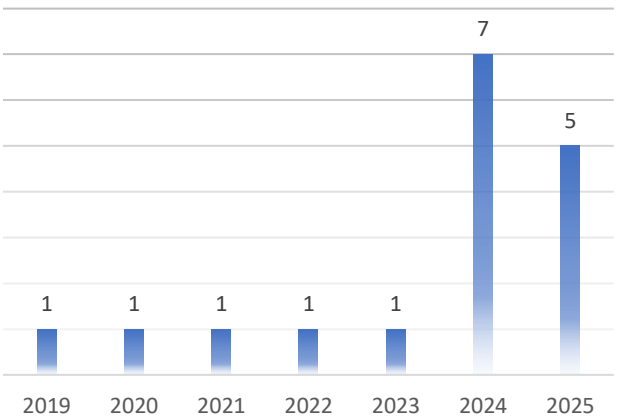


Figure 2. Number of Publications by Year

It should be noted that, while the data indicates a potential decrease in publications from 2024 to 2025, further verification is needed to confirm this trend. The decrease could be due to various factors, such as shifts in research priorities or methodological approaches. Alternatively, it could be due to delays in the publication process for articles submitted in 2025. A more in depth analysis of these factors would help identify the root causes of the observed changes. Next, we will examine the geographic distribution of research, focusing on the country of origin of the lead authors. Furthermore, public interest in cryptocurrencies, particularly Bitcoin, reached an all time high during this period, fueling many blockchain based projects. This increase demonstrates a positive feedback loop, where blockchain technology innovations drive research and wider adoption worldwide.

This continued growth in interest reflects the impact of technological advancements on other sectors, as well as its crucial role in developing a more efficient and transparent food supply chain.However, further analysis is needed to understand the possibility of a decline in interest from 2024 to 2025. While preliminary data suggests a possible decline, this could be due to various factors, such as changing research priorities.

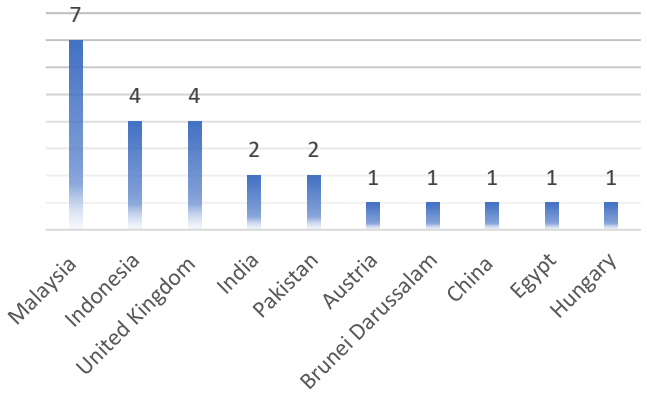


Figure 3. Number of Publications Based on Country of Origin.

Figure 3 shows the top 10 countries contributing to the body of knowledge in this field. Malaysia is the top contributor, with 29.2% of articles. Blockchain research in Malaysia has developed rapidly, with bibliometric approaches used to explore research dynamics, institutional collaborations, and thematic focus within the literature (Bazel et al., 2023) in the application of blockchain to address issues of security, quality, and consumer trust (Vikaliana et al., 2021).

Several Indonesian researchers recommend that blockchain researchers focus more on privacy and security protection issues (Ibrahim & Samrat, 2021) and explains the various dimensions of Internet of Things (IoT) technology and the Industry 4.0 framework, as well as examining the potential for utilizing IoT in driving the development of sustainable supply chains (Yalcin et al., 2020).

This article identifies the 10 leading journals that publish the most research related to blockchain and the halal food supply chain. Among these journals, Business Management and Accounting and Computer Science stand out as the main sources. Business Management and Accounting accounts for 16% of the total publications, while Computer Science contributes another 16% (Wahab et al., 2025). his can be seen in Figure 4.

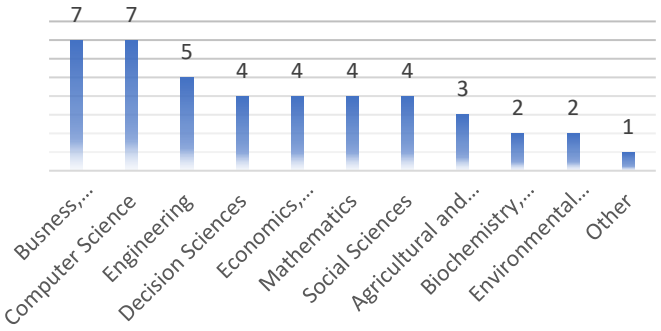


Figure 4. Top 10 Subject Areas.

There are 10 authors who are most productive in producing articles on the use of blockchain in the halal food supply chain, as seen in Figure 5. In the figure, Vanany, I. has two published articles. Vanany, I. is in the first position as the most productive author, indicating a major focus or contribution to this topic. Although the number of articles she has written is only two, her position at the top indicates that research on the application of blockchain in the halal food supply chain is still in its infancy, and not many authors are actively producing work in this field.

This could be because the topic is interdisciplinary, requiring expertise from various fields such as information technology, supply chain management, and sharia law. Other authors in the top ten likely have the same or slightly fewer articles than Vanany, I. This data indicates that the research community in this field is still small, and its works are divided among a few authors.

To understand more deeply, it is crucial to analyze the content of the articles written by Vanany, I. and the dominance of top authors reflecting key research trends. This understanding helps in formulating relevant research directions and key trends in research at the intersection of blockchain, halal food supply chains, and author productivity. To identify and interpret more deeply the relevance and direction of research developments related to blockchain in the food supply chain, a bibliometric analysis was conducted using Vosviewer software. Shown in Figure 5.

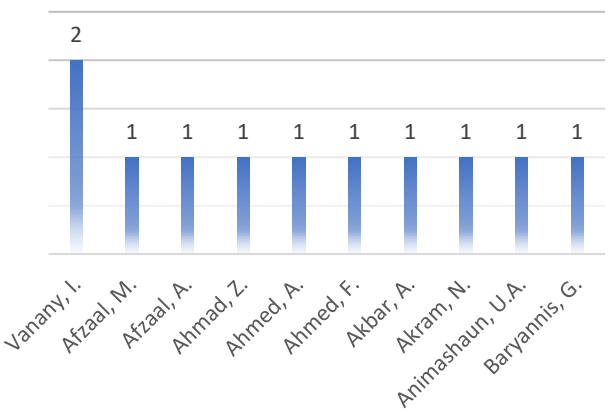


Figure 5. Top 10 Authors.

The graph depicted above shows the extent of author participation in research papers. The results indicate that Vanniy I. exhibited the highest level of involvement by contributing to two publications. Conversely, numerous other scholars, such as Afzaal M., Afzaal A., Ahmad Z., Ahmad A., Ahmed F., Akbar A., Akram N., Aminshaun U. A., and Bayanniss G. Everyone else contributed to only a single paper. This pattern suggests that Vanniy I. likely acted as a primary contributor or held a significant role in the study, whereas the remaining authors also participated but to a relatively lesser extent. The variation in contribution may indicate different roles among the authors, where some were more actively involved in manuscript preparation, while others contributed through supporting activities such as data collection or analytical tasks.

The research methodology employed co authorship and co occurrence analyses to examine collaboration patterns among researchers and countries involved in the study. These analytical approaches used authors and thematic keywords as the primary units of analysis to map collaboration networks and identify key contributors within the academic community related to the research topic. The visual representation of the co authorship analysis results illustrates the collaboration structure and relationships among researchers involved in the study is presented in Figure 6.

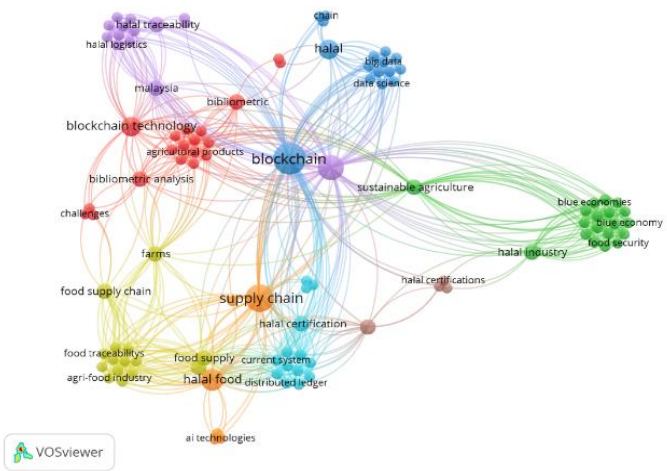


Figure 6. Co-Occurrence Keywords.

Figure 6, a keyword co occurrence network, demonstrates a systematic relationship between keywords, demonstrating the keyword relationship map of 17 articles on blockchain in the halal food supply chain. Keywords are grouped into several color clusters, with key keywords such as "blockchain," "supply chain," and "halal" as the center of the relationship. These results indicate that the topic blockchain in the halal supply chain is closely linked to digital technology and sustainability issues. Table 1 presents the top 10 keywords with the highest total link strength (TLS) scores. This overall analysis underscores the complexity and interdisciplinary nature of the blockchain topic in the halal food supply chain.

Blockchain technology has an important role in the research field, so it is not surprising that the keyword "blockchain" appears 8 times and has a total power of 100%. tautan (TLS) the largest indicates that most of the articles in this dataset use “blockchain” as the primary keyword.

Table 1. Highest TLS

No.	Keyword	Occurrence	TLS
1	block-chain	5	22
2	blockchain	8	22
3	supply chain	6	20
4	halal food	4	15
5	blockchain technology	3	12
6	food supply	2	12
7	supply chains	2	12
8	farms	2	11
9	halal certification	2	9
10	transparency	2	9
11	bibliometric analysis	2	8
12	sustainable agriculture	2	8
13	bibliometric	2	7
14	food supply chain	2	7
15	halal	3	5
16	halal traceability	2	5
17	halal industry	2	4

The central role blockchain plays in research is also evident in how this keyword serves as a key link between concepts such as "supply chain," "halal," "traceability," and "smart contract." This strong connection demonstrates that discussions about blockchain implementation in the halal food supply chain cannot be separated from a deeper understanding of the technology itself. Thus, the dominance of "blockchain" as the keyword with the highest TLS reflects not only the research focus but also its relevance. The strong presence of the keyword *“blockchain”* reflects a significant emphasis on technological advancement and its practical applications. A core focus for researchers has been the investigation of this technology's mechanisms and its capacity for resolving particular hurdles inherent in the halal food distribution network, notably the improvement of visibility, ensuring traceability, and improving information management systems.

The consistent appearance of this term and its strong association with other related keywords indicate that blockchain is not merely a research topic but also represents a transformative tool with substantial practical relevance in the field. An analysis of co authorship by country unit of analysis is shown in Figure 7.

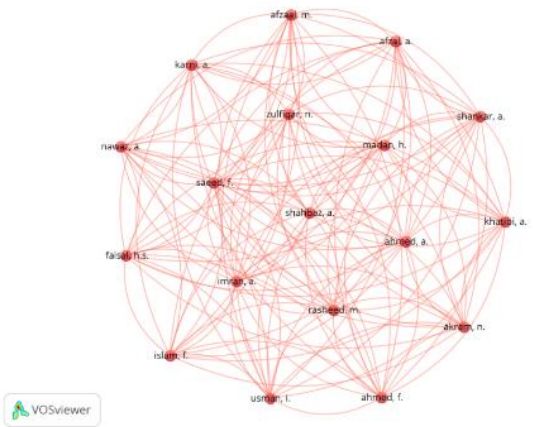


Figure 7. Co-authorship (Authors)

Figure 7 shows how the authors collaborate in research on blockchain and halal supply chains. Author Shahbaz, A. appears to be the most active because he has many relationships with other authors such as Imran, A., Ahmed, A., and Rasheed, M. This indicates his very important role in scientific collaboration.

Many authors collaborate with each other. are closely connected, indicating that they often work in the same team. Table 2 presents the total link strength (TLS) scores for each author. The high TLS scores for Shahbaz, A., and other well connected authors, indicate that research in this area is typically conducted collaboratively and involves multiple institutions.

Table 2. Total link strength (TLS) for co-authorship (author)

No.	Author	Document	Citation	TLS
1	keogh, john g.	1	204	4
2	kurniawan, edi	1	20	4
3	pratama, muhamad aria	1	20	4
4	puspitasari, nia budi	1	20	4
5	rejeb, abderahman	1	204	4
6	rejeb, karim	1	204	4
7	rosyada, zainal fanani	1	20	4
8	susanty, aries	1	20	4
9	treiblmaier, horst	1	204	4
10	zailani, suhaiza	1	204	4
11	akbar, adam	1	12	2
12	chandra, geetanjali ramesh	1	67	2
13	liaqat, iman ali	1	67	2
14	rakhmawati, nur aini	1	12	2
15	sharma, bhoopesh	1	67	2
16	vanany, iwan	2	20	2

Author John G. Keogh recorded the highest citation count at 204 with a total link strength (TLS) value of 4, followed by Edi Kurniawan, who obtained 20 citations with a TLS value of 2. Visualization results generated through VOSviewer indicate that blockchain technology is extensively connected with several key areas, including food supply, supply chains, and supply chain management. The wide range of these connections highlights the substantial potential of blockchain to drive transformation across multiple industrial sectors.

3.2 Strategic Implications and Future Research Directions

The implementation of blockchain in the halal supply chain has a significant strategic impact on increasing efficiency, certification transparency, and consumer trust. (Noman et al., 2025) he explained that a blockchain based halal supply chain system can enhance automatic, real time product tracking from start to finish in the distribution process. Furthermore, this technology can ensure a product's halal status without manual intervention, making it crucial for complying with Sharia principles in international trade. He also emphasized (Sunmola et al., 2025) this is done by presenting an integrative framework between blockchain and artificial intelligence which plays a role in strengthening the halal certification system globally.

Although the prospects for this technology are very promising, its implementation still faces obstacles, especially within the scope of small and medium enterprises (MSMEs). As shown by (Ummah et al., 2024), most MSMEs in the halal food sector in Indonesia lack adequate digital readiness to adopt blockchain and IoT technologies. (Hassam et al., 2024) highlighted the importance of training programs and technological capability development for MSMEs in Malaysia so they can optimally access blockchain benefits. Therefore, support from the government and halal certification bodies is essential for developing an inclusive and equitable digital infrastructure.

From a regulatory and governance perspective, blockchain adoption requires harmonization of halal certification standards between countries. Disparities in systems and regulations are a major challenge to the development of a global halal blockchain ecosystem. (Dieguez Santana et al., 2025) proposes the implementation of international standards based smart contracts as a solution to cross country regulatory disparities. In his research, (Vanany et al., 2024) he also emphasized the importance of collaboration between national halal institutions such as BPJPH and blockchain technology to ensure the validity of halal data digitally and in accordance with syariah. In addition, future studies are expected to explore the integration of blockchain with complementary technologies such as the Internet of Things (IoT), big data analytics, and artificial intelligence (AI) to develop a responsive and intelligent halal

supply chain system (Iftekhar et al., 2020). Earlier studies have introduced an integrated blockchain and Internet of Things (IoT) framework designed to strengthen the resilience of supply chain data, particularly in supporting food safety compliance (Aliana et al., 2024). This highlights the necessity of adopting a multidisciplinary perspective in developing a digital halal ecosystem that is both sustainable and grounded in empirical evidence. With automated tracking support, halal certification audits are faster, and consumers can verify directly through a digital application.

Blockchain adoption also demands a social and educational based approach. (Harsanto et al., 2024) underscored the need to formulate a sustainable halal value chain that is oriented towards the welfare of MSMEs, (Karyani et al., 2024) this study demonstrates that industry players' willingness to adopt blockchain is heavily influenced by perceived benefits, system readiness, and external motivation from certification bodies. Therefore, future research must encompass technical, regulatory, social, and cultural dimensions so that the integration of blockchain in halal supply chain management can contribute to a comprehensive, transformative impact.

3.3 Discussion

The research results show that blockchain technology helps increase transparency and efficiency in the supply chain system halal food supply. With its immutable and instantly accessible record keeping, blockchain enables all parties, such as producers, distributors, auditors, and consumers, to accurately track the origin, production process, and certification status. This level of transparency helps reduce the risk of data fraud and expedites the halal status verification process without relying on time consuming manual methods.

In terms of efficiency, blockchain facilitates information exchange among supply chain stakeholders by eliminating reliance on physical documentation and separate verification systems. The utilization of smart contracts further optimizes auditing and certification procedures, thereby reducing processing time This feature proves exceptionally vital for guaranteeing effortless flow of halal goods, especially within cross-border commerce, simultaneously aiding in boosting how smoothly operations run and lowering expenses.

Even with its significant promise, this research also brought to light a number of hurdles regarding the deployment of blockchain, specifically concerning overseas halal accreditation. A primary impediment stems from the absence of universally accepted standards for the halal certification procedures and the necessary digital groundwork. Variations in governing rules and how things operate country by country could impede the embedding of blockchain technology into the current accreditation structures. Furthermore, worries surrounding the safety of information and the capacity of the system to work with other technologies persist as key problems, particularly when the setup needs to cater to numerous involved parties possessing diverse responsibilities and power levels.

More comprehensive research examining the relationship between blockchain technology and the specific needs of the halal ecosystem such as consumer trust, regulatory roles, and the readiness of micro, small, and medium enterprises remains limited and requires further exploration.

Therefore, this study emphasizes that blockchain has significant potential to improve halal supply chain management. However, its success depends heavily on the preparation of industry players, appropriate policy support, and the development of practical and context appropriate research. Therefore, a collaborative and cross sectoral approach is a key strategy for this technology to truly bring about real change in the global halal industry.

CONCLUSION

Based on the findings and bibliometric analysis presented in this study, several strategic recommendations are crucial to strengthen the adoption of blockchain technology in the halal food supply chain. First, to overcome digital capability limitations among Micro, Small, and Medium Enterprises (MSMEs), it is advisable for governments to collaborate with halal certification authorities in establishing technology literacy initiatives and digital training programs that emphasize the implementation of blockchain, IoT, and artificial intelligence. These initiatives are essential for reducing the technology adoption gap that continues to characterize the small scale halal industry, particularly in developing countries such as Indonesia and Malaysia.

Furthermore, within the global framework, the harmonization of halal certification standards across countries has become a critical necessity. Accordingly, strengthening mutual cooperation among regulatory authorities, including BPJPH, JAKIM, and GAC, is recommended to develop a smart contract system grounded in internationally recognized halal standards. This alignment would support halal verification processes that are transparent, real time, and decentralized, while simultaneously minimizing challenges caused by regulatory inconsistencies.

Third, from a technological perspective, the development of an integrated system that integrates blockchain with the Internet of Things (IoT) and artificial intelligence (AI) could be a promising future direction. This technological model has the potential to foster a halal supply chain ecosystem that is adaptive, intelligent, and based on tamper proof data, thereby significantly improving audit efficiency and consumer trust.

Fifth, subsequent investigations ought to employ a wide-ranging, interdisciplinary methodology, incorporating facets of information technology, Sharia-compliant supply chains, Islamic jurisprudence, and how consumers behave. This ensures that incorporating blockchain technology isn't purely a technical exercise but is also finely attuned to the surrounding cultural and societal nuances. Such an approach is paramount for cultivating a digital halal environment that

is comprehensive and accurately mirrors the practical needs of those involved in the sector. Moreover, for a digital halal system to endure over the long haul, bolstering educational efforts and heightening public involvement become crucial. Regulatory bodies, educational establishments, and industry specialists should collaborate to foster the development of user-friendly applications for tracking halal integrity, alongside initiatives designed to boost understanding of verification methods powered by technology in the halal domain. Adopting these steps should enable the incorporation of blockchain within the worldwide halal structure to function optimally, delivering results that are both lasting and fundamentally changing.

Additionally, the WTERP, an integrated platform for business oversight, demonstrates the substantial potential of blockchain to elevate openness, streamlining operations, and fostering greater confidence among interested parties. Given its capacity for tamper-proof data recording and instant progress tracking, blockchain offers a means to strengthen adherence to the halal certification process while substantially reducing the risk of data falsification.

Furthermore, the available literature is still limited to conceptual studies, necessitating a more applied and contextual approach to support the technology's comprehensive adoption within the global halal ecosystem.

REFERENCES

Ababou, M., Chelh, S., & Elhiri, M. (2023). 2023 5 A-Bibliometric-Analysis-of-the-Literature-on-Food-Industry-Supply-Chain-Resilience-Investigating-Key-Contributors-and-Global TrendsSustainability-Switzerland.pdf. https://doi.org/10.3390/su15118812

Aliana, N., Hanafi, M., Nasir, M., & Majid, A. (2024). Traceability of Logistics in Halal Meat Supply Chain According to Islamic Legal Maxim. Journal of Law & Governance, 7(1), 73–94.https://unimel.edu.my/journal/index.php/JLG/article/view/1891.

Bazel, M. A., Ahmad, M., & Mohammed, F. (2023). Blockchain Technology in Malaysian Context: Bibliometric Analysis and Systematic Review. International Journal on Advanced Science, Engineering and Information Technology, 13(5), 1679–1692. https://doi.org/10.18517/ijaseit.13.5.18532

Benatiya Andaloussi, M. (2024). A Bibliometric Literature Review of Digital Supply Chain: Trends, Insights, and Future Directions. SAGE Open, 14(2), 1–20. https://doi.org/10.1177/21582440241240340.

Catur, H., Alfan, M., Sabrina, B., Gunawan, I., & Tieman, M. (2025). Blockchain dalam Rantai Pasokan Makanan : Sebuah Tinjauan Literatur dan Analisis Bibliometrik. 23(1), 42–57. https://doi.org/10.12928/si.v23i1.302

Che Hassan, M. H., & Osman, L. H. (2024). the Impact of Adopting Blockchain in the Food Supply Chain: a Scoping Review. Logforum, 20(3), 323–337. https://doi.org/10.17270/J.LOG.001063

Dewi, R. (2024). Overview of Managing Management Information Systems on Supply Chain Management : A Bibliometric Study. 7(Table 10), 4–6.https://doi.org/10.36815/bisman.v7i2.3141

Dieguez-Santana, K., Sarduy-Pereira, L., Ruiz-Reyes, E., & Sablón Cossío, N. (2025). Application of the Circular Economy in Research in the Agri-Food Supply Chain: Bibliometric, Network, and Content Analysis. Sustainability (Switzerland), 17(5), 1–28. https://doi.org/10.3390/su17051899

Guaita Martínez, J. M., Carracedo, P., Gorgues Comas, D., & Siemens, C. H. (2022). An analysis of the blockchain and COVID-19 research landscape using a bibliometric study. Sustainable Technology and Entrepreneurship, 1(1), 1–7. https://doi.org/10.1016/j.stae.2022.100006

Harsanto, B., Pradana, M., Firmansyah, E. A., Apriliadi, A., & Ifghaniyafi Farras, J. (2024). Sustainable Halal Value Chain performance for MSMEs: the roles of digital technology, R&D, financing, and regulation as antecedents. Cogent Business and Management, 11(1). https://doi.org/10.1080/23311975.2024.2397071

Hassam, S. F., Talip, A., Aspha, Y., Mustapha, A., & Shaharudin, M. R. (2024). Blockchain Technology in the Halal Supply Chain: Comparative insights from Malaysian micro, small, and medium enterprises. October, 23–25.https://doi.org/10.21834/e-bpj.v10iSI28.6971

Ibrahim, G., & Samrat, R. (2021). An analysis of blockchain in Supply Chain Management: system perspective current and future research. International Business Logistics, 1(2), 28. https://doi.org/10.21622/ibl.2021.01.2.028

Iftekhar, A., Cui, X., Hassan, M., & Afzal, W. (2020). Application of Blockchain and Internet of Things to Ensure Tamper-Proof Data Availability for Food Safety. Journal of Food Quality, 2020. https://doi.org/10.1155/2020/5385207

Karyani, E., Geraldina, I., Haque, M. G., & Zahir, A. (2024). Intention to adopt a blockchain-based halal certification: Indonesia consumers and regulatory perspective. Journal of Islamic Marketing, 15(7), 1766–1782. https://doi.org/10.1108/JIMA-03-2023-0069

Mohammed, M. A., De-Pablos-Heredero, C., & Montes Botella, J. L. (2024). A Systematic Literature Review on the Revolutionary Impact of Blockchain in Modern Business. Applied Sciences (Switzerland), 14(23). https://doi.org/10.3390/app142311077

Noman, A. Al, Afif, M. M., Huq, A. M. R., Rahman, A. F. F., & Islam, M. E. A. (2025). Blockchain-Driven Halal Supply Chains: Enhancing Transparency and Efficiency While Ensuring Shariah Adherence. International Journal of Innovative Science and Research Technology, May, 1992–1997. https://doi.org/10.38124/ijisrt/25apr1001

Prados-Castillo, J. F., Guaita Martínez, J. M., Zielińska, A., & Gorgues Comas, D. (2023). A Review of Blockchain Technology Adoption in the Tourism Industry from a Sustainability Perspective. Journal of Theoretical and Applied Electronic Commerce Research, 18(2), 814–830. https://doi.org/10.3390/jtaer18020042

Reis-Marques, C., Figueiredo, R., & Neto, M. de C. (2021). Applications of blockchain technology to higher education arena: A bibliometric analysis. European Journal of Investigation in Health, Psychology and Education, 11(4), 1406–1421. https://doi.org/10.3390/ejihpe11040101

Shevchuk, R., Lishchynskyy, I., Ciura, M., Lyzun, M., Kozak, R., & Kasianchuk, M. (2025). Application of Blockchain Technology in Emergency Management Systems: A Bibliometric Analysis. Applied Sciences (Switzerland), 15(10), 1–29. https://doi.org/10.3390/app15105405

Sundarakani, B., & Ghouse, A. (2024). A Systematic Literature Review and Bibliometric Analysis of Blockchain Technology for Food Security. Foods, 13(22). https://doi.org/10.3390/foods13223607

Sunmola, F., Baryannis, G., Tan, A., Co, K., & Papadakis, E. (2025). Holistic Framework for Blockchain-Based Halal Compliance in Supply Chains Enabled by Artificial Intelligence. Systems, 13(1), 21.https://doi.org/10.3390/systems13010021

Tavana, M. (2022). A Review of Digital Transformation on Supply Chain Process Management Using Text Mining. Processes, 10, 842.https://doi.org/10.3390/pr10050842

Ummah, F. F., Kurniawan, A., Othman, N. H., & Mulyati, S. (2024). Bibliometric Analysis: Performance Measurement From 2003-2023 Using Vosviewer. Jurnal Riset Bisnis Dan Manajemen Tirtayasa, 8(2), 129. https://doi.org/10.35448/jrbmt.v8i2.29185

Vanany, I., Soon-Sinclair, J. M., & Rahkmawati, N. A. (2024). Assessment of halal blockchain in the Ababou, M., Chelh, S., & Elhiri, M. (2023). 2023 5 A-Bibliometric-Analysis-of-the-Literature-on-Food-Industry-Supply-Chain-Resilience-Investigating-Key-Contributors-and-Global TrendsSustainability-Switzerland.pdf. https://doi.org/10.3390/su15118812

Aliana, N., Hanafi, M., Nasir, M., & Majid, A. (2024). Traceability of Logistics in Halal Meat Supply Chain According to Islamic Legal Maxim. Journal of Law & Governance, 7(1), 73–94.https://unimel.edu.my/journal/index.php/JLG/article/view/1891.

Bazel, M. A., Ahmad, M., & Mohammed, F. (2023). Blockchain Technology in Malaysian Context: Bibliometric Analysis and Systematic Review. International Journal on Advanced Science, Engineering and Information Technology, 13(5), 1679–1692. https://doi.org/10.18517/ijaseit.13.5.18532

Benatiya Andaloussi, M. (2024). A Bibliometric Literature Review of Digital Supply Chain: Trends, Insights, and Future Directions. SAGE Open, 14(2), 1–20. https://doi.org/10.1177/21582440241240340

Catur, H., Alfan, M., Sabrina, B., Gunawan, I., & Tieman, M. (2025). Blockchain dalam Rantai Pasokan Makanan : Sebuah Tinjauan Literatur dan Analisis Bibliometrik. 23(1), 42–57. https://doi.org/10.12928/si.v23i1.302

Che Hassan, M. H., & Osman, L. H. (2024). the Impact of Adopting Blockchain in the Food Supply Chain: a Scoping Review. Logforum, 20(3), 323–337. https://doi.org/10.17270/J.LOG.001063

Dewi, R. (2024). Overview of Managing Management Information Systems on Supply Chain Management : A Bibliometric Study. 7(Table 10), 4–6.https://doi.org/10.36815/bisman.v7i2.3141

Dieguez-Santana, K., Sarduy-Pereira, L., Ruiz-Reyes, E., & Sablón Cossío, N. (2025). Application of the Circular Economy in Research in the Agri-Food Supply Chain: Bibliometric, Network, and Content Analysis. Sustainability (Switzerland), 17(5), 1–28. https://doi.org/10.3390/su17051899

Guaita Martínez, J. M., Carracedo, P., Gorgues Comas, D., & Siemens, C. H. (2022). An analysis of the blockchain and COVID-19 research landscape using a bibliometric study. Sustainable Technology and Entrepreneurship, 1(1), 1–7. https://doi.org/10.1016/j.stae.2022.100006

Harsanto, B., Pradana, M., Firmansyah, E. A., Apriliadi, A., & Ifghaniyafi Farras, J. (2024). Sustainable Halal Value Chain performance for MSMEs: the roles of digital technology, R&D, financing, and regulation as antecedents. Cogent Business and Management, 11(1). https://doi.org/10.1080/23311975.2024.2397071

Hassam, S. F., Talip, A., Aspha, Y., Mustapha, A., & Shaharudin, M. R. (2024). Blockchain Technology in the Halal Supply Chain: Comparative insights from Malaysian micro, small, and medium enterprises. October, 23–25.https://doi.org/10.21834/e-bpj.v10iSI28.6971

Ibrahim, G., & Samrat, R. (2021). An analysis of blockchain in Supply Chain Management: system perspective current and future research. International Business Logistics, 1(2), 28. https://doi.org/10.21622/ibl.2021.01.2.028

Iftekhar, A., Cui, X., Hassan, M., & Afzal, W. (2020). Application of Blockchain and Internet of Things to Ensure Tamper-Proof Data Availability for Food Safety. Journal of Food Quality, 2020. https://doi.org/10.1155/2020/5385207

Karyani, E., Geraldina, I., Haque, M. G., & Zahir, A. (2024). Intention to adopt a blockchain-based halal certification: Indonesia consumers and regulatory perspective. Journal of Islamic Marketing, 15(7), 1766–1782. https://doi.org/10.1108/JIMA-03-2023-0069

Mohammed, M. A., De-Pablos-Heredero, C., & Montes Botella, J. L. (2024). A Systematic Literature Review on the Revolutionary Impact of Blockchain in Modern Business. Applied Sciences (Switzerland), 14(23). https://doi.org/10.3390/app142311077

Noman, A. Al, Afif, M. M., Huq, A. M. R., Rahman, A. F. F., & Islam, M. E. A. (2025). Blockchain-Driven Halal Supply Chains: Enhancing Transparency and Efficiency While Ensuring Shariah Adherence. International Journal of Innovative Science and Research Technology, May, 1992–1997. https://doi.org/10.38124/ijisrt/25apr1001

Prados-Castillo, J. F., Guaita Martínez, J. M., Zielińska, A., & Gorgues Comas, D. (2023). A Review of Blockchain Technology Adoption in the Tourism Industry from a Sustainability Perspective. Journal of Theoretical and Applied Electronic Commerce Research, 18(2), 814–830. https://doi.org/10.3390/jtaer18020042

Reis-Marques, C., Figueiredo, R., & Neto, M. de C. (2021). Applications of blockchain technology to higher education arena: A bibliometric analysis. European Journal of Investigation in Health, Psychology and Education, 11(4), 1406–1421. https://doi.org/10.3390/ejihpe11040101

Shevchuk, R., Lishchynskyy, I., Ciura, M., Lyzun, M., Kozak, R., & Kasianchuk, M. (2025). Application of Blockchain Technology in Emergency Management Systems: A Bibliometric Analysis. Applied Sciences (Switzerland), 15(10), 1–29. https://doi.org/10.3390/app15105405

Sundarakani, B., & Ghouse, A. (2024). A Systematic Literature Review and Bibliometric Analysis of Blockchain Technology for Food Security. Foods, 13(22). https://doi.org/10.3390/foods13223607

Sunmola, F., Baryannis, G., Tan, A., Co, K., & Papadakis, E. (2025). Holistic Framework for Blockchain-Based Halal Compliance in Supply Chains Enabled by Artificial Intelligence. Systems, 13(1), 21.https://doi.org/10.3390/systems13010021

Tavana, M. (2022). A Review of Digital Transformation on Supply Chain Process Management Using Text Mining. Processes, 10, 842.https://doi.org/10.3390/pr10050842

Ummah, F. F., Kurniawan, A., Othman, N. H., & Mulyati, S. (2024). Bibliometric Analysis: Performance Measurement From 2003-2023 Using Vosviewer. Jurnal Riset Bisnis Dan Manajemen Tirtayasa, 8(2), 129. https://doi.org/10.35448/jrbmt.v8i2.29185

Vanany, I., Soon-Sinclair, J. M., & Rahkmawati, N. A. (2024). Assessment of halal blockchain in the Indonesian food industry. Journal of Islamic Marketing, 15(6), 1498–1518.https://doi.org/10.1108/JIMA-05-2022-0122

Vikaliana, R., Raja Mohd Ras, R. Z., Pujawan, I. N., & Irwansyah. (2021). Blockchain Technology Meets Traceability in Fruit Supply Chain Management: A Systematic Review. Jurnal Manajemen Dan Organisasi, 12(3), 232–238. https://doi.org/10.29244/jmo.v12i3.39199

Wahab, R. A., Mohamad, U. H., & Ahmad, M. N. (2025). A Dual Approach to Halal Meat Traceability through QR Codes and Blockchain. International Journal on Advanced Science, Engineering and Information Technology, 15(2), 654–660. https://doi.org/10.18517/ijaseit.15.2.20509

Xue, J., Zhang, W., Rasool, Z., & Zhou, J. (2022). A review of supply chain coordination management based on bibliometric data. Alexandria Engineering Journal, 61(12), 10837–10850. https://doi.org/10.1016/j.aej.2022.04.013

Yadav, A., Garg, R. K., & Sachdeva, A. (2024). Artificial intelligence applications for information management in sustainable supply chain management: A systematic review and future research agenda. International Journal of Information Management Data Insights, 4(2), 100292. https://doi.org/10.1016/j.jjimei.2024.100292

Yalcin, H., Shi, W., & Rahman, Z. (2020). A review and scientometric analysis of supply chain management (SCM). Operations