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Integration of Blockchain Technology in Islamic Finance: A Decentralized Solution for Shariah-Based Finance

Gina Elfida[1], Zaenafi Ariani[2*], Nur Fitri Hidayanti[3], Ahadiah Agustina[4], Ahmad Hulaimi, Novi Yanti Sandra Dewi[6]
[1,2,3,4,5,6]Sharia Economic, Universitas Muhammadiyah Mataram, Indonesia
ginaelfida8@gmail.com[1], efisholiha@gmail.com[2]

Abstract: This study aims to examine the integration of blockchain technology in Islamic financing as a decentralized solution to create a financial system that is more transparent, efficient, and in accordance with Islamic principles. Using a qualitative approach with an integrative literature review method, this study analyzes selected scholarly articles from Google Scholar, Scispace, DOAJ, and Scopus databases from 2015-2024. The selection process was based on strict inclusion-exclusion criteria and used thematic coding techniques to identify key patterns of findings. The results show that blockchain technology has significant potential to improve accountability, minimize intermediation, and eliminate usury and gharar in Islamic financial transactions. In addition, blockchain supports the maqashid objectives of sharia through transparency and fairness in transactions. However, its implementation still faces challenges such as regulatory limitations, digital literacy, and infrastructure readiness. This study suggests the importance of collaboration between stakeholders-including regulators, academics, and sharia practitioners-to ensure that the integration of blockchain technology is in line with sharia values and supports the economic empowerment of the ummah in a sustainable manner.

Keywords: Blockchain, Islamic Finance, Decentralization, Islamic Finance, Maqashid Sharia

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A. INTRODUCTION

Blockchain is a distributed ledger technology that enables the recording of transactions transparently, securely, and without intermediaries. In the context of Islamic finance, this technology can address challenges such as uncertainty (gharar) and interest (riba), which are against the principles of sharia. The decentralized and cryptographically protected characteristics of blockchain support the principles of Islamic finance, particularly in reducing uncertainty and avoiding the element of usury. According to Ananda and Widiarti (2024), the application of blockchain in the Islamic financial sector can increase transparency and efficiency in Islamic financial transactions and expand access to financial services. In addition, blockchain technology can improve data security, transaction transparency, and has a decentralized system, which is relevant to the need for transparency and accountability in Islamic finance.

Research by Abdusshomad (2023) suggests that the application of blockchain technology in zakat, waqf and sukuk can improve accountability through the creation of an open and supervisable audit trail. In addition, this study raised the controversial issue of cryptocurrency in the Islamic economy arising from its speculative nature, so further research is needed to

develop appropriate regulations and legal frameworks. The adoption of blockchain in Islamic economics faces various challenges, especially in terms of regulation, limited knowledge among practitioners, and public acceptance of this new technology. Therefore, collaboration between regulators, shariah experts, and technology developers is important to ensure shariah compliance while increasing technology adoption.

Bahanan and Wahyudi (2023) analyzed the effect of using blockchain technology in financial transactions in Islamic banking. This research uses a descriptive analytical approach to understand the influence of blockchain technology in the context of Islamic banking. Through a literature review and empirical studies, this research identifies several benefits that may occur in the use of blockchain technology in Islamic banking financial transactions. One of the main benefits is the increased security of financial transactions. However, this study also identifies several challenges that need to be addressed in the use of blockchain technology in Islamic banking financial transactions. These challenges include immature regulations, the need for robust infrastructure, and parties' trust in the new technology. In order to realize the potential of using blockchain technology in Islamic banking financial transactions, there needs to be cooperation between Islamic banking institutions, regulators, and other stakeholders. Clear regulations and a deep understanding of blockchain technology will be the key to success in facing the challenges and capitalizing on the potential of this technology.

Herawati (2024) illustrates the importance of transparency and reliability of financial records, focusing on the application of blockchain technology in sharia accounting. This research uses a qualitative descriptive method through library research. The results of this study show that blockchain provides an unprecedented level of transparency by ensuring every recorded transaction cannot be altered and verified by all relevant parties. The reliability of financial record keeping is also enhanced through the use of blockchain due to its decentralized structure that minimizes the risk of fraud and recording errors. In addition, this study discusses the challenges and implications of implementing blockchain technology in Islamic accounting, and provides suggestions for further research to optimize the integration of blockchain in Islamic accounting practices.

Najibulloh and Rahmalia (2024) discussed the application of blockchain technology in the Islamic finance industry, including the challenges and opportunities derived from its implementation. The research methodology involved a literature review and case studies of various projects and pilot projects using blockchain technology in Islamic finance. The results of the literature review show that blockchain technology has great potential in addressing the challenges of transparency, risk awareness, and efficiency in the Islamic financial system. The case studies showcase examples of projects that integrate blockchain technology, such as sharia-based sukuk platforms, price disclosure systems, and sharia digital payment solutions. The analysis shows that the application of blockchain technology in the Islamic finance industry has the potential to reduce administrative costs, simplify transactions, and expand the Islamic investment market.However, there are still challenges to be addressed, such as protocol standardization, regulation, and current technological limitations. This research provides a basis for developing a strategy for more effective use of blockchain technology in supporting the growth of the Islamic finance industry. Although various studies have

identified the potential of blockchain in improving transparency and efficiency in Islamic finance, there are still gaps in its widespread application, especially in the context of Islamic financing. Some of the key challenges faced include immature regulations.

B. METHOD

This research uses a library research approach with an integrative literature review method. This approach is used to systematically summarize and analyze various relevant scientific literature in order to identify trends, opportunities, and challenges in the application of blockchain technology in Islamic financing. This method was chosen because it is able to combine diverse primary research results to produce a complete and in-depth conceptual understanding (Torraco, 2005). Thus, this research is not only descriptive, but also analytical and synthesizing, in order to find gaps and novelty in the topic studied.

The data sources in this study were obtained from various leading scientific databases, namely Google Scholar, Scispace, DOAJ (Directory of Open Access Journals), and Scopus. The literature selected were national and international journal articles published between 2015 and 2024, to ensure that the information used was up-to-date and relevant to the development of blockchain technology and Islamic financing. The selected literature had to meet the inclusion criteria, namely: (1) discuss blockchain technology in the context of Islamic finance or economics, (2) use verifiable scientific methods, and (3) be available in full-text. While the exclusion criteria include: (1) articles that are not relevant to the main topic, (2) only in the form of opinion or editorial without research basis, and (3) duplicate articles from the same source.

The literature search process was conducted using a combination of keywords such as: "Blockchain", "Islamic Finance", "Shariah-Compliant Financing", "Blockchain in Islamic Banking", and "Islamic Fintech". Articles found in the database were then evaluated through title and abstract screening, as well as full-text analysis to ensure compliance with the focus of the study. The selection procedure was conducted in stages: the first stage was initial identification, followed by screening based on abstracts and keywords, then selection based on inclusion-exclusion criteria, and finally content quality evaluation.

The data analysis method used is descriptive qualitative, with a thematic coding approach to identify thematic patterns from each article analyzed. Emerging themes were categorized based on similarity of focus (e.g. transparency, efficiency, accountability, and sharia compliance). To ensure the validity and reliability of the data, source triangulation was conducted by comparing the findings of various articles from different reputable journals, as well as double-checking the interpretation results based on systematic literature review standards (Snyder, 2019). This process aims to make the synthesis results not only academically relevant, but also methodologically accountable.

C. RESULTS AND DISCUSSION

1. The Potential of Blockchain Technology in mproving Transparency and Efficiency of Islamic Financing

Blockchain technology has emerged as a pivotal innovation within the financial sector, especially in the realm of Islamic finance. It promises to enhance transparency and efficiency

in financing practices by leveraging its fundamental attributes such as decentralization, immutability, and security. The potential benefits of blockchain technology are particularly relevant in the context of Shariah-compliant financing, where adherence to ethical and transparent practices is paramount.

To begin with, blockchain can significantly improve transparency in Islamic finance by providing immutable and secure records of transactions. This is essential because traditional financial systems often grapple with concerns of trust and accountability among stakeholders involved in Shariah-compliant financial products (Truby et al., 2022). The use of blockchain enables parties to verify transactions without relying on a central authority, thus fostering trust and reducing instances of fraud. Furthermore, smart contracts which self-execute when predetermined conditions are met can automate compliance with Shariah laws, making processes more efficient and less prone to manipulation (Rejeb, 2022; Chong, 2021).

Moreover, the integration of blockchain into Islamic financial practices can lead to increased efficiency in transaction execution and management of funds. For instance, blockchain allows for real-time transaction processing, reducing delays and costs associated with intermediaries (Noch, 2024). The automation facilitated by blockchain can also enhance financial operations, allowing financial institutions to focus on customer service and strategy rather than administrative tasks (Hendarti et al., 2024). As highlighted in several studies, this automation helps not only in expediting transactions but also in minimizing errors that may arise in manual processing (Mbaidin & Alomari, 2024).

The proliferation of technological innovations, such as blockchain, can also catalyze the development of various Islamic fintech solutions, including crowdfunding platforms and peer-to-peer lending services. By adhering to Shariah principles, these instruments can provide alternative financing avenues for individuals and small businesses that may not have access to traditional banking services. Furthermore, the adoption of such technologies in the Islamic finance sector supports financial inclusion by offering lower transaction costs and improving accessibility for underserved populations (Kılıç, 2023; Hidajat, 2020).

Additionally, blockchain technology's applications extend to enhancing social responsibility within Islamic finance frameworks. Institutions like waqf and zakat can utilize blockchain to streamline processes related to contribution and distribution, thereby promoting accountability and traceability of funds (Mohamed et al., 2023). This advanced level of transparency not only builds donor trust but also ensures that resources are utilized effectively in alignment with Shariah obligations.

However, it is essential to recognize that the implementation of blockchain technology in Islamic finance is not devoid of challenges. Regulatory uncertainties, interoperability with existing systems, and the need for comprehensive understanding of Shariah compliance pose significant hurdles that must be addressed to fully leverage this technology's potential (Noch, 2024). Addressing these challenges will require collaboration among regulators, financial institutions, and technology developers to establish inclusive frameworks that encompass both technological advancements and the ethical dimensions of Islamic finance. In conclusion, the potential for blockchain technology to enhance transparency and efficiency in Shariah-compliant financing is substantial. By streamlining processes, fostering trust, and supporting

social responsibility, blockchain can significantly improve the effectiveness of Islamic finance and promote greater financial inclusivity. To harness these advantages, stakeholders must work collaboratively to navigate the complexities associated with implementing such transformative technologies in adherence to Islamic principles.

2. Implications of Decentralization for Shariah Compliance and Elimination of Usury

Alternatives. In the Islamic financial tradition, usury is prohibited, and risk-based approaches such as mudharabah and musyarakah should be promoted. Blockchain technology can be an appropriate platform to implement these contracts, where each party contributes capital and shares profits as agreed, without being affected by interest (Widyastuti, 2020). This creates an environment where investors and businesses can operate with more tangible sharia principles.

However, there are still challenges in the implementation of decentralization that may affect Shariah compliance. One such challenge is the need for adequate understanding and literacy of sharia principles among industry players and users. Many of them may not fully understand the various contracts and how they work in the context of decentralization (Harahap et al., 2024; Gani & Budiman, 2023). To address this, education and literacy on Islamic finance must be improved so that market participants can carry out their economic activities in accordance with sharia norms without being trapped in harmful practices.

While there are various benefits, it is important to emphasize that strong supervision and regulation are still needed to ensure that decentralized practices do not violate sharia principles. Clear regulations can help maintain the integrity of the Islamic financial system, thereby protecting consumers from risks that may arise from the use of new technologies (Tarigan et al., 2023; Muharam, 2023). As blockchain adoption increases, collaboration between Islamic financial institutions, policymakers, and technology can strengthen a sharia-compliant and sustainable financial ecosystem.

Overall, decentralization through blockchain technology offers significant potential to improve sharia compliance and eliminate the element of usury in Islamic finance. By promoting transparency and developing a better understanding of sharia principles among the public, decentralization can be an effective tool in the transformation of the Islamic economy.

D. CONCLUSIONS AND SUGGESTIONS

The integration of blockchain technology in Islamic financing shows great potential to deliver a more transparent, efficient, and Shariah-compliant financial system. Through decentralization, blockchain can reduce dependence on intermediaries, promote compliance with Islamic law, and eliminate usury and gharar in transactions. Thus, this technology not only offers technical solutions, but also supports financial inclusion and economic empowerment of the ummah. Its successful implementation relies heavily on the synergy between technology developers, financial authorities, academics, and scholars so that the application of blockchain is truly in line with maqashid sharia.

REFERENCES

Ananda, D., & Widiarti, T. (2024). Implementasi teknologi blockchain dalam keuangan syariah: Peluang dan implikasi. Mufakat: Jurnal Ekonomi, Manajemen dan Akuntansi, 3(2), 92–101. https://doi.org/10.21043/mufakat.v3i2.2437

Arwani, A., & Priyadi, U. (2023). Eksplorasi peran teknologi blockchain dalam meningkatkan transparansi dan akuntabilitas dalam keuangan Islam: Tinjauan sistematis. Jurnal Ekonomi Bisnis dan Manajemen, 2(2), 45–58. https://doi.org/10.59024/jise.v2i2.653

Bahanan, M., & Wahyudi, M. (2023). Analisis pengaruh penggunaan teknologi blockchain dalam transaksi keuangan pada perbankan syariah. I'thisom: Jurnal Ekonomi Syariah, 2(1), 232–243. https://doi.org/10.70412/its.v2i1.42

Chong, F. (2021). Enhancing trust through digital islamic finance and blockchain technology. Qualitative Research in Financial Markets, 13(3), 328-341. https://doi.org/10.1108/qrfm-05-2020-0076

Gani, A. A. and Budiman, B. (2023). Studi kuantitatif pemahaman konsep riba melalui latar belakang pendidikan dan literasi ekonomi syariah. Finansha: Journal of Sharia Financial Management, 4(1), 51-64. https://doi.org/10.15575/fjsfm.v4i1.26360

Hendarti, Y., Winarno, B., & Aprilianto, M. (2024). Use of blockchain technology and ai in sharia financial risk management. Ekuisci, 1(3), 155-163. https://doi.org/10.62885/ekuisci.v1i3.165

Hidajat, T. (2020). Financial technology in islamic view. Perisai : Islamic Banking and Finance Journal, 4(2), 102-112. https://doi.org/10.21070/perisai.v4i2.465

Harahap, M. G., Haidir, H., & Hizbullah, M. (2024). Pengaruh pendidikan dan literasi keuangan terhadap perilaku pengelolaan keuangan dalam perspektif ekonomi syariah di kalangan mahasiswa. CENDEKIA : Jurnal Penelitian Dan Pengkajian Ilmiah, 1(3), 90-96. https://doi.org/10.62335/0c06wd63

Kılıç, G. (2023). The emergence of islamic fintech and its applications. International Journal of Islamic Economics and Finance Studies. https://doi.org/10.54427/ijisef.1328087

Mbaidin, H. and Alomari, K. (2024). The critical success factors (csf) of blockchain technology effecting excel performance of banking sector: case of uae islamic banks. International Journal of Data and Network Science, 8(1), 289-306. https://doi.org/10.5267/j.ijdns.2023.9.024

Mohamed, M. A., Mohamed, M. A., & Mohamud, O. A. (2023). The role of blockchain technology on zakat institutions, a way forward: literature review. International Journal of Membrane Science and Technology, 10(3), 1996-2009. https://doi.org/10.15379/ijmst.v10i3.1869

Muharam, A. (2023). Integrasi ekonomi syariah dalam sistem keuangan global. Jurnal Inovasi Global, 1(1), 6-13. https://doi.org/10.58344/jig.v1i1.2

Noch, M. (2024). The application of blockchain technology in international financial management: opportunities and challenges. Golden Ratio of Mapping Idea and Literature Format, 4(2), 154-166. https://doi.org/10.52970/grmilf.v4i2.396

Najibulloh, I. K. and Rahmalia, L. (2024). Penerapan teknologi blockchain dalam industri keuangan syariah : tantangan dan peluang. J-Ebi: Jurnal Ekonomi Bisnis Islam, 3(01). https://doi.org/10.57210/j-ebi.v3i01.295

putra, D. (2024). Implementasi sharia complaince dalam platform crowdfunding syariah bagi umkm studi kasus: pt shafiq digital indonesia. Al-Mutsla, 6(1), 156-180. https://doi.org/10.46870/jstain.v6i1.939

Rejeb, D. (2022). Smart contract's contributions to mudaraba. Tazkia Islamic Finance and Business Review, 15(1). https://doi.org/10.30993/tifbr.v15i1.236

Syukron, S. J. (2024). Peran teknologi blockchain dalam keuangan syariah: Analisis tantangan dan solusinya. Al-Musyarakah: Jurnal Ekonomi Islam, 4(1), 93–107. https://doi.org/10.71247/qjds1j03

Snyder, H. (2019). Literature review as a research methodology: An overview and guidelines. Journal of Business Research, 104, 333–339. https://doi.org/10.1016/j.jbusres.2019.07.039

Suratinoyo, F., Bukido, R., & Nagauleng, A. M. (2021). Implementasi akad murabahah pada pembiayaan pension di bank syariah mandiri kantor cabang pembantu manado kairagi. Kunuz: Journal of Islamic Banking and Finance, 1(1), 1-9. https://doi.org/10.30984/kunuz.v1i1.19

Truby, J., Dahdal, A., & Ismailov, O. (2022). The role and potential of blockchain technology in islamic finance. European Business Law Review, 33(Issue 2), 175-192. https://doi.org/10.54648/eulr2022005

Torraco, R. J. (2005). Writing integrative literature reviews: Guidelines and examples. Human Resource Development Review, 4(3), 356–367. https://doi.org/10.1177/1534484305278283

arigan, Y. P., Thaib, H., Maharani, U., & Zamakhsyari, Z. (2023). Penyelesaian pembiayaan bermasalah pada bank syariah dengan mekanisme agunan yang diambil alih (ayda) (studi kasus: pt coffindo dan bank muamalat cabang medan sudirman). Jurnal Normatif, 3(1), 245-254. https://doi.org/10.54123/jn.v3i1.273

Rejeb, D. (2022). Smart contract's contributions to mudaraba. Tazkia Islamic Finance and Business Review, 15(1). https://doi.org/10.30993/tifbr.v15i1.236

Wati, A. C. P., & Yazid, M. (2023). Blockchain technology in financial transactions under sharia banking practice. EkBis: Jurnal Ekonomi dan Bisnis, 7(2), 81–91. https://doi.org/10.14421/ekbis.2023.7.2.2049

Widyastuti, E. (2020). Urgensi optimalisasi pembiayaan mudharabah sebagai core product perbankan syariah indonesia. El-Jizya: Jurnal Ekonomi Islam, 8(2), 150-175. https://doi.org/10.24090/ej.v8i2.4024