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Integration of Blockchain Technology in Islamic Finance A Literature Review on Transparency and Shariah Compliance

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Abstract: This study aims to examine the integration of blockchain technology in Islamic finance with a focus on transparency and compliance with sharia principles. Using a qualitative approach with Library Research and Integrative Review methods, this study analyzes literature from 2015 to 2024 obtained from scientific databases such as Google Scholar, DOAJ, Scopus, and Scispace. The selection process was conducted systematically through title, abstract, and full content analysis of articles that met the inclusion criteria. The results show that blockchain contributes significantly to improving transaction efficiency, data transparency, and automation of sharia-compliant processes through features such as immutability and smart contracts. However, challenges such as low technological literacy, lack of adaptive regulations, and limited infrastructure are barriers to the widespread adoption of this technology. This study recommends the need for collaboration between academics, regulators and industry practitioners to build a regulatory and educational framework that supports sustainable Shariah-compliant digital transformation. This study makes an important contribution to understanding the direction of blockchain technology development in the context of global Islamic finance.

Keywords: Blockchain Technology, Islamic Finance, Transparency, Shariah Compliance.

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A. INTRODUCTION

Blockchain technology is a digital innovation that offers a decentralized, transparent, and manipulation-resistant system of recording transactions. In the context of Islamic finance, principles such as the prohibition of riba, gharar, and maisir, as well as the emphasis on fairness and transparency, make blockchain a potential technology to strengthen the integrity of the Islamic financial system. For example, a study by Rabbani et al. (2020) highlights that blockchain can improve efficiency and transparency in Islamic financial transactions, while research by Alwazir Abdusshomad (2023) suggests that the application of blockchain in zakat, waqf, and sukuk can improve accountability through the creation of an open and supervisable audit trail.

Several studies have highlighted the benefits of blockchain in improving the transparency and efficiency of Islamic financial transactions. Wati and Yazid (2023) found that this technology can speed up transactions and reduce operational costs in Islamic banking. Meanwhile, Octaviana (2024) showed that blockchain can improve operational efficiency, transparency, and transaction security in Islamic banking in Indonesia. In addition, Aminin

(2023) asserted that blockchain can increase the transparency, efficiency, and security of Islamic banking financial transactions in Indonesia.

However, the implementation of blockchain in Islamic finance also faces challenges, especially related to compliance with sharia principles. Rabbani et al. (2020) noted that sharia compliance related to cryptocurrencies and blockchain is the biggest challenge faced by Islamic FinTech organizations. In addition, research by Zerouali (2022) suggests that blockchain technology can support financial inclusion and build trust in Islamic finance, but a clear legal framework is still needed to ensure sharia compliance. The study by Ali et al. (2021) also highlighted the need for education and socialization to the public regarding the benefits and ease of use of blockchain in Islamic social finance such as zakat.

Furthermore, research by Fitria and Sari (2023) suggests that blockchain can minimize the risk of fraud and improve operational efficiency through a decentralized, secure, and immutable transaction recording system. However, they also noted that challenges such as regulatory limitations, technological infrastructure readiness, and low digital literacy are still barriers to blockchain implementation in the Islamic banking sector. The study by Putri et al. (2023) emphasized the importance of collaboration between regulators, Islamic financial institutions, and technology providers in designing a legal framework that complies with sharia principles and supports system transparency.

An analysis of the above studies shows that while blockchain technology has great potential in enhancing transparency and sharia compliance in Islamic finance, there are still gaps in the literature regarding its practical implementation and the challenges faced. Most studies are still conceptual in nature and have not provided practical guidance for blockchain integration in the Islamic financial system. Therefore, this study aims to fill this gap by conducting a comprehensive literature review on the integration of blockchain technology in Islamic finance, particularly in enhancing transparency and compliance with sharia principles.

B. METHOD

This research uses a Library Research approach with the Integrative Review method, which is a systematic approach that aims to analyze, synthesize, and integrate various previous research findings to answer research questions thoroughly (Whittemore & Knafl, 2005). This approach is considered relevant because it allows researchers to examine recent developments related to the application of blockchain technology in Islamic banking. The main focus of the study is to analyze the literature that contains discussions on efficiency, transparency, and the challenges and opportunities of blockchain adoption in the context of Islamic finance.

Secondary data sources in this study came from reputable scientific databases namely Google Scholar, Scispace, Directory of Open Access Journals (DOAJ), and Scopus. The inclusion criteria applied include articles published between 2015 and 2024, both in Indonesian and English, and relevant to the topic of blockchain and Islamic banking. Articles must be peer-reviewed and fully accessible. The exclusion criteria included opinion articles without research basis, duplication of publications, or those that did not include clear methods.

The literature search process was conducted using combined keywords such as "blockchain AND Islamic banking", "blockchain in Islamic finance", and "blockchain technology AND Islamic transaction efficiency". The selection procedure was conducted in two stages, namely title and abstract screening, followed by a full content analysis of the articles that met the inclusion criteria. The entire search and selection process was conducted systematically using reference management tools to minimize bias and duplication.

The data analysis method was done thematically by grouping the research results based on the main topics that frequently appear such as transaction efficiency, transparency, sharia compliance, and regulatory challenges. To ensure the validity and reliability of the study, triangulation between sources was conducted and the quality of articles was assessed using the criteria set out in the Critical Appraisal Skills Program (CASP). Researchers also conducted peer debriefing to test the consistency of interpretation of the review results.

C. RESULTS AND DISCUSSION

1. Increasing Transparency through Blockchain Implementation in Islamic Finance

In the context of Islamic finance, the application of blockchain technology has shown significant potential to improve transparency, efficiency, and security in financial transactions. Blockchain technology, with its decentralized nature and immutable record-keeping mechanism, can facilitate a more open record-keeping and oversight process that increases trust between stakeholders (Talha, 2024; Chong, 2021). This transparency not only supports compliance with Shariah principles but also helps reduce the risk of fraud and data manipulation, which are crucial aspects of the Islamic financial system (Su, 2023; Chong, 2021)

The application of blockchain in Islamic finance can be illustrated through the development of innovative products such as smart Sukuk. Smart Sukuk is an application of smart contracts that utilizes blockchain technology to ensure that every aspect of the contract is aligned with sharia principles (Iftikhar & Saba, 2020; Zulkepli et al., 2023). With flexible coding and the ability to be upgraded according to changing market dynamics and sharia regulations, smart Sukuk offers a transparent transaction mechanism while being safe from potential violations of sharia principles (Zulkepli et al., 2023). This approach is combined with a blockchain-based audit system that allows the sharia supervisory board to conduct real-time monitoring of transactions, thus maximizing accountability and compliance (Chong, 2021; Haridan et al., 2023).

In addition, innovations in Islamic Fintech that integrate blockchain have resulted in various Islamic financial solutions such as digital banking, crowdfunding, and peer-to-peer (P2P) lending platforms. This technology not only improves transaction efficiency, but also provides the advantage of transparent track records as well as high auditability, which is crucial in ensuring that every transaction complies with strict Shariah requirements (Kılıç, 2023; Iftikhar, 2022). The involvement of various stakeholders in the blockchain-based audit and verification process also adds value to public trust in the digitally integrated Islamic financial system (Chong, 2021).

Overall, the implementation of blockchain in Islamic finance is a revolutionary approach that synergizes the need for transparency, accountability, and sharia compliance. With the advantages offered by blockchain in enhancing data security and reducing transaction costs,

the technology has the potential to fundamentally change the Islamic finance landscape and pave the way for the development of more innovative and inclusive financial products (Talha, 2024; Chong, 2021; Iftikhar & Saba, 2020). Strategic steps to adopt blockchain must also be accompanied by improved regulations and governance systems that are able to address the challenges of integration and scalability, so that the benefits obtained can be widely felt throughout the Islamic finance ecosystem (Su, 2023; Haridan et al., 2023).

2. Blockchain's Role in Supporting Compliance with Shariah Principles

The implementation of blockchain technology in Islamic finance presents a significant opportunity to strengthen compliance with sharia principles through increased transparency, accountability, and transaction security. Blockchain, with its immutable ledger nature and decentralized mechanism, enables real-time recording of transactions that can be verified by all stakeholders, thus supporting a strict monitoring system in accordance with sharia guidelines (Djumadi, 2024). In this context, the implementation of smart contracts acts as an automation tool, which not only executes agreements automatically when conditions are met, but also encodes sharia principles explicitly so that every transaction can be controlled and ensured to be in line with sharia values (Djumadi, 2024).

Furthermore, the application of blockchain enables full transparency in every stage of a transaction, from the initial recording to the final audit, which fundamentally reduces the chances of data manipulation and deviation from sharia principles. The decentralized voting and verification system in the blockchain provides assurance that every transaction has gone through a rigorous validation process by religious authorities or sharia supervisory boards, thereby increasing public trust and the integrity of the Islamic financial system Septianda et al., 2022). This approach is particularly relevant in the context of Islamic finance where adherence to the principles of fairness, transparency, and auditability are top priorities.

Overall, blockchain's role in supporting compliance with sharia principles lies in its ability to integrate surveillance technology and transparent digital record-keeping systems with automated mechanisms through smart contracts. This not only reduces the risk and potential for fraud, but also ensures that every transaction that occurs can be audited and accounted for consistently in accordance with sharia guidelines, thereby realizing a more just and trusted financial ecosystem (Djumadi, 2024; Septianda et al., 2022).

3. Challenges and Opportunities for Blockchain Integration in the Islamic Finance Ecosystem

The integration of blockchain technology in the Islamic finance ecosystem is increasingly relevant along with the development of information technology and the need for transparency and efficiency in the sharia-based financial system. The existence of blockchain can offer solutions to the challenges faced by the Islamic finance industry, such as transparency, risk management, and operational efficiency. Research conducted by Najibulloh & Rahmalia (2024) states that the application of blockchain can increase transaction transparency and reduce operational costs related to transaction verification and security. In addition, (Djumadi,

2023) also pointed out that blockchain provides a secure and decentralized system, and ensures compliance with sharia principles, which are fundamental in Islamic finance.

Despite its great potential, the integration of blockchain in Islamic finance faces a number of challenges. One of the main challenges is industry players' lack of understanding and limited knowledge of the technology. This may hinder the widespread adoption and application of blockchain (Najibulloh & Rahmalia, 2024), (Djumadi, 2023). In this context, there needs to be more intensive education and socialization efforts from Islamic financial institutions to the public and industry players regarding the benefits and ways of applying this technology, as raised in Widiastuti et al.'s research on the importance of guidance in the integration of Islamic social finance (Widiastuti et al., 2022).

On the other hand, the opportunities offered by blockchain technology are significant. With its smart contract mechanism, blockchain enables automation in financial transactions, which impacts efficiency and reduces the risk of human error (Djumadi, 2023). In addition, this technology supports the development of innovative Islamic financial instruments, such as digital sukuk and sharia-based crowdfunding, which can attract investors and expand financial access for the community (Najibulloh & Rahmalia, 2024). The implementation of blockchain technology in Islamic financial products has also shown positive results in several pilot projects, where more efficient and transparent transactions increase public trust in Islamic financial institutions (Djumadi, 2023).

Overall, the integration of blockchain in the Islamic finance ecosystem offers interrelated challenges and opportunities. In facing adoption challenges, it is important for various parties in the Islamic finance industry to work together on education and training to improve technological literacy. Meanwhile, the implementation of pilot projects can accelerate the understanding and acceptance of this new technology, which in turn will benefit the growth of the Islamic finance industry as a whole.

D. CONCLUSIONS AND SUGGESTIONS

The integration of blockchain technology in Islamic finance contributes significantly to improving transparency, efficiency, and compliance with sharia principles. Advantages such as immutable data records, smart contracts for the automation of sharia-compliant transactions, and reduced operational costs make blockchain a strategic solution to strengthen the integrity and competitiveness of the Islamic finance industry globally. However, challenges such as low technological literacy, lack of adaptive regulations, and infrastructure gaps need to be addressed through multi-stakeholder collaboration.

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