

## Analysis of the Compatibility of Blockchain and Bitcoin Technology in the Digital Financial System: A Legal and Islamic Economic Review of Financial Innovation in the Digital Era

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**ABSTRACT:** This study aims to analyze the compatibility of Bitcoin and blockchain technology within digital financial systems based on Islamic legal and economic principles. The primary focus is on assessing how these technologies align with core Islamic values, such as the prohibition of *riba* (interest), *gharar* (uncertainty), and *maysir* (speculation/gambling). The research adopts a literature review method using the PRISMA approach, covering five classical Islamic texts and 40 scholarly articles from reputable databases. The analysis process involves examining relevant literature, identifying thematic patterns, and evaluating the potential integration of blockchain in Islamic finance.

The findings reveal that Bitcoin, due to its high volatility and speculative nature, does not fully comply with sharia principles. However, blockchain technology holds significant potential in supporting Islamic financial systems, particularly by enhancing transparency, efficiency, and reducing *gharar* and *maysir* elements. Furthermore, blockchain opens opportunities for developing sharia-compliant digital payment systems and currencies that are more stable and equitable. This study recommends further exploration and development of blockchain technology within the framework of Islamic economics, aiming to build a sustainable and sharia-compliant digital financial system.

**Keywords:** Bitcoin, Blockchain, Ekonomi Islam, Sistem Keuangan, Keuangan Digital.



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## INTRODUCTION

The purpose of this study is to analyze the compatibility of using Bitcoin and blockchain technology within the Islamic economic system. Since its introduction in 2008, Bitcoin as a decentralized digital currency has attracted significant attention from both investors and governments due to its advantages, such as fast transactions and low fees. Moreover, the blockchain technology underlying Bitcoin has been applied across various sectors such as supply chains, governance, and voting systems, thanks to its ability to ensure transparency and data

security. Nevertheless, questions have arisen regarding the extent to which this technology aligns with the principles of Islamic economics.

Although Bitcoin and blockchain have brought many advancements to the digital financial system, their emergence raises major concerns about their compatibility with the values taught in Islamic economics. In the modern economic context, Bitcoin offers an alternative to the traditional financial system dominated by banks and financial institutions, providing opportunities for cross-border investments and transactions. However, does this technology align with Islamic economic principles that emphasize justice, transparency, and the prohibition of *riba* (interest), *gharar* (uncertainty), and *maysir* (gambling)?

The central issue investigated in this paper is whether the use of Bitcoin and blockchain technology is acceptable within the Islamic economic system. The research question addressed is: "How can Islamic economic principles be applied in the implementation of blockchain and Bitcoin technologies in the digital financial system, and what is the potential for innovation in supporting a Shariah-compliant financial system?" By answering this question, this paper aims to contribute to the understanding of how these new technologies interact with the principles of Islamic finance and what innovations can be integrated with blockchain to advance the Shariah-compliant financial system.

The motivation for this research stems from the lack of comprehensive studies on the acceptance of digital technologies such as Bitcoin and blockchain in Islamic economics, especially those that consider Shariah values. Therefore, this research is expected to provide a clearer perspective on whether these technologies can be integrated into a Shariah-compliant financial system without contradicting Islamic economic principles.

**Novelty:** This question allows for a deeper exploration of technological innovation and how its application can interact with modern Islamic legal and economic principles. It also opens the door to discussions related to the rapidly developing digital financial systems.

## METHOD

This study adheres to the PRISMA guidelines for conducting a literature review. Relevant articles were gathered from academic databases such as Google Scholar, NOORBOOK.com, and Maktabah Syamilah using specific keywords including 'blockchain', 'Bitcoin', 'digital finance', and 'Islamic economics'. Following a rigorous screening process involving titles, abstracts, and full texts, a total of five primary Islamic texts and forty academic articles were selected in accordance with the inclusion criteria, as detailed in the PRISMA flow diagram. The population of this study comprises academic research, journal articles, legal documents, and official reports that address the themes of Bitcoin, blockchain technology, Islamic economics, and Shariah principles in the digital finance context. The sample includes both prior studies and classical Islamic texts relevant to these topics. The research was conducted by utilizing a range of academic sources, including classical Islamic literature, digital platforms like Google Scholar, and online fatwa collections. The instruments used in this study consist of books and theoretical references, drawn from both classical and modern Islamic texts, scholarly articles, and fatwas issued by reputable scholars. Data

collection involved accessing these resources through academic databases and public fatwa repositories. For data analysis, the study focused on identifying recurring patterns and major themes in the literature that link Bitcoin and blockchain to Islamic economic principles. Particular attention was given to the alignment of these technologies with Shariah law and their potential effects on the stability of the Islamic financial system. From this analysis, a conceptual model was developed to illustrate how blockchain and Bitcoin could be integrated into a Shariah-compliant financial structure. As this research is literature-based, ethical approval primarily concerns the responsible use of credible sources and the strict avoidance of plagiarism.

## RESULTS AND DISCUSSION

Literature from books and articles reveals both alignment and misalignment between Bitcoin/blockchain and Islamic economic principles. However, blockchain—built on decentralization—can enhance transparency and reduce *gharar*, in addition to lowering transaction costs.

**Table 1.** Key Findings from Reviewed Literature

No	Author	Year	Focus Area	Key Findings	Moderating Factor	Geographic Context
1	Abidin et al.	2021	Blockchain Tech & Islamic Finance	Bitcoin and blockchain not fully compatible due to <i>riba</i> (interest) and high speculation.	Local regulations	Indonesia, Middle East
2	Ibrahim et al.	2020	Blockchain Potential in Islamic Finance	Blockchain has the potential to support a Shariah-compliant financial system through high levels of transparency and transaction security, reducing practices of <i>gharar</i> (uncertainty) and <i>maysir</i> (gambling).	Government policy	Europe, Asia
3	Kamil & Rahman	2022	Blockchain Efficiency in Islamic Finance	Blockchain technology has the potential to reduce transaction costs and enhance efficiency in the Shariah-compliant financial system, as well as	Company size	Global

				provide inclusive access.	more financial		
4	Ahmad & Zainuddin	2023	Blockchain for Islamic Digital Finance	Blockchain offers the potential to create a more transparent and accountable digital financial system, in line with the principle of justice in Islamic economics.	Fintech industry	Malaysia, Indonesia	
5	Ali & Hamid	2021	Shariah- compliant Payment Alternatives	Although Bitcoin may not be Shariah- compliant, blockchain technology can be used to develop alternative Shariah- based payment systems or digital currencies, as proposed by several Islamic financial institutions.	Support from institutions	Middle East	

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### Key Findings Summary:

1. Bitcoin and blockchain are not fully aligned with Islamic economic principles, particularly due to *riba* (interest) and speculative price volatility.
2. Blockchain has the potential to support Islamic finance through enhanced transparency and security, reducing *gharar* and *maysir*. Penggunaan blockchain dapat mengurangi biaya transaksi, meningkatkan efisiensi sistem keuangan syariah, dan memberikan akses keuangan yang lebih inklusif bagi masyarakat.
3. Blockchain can lower transaction costs and improve financial efficiency, enabling broader financial access.
4. It offers the possibility of creating a more just and accountable digital financial system.
5. Although Bitcoin may not meet Shariah principles, blockchain can still facilitate Shariah-compliant digital currency alternatives.

### **Comparison with Previous Studies**

The findings of this study are consistent with Abidin et al. (2021), who concluded that Bitcoin and blockchain are not entirely Shariah-compliant due to speculative nature and price instability. However, this differs from Ibrahim et al. (2020), who emphasized blockchain's potential to support Islamic finance through increased transparency and reduced *gharar* and *maysir*. This discrepancy may be explained by differences in geographic and regulatory contexts—Ibrahim's study focuses on Europe and Asia, while this study emphasizes Indonesia and the Middle East.

Furthermore, our findings align with Kamil & Rahman (2022), who asserted blockchain's potential to reduce transaction costs and enhance inclusivity. Our study, however, places more emphasis on transparency in Shariah-based digital finance, echoing Ahmad & Zainuddin (2023)'s conclusion about blockchain enabling more accountable systems.

### **Limitations and Cautions**

While this research provides valuable insights into the application of blockchain and Bitcoin in digital finance from an Islamic economic perspective, several limitations must be acknowledged:

1. The literature-based design limits the ability to draw strong causal conclusions due to reliance on secondary sources and limited primary data.
2. Dependence on published literature may introduce bias, such as non-representative article selection or interpretative bias, similar to challenges noted by Ibrahim et al. (2020).
3. Despite reviewing literature from diverse regions, the focus on Indonesia and the Middle East may limit generalizability to regions with different economic and cultural contexts.

### **Recommendations for Future Research**

Future studies should use longitudinal designs to better establish causal relationships between blockchain applications and their impacts on Shariah-compliant financial performance. Further research could also explore the application of Islamic contracts and principles in developing blockchain-based solutions so that Muslims can effectively benefit from the technology within a Shariah-compliant framework.

### **CONCLUSION**

This study concludes that while Bitcoin is not fully compliant with Islamic economic and legal principles—particularly due to *riba*, *gharar*, and *maysir* associated with its high volatility and speculative nature—blockchain technology holds significant potential in supporting a Shariah-based financial system. Blockchain can enhance transparency, efficiency, and fairness in transactions, aligning well with Islamic economic values.

Although Bitcoin may face challenges as an investment asset or medium of exchange under Shariah law, blockchain technology can be utilized to develop alternative digital payment systems more consistent with Islamic principles. Therefore, Islamic financial institutions and regulators should consider exploring blockchain's potential in building Shariah-compliant digital finance systems. This also opens opportunities for innovation in creating more stable Islamic digital currencies rooted in Islamic values.

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