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Blockchain Technology and Islamic Legal Ethics: A Scrutiny of Authentic Deed Integrity in Sharia Economic Transactions

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Abstract
The development of digital technology today has brought about innovations that can support legal certainty in economic transactions, one of which is blockchain technology. In the context of sharia economic transactions, the existence of authentic deeds as legal documents has an important function in ensuring legality, authenticity, and protection of the rights of the parties. However, the challenge faced is the potential for manipulation, falsification, or uncertainty regarding the integrity of documents. This research addresses two main issues: first, how blockchain technology aligns with Islamic legal ethics in ensuring the integrity of authentic deeds; second, how effective its application is in Islamic economic transactions in Indonesia. This study aims to examine the relationship between blockchain technology and Islamic legal principles, as well as analyze the prospects of its implementation in strengthening the authenticity of deeds. The research method used is normative legal research with a legislative, conceptual, and comparative approach. The results show that blockchain has characteristics that support maqāṣid al-syarī'ah, particularly the principles of justice, transparency, and honesty, through a permanent, decentralized, and tamper-proof recording system. The implementation of blockchain in sharia economic transactions has the potential to increase the integrity of authentic deeds and public trust, although it is still necessary to strengthen national regulations, especially harmonization with the Notary Law and sharia financial regulations. Thus, the integration of this technology can be a modern instrument to strengthen legal protection while maintaining compliance with Islamic legal ethics.

Keywords: *Blockchain, Sharia Economic Transactions, Legal Certainty*

Abstrak
Perkembangan teknologi digital dewasa ini telah melahirkan berbagai inovasi yang berpotensi mendukung kepastian hukum dalam transaksi ekonomi, salah satunya melalui pemanfaatan teknologi blockchain. Dalam konteks transaksi ekonomi syariah, keberadaan akta autentik sebagai dokumen hukum memiliki peran penting dalam menjamin legalitas, keabsahan, serta perlindungan hak para pihak. Namun demikian, tantangan yang dihadapi adalah adanya potensi manipulasi, pemalsuan, maupun ketidakpastian terhadap integritas dokumen hukum tersebut. Penelitian ini mengkaji dua permasalahan utama, yaitu: pertama, kesesuaian teknologi blockchain dengan etika hukum Islam dalam menjamin integritas akta autentik; dan kedua, efektivitas penerapan teknologi blockchain dalam transaksi ekonomi syariah di Indonesia. Penelitian ini bertujuan untuk menganalisis keterkaitan antara teknologi blockchain dan prinsip-prinsip hukum Islam, serta menelaah prospek implementasinya dalam memperkuat keautentikan akta. Metode penelitian yang digunakan adalah penelitian hukum normatif dengan pendekatan perundang-undangan, konseptual, dan

komparatif. Hasil penelitian menunjukkan bahwa teknologi blockchain memiliki karakteristik yang sejalan dengan maqāṣid al-syarī'ah, khususnya prinsip keadilan, transparansi, dan kejujuran, melalui sistem pencatatan yang bersifat permanen, terdesentralisasi, dan tahan terhadap manipulasi. Penerapan blockchain dalam transaksi ekonomi syariah berpotensi meningkatkan integritas akta autentik serta memperkuat kepercayaan publik, meskipun masih diperlukan penguatan regulasi nasional, terutama harmonisasi dengan Undang-Undang Jabatan Notaris dan peraturan di bidang keuangan syariah. Dengan demikian, integrasi teknologi blockchain dapat menjadi instrumen modern dalam memperkuat perlindungan hukum sekaligus menjaga kesesuaian dengan etika hukum Islam.

Kata Kunci: Blockchain, Transaksi Ekonomi Syariah, Kepastian Hukum

INTRODUCTION

The development of digital technology has brought significant changes to global economic transaction systems, including the Islamic economy. One innovation that has great potential in supporting the principles of fairness, transparency, and honesty is blockchain technology. Blockchain is known as a decentralized, transparent, and tamper-proof digital recording system, as each transaction is recorded in blocks that are cryptographically linked to one another (Sedlmeir, Lautenschlager, Fridgen, & Urbach, 2022).

In the context of Islamic law, values such as trustworthiness, honesty (ṣidq), justice ('adl), and transparency (tablīgh) form the foundation of legal ethics that guide the economic behavior of Muslims (Damanik, (Damanik & Ngaliyan, 2024). The use of blockchain in sharia economic transactions has the potential to strengthen these values, particularly in ensuring the authenticity and integrity of authentic deeds used in muamalah contracts based on Indonesian positive law(Aminin, 2024).

The rapid pace of digital technology development has given rise to Blockchain, a distributed ledger innovation that promises transparency, security, and resistance to manipulation (immutability)(Udeh, Amajuoyi, Adeusi, & Scott, 2024). This technology is now considered a transformative solution for various sectors, including record-keeping and transaction systems. In the context of Islamic economics, where integrity and compliance with Islamic legal ethics (sharia) are fundamental, the potential adoption of Blockchain is an interesting and critical subject of study. Its ability to create unalterable records has the potential to overcome the issues of centralization and lack of trust in conventional systems(Chong, 2021).

One of the most vital aspects of sharia transactions is authentic deeds or legal documents that form the basis of contract validity, such as mudharabah or murabahah contracts. The validity of these documents is essential because it determines whether a transaction is valid or not in the eyes of Islamic law (*fiqh*

muamalah)(Syarifuddin, Djaenab, & Nuringsih, 2024). Therefore, this study aims to conduct an in-depth scrutiny of the suitability of Blockchain Technology implementation in maintaining the integrity of authentic deeds in Sharia economic transactions, particularly in Indonesia.

To achieve this objective, the study directs its analysis toward two interrelated core issues that bridge technological innovation and Islamic legal thought. First, it examines the extent to which Blockchain Technology aligns with Islamic legal ethics in safeguarding the integrity of authentic deeds. This analysis explores the conceptual compatibility between Blockchain's key characteristics—such as hashing mechanisms, decentralization, and immutability—and fundamental Sharia principles, including justice ('adl), transparency (shidq), and the reliability and validity of evidence in legal transactions. By situating Blockchain as a technological system of trust, the study treats it as a working model for assessing whether modern digital infrastructures can fulfill normative Islamic requirements for fairness, accountability, and evidentiary certainty.

Second, the study evaluates the effectiveness of applying Blockchain Technology within Islamic economic transactions in Indonesia. This part of the analysis focuses on both the prospective benefits and the practical challenges of implementation, including regulatory readiness, institutional governance, and the level of acceptance among Islamic financial institutions. Particular attention is given to how Blockchain may enhance the authenticity and legal certainty of deeds in practice, while also addressing potential tensions between technological adoption and existing legal frameworks. Through this dual analysis, the study aims to provide a nuanced understanding of Blockchain's role as a tool for strengthening trust, compliance, and legal certainty in Indonesia's Islamic economic ecosystem.

LITERATURE REVIEW

Blockchain technology is widely defined as a decentralized digital ledger system that records transactions in a transparent, permanent, and tamper-resistant manner. Each transaction is stored in a block that is cryptographically linked to previous blocks, creating an immutable chain of records. This technical architecture ensures data integrity and reduces the risk of manipulation or unilateral alteration (Sedlmeir et al., 2022). Due to these characteristics, blockchain has increasingly been discussed in legal scholarship as a technological instrument capable of enhancing legal certainty, particularly in document authentication and digital evidence systems (Gao et al., 2021).

In the context of Islamic economic transactions, legal validity is inseparable from Islamic legal ethics (akhlaq al-qanuniyyah), which emphasize

the principles of amanah (trustworthiness), ṣidq (honesty), ‘adl (justice), and clarity of contractual terms. These ethical foundations aim to prevent gharar (uncertainty), tadlīs (fraud), and unjust enrichment in economic dealings (Damanik & Ngaliyan, 2024). As a result, the use of any new technology in sharia-based transactions should go beyond improving efficiency; it must also be consistent with the objectives of Islamic law (‘maqāsid al-syarī‘ah’), especially the safeguarding of wealth (ḥifẓ al-māl) and the promotion of the public interest (such adv).

Authentic deeds occupy a central position in ensuring legal certainty in sharia economic transactions. Under Indonesian positive law, authentic deeds are regarded as perfect written evidence due to their issuance by authorized public officials. From the perspective of Islamic law, written documentation functions as bayyinah—strong and reliable evidence that guarantees clarity and honesty in contractual relations (Effendi, Safrijal, & Mukhlis, 2025). However, conventional documentation systems remain vulnerable to forgery, data loss, and excessive reliance on centralized institutional control, which may undermine trust and legal certainty.

Recent studies suggest that blockchain technology is conceptually compatible with Islamic legal principles. (Mufadhol, Khaidir, Jie, & Cai, 2024) argue that blockchain’s immutability and transparency inherently support the values of honesty and justice required in sharia transactions. Furthermore, blockchain-based smart contracts enable the automatic execution of contractual obligations according to predefined terms, thereby reducing operational gharar and minimizing human intervention. Nevertheless, such smart contracts must be structured in accordance with valid sharia contracts and supervised by sharia authorities to ensure compliance (Antova & Tayachi, 2019).

In Indonesia, the adoption of blockchain in sharia-based economic transactions is still at an early stage, yet it shows considerable potential for future development. Regulatory initiatives through digital financial innovation frameworks have opened opportunities for blockchain adoption, although its legal recognition in relation to authentic deeds is not yet explicit.(Aminin, 2024) highlights that blockchain can enhance transparency and security in Islamic banking transactions; however, regulatory harmonization with the Notary Law, the Electronic Information and Transactions Law, and DSN-MUI fatwas remains a critical prerequisite for its effective application.

Although research on blockchain and Islamic finance continues to expand, the majority of existing studies tend to emphasize financial efficiency, fintech innovation, or broad aspects of sharia compliance. Normative legal analyses that specifically examine blockchain as a means of protecting the integrity of authentic

deeds from the perspective of Islamic legal ethics remain scarce, especially in the context of the Indonesian legal system. This research addresses that gap by analyzing blockchain technology as a modern legal instrument that strengthens the authenticity of deeds while remaining consistent with Islamic legal principles and national regulatory frameworks.

METHODOLOGY

This study uses a normative or doctrinal legal research method. This approach was chosen because the main focus of the study is to examine the compatibility of new technology—Blockchain—with the established legal ethical framework, namely Islamic law (sharia), particularly in the context of the integrity of authentic deeds in sharia economic transactions. The legal materials used are primary and secondary legal materials(Pakarti, Suntana, Sururie, Kurniawan, & Saleh, 2025). Primary legal materials include the main sources of Islamic law, such as the Qur'an and Hadith, as well as the basic rules of Fiqh Muamalah that regulate transactions and contracts, particularly those related to the concepts of amanah (trust), shidq (honesty), and the validity of evidence (bayyinah). Primary legal materials also include regulations and fatwas from the National Sharia Council (DSN-MUI) in Indonesia related to electronic transactions and sharia documents(Anggraini, Hulwati, & Duhriah, 2025). Secondary legal materials include scientific literature, journals, and books discussing Blockchain Technology, Islamic legal ethics, and Indonesian contract law(Apriantoro, Faradilla, Ashfahany, Maruf, & Aziza, 2024).

Data analysis is conducted descriptively and analytically. After collecting and classifying legal materials, legal interpretation is carried out to answer two questions: first, whether the technical features of Blockchain are in line with Islamic legal ethical values in ensuring the validity of deeds; and second, to what extent the effectiveness of its application can be justified legally and practically in sharia transactions in Indonesia. The results of the analysis are expected to provide normative recommendations regarding the prospects and limitations of Blockchain implementation in order to remain Sharia-compliant.

DISCUSSION

The Relationship Between Blockchain Technology and Islamic Legal Ethics in Ensuring the Integrity of Authentic Deeds

The discussion on the compatibility of Blockchain technology with Islamic legal ethics (sharia) in ensuring the integrity of authentic deeds centers on a comparison between the technical features of Blockchain and the fundamental principles of Fiqh Muamalah. Core principles of sharia, such as amanah (trust),

shidq (honesty), 'adl (justice), and the requirement for indisputable evidence (bayyinah), find strong resonance in the architecture of Blockchain. Blockchain technology serves as a guarantor of the integrity of authentic deeds, which is fundamentally in line with the demands of Islamic Legal Ethics(Mufadhol et al., 2024). Islam strongly emphasizes the principles of amanah (trust) and shidq (honesty) in every transaction. In a conventional context, the enforcement of these principles depends on the integrity of notaries or central institutions, which are still vulnerable to corruption or human error(Gao et al., 2021). Blockchain addresses these vulnerabilities through cryptographic mechanisms and mathematical consensus(Gao et al., 2021).

In the context of authentic deeds, blockchain can function as a Sharia digital ledger, where every contract (e.g., murabahah, ijarah, or musyarakah) is permanently recorded and verifiable by the parties without the risk of forgery. This is in line with the fiqh rule: al-umūr bi maqāṣidihā (all matters depend on their objectives), which demands honesty and clarity (bayān) in transactions.

In addition, the concept of smart contracts in blockchain enables the automatic execution of contracts according to the initial agreement without human intervention, which can reduce the risk of gharar (uncertainty) and tadlīs (fraud)(Antova & Tayachi, 2019). However, for smart contract algorithms to be considered legally valid under Islamic law, they must be structured in accordance with recognized sharia contracts, operate under the oversight of the Sharia Supervisory Board (DPS), and conform to the fatwas issued by the DSN-MUI. Sharia audits of program code or code-as-contract are conducted by assessing the code's logic, transaction flow, contract parameters, and automated execution mechanisms to comply with established Sharia principles. While the DPS does not need to master all technical aspects of programming, it does need to understand the basic principles of the technology used to assess its Sharia compliance. For complex technical aspects, the DPS may engage an independent technology auditor or third party to review the code, which then uses the results of these audits as a basis for determining Sharia compliance.

The principles of trust and transparency occupy a central position in both legal systems and ethical frameworks, particularly within the context of Islamic law. Trust is established when legal and economic transactions are conducted in a manner that is open, verifiable, and resistant to manipulation. Transparency ensures that all parties have access to accurate and complete information, thereby reducing uncertainty (gharar) and preventing deceit. In this sense, mechanisms that allow clear documentation, traceability, and accountability play a crucial role in strengthening confidence among parties and upholding ethical standards in transactional relationships.

Closely related to these principles are the principles of justice and the validity of evidence, which serve as foundational elements in the enforcement of rights and obligations. Justice requires that legal processes treat all parties fairly and proportionately, ensuring that no party is disadvantaged through concealment or falsification of information. The validity of evidence is essential to this process, as decisions must be based on proof that is authentic, reliable, and legally recognized. Within Islamic legal thought, evidence must reflect truthfulness and certainty, as it directly affects the realization of justice and the protection of rights. Together, justice and evidentiary validity provide the normative basis for legal certainty and the equitable resolution of disputes.

Blockchain operates on the basis of decentralization, which means that no single authority controls the data. This nature effectively reduces the risk of fraud or manipulation that often occurs when data is controlled by a central third party(Ahmed, 2025). In Islamic ethics, the concept of amanah (trust) is strongly emphasized. Blockchain helps uphold amanah not through human authority, but through mathematical consensus and cryptography(Hammi, Hammi, Bellot, & Serhrouchni, 2018). Every transaction or deed recorded becomes a new block, verified by the network, and listed transparently, so that every party can verify the record, which is in line with the requirement of shidq (honesty) in transaction documentation(Aisah, Putri, & Hafizi, 2025).

The most relevant key feature of Blockchain is immutability(Politou, Casino, Alepis, & Patsakis, 2019). Once a deed or data is entered into the distributed ledger, it is hashed and cryptographically linked to the previous block. This ensures that the data cannot be manipulated or removed without changing the entire chain, an act that is nearly impossible(Yadav, Singh, & Kushwaha, 2023). This characteristic directly supports the principle of 'adl (fairness) because it provides legal certainty and high data integrity, thereby minimizing disputes arising from document falsification.

In Sharia law, authentic deeds serve as bayyinah (strong evidence). The integrity of these deeds must be maintained(Effendi et al., 2025). In conventional systems, authenticity depends on physical stamps and signatures and storage by official institutions. Blockchain offers a much stricter mechanism through timestamping and hashing, providing an equivalent or even superior level of authenticity because its digital trail is permanent and verified by global consensus(Hyla & Pejaś, 2020). Thus, Blockchain Technology is not only compatible but can also be a powerful tool for implementing Islamic legal ethics that demand honest, fair, and verified documentation in all Sharia economic transactions.

The Effectiveness of Blockchain Applications in Sharia Economic Transactions in Indonesia

In Indonesia, the application of blockchain is still limited, but it has great potential to strengthen the integrity of sharia economic deeds. The OJK has been promoting digital financial innovation (Sharia Fintech) through the Regulatory Sandbox since 2020(OJK, 2024), which allows the use of blockchain for recording transactions based on sharia contracts(Rani et al., 2025).

In the positive law system, authentic deeds are recognized under Article 1868 of the Civil Code, which requires the intervention of a public official (notary). Blockchain is not yet explicitly recognized as an authentic evidence tool, but it can be valid electronic evidence under Article 5 paragraph (1) of the ITE Law, as long as its authenticity and integrity can be guaranteed(Li, Lal, Conti, & Hu, 2021). The concept of *Cyber Notary* in Indonesia needs to be understood as an effort to modernize notarial services through the use of digital technology, especially in the creation, storage, and authentication of electronic documents(Fernando & Djajaputra, 2025). However, its implementation still faces normative obstacles because Article 1868 of the Civil Code stipulates that authentic deeds must be made by or before an authorized public official, so that the element of physical presence remains the basis for the validity of the deed. Therefore, the development of *Cyber Notary* requires regulatory harmonization so that the use of digital technology continues to guarantee the identity of the parties, free will, document security, and the evidentiary power of authentic deeds.

The effectiveness of applying Blockchain Technology in Islamic economic transactions in Indonesia shows great transformative potential, although it is still in its early stages and faces a number of challenges. The use of Blockchain can significantly improve efficiency, security, and sharia compliance in various contracts(Sukmasari, Frederik, Kalalo, & Soepeno, 2024).

Prospects for Increased Effectiveness(Zulkepli, Mohamad, & Azzuhri, 2023); Contract and deed integrity constitute a fundamental concern in sharia-based transactions, where authenticity and reliability of legal documents determine the validity of rights and obligations. In the Indonesian context, blockchain technology offers significant potential to strengthen the integrity of authentic deeds, such as murābaḥah financing contracts or muḍārabah agreements. By recording the hash, or digital fingerprint, of these documents on a decentralized ledger, the possibility of forgery, alteration, or unauthorized manipulation can be substantially reduced. This mechanism enhances legal certainty and trust not only for Islamic financial institutions, but also for

customers and regulators who rely on the accuracy and permanence of contractual records.

Beyond document security, blockchain also enables business process automation through smart contracts, which can transform the execution of Islamic contracts. Smart contracts supported by blockchain technology allow contractual obligations to be carried out automatically once the agreed ʿaqd terms are fulfilled. For instance, in ijārah (lease) financing, periodic lease payments and the final transfer of ownership can be executed seamlessly without the need for continuous third-party intervention. This form of automation contributes to lower operational costs, faster transaction processing, and a meaningful reduction in operational ghārār (uncertainty), thereby supporting greater efficiency while remaining aligned with sharia principles.

In addition, blockchain plays an important role in enhancing asset traceability and transparency, particularly in relation to halal assurance. Within the halal product supply chain, blockchain can document every stage of production and distribution, starting from raw materials through to the final product. This comprehensive traceability ensures that assets involved in sharia-based transactions, such as those in salam or istisnāʿ contracts, genuinely meet the requirements of being ḥalāl and ṭayyib. As a result, blockchain not only supports compliance with Islamic ethical standards but also strengthens consumer confidence and accountability across the Islamic economic ecosystem. Implementation Challenges in Indonesia

Despite its prospects, the implementation of Blockchain faces challenges. Regulatory challenges are the most significant, with Bank Indonesia (BI) and the Financial Services Authority (OJK) still developing a specific legal framework for distributed ledger technology in sharia financial services. In addition, the readiness of infrastructure and digital literacy among the public and LKS in Indonesia still varies. Effective implementation requires significant investment in technology and education to ensure that these solutions are accessible and can be used in a sharia-compliant manner by all relevant parties(Aminin, 2024). By addressing these challenges, blockchain applications can reach their full potential, allowing sharia-based transactions in Indonesia to become more dependable while also keeping pace with modern technological developments.

CONCLUSION

Blockchain technology shows tremendous potential and relevance for strengthening Islamic legal ethics in sharia economic transactions. The core principles of Blockchain such as decentralization, transparency, and immutability are fundamentally aligned with sharia values that demand honesty

(shidq), justice (ʼadl), and trustworthiness (amanah) in every contract and record. In the specific context of authentic deed integrity, Blockchain is capable of offering a superior digital mechanism, replacing conventional recording systems that are prone to falsification with a more transparent and efficient distributed ledger, thereby strengthening the function of deeds as bayyinah (evidence) that is beyond doubt. Despite its high normative alignment, the effectiveness of its application in sharia transactions in Indonesia currently faces significant obstacles, particularly in terms of formal law and institutional readiness. Existing positive legal regulations do not yet fully accommodate the legal status of smart contracts or the authenticity of data recorded on Blockchain specifically within the framework of the sharia economy.

Therefore, strategic steps in the form of regulatory synchronization are needed. The most urgent regulatory adjustment needs to be directed at Article 5 paragraph (4) of the ITE Law, because this provision still excludes documents that must be made in the form of a notarial deed from full recognition as electronic documents that have legal force. Revisions also need to be made to the Notary Law, especially the provisions regarding the obligation for the person appearing, the reading of the deed, and the signing of the deed before a notary, so that the *blockchain*-based authentication mechanism can be recognized as part of the process of making an authentic deed. This adjustment to positive law needs to be complemented by a fatwa and digital sharia ethical standards from the DSN-MUI, so that the use of *blockchain* has legal force, fulfills sharia principles, and supports the goals of *maqāṣid al-syarīʻah* in the Indonesian sharia economic ecosystem.

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