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The Effectiveness of Blockchain Technology Implementation by Notaries in Increasing the Security and Validity of Digital Investment Agreement Deeds

Titin Hartati[1], Riswadi[2]
[1]Universitas Borobudur, Jakarta, Indonesia, titinhartati42@gmail.com
[2]Universitas Borobudur, Jakarta, Indonesia, riswadi@borobudur.ac.id

Corresponding Author: titinhartati42@gmail.com[1]

Abstract: The development of blockchain technology has opened up significant opportunities in the legal world, including in the notarial realm, particularly in the creation of digital investment agreement deeds. This study aims to analyze the effectiveness of blockchain technology implementation by notaries in improving the security and validity of digital investment agreement deeds by reviewing relevant legal, institutional, and technological aspects. Blockchain is considered capable of providing an immutable, transparent, and secure digital recording system, thereby strengthening trust between parties and preventing deed forgery. However, the application of this technology in notarial practice in Indonesia still faces significant challenges, primarily due to the lack of regulations specifically governing the legality of blockchain-based notarial deeds. This study uses a normative juridical approach with an analysis of Law Number 2 of 2014 concerning the Office of Notaries, Law Number 1 of 2024 concerning Electronic Information and Transactions, and other relevant regulations. The results of the study indicate that despite its technological potential, the implementation of blockchain in notarial practice is still hampered by legal, infrastructure, and human resource constraints. Progressive legal reforms and public policy initiatives are needed to accommodate these digital innovations within the national legal system, as well as to encourage the digitalization of notarial services that are secure, accountable, and legally valid.

Keywords: Notary, Blockchain, Investment Agreement Deed, Legal Security, Legal Digitalization, Legality

INTRODUCTION

The development of digital technology has significantly changed the investment landscape (Khairiyah, 2024). Digitalization is driving the transformation of various sectors, including the financial and legal services sectors (Hasanah, 2024). Investors are no longer limited to large institutions but also individuals through various technology-based digital platforms (Putri, 2025). Investment activities, previously conducted conventionally, are now

shifting to more efficient, faster, and automated systems (Johan, 2024). This situation demands legal certainty and the same strong protections as conventional systems.

The role of a notary public, as a public official authorized to create authentic deeds, remains key in guaranteeing the validity and legal force of any agreement, including investment agreements (Illiyyin, 2023). Notaries are obligated to ensure that the parties to the agreement understand the substance and legal consequences of their actions (Mubarak, 2025). A notarial deed serves as perfect evidence in court, as long as it is not challenged by another deed of equal legal force. This function remains irreplaceable despite the shift in transaction media from physical to digital (Fauziannor, 2025). Notaries remain essential to provide legally recognized legitimacy to high-value digital documents.

The primary issue emerging from the transition to a digital investment system is the security and validity of documents. Digital data is vulnerable to hacking, manipulation, and loss, especially if not supported by a reliable data security system (Chic, 2024). It creates unique challenges for notaries in ensuring that notarized documents still qualify as authentic deeds. Legal and technological solutions need to be formulated to ensure optimal legal protection for parties involved in digital investments.

Blockchain technology has emerged as a promising innovation that addresses these issues (Munawar, 2023). Blockchain offers an encrypted, transparent, and immutable data recording system that guarantees the permanent integrity of digital documents (Dini Sabila Supriyanto, 2025). Every change to a document is recorded chronologically and can be easily audited, minimizing the risk of forgery. The advantage can be used to securely store and record digital investment agreement transactions and strengthen the legal standing of documents by strengthening electronic evidence systems. The implementation of blockchain has significant potential to support the notary's role in ensuring the validity and security of investment deeds (Zulfikar, 2024).

The position and authority of a notary are expressly regulated in Law Number 30 of 2004 concerning the Office of Notaries, as amended by Law Number 2 of 2014 (Panjaitan, 2025). Notaries act as public officials authorized to create authentic deeds and store important documents related to the parties' agreements (Bintang, 2025). Deeds drawn up by or before a notary have perfect evidentiary force and can be directly executed without the need for re-verification (Mahzar, 2022). Notaries are also responsible for ensuring that the deed is prepared in accordance with formal and substantiated legal requirements (Ghani, 2025). This position provides strong legal guarantees for the parties to an investment agreement.

The authentication function of a notary creates legal protection for the content and existence of agreements entered into by the parties (Eli, 2025). Authentication ensures that each party to the agreement is confident that the document is valid and can be used to assert their rights in the future. An authentic deed can also prevent future disputes because the notary has verified the parties' identities and their legal intentions. The notary acts as a neutral party, guaranteeing the validity of the document and explaining the parties' legal rights and obligations (Abdillah, 2024). Legal protection through a notary is crucial in high-value transactions such as investments.

Investment agreements have unique characteristics as a form of agreement between the investor and the recipient of the investment. These agreements cover aspects of capital, risk, profit sharing, timeframe, and dispute resolution mechanisms (Jaya, 2023). These agreements can take the form of direct investment in stocks, bonds, digital assets, or specific project collaborations. The legality of investment agreements is crucial because they involve the allocation of large, long-term economic resources. In practice, this agreement needs to be set out in an authentic deed so that it has maximum legal force and can be used as a legal basis in litigation or execution processes (Untung, 2024).

The existence of an authentic deed in an investment agreement serves not only as written evidence but also as a legal instrument that provides trust and certainty for investors. Investors, both individuals and institutions, highly consider the legality of documents before making investment commitments (Kulzum, 2024). As the authorized party to draft authentic deeds, notaries are responsible for ensuring that all legal provisions are met in the agreement. In the digital realm, this need is even more pressing because agreements are often made without face-to-face meetings. Therefore, a strengthened system will enable notaries to continue to do their role effectively in the digital era.

Digital investment is growing rapidly in Indonesia, with the penetration of information technology and increasing public interest in digital assets. Financial technology (fintech)-based investment platforms offer a variety of investment products, from digital mutual funds and online stocks to crypto assets (Anggara, 2024). The Indonesian government, through various institutions, has regulated the governance of this sector to ensure market security and integrity. The growth of this ecosystem opens up more inclusive investment opportunities, but also presents complex regulatory challenges, particularly in legal protection for investors and the validity of digital agreements.

The government has enacted Law Number 4 of 2023 concerning the Development and Strengthening of the Financial Sector (PPSK Law), which provides the legal umbrella for all innovations in the financial sector, including the digitalization of investment. This law affirms the role of the Financial Services Authority (OJK) as the primary regulator of the financial sector and expands the scope of regulation to digital assets and financial technology. The PPSK Law also provides space for the establishment of a legal and integrated digital financial infrastructure. This creates opportunities for collaboration between notaries and financial technology industry players to develop legitimate and verified blockchain-based services.

The Commodity Futures Trading Regulatory Agency (Bappebti) has also issued specific regulations regarding crypto assets, namely Bappebti Regulation Number 8 of 2021, which was later amended by Bappebti Regulation Number 13 of 2022. This regulation governs the procedures for conducting legal and registered crypto asset trading in Indonesia. Under this regulation, crypto assets are recognized as commodities that can be traded on futures exchanges, but not as a means of payment. This recognition opens up legal opportunities for crypto-based investment agreement documents, thus requiring the presence of a notary to guarantee the legality of these transactions through secure technologies such as blockchain.

METHOD

The research method used in writing this journal is a normative juridical method with a statutory regulatory approach and a conceptual approach. The statutory regulatory approach is used to examine positive legal norms relevant to the application of blockchain technology in notarial practice, particularly in the preparation of investment agreement deeds. This study analyzes various applicable regulations, including Law Number 2 of 2014 concerning the Position of Notary (UUJN), Law Number 11 of 2008 concerning Electronic Information and Transactions as amended by Law Number 19 of 2016 (UU ITE), and Government Regulation Number 71 of 2019 concerning the Implementation of Electronic Systems and Transactions (PP PSTE). In addition, a conceptual approach is used to examine the theoretical understanding of blockchain technology, the principles of deed validity, and the authentication function in the modern notarial system. Through this approach, the author attempts to construct an integrative thinking between national legal needs and the development of global information technology, particularly blockchain. This research is descriptive-analytical and employs a literature review technique, examining primary,

secondary, and tertiary legal materials, including academic journals, law books, official regulations, and technology literature. Thus, this method allows for a comprehensive analysis of the legal opportunities and challenges in implementing blockchain technology by notaries, in order to strengthen the legitimacy and security of digital legal documents, particularly investment agreements.

RESULT AND DISCUSSION

Blockchain Technology and Its Potential in the Notary World

Blockchain is a decentralized digital record-keeping system that allows transactions to be recorded permanently and transparently without the need for a third party as an intermediary. This technology works based on a distributed ledger network, where every transaction that occurs is confirmed by nodes (participating computers) and entered into a cryptographically interconnected data block. The three main principles of blockchain—decentralization, transparency, and immutability—provide advantages in maintaining data authenticity and integrity. Every data change is permanently recorded and can be traced back to its origin without unilateral manipulation. This technology is highly relevant for notarial systems that demand the validity and authenticity of documents.

Blockchains are divided into three main types: public, private, and consortium. Public blockchains allow anyone to join and participate in the data verification process, such as Bitcoin and Ethereum. Private blockchains restrict access to only certain parties determined by a central authority and are suitable for use by legal institutions or notary agencies to maintain data confidentiality. Consortium blockchains fall somewhere in between, where access is granted only to a predetermined group of institutions, such as collaborations between notaries, regulators, and financial institutions. Selecting the right blockchain is key to determining the effectiveness of this technology's application in the legal realm, particularly for notaries.

Several countries have implemented blockchain in legal and notary services as a step to modernize their national legal systems. Estonia is a pioneer in the digitization of public services, including a blockchain-based notary system that allows for the digital and encrypted recording of contracts and deeds. The European Union, through its European Blockchain Services Infrastructure (EBSI), is also developing a similar system to support data integrity across member states. The United States has authorized the use of digital signatures and blockchain-based recordkeeping for business contracts in several states, such as Vermont and Arizona. The success of these countries demonstrates that implementing blockchain in the legal system is not impossible, but rather inevitable, given the growing demand for efficiency and security of legal information.

Smart contracts are a unique feature of blockchain that allows for the automatic execution of agreements based on predetermined conditions. This feature replaces the need for human intervention in executing agreements, as the system automatically executes legal obligations once certain conditions are met. In the world of notaries, smart contracts can be used to regulate the implementation of investments in stages according to parameters agreed upon by the parties. Furthermore, encrypted digital identities can be used to securely verify and authenticate notary service users. The use of smart contracts and digital identities expands the notary's function from merely recording deeds to managing technology-based legal systems.

One of the main advantages of blockchain in the notarial field is its ability to significantly enhance the security and validity of deeds. Through the time-stamping feature, every document uploaded to the blockchain system is assigned an immutable timestamp. This information serves as proof that the document existed at a specific point in time, preventing claims of forgery created after the legal event has occurred. Hashing, or digital fingerprinting

of documents, also ensures that even the slightest changes can be detected instantly. This combination of features makes blockchain a highly reliable document verification system for notarial purposes.

Blockchain also serves as a means to reduce the risk of forgery and loss of legal data. Documents recorded on a blockchain are not stored in a single location but are distributed across multiple nodes, so no single party can unilaterally change or delete information. This system makes data more resistant to cyberattacks and technical failures than conventional data storage systems. This security is an added value in the creation and storage of investment agreements, which require guarantees of authenticity and permanence. In an emergency, data can still be recovered from other nodes on the same network.

The permanent and unalterable nature of data on a blockchain (immutability) provides additional strength in legal evidence. Deeds recorded on a blockchain can be used as strong evidence in legal proceedings because they have an authentic digital footprint. Notaries can demonstrate that the document was actually created and notarized at a specific time and has not been altered since then. This provides additional protection against potential future lawsuits. The existence of this immutable digital record also expedites the evidentiary process in court.

The main obstacle to blockchain implementation by notaries in Indonesia is the lack of explicit provisions in the Notary Law. Law Number 2 of 2014, amending Law Number 30 of 2004, does not comprehensively regulate the role of notaries in the digital realm. There are no provisions outlining how deeds created electronically or through a blockchain system can be recognized as authentic under Indonesian law. This regulatory gap has created hesitation in implementing advanced digital technology, even though it is technically feasible. Notaries risk facing lawsuits if their digitally created deeds are not recognized as valid by the courts.

Another equally important issue is the issue of jurisdiction, digital authentication, and the legality of electronic signatures. The blockchain system is cross-border, so using a global system for creating deeds can give rise to conflicts of legal jurisdiction. Furthermore, electronic signatures are only recognized as valid if they use an electronic certification provider certified in accordance with Government Regulation Number 71 of 2019 concerning the Implementation of Electronic Systems and Transactions. Notaries must ensure that the digital authentication and document signing processes comply with national legal standards to avoid legal loopholes. This alignment is crucial to maintain the formal validity of the deeds produced.

The undertaking of blockchain in the Indonesian notarial system requires harmonization with other related laws and regulations, particularly the Electronic Information and Transactions Law and the PPSK Law. The ITE Law regulates the legal basis for electronic documents and their evidentiary force, while the PPSK Law provides a supervisory framework for digital financial activities, including the legality of digital asset-based investment transactions. Neither law specifically regulates the role of notaries in blockchain-based digital transactions. This lack of integration between regulations has prevented a solid legal foundation from being created to support digital transformation in notarial practice. Revising regulations and establishing new norms are crucial steps to enable notaries to adapt to the technological era without losing their legal legitimacy.

Legal Analysis of Blockchain Implementation by Notaries for Digital Investment Agreement Deeds

Article 15 of Law Number 2 of 2014 concerning Amendments to Law Number 30 of 2004 concerning the Position of Notaries states that notaries are authorized to draw up authentic deeds regarding all acts, agreements, and provisions required by laws and/or desired by interested parties to be stated in an authentic deed. This authority provides notaries with

ample scope, including the possibility of using digital tools to support the validity of the deed as long as it does not alter its authentic nature. Blockchain can be considered a tool for authenticating data and transactions between parties in an investment agreement. Its interpretation must maintain the principle that the formal authority to draw up the deed and the obligation to verify it remain with the notary as a public official.

The use of blockchain does not necessarily change the form or procedure for creating authentic deeds, but rather has the potential to become a complementary instrument in verifying data and documenting the chronology of deed creation. Data recorded through blockchain can strengthen the reliability of the evidentiary process without replacing the legal standing of the authentic deed itself. It is similar to the use of audio or video recording devices in the deed creation process, which, while not the primary component, can still be used as additional evidence. Notaries can utilize this technology as a supporting system to ensure client data and transaction timelines are documented more neatly, securely, and irreversibly after creation.

Law Number 11 of 2008 concerning Electronic Information and Transactions, as amended by Law Number 19 of 2016, recognizes electronic documents as valid legal evidence. Article 5, paragraph (1) states that electronic information and/or electronic documents and/or printouts thereof constitute valid legal evidence. Article 11 emphasizes that electronic signatures have legal force and legal consequences, provided they meet the stipulated requirements. It provides a legal basis for integrating blockchain with notarial systems, provided the technology used complies with established provisions, including the use of certified electronic signatures.

Government Regulation Number 71 of 2019 concerning the Implementation of Electronic Systems and Transactions (PP PSTE) strengthens the legality of using electronic systems in legal transactions. Article 40 of PP 71/2019 stipulates that electronic system operators are required to guarantee the confidentiality, integrity, and availability of the personal data they manage. In the notarial realm, this can be applied to the use of blockchain systems to permanently and securely store or record legal transactions. Blockchain can be used as a supporting system for storing and securing electronic data resulting from notarial deeds, as long as it meets government-recognized technical and procedural standards.

Law Number 4 of 2023 concerning the Development and Strengthening of the Financial Sector (PPSK Law) expands legal recognition of digital assets and technological innovations in the financial sector. Article 9 stipulates that the development of financial sector technology innovations (ITSK) is done by providers under the supervision of the Financial Services Authority (OJK). Article 213 states that digital financial assets, such as crypto assets, are subject to regulation by the Commodity Futures Trading Regulatory Agency (Bappebti) as commodities. It demonstrates that national law has recognized digital-based entities and transactions as part of the legitimate financial system. Notaries involved in drafting digital asset-based investment agreements can utilize blockchain technology to enhance legal certainty and transparency of documents related to these digital transactions.

The Financial Services Authority (OJK) and Bappebti have regulatory and supervisory authority over sectors involving financial technology and digital assets. Bappebti issued Bappebti Regulation Number 8 of 2021 in conjunction with Bappebti Regulation Number 13 of 2022, which regulates the implementation of crypto asset trading. The OJK, through various derivative regulations, such as POJK No. 13/POJK.02/2018 concerning Digital Financial Innovation in the Financial Services Sector, has provided a legal basis for technology-based innovation in the financial system. The involvement of notaries in these transactions requires a thorough understanding of these regulations to ensure that the use of blockchain does not conflict with established digital asset legality standards and business processes.

The effectiveness of blockchain implementation by notaries in digital investment practices depends heavily on technical readiness and national regulations. In terms of speed and efficiency, blockchain enables real-time legal data recording with high accuracy. The security of distributed systems protects against manipulation or loss of legal data. However, not all notary offices have adequate digital infrastructure, including hardware, software, and human resources. This infrastructure gap has the potential to create gaps in public services if the technology is implemented without thorough and equitable preparation.

The Indonesian legal system also faces serious challenges in accepting blockchain-based evidence in judicial proceedings. The judicial system still relies on physical and formalistic evidence, such as printed deeds with wet signatures or manually legalized documents. Although electronic documents have been recognized as valid, their acceptance and verification still face obstacles related to interpretation and the readiness of legal authorities. It hinders the full implementation of blockchain as a legal instrument. Notaries need legal protection and assurance that the digital practices they adopt will not be legally challenged in the future.

The need for derivative regulations is urgent to ensure the notarial system can legally and systematically adopt blockchain. A regulation from the Minister of Law and Human Rights governing the technical use of electronic systems for notarial deeds could be an initial solution. Trials of blockchain-based digital notaries could also be facilitated by a Circular Letter or transitional regulation from the Ministry of Law and Human Rights. Several important aspects that must be regulated include system security, party verification methods, electronic signature standards, and system integration with the national database. These standards will create uniformity and provide legal certainty for deeds created electronically and stored via blockchain.

The proposed revision to the Notary Law is an important long-term step to accommodate the digital reality. The addition of provisions regarding the creation of electronic deeds, the mandatory use of digital security systems, and the recognition of modern verification methods will provide a clear legal basis. Implementation could begin with a pilot project in collaboration between the Ministry of Law and Human Rights, notary associations, and certified national blockchain technology companies. The goal is to build a digital notarial system that is not only legally valid but also practically and efficiently applicable. Standardizing blockchain-based services will better prepare Indonesia for the global digital legal era.

CONCLUSION

The policy of implementing blockchain technology in notarial practice, particularly in the preparation of digital investment agreements, holds great potential for enhancing the security, transparency, and validity of legal documents. Blockchain is capable of providing an immutable, decentralized, and auditable recording system, which aligns with the principles of legality and legal protection in authentic deeds. However, regulations in Indonesia are still partial and do not specifically accommodate the use of blockchain in notarial practice. The Notary Law (Law No. 2 of 2014 in conjunction with Law No. 30 of 2004) still emphasizes physical presence, wet signatures, and manual deed preparation, which are not in line with the characteristics of digital technology. Furthermore, derivative regulations such as Minister of Law and Human Rights Regulation No. 60 of 2016 concerning the Application of Electronic Signatures in the Legal Entity Administration System and Government Regulation No. 71 of 2019 concerning the Implementation of Electronic Systems and Transactions (PP PSTE) do not explicitly provide a legal basis for notaries to adopt blockchain in the preparation of authentic deeds.

Therefore, concrete steps are needed from the government to develop progressive and adaptive legal policies for the development of blockchain technology, particularly in the notarial sphere. There needs to be a revision or drafting of new regulations that recognize the validity of digital deeds created using blockchain systems, including the recognition of certified electronic signatures and digital timestamps. Furthermore, notaries, as key actors, must also be comprehensively prepared through information technology training, increased digital legal literacy, and the provision of adequate and secure digital infrastructure. To support this transformation, the government can pilot blockchain-based digital notary applications in major cities such as Jakarta, Surabaya, and Bandung as an initial step. This implementation can serve as a benchmark and model for national policy development, while simultaneously fostering public trust in a more modern and efficient technology-based legal system.

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