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The Impact of Blockchain Technology Application on The Efficiency of Notary Services In The Digital Era of Kediri City

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Abstract. *This study aims to analyze the effect of blockchain technology implementation on the efficiency of Notary services in practice in the digital era, especially in Kediri City. This study uses a normative approach with a literature study method as well as a legislative and conceptual approach. Data were analyzed qualitatively through a descriptive-analytical method. The results of the study indicate that blockchain technology can improve the efficiency of Notary services by accelerating the document verification process, secure digital storage, and reducing manual bureaucracy. In addition, blockchain provides advantages in terms of data security, transparency, and traceability of legal documents. However, its implementation still faces obstacles in the form of unclear regulations, limited technological infrastructure, and resistance from some Notaries to changes in conventional systems. This study concludes that legal reform and public policy are needed to support the integration of blockchain technology in notary practice, including the preparation of technical standards, HR training, and collaboration between the government, professional associations, and technology actors.*

Keywords: *Blockchain; Digital notary; Legal reform; Legal technology; Service efficiency.*

1. Introduction

The development of information technology has driven significant transformation in various sectors, including notary services. Blockchain technology, with its characteristics of decentralization and immutability, offers a solution to improve efficiency and security in the document notarization process. Research by Putra et al. (2025) proposed a blockchain-based e-notary framework integrated with

Indonesia's e-government system, showing the potential for increasing the efficiency and security of notary services.[1]

However, the implementation of this technology in Indonesia faces regulatory challenges. Existing laws have not fully accommodated the use of electronic signatures and remote notarization. This creates a gap between the potential of technology and the reality of notary practices in the field. A study by Winsherly Tan et al. (2024) emphasized the urgency of regulating cyber notaries in Indonesia to support ease of doing business.[2]

In addition, resistance from some notaries to changes in conventional systems is an obstacle to the adoption of new technologies. Lack of digital literacy and adequate technological infrastructure are also inhibiting factors. Research by Alwajdi (2020) states that Indonesia does not yet have regulations governing the use of advanced technologies such as blockchain in notary services.[3]

Nevertheless, the benefits offered by blockchain technology in notary services cannot be ignored. Data security, transparency, and process efficiency are some of the benefits that can be obtained. A study by DoxyChain (2024) shows that blockchain-based notarization can reduce fraud and increase cost efficiency.[4]

Identifying the gap between the potential of technology and the reality of notary practice in Indonesia is important to formulate an effective implementation strategy. By understanding the challenges and opportunities that exist, it is hoped that the right solution can be found to improve the efficiency of notary services through the application of blockchain technology.

This study aims to analyze the effect of implementing blockchain technology on the efficiency of notary services in practice in the digital era, especially in Kediri City.

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[1]Putra, POH, Muda, I., Bakry, MR, Yusuf, C., & Santosa, I. (2025). A framework for integrated e-notary services based on blockchain for civil law notaries: The case of Indonesia. JOIV: International Journal on Informatics Visualization, Vol 9. No 1, pp 153–162.*https://www.joiv.org/index.php/joiv/article/view/1750*. Accessed May 23, 2025 at 17:00

[2]Tan, W., Agustini, S., & Situmeang, A. (2024). The urgency of implementing a cyber notary in Indonesia: A comparative study with the United States. SASI, Vol 30. No. 3, pp. 274–286.https://doi.org/10.47268/sasi.v30i3.2258. Accessed May 23, 2025 at 17:05

[3]Ibid

[4]Turovtseva, D. (2024, April 8). The power of blockchain notarization: Securing digital assets against deepfakes and fraud. DoxyChain.https://www.doxychain.com/blog/the-power-of-blockchain-notarization-securing-digital-assets-against-deepfakes-and-fraud. Accessed May 23, 2025 at 17:10

2. Research Methods

Soerjono Soekanto stated that legal research is a scientific activity based on certain methods and systems to analyze legal phenomena and find solutions to legal problems.[5]

3. Results and Discussion

3.1. Application of Blockchain Technology to the Efficiency of Notary Services in Practice in the Digitalization Era

1. Condition of Notaries in Kediri City

Notary services in Kediri City are still manual and bureaucratic, relying on physical documents and the direct presence of the parties. Processes such as recording, archiving, and checking the validity of documents are carried out conventionally, so they are slow and prone to errors.[6]The involvement of other agencies such as the BPN adds complexity and extends the completion time.

In terms of security, the use of documents without a strong encryption system risks data loss or misuse, which can damage public trust. In addition, the process of making deeds that require physical presence makes it difficult for parties with limited mobility and increases costs and time.

Physical management of deed minute archives creates problems of limited space and potential damage. Office operating costs are also quite large, including rent, salaries, and administration, while slow processes reduce overall service efficiency.[7]

2. Blockchain Potential in Notary Services

Blockchain technology offers solutions to the various weaknesses of conventional Notary services through its three main characteristics: decentralization, transparency, and immutability.[8]

a. Decentralization
Data is not stored on one server, but is spread across the network (nodes), reducing the risk of data manipulation or loss. In the context of Notaries, this

[5]Soerjono Soekanto, 1981 "Introduction to Legal Research", University of Indonesia, Jakarta, p. 44
[6]Hasyan, M., 2024, "Utilization of Artificial Intelligence and Blockchain in Making Notarial Deeds in Indonesia", Notarius, Vol. 17 No. 1,*https://ejournal.undip.ac.id*, accessed May 9, 2025, at 14.32 WIB.
[7]Sunardi & Rusidik, ND, 2022, "Norms on the Obligation of Notaries to be Physically Present in Relation to Presidential Decree Number 11 of 2020 concerning the Determination of a State of Emergency in Handling the COVID-19 Outbreak", Journal of Law and Notary, Vol. 6 No. 2, pp. 1035–1051.
[8]Sari, AN, & Gelar, T., 2024, "Blockchain: Technology and Its Implementation", Journal of Computer Engineering and Informatics, Vol. 7 No. 1, p. 63, Department of Computer Engineering and Informatics, Bandung State Polytechnic.

increases the security of document recording such as deeds and legal agreements.[9]

b. Transparency
Every transaction and data change can be accessed by authorities. This strengthens trust because all processes can be verified, including who signed and when the action was taken.[10]

c. Immutability
Recorded data cannot be changed without the consent of the majority of the network, ensuring the integrity and authenticity of legal documents such as land sale and purchase deeds or inheritance letters.[11]

d. Process Efficiency
With the blockchain system, the document verification process becomes faster and more accurate, and minimizes the need for time-consuming and error-prone manual checking.[12]

e. Security and AuditTrail
Every transaction is permanently recorded, creating a transparent and difficult-to-manipulate audit system. This reduces the risk of fraud and increases the credibility of the Notary.[13]

Blockchain technology offers innovative solutions in notarial services by providing a decentralized, transparent and immutable recording system. This can speed up the document verification process, reduce the risk of forgery and increase public trust in notary services.[14]Although there are still challenges in its implementation, such as the need for supporting technological infrastructure and regulations, the benefits offered make blockchain an innovative solution for digital transformation in the notary sector.[15]

1. Digital Notary Profit Analysis (Literature & Hypothetical Field Data)

The implementation of digital notaries based on blockchain technology brings various strategic advantages in increasing the efficiency, security, and

[9]Ibid
[10]Ibid
[11]Ibid
[12]Ibid
[13]Ibid
[14]Prita, "Benefits, Risks, and Challenges of Technological Disruption in Notary," Hukumonline, 2025,*https://www.hukumonline.com/*. Accessed May 25, 2025 at 12:24
[15]Litera. (2023, December 14). Blockchain-based digital notary: The future of notarial services. Litera.id.*https://litera.id/digital-notary-based-blockchain-future-notary-services/*. Accessed May 8, 2025 at 18:00

accessibility of legal services.[16]Based on literature and hypothetical field data simulations, these benefits can be classified into three main categories:

a. Time and Cost Savings

The digitization of Notary services through blockchain enables automation of the verification, recording, and validation processes of documents. Procedures that previously required long and bureaucratic stages can now be completed instantly and efficiently through a decentralized system. Operational costs are also significantly reduced due to the reduced need for physical documents, archive space, and manual administration. From the user's perspective, process efficiency also reduces legal transaction costs, while increasing convenience in document management. Thus, blockchain presents a Notary service model that is more economical and responsive to the needs of modern society.[17]

b. Data and Document Security

Blockchain technology provides high security guarantees through encryption and immutability mechanisms. Encryption protects sensitive information from unauthorized access, while the immutable nature ensures that the integrity of legal documents cannot be changed without network consensus. This system eliminates the risk of forgery, data manipulation, and document loss due to physical damage or system disruption. Data is stored on multiple nodes simultaneously, making blockchain resistant to attacks or single system failures. This is especially relevant in notarial practices that require long-term validity and legitimacy of legal documents.[18]

c. Ease of Access and Mobility

Blockchain-based digital notary services allow people to access legal services without geographical limitations and operational hours. Clients can manage documents and transact online, minimizing the need for face-to-face meetings and increasing the inclusiveness of services. For notaries, this system expands the reach of legal practice to previously difficult-to-reach areas. Notary work mobility also increases because document management can be done via digital devices anytime and anywhere. In addition to speeding up the process, this also increases the competitiveness and performance of notaries in the digital era.[19]

2. Relation to Satjipto Rahardjo's Progressive Legal Theory

[16]Litera. (2023, December 14). Blockchain-based digital notary: The future of notarial services. Litera.id.*https://litera.id/digital-notary-based-blockchain-future-notary-services/*. Accessed May 8, 2025 at 18:00
[17]Ibid
[18]Ibid
[19]Ibid

The application of blockchain technology in notarial services reflects the real implementation of the progressive legal theory initiated by Satjipto Rahardjo. This theory emphasizes that the law must side with human values, be responsive to social change, and encourage legal reform in order to achieve substantive justice. In this context, blockchain becomes a modern instrument that supports the achievement of progressive legal principles, as explained through the following three dimensions:

a. Orientation towards Human Welfare

Blockchain-based digital notary services expand public access to efficient, secure, and reliable legal services. This technology eliminates physical and administrative barriers in the management of legal documents, allowing the public to access services from anywhere and at any time. Through the decentralized and transparent blockchain system, the public is guaranteed the integrity and security of legal documents, while enjoying a faster and error-free service process. Thus, the legal orientation towards human welfare is reflected in efforts to facilitate the fulfillment of legal needs practically and evenly.

b. Legal Innovation as a Means of Realizing Justice

Progressive legal theory views that law should not be trapped in proceduralism, but should be open to innovation in order to achieve substantive justice. The integration of blockchain technology in notarial practice is a form of legal innovation that can simplify processes, minimize the potential for abuse of authority, and strengthen accountability. Transparency and authenticity of data guaranteed by blockchain narrows the space for fraud and increases public trust in the legal system. This confirms that digital innovation, in this case blockchain, is not only a technical tool, but also a transformative medium to achieve a more just and functional legal system.

c. Adaptability of Law to Technological Changes

Satjipto Rahardjo emphasized that the law must be able to adapt to the dynamics of society, including technological developments. In this framework, the adoption of blockchain reflects an adaptive and relevant legal response to the digital era. Blockchain provides concrete solutions to various weaknesses in conventional systems, such as slow document verification and vulnerability to data manipulation. This technology accelerates the legalization process, reduces operational costs, and strengthens public trust. This is in line with the principle of progressive law that requires the law to be an agent of social change, not just a tool of control.

3. Results Obtained: Application of Blockchain Technology to the Efficiency of Notary Services in Practice in the Digitalization Era

The application of blockchain technology in digital Notary services marks a significant development in the legal service system, both from a technical and philosophical aspect. Based on the studies that have been conducted, several main points can be concluded as follows:

a. Practical Benefits of Blockchain-Based Digital Notary

The implementation of blockchain in Notary services provides three main advantages:

1. Time and cost efficiency
The process of legalization, verification and storage of documents becomes faster and cheaper thanks to automation and digitalization that replaces conventional manual methods.

2. High data security
With encryption and immutable nature, blockchain ensures document security, reducing the risk of forgery, manipulation, and data loss due to physical disasters or system failures.

3. Ease of access and mobility
Services can be accessed anytime and anywhere by the public and notaries without geographical and operational time limitations, so that the system becomes more inclusive and adaptive to the needs of modern society.[20]

b. Relation to Satjipto Rahardjo's Progressive Legal Theory

3.2. Obstacles and solutions in implementing blockchain technology in notary services in Kediri City

1. Public Concerns about Digital Deeds

Although digital Notary services supported by blockchain technology offer various advantages such as efficiency, transparency, and data security, its implementation is not free from various concerns and challenges in society. One of the main obstacles is the lack of public understanding of blockchain technology and the concept of digital deeds themselves. Many people, especially those who are not yet familiar with sophisticated technology, feel confused or doubtful about deeds that are not in physical form and how such documents can be legally accepted.

Public concerns mainly revolve around the security and validity of digital documents. Traditionally, physical documents with wet signatures and official notary stamps are still considered more valid and reliable legal evidence. When

[20] Megawati, L., Wiharma, C., & Hasanudin, A., 2023, "The Role of Blockchain Technology in Improving Security and Legal Certainty in Contract Transactions in Indonesia", Mimbar Justitia Law Journal, Vol. 9 No. 2, pp. 410–435.

the deed is converted into digital form, doubts arise whether the document can be accepted by the court or other institutions in legal transactions. This is a major challenge because many parties have not fully accepted the concept of electronic deeds as valid legal documents.[21]

In addition, the uncertainty of the legal status of electronic deeds also raises its own concerns. The Notary Law (UUJN) still stipulates that notarial deeds must be in physical form, with a wet signature and an official stamp. Meanwhile, the regulations governing digital or electronic deeds are still inadequate and unclear. Therefore, in order for the adoption of digital notaries to run widely, it is necessary to update legal regulations that accommodate technological developments and provide legal certainty regarding the validity of electronic deeds.

Personal data security is also a major concern in the implementation of digital notary services. People are often concerned about the potential for misuse of personal data through cyber attacks or data leaks. Although blockchain technology offers encryption and a system that is difficult to change, people still need transparent data protection guarantees and strict supervision so that trust in this digital system is built.

2. Barriers to Implementing Digital Notaries

The implementation of digital notaries in Indonesia faces various structural, legal, and technical obstacles that are quite complex. The most significant challenge arises from the regulatory gap between the Notary Law (UUJN) and the Electronic Information and Transactions Law (UU ITE).

UUJN, which is the legal basis for the notary profession, is currently still oriented towards conventional practices, namely the creation of authentic deeds physically with the direct presence of the parties and manual signing. UUJN does not explicitly regulate digital authentic deeds, so there are no procedures and requirements for the validity of making digital deeds. The ambiguity of this regulation causes a legal vacuum and uncertainty in practice, so that the public and legal institutions, including the courts, still doubt the validity and evidentiary power of electronic deeds.

In contrast, the ITE Law recognizes electronic documents and electronic signatures in general as valid evidence, but its provisions are broader and do not specifically regulate authentic deeds in the notary profession. In addition, the ITE Law also stipulates exceptions for several documents, including notarial deeds that must still be made in writing and stamped. This condition creates

[21]Lyta Berthalina Sihombing, 2020, "The Validity of Electronic Signatures in Notarial Deeds", Jurnal Education and Development, Vol. 8 No. 1, p. 134,*https://journal.ipts.ac.id/index.php/ED/article/view/1515/692*. Accessed on May 9, 2025 at 17:32

dissonance between the UUJN and the ITE Law, so that the implementation of digital notaries has an unclear legal status.

Therefore, harmonization and revision of UUJN are very necessary to accommodate digital technology, including regulating procedures, requirements for the validity of digital deeds, and validation of electronic signatures and digital documents. This regulation is important so that electronic deeds have the same legal evidentiary force as physical deeds.

In addition to regulations, technological infrastructure and human resources (HR) are also major obstacles. Not all regions in Indonesia have adequate internet access, especially remote areas, making it difficult to achieve equal distribution of digital notary services. On the other hand, many notaries do not yet have sufficient digital literacy and skills to carry out digital processes safely and in accordance with legal procedures. The lack of training and understanding of technology makes the transition to digital notary difficult.

Furthermore, concerns about data security and confidentiality of legal documents are also challenges. Protection of personal data and client confidentiality are fundamental principles in the notary profession. Without a reliable cybersecurity system and legal guarantees for data protection, public trust in digital notaries is difficult to build.

The legal paradigm that is still strongly based on conventional practices is also a non-technical obstacle. Many people and legal practitioners still consider physical documents with wet signatures to be more legitimate and accountable than digital documents that are considered vulnerable to manipulation. This paradigm shift requires legal education, socialization, and regulatory adjustments so that digital technology is widely recognized and accepted.

Overall, the successful implementation of digital notaries requires integrated steps in the form of regulatory harmonization, improving digital infrastructure and literacy, and changing the legal paradigm. These efforts are important to create a notary system that is modern, efficient, safe, and trustworthy for the Indonesian people.

3. Analysis Based on Satjipto Rahardjo's Theory of Justice

From the perspective of Satjipto Rahardjo's theory of justice, the implementation of digital notary services must prioritize the principles of inclusivity and substantive justice.[22]Justice in the legal context cannot be limited solely to the formal or procedural dimension of legal certainty; more than that, the law must be able to be present as an instrument that is truly beneficial to all levels of society without discrimination. In the contemporary view, justice is not only

[22]Wiguna, BA, Ikhwansyah, I., & Mayana, RF, 2024, "Harmonization of Digital Notary Protocol Storage Regulations", ACTA DIURNAL: Journal of Notary Law Science, Vol. 7 No. 2, pp. 9-10.

enforced legally, but also socially. This means that the law must be able to reach the real needs of society evenly and inclusively. This is becoming increasingly crucial in the digital era, where technological transformation can be a tool of empowerment as well as potentially creating new gaps, depending on how regulations and their implementation are designed and implemented.

One form of legal innovation that deserves attention is the presence of the concept of a digital notary. A digital notary, as a form of technological adaptation in notarial practice, has great potential to become an important instrument in realizing social justice. Through digitalization, notarial processes that have tended to be complicated, expensive, and difficult to access for people in remote areas, can now be carried out more efficiently, flexibly, and affordably. This transformation can directly reduce structural barriers such as geographical distance, time constraints, and cost burdens, which have so far been the main barriers for certain groups of people, especially those who are economically disadvantaged or live in remote areas.

However, the presence of digital notaries also brings serious challenges, especially related to equal access and the level of digital literacy in society. This transformation should not only be a modernization tool that widens the gap of digital inequality or creates new social exclusion. Therefore, the implementation of digital notaries must be designed and implemented with the principle of distributional justice, ensuring that all groups - including vulnerable groups who have economic, educational, age limitations, or who live in remote areas - can access and utilize this service. A humanistic approach and one based on the real needs of the community is very important in ensuring the success of this process.

Furthermore, in the framework of justice as put forward by figures such as John Rawls and Amartya Sen, justice is not only about the distribution of resources or opportunities, but also how systems and institutions guarantee that individual rights are carried out procedurally and substantively. In the context of digital Notaries, this means that every legal process carried out digitally must uphold the principles of legal legitimacy, accountability, and transparency. The presence of a digital platform alone is not enough; there must be strong, clear, and comprehensive regulations to protect all parties involved — both Notaries, service users, and third parties related to the legal documents produced.

The regulation must cover various important aspects, starting from the legal validity of electronic documents, digital security standards, identity verification procedures, digital archive storage mechanisms, to personal data protection. Legal certainty is key so that digital Notaries do not create legal confusion or open up loopholes for abuse. On the other hand, transparent and accountable procedures will increase public legitimacy towards the digital notary system. Public trust is a fundamental factor in determining the success of digital transformation in the legal sector.

Thus, the success of the implementation of digital Notaries as part of digital legal reform must be seen not only from the technical and administrative aspects, but also from the extent to which it is able to present substantive justice. This requires synergy between aspects of technology, legal policy, public education, and ongoing institutional supervision. When all these components run harmoniously, digital Notaries will not only be a symbol of technological progress, but also real evidence that the law is able to develop to be more responsive, adaptive, and in favor of the interests of the wider community.

4. Results Obtained

The implementation of blockchain technology in notary services in Kediri City faces a number of technical, regulatory, and social challenges. These obstacles need to be addressed in a structured manner so that digitalization efforts are not only effective and safe, but also widely accepted by the community. Based on the research results, the following is a mapping of the main obstacles along with the implications of solutions that can be considered:

a. Unsynchronized and Uncomprehensive Regulations

1) Regulations regarding digital notaries, especially those that accommodate the use of blockchain technology, still do not have a clear and comprehensive legal framework.

2) There is a potential conflict between the Notary Law (UUJN), the Electronic Information and Transactions Law (UU ITE), and other implementing regulations, which could lead to legal uncertainty.

3) There is no procedural clarity regarding the creation of digital authentic deeds, the use of certified electronic signatures, and digital identity verification mechanisms that comply with legal standards.

Recommended solution: Preparation of special regulations regarding digital notaries involving relevant stakeholders, harmonization of regulations between UUJN and UU ITE, as well as technical regulations regarding electronic signature standards, validity of digital documents, and blockchain-based verification mechanisms.

b. Infrastructure and Technology Readiness

1) The availability of internet networks that is not evenly distributed in several areas, especially remote areas in Kediri City, hampers access to digital services.

2) Lack of hardware and software specifically designed to support blockchain-based notary processes.

3) Challenges in implementing information security standards, including data encryption, dual authentication, and digital audits to protect sensitive data processed electronically.

Recommended solution: Improving information technology infrastructure through cooperation between local governments and telecommunications service providers, procuring special digital systems for notary needs, and implementing digital security standards according to international best practices.

c. Limitations of Notary Digital Competence and Literacy

1) Most notaries do not yet have adequate mastery of digital or blockchain technology, making them susceptible to procedural errors or even violations of the law.

2) Lack of formal training, certification, and continuous learning programs related to digital technology, cybersecurity, and digital notary governance.

Recommended solution: Implementation of mandatory training and certification programs for notaries related to blockchain technology, digital security, and digital legal procedures. Technical assistance and the provision of a helpdesk are also needed to facilitate the process of technology adaptation among notaries.

d. Low Digital Literacy and Public Trust

1) The varying levels of digital literacy in society cause resistance, concern, and even distrust towards blockchain-based digital notary services.

2) Limited access to technological devices and connectivity among underprivileged communities can be a barrier to the inclusivity of digital services.

Recommended solution: Implementation of public education programs on the benefits, procedures, and security of digital notary services, as well as the provision of supporting service facilities (e.g., digital service centers) in areas with limited access. The government can also provide subsidies or financial support to ensure more equitable access to technology.

4. Conclusion

The discussion on the application of blockchain technology to the efficiency of Notary services in the digitalization era shows the potential for significant transformation in the notary system, especially in the Kediri City area. So far, Notary services that still operate conventionally tend to be burdened by long manual procedures, complex bureaucracy, and dependence on physical documents that are susceptible to damage, loss, and limited storage space. This situation has a direct impact on low time efficiency, high operational costs, and increased risks in managing legal archives. Blockchain technology has emerged as an innovative solution that offers a new approach to document recording and

verification in a faster, safer, and more efficient way. With its main characteristics of decentralization, transparency, and immutability, blockchain is able to overcome various weaknesses of conventional services. In practice, this technology enables the acceleration of data and document verification processes, the implementation of smart contracts, and a significant reduction in administrative costs and manual workloads. Based on the hypothetical simulation conducted, the implementation of a blockchain-based digital Notary system has the potential to shorten service completion time while reducing operational costs. This also opens up opportunities for Notaries to expand the scope of services in a more flexible, responsive, and appropriate manner to the needs of modern society. Other benefits include increased security and integrity of documents, data protection from manipulation or loss, and ease of access to services from various locations that support user mobility. Furthermore, this approach is in line with Satjipto Rahardjo's progressive legal theory framework which holds that law should not only be subject to normative texts, but also be able to answer the real needs of society. Law is required to be adaptive, responsive to technological developments, and oriented towards substantive welfare and justice. Therefore, the application of blockchain technology in the digital Notary system is not only a technical innovation, but also a reflection of relevant, humane, and public interest-oriented legal reforms.

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