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Transforming Notarial Practices: The Impact of Digitalization on Supervision and Regulation

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ABSTRACT

This study discusses the digital transformation in notarial supervision, highlighting how digitalization can enhance efficiency, security, and transparency in the notarial profession. In this digital era, notaries face significant challenges related to data security and document integrity. This research explores various technologies such as electronic signatures and blockchain that can be used to ensure the validity and authenticity of notarial documents. The use of automatic monitoring technologies, early warning systems, and periodic audits are identified as crucial steps in digital supervision. Additionally, collaboration with digital service providers and training for law enforcement officers are identified as key factors supporting this transformation. The research findings show that the implementation of digital technology can increase public trust in notarial services, reduce dependence on slower physical processes, and open new opportunities for cross-border transactions. Digitalization in notarial supervision requires a holistic approach that includes regulatory development, effective supervision, and capacity building through training and collaboration. With these measures, the legal system can adapt to technological developments, ensuring that notarial services remain relevant and effective in the digital era, providing maximum benefits to society and the business world.

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PRELIMINARY

The profession of notary holds a highly vital role in the legal systems of various countries. As public officials appointed by the state, notaries have the responsibility to ensure that legal transactions are conducted lawfully, correctly, and in accordance with applicable regulations. The primary functions of notaries include the creation, authentication, and safekeeping of essential legal documents, such as birth certificates, wills, sale and purchase agreements, land deeds, and various other contracts. Notaries are responsible for ensuring that all parties involved in a legal transaction or agreement fully understand the content of the documents they sign, thereby preventing any party from being disadvantaged and ensuring that the documents are legally valid.

Through the role of the notary as a witness and mediator in the document preparation process, the likelihood of future disputes can be minimized. Notarial deeds have higher evidentiary value in court[1]. Notaries serve to provide legal certainty to the public. Documents prepared and authenticated by notaries are legally recognized, thereby instilling confidence among parties involved in a transaction. Given the notary's vital role in the legal system, strict and effective supervision is necessary to ensure that notaries perform their duties with integrity and professionalism. Without adequate oversight, there is a risk of abuse of authority that could harm the public and undermine public trust in legal institutions.

In the digital era, the role of notaries has undergone significant changes alongside the advancement of information and communication technology. This transformation is evident in various aspects that both strengthen the role of notaries and introduce new challenges requiring adaptation. Firstly, the digitization of documents is one of the most substantial changes. Documents that were previously created and stored in physical form are now shifting to digital formats. Notaries are no longer solely responsible for authenticating physical documents but are also tasked with certifying electronic documents, providing digital signatures, and ensuring that these digital documents hold the same legal weight as their physical counterparts[2].

Overall, the role of notaries in the digital era involves balancing the use of technology to enhance service efficiency while maintaining the trust and legal security that are the core of the profession. This transformation requires innovation and adaptation but also demands that notaries remain true to the fundamental principles of their profession to preserve integrity and public trust. Effective supervision can prevent notaries from engaging in unlawful acts, such as document forgery or signing documents without the presence of the concerned parties. This oversight also assures the public that the notary services they receive are legitimate, trustworthy, and conducted in accordance with applicable legal standards[3]. Ultimately, effective supervision creates an environment where notaries can be held accountable for their actions, maintain public trust, and protect the interests of all parties involved.

In the digital era, supervision is also crucial to ensure that notaries protect the personal data and sensitive information they handle. This includes implementing high-security standards to prevent data breaches or unauthorized access. With a strong supervision system in place, public trust in the notary profession will increase. People will feel more secure and confident that the notary services they use are carried out professionally and in compliance with the law. Effective supervision not only serves as a control mechanism but also as a preventive measure to ensure that the notary profession continues to grow and adapt to changing times, especially with the advent of digitalization[4]. This enables notaries to remain relevant and efficient in meeting the legal needs of society.

Additionally, the validity and legality of digital documents are crucial issues. In many jurisdictions, regulations regarding digital signatures and electronic documents are still evolving. Supervisors must ensure that notaries understand and comply with existing regulations and that the digital documents they authenticate have the same legal force as physical documents. However, not all notaries have equal access to technology. Technological gaps and accessibility pose challenges, particularly in areas with limited

[1] Habib Adjie, *Sekilas Dunia Notaris & PPAT Indonesia,* (Bandung: Mandar Maju, 2009), hlm. 23.

[2] Gania Fasya, "Keabsahan Pembacaan Akta Melalui Video Conference di Era Digitalisasi," *Humantech: Jurnal Ilmiah Multidisiplin Indonesia*, (Vol. 2, No. Spesial Issues 1, 28 Januari 2022), hlm. 318–322.

[3] Regina Natalie Theixar dan Ni Ketut Supasti Dharmawan, "Tanggung Jawab Notaris dalam Menjaga Keamanan Digitalisasi Akta," *Acta Comitas: Jurnal Hukum Kenotariatan* (Vol. 6, No. 01, 30 Maret 2021), hlm. 1-15.

[4] Arif Lukman, "Implementation of Regulation of the Minister of Agrarian Affairs and Spatial Planning (ATR)Act No.National Land Agency (BPN) Number 9 of 2019 concerning Implementation of Registration of Mortgage Rights Using an Electronic System (Analysis of Problems and Legality of Authentic Deed Electronically)", *Sultan Agung Notary Law Review* (SANLaR), (Vol. 3, No. 1, 2021), hlm. 349.

internet access or for notaries less familiar with new technology[5]. To ensure consistent supervision, efforts must be made to provide uniform training and technological support for all notaries.

Privacy and data protection are also primary concerns in the digital era. Notaries often handle highly sensitive personal information, so they must follow best practices in data protection. Supervision must ensure that notaries comply with data protection regulations, such as the General Data Protection Regulation (GDPR) or other local regulations. Transparency and accountability are also crucial aspects of supervising notaries in the digital era. While digitalization can enhance transparency, questions regarding how digital records are maintained, who has access to them, and how audits are conducted still need clear answers[6]. The supervisory system must ensure that the supervision process is not only transparent but also has clear mechanisms to maintain the accountability of notaries in all their actions.

Research on notary supervision in the digital era is urgent due to the significant changes occurring in the work methods of notaries and the technologies they use. The urgency of this research is rooted not only in the need to protect sensitive data and prevent cybercrime but also in the importance of maintaining the integrity, transparency, and accountability of the notary profession amid a continuously evolving digital era. Based on this overview, this article aims to explore the challenges notaries face in adopting digital technology and how these challenges impact service consistency and supervision?

METHOD

This article employs a normative research method to critically examine the legal framework governing notaries, notarial oversight, and the integration of digital technology in the context of regulations in Indonesia. The legal materials analyzed include the Law on Notary Positions (UUJN), regulations on digital signatures as stipulated in Government Regulation No. 82 of 2012 on the Implementation of Electronic Systems and Transactions (PP PSTE), and Law No. 27 of 2022 on Personal Data Protection (UU PDP). The research also covers an analysis of other regulations governing the storage and management of electronic documents, including the Ministry of Communication and Information Technology Regulation on the Governance of Electronic Systems. In this context, the normative approach involves a deep interpretation of how these laws and regulations are implemented in the increasingly digital practices of notaries.

This study aims to determine whether the current regulatory framework, particularly UUJN, PP PSTE, and UU PDP, is comprehensive enough to regulate the use of digital technology by notaries, including the protection of personal data generated in the notarial process. Furthermore, this research will evaluate whether there are legal gaps in these regulations that need to be addressed with new legislation, especially in terms of notarial oversight and personal data protection in the era of digitalization.

RESULT AND DISCUSSION

Digital Technology in Notary Supervision

Digital technology has fundamentally changed how notary supervision is conducted. Before the digital era, the supervision process relied heavily on manual methods, which were

[5] Mohamat Riza Kuswanto, "Urgensi Penyimpanan Protokol Notaris dalam Bentuk Elektronik Dan Kepastian Hukumnya Di Indonesia", *Jurnal Repertorium,* (Vol. 4, No. 2, 2017), hlm. 65.

[6] R. Budi P.W, "Kewajiban Notaris Dalam Menjaga Data Pribadi Secara Digital Persepektif Undang-Undang Perlindungan Data Pribadi Indonesia", *Otentik's: Jurnal Hukum Kenotariatan, (*Vol 5, No. 2, 2023), hlm. 215-216.

often time-consuming and resource-intensive. Supervisors had to perform physical inspections, examine printed documents, and carry out manual audits that were lengthy and prone to human error. Each stage of supervision required considerable manpower and time and was often hindered by physical and geographical limitations. Digitalization has allowed many previously manual supervision processes to become automated, faster, and far more efficient. Digital systems facilitate real-time recording of notary activities, enabling important information to be immediately accessed by supervisors anytime and from anywhere[7].

The ability to access and audit notary data in real-time also enhances transparency in supervision. Supervisors can easily monitor notary activities, ensuring that every action taken complies with applicable regulations and standards. This also simplifies the audit process, as all necessary data is readily available and well-organized in the digital system. Greater transparency not only strengthens supervision but also increases public trust in the notary profession. Overall, digital technology has opened up significant opportunities to improve the effectiveness and efficiency of notary supervision. By leveraging the advantages of this technology, the supervision process can become more responsive, accurate, and transparent, better protecting the public interest in an increasingly digital era[8]. Effective supervision through digitalization also serves as a crucial foundation for notaries to maintain their integrity and professionalism in carrying out their duties.

Furthermore, digitalization also simplifies document verification. Technologies such as digital signatures and electronic identity recognition systems have replaced traditional verification methods that are slower and more prone to errors. Digital signatures, for example, allow notaries and relevant parties to sign documents electronically with security that is equal to or even superior to physical signatures. Each digital signature is protected by encryption technology that ensures the integrity of the document, making it impossible to alter or forge after it has been signed. Electronic identity recognition systems also play a crucial role in speeding up and enhancing the accuracy of document verification. With this technology, the identities of parties involved in a transaction or document authentication can be verified instantly and accurately, reducing the risk of fraud or identification errors. This is essential in a legal context, where the accuracy of identity is the foundation for the validity of documents and legal transactions[9].

Integrated Supervision with Technology-Based Systems

Digital technology has paved the way for developing integrated supervision systems that encompass various aspects of notary work, creating a more efficient and transparent ecosystem for monitoring notary performance and compliance. These supervision systems do not focus on a single aspect but cover multiple dimensions of notary activities, such as regulatory compliance, work performance, and financial report management. With digital technology, data integration becomes smoother and more holistic. Data from various sources, such as transaction records, financial reports, and audit results, can be integrated into a single, comprehensive platform. Supervisors no longer have to rely on data scattered across different departments or physical documents that are difficult to access.

In a digital system, financial reports can be monitored in real-time, allowing supervisors to detect suspicious patterns or discrepancies in bookkeeping that may indicate risks of misuse or fraud. This system also facilitates the monitoring of cash flows and asset management, which are critical components of a notary's financial integrity. A major

[7] Regina Natalie Theixar, “Tanggung Jawab Notaris Dalam Menjaga Keamanan Digitalisasi Akta”, *Acta Comitas : Jurnal Hukum Kenotariatan,* (Vol. 06 No. 01, (2021), hlm. 5.

[8] Habib Adjie, *Memahami: Majelis Pengawas Notaris (MPN) dan Majelis Kehormatan Notaris (MKN),* (Bandung : PT. Refika Aditama, 2017), hlm. 23.

[9] Koko Caniago and Tata Sutabri, “Tindak Kejahatan Phising di Sektor Pelayan Di Universitas Bina Insan Lubuklinggau”, *Jurnal Riset Sistem Informasi Dan Teknik Informatika (JURASIK),* (Volume 8.Nomor 1, Februari 2023), hlm. 117–125.

advantage of this integrated supervision system is its ability to provide more detailed and comprehensive information to decision-makers. Supervisors can make better, data-driven decisions rather than relying on intuition or limited information[10]. For example, if discrepancies are found between financial reports and the number of reported transactions, supervisors can immediately conduct an in-depth audit and determine the necessary steps to address the issue.

Moreover, this integrated supervision system also enables faster and more targeted corrective actions. If deviations or violations are detected, supervisors can quickly identify the source of the problem and take the necessary steps to prevent further impact. For example, if a notary fails to meet compliance standards, the system can provide recommendations for additional training or issue an official warning, depending on the severity of the issue. In the long term, developing such an integrated supervision system will not only enhance efficiency and accuracy in notary supervision but also build greater public trust[11]. Clients and the wider community can be more assured that notaries are being closely monitored and that all their actions are scrutinized for compliance with legal and ethical standards.

With digital technology, notaries have more opportunities to innovate and introduce new practices that are more efficient and aligned with contemporary needs. For example, integrating blockchain technology into the document authentication process can provide an additional layer of security and create an immutable record. Similarly, using artificial intelligence in document analysis can help notaries handle large volumes of work more quickly and accurately. Advanced supervision systems support these innovations by ensuring that any new practices introduced remain within the boundaries of applicable laws and standards[12]. Digital technology and integrated supervision systems provide a solid foundation for the notary profession, enabling them to perform their duties more effectively, comply with all relevant regulations, and continually improve their performance.

Data analysis capabilities also enable supervision to anticipate potential problems before they arise. For instance, through predictive analysis, supervisors can identify notaries who may be at high risk of compliance issues in the future, based on historical data and observed trends. This allows supervisors to take preventive measures, such as offering guidance or additional oversight, to help these notaries stay on the right track. Such proactive supervision not only enhances efficiency but also reduces the risk of legal violations that could harm notaries and their clients. Data-driven supervision also facilitates greater transparency and accountability. With structured and accessible data, supervisors can easily track every action taken by a notary and ensure that all actions comply with applicable regulations[13].

One of the main advantages of digitalization is its ability to simplify tracking and auditing. Digital systems enable supervisors to trace every action taken by a notary, from the initial steps to finalization. Each transaction can be tracked with clear detail, allowing supervisors to understand the chronology and context of every notarial activity. Audit processes that previously might have taken weeks or even months can now be conducted more quickly and efficiently, as all the necessary data is available on a centralized and structured platform. Transparency is one of the key pillars in the legal profession, and digitalization has significantly enhanced this aspect. With all activities recorded and accessible to supervisors, the supervision process becomes more transparent. There is no

[10] Salim H.S, *Teknik Pembuatan Akta Satu* (Jakarta: Raja Grafindo Persada, 2015), hlm. 33.

[11] Sjaifurrahman, *Aspek Pertanggungjawaban Notaris dalam Pembuatan Akta* (Bandung: Mandar Maju.hlm. 65, 2015), hlm. 15.

[12] Neky Kuntjoro, "Efektivitas Pengawasan Majelis Pengawas Daerah (MPD) Kota Yogyakarta Terhadap Perilaku Notaris di Kota Yogyakarta Menurut Kode Etik Notaris", *Jurnal LEX Renaissance,* (Volume 1 Nomor 2, 2016), hlm. 204.

[13] Merlec, Mpyana Mwamba, Youn Kyu Lee, Seng-Phil Hong, dan Hoh Peter In. "Sistem Manajemen Persetujuan Dinamis Berbasis Kontrak Cerdas untuk Penggunaan Data Pribadi di bawah GDPR", *Sensors*, (Vol. 21, No. 23).

longer room for manipulation or concealment of information, as every action by a notary is recorded and can be reviewed at any time.

Public trust is key in the legal profession, and digitalization plays a major role in enhancing this trust. When clients know that every action taken by a notary is closely monitored and traceable, they feel more secure and confident that the services they receive are legitimate and of high quality. The transparency brought about by digitalization fosters greater trust in the notary profession, ultimately strengthening the relationship between notaries and their clients. Digitalization has significantly increased transparency in notary supervision, with every action and transaction performed by notaries recorded and stored in a secure and easily accessible database[14]. This transparency not only facilitates tracking and auditing processes but also enhances accountability and upholds the integrity of the notary profession.

Challenges in the Implementation of Digital Technology

The implementation of digital technology across various sectors, including in notary supervision, brings unique challenges and opportunities. On one hand, digital technology offers numerous advantages, such as greater efficiency, accuracy, and transparency. On the other hand, the process of implementing this technology is not without challenges that require strategic planning, adaptation, and thorough preparation. To ensure the success of digital transformation, it is crucial to understand both the potential challenges and the opportunities that can be leveraged. The following is an overview of the challenges and opportunities in implementing digital technology[15].

1) Resistance to Change

One of the biggest challenges in implementing digital technology is resistance to change. Notaries, supervisors, and other staff may be accustomed to traditional working methods they have used for years. The transition to a new digital system is often accompanied by concerns about the difficulties in learning to use new technology, uncertainty about how these changes will impact their work, and fears of losing control or even their jobs. Therefore, this resistance must be managed wisely through effective communication, adequate training, and continuous support during the transition process. Many people feel comfortable with the familiar ways of working and may feel burdened by the demand to learn something new. Digital technology, despite its many benefits, often requires new skills and understanding that not all staff may possess.

In addition to uncertainty, there is also a deeper fear of losing control over one's work or even losing the job itself. Digital technology often brings automation and efficiency, which can reduce the need for manual tasks. This can lead to insecurity among staff, who may feel that they no longer have full control over their work processes or that their jobs could be replaced by technology. It is essential for management to address these concerns wisely, such as by demonstrating how new technology can enhance their work rather than replace it, and by offering opportunities for developing relevant skills[16]. Management needs to clearly communicate the reasons behind the digital transformation, the expected benefits, and its impact on each team member. This communication should be ongoing, not just at the beginning of the change process, to ensure that everyone remains informed and feels involved throughout the process.

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[14] Putri, C. C., & Budiono, A. R. "Konseptualisasi dan Peluang Cyber Notary dalam Hukum", *Jurnal Ilmiah Pendidikan Pancasila dan Kewarganegaraan*, (Vol. 4, No. 1), hlm. 29–36.

[15] Valentine Phebe Mowoka, "Pelaksanaan Tanggung Jawab Notaris Terhadap Akta yang Dibuatnya", *Jurnal Lex es Societatis*, (Volume 2 Nomor 4, 2014), hlm. 62.

[16] Estikharisma Harun, dan Akhmad Khisni, "Perbedaan Kewenangan dan Syarat Tata Cara Pengangkatan Antara Notaris dan Notaris Pengganti", *Jurnal Akta,* (Volume 4 Nomor 4, 2017), hlm. 510.

2) Implementation Costs

Implementing digital technology often requires a significant investment, covering various aspects such as hardware, software, training, and maintenance. The costs involved in this transformation can be a major challenge, especially for organizations with limited budgets. Not only is the initial investment substantial, but the ongoing operational and maintenance costs must also be carefully considered. Therefore, careful cost management and the selection of efficient solutions are crucial to overcoming this challenge and ensuring that digital transformation can proceed successfully without overburdening the organization's financial resources. One of the largest components of digital technology implementation costs is the investment in hardware and software. Hardware includes servers, computers, networking devices, and data storage tools needed to support digital systems. Meanwhile, software encompasses operating systems, data management applications, analytical tools, and other programs that support digital operations[17].

Careful budget management is key to ensuring that investments in digital technology remain under control. For example, organizations can choose to implement the technology gradually, spreading the costs over several budget years. Additionally, regular evaluations of expenditures and the benefits derived from new technology should be conducted to ensure that the investment is delivering the expected results. While implementing digital technology does require a significant investment, this challenge can be overcome with careful cost management and the selection of efficient solutions. Strategies such as using cloud computing, partnering with third parties, and good budget management can help reduce costs without sacrificing the quality and effectiveness of the digital transformation. With a structured, efficiency-oriented approach, organizations can successfully undergo digitalization, even with limited budgets[18].

Data Security and Privacy

With the increasing amount of data managed digitally, data security risks also rise. Threats like hacking, data theft, and other cyberattacks become challenges that must be taken seriously. Additionally, there are challenges related to compliance with strict data privacy regulations, such as the GDPR in Europe. To address these challenges, organizations need to implement robust security measures, including encryption, multi-factor authentication, and continuous network monitoring, while ensuring that all systems and processes comply with applicable regulatory standards. In the constantly evolving digital landscape, cyber threats are becoming more sophisticated and diverse. Cybercriminals now use various techniques to exploit system vulnerabilities, including phishing attacks, malware, ransomware, and DDoS attacks. These attacks target not only stored data but also data in transit, making it vulnerable to theft or manipulation. This threat is further exacerbated by the increasing use of IoT (*Internet of Things*) devices and cloud services, which often lack adequate security measures[19].

Encryption is one of the most effective methods for protecting data from unauthorized access. With encryption, data is transformed into a coded form that can only be read by those who have the correct decryption key. This means that even if the data is stolen by cybercriminals, it cannot be used without the proper key. Encryption should be applied to all sensitive data, whether it is stored (data at rest) or being transferred (data in transit). Additionally, encryption is essential for complying with regulatory requirements, such as the GDPR, which demands that personal data be protected with strong security measures. Multi-

[17] Ghansham Anand, *Karakteristik Jabatan Notaris di Indonesia,* (Jakarta: Prenada Media Group, 2018). hlm. 68.

[18] Bayu Rianto dan Welly Dozan, Dasar-dasar Pengantar Teknologi Informasi, (Malang: CV. Multimedia Edukasi, 2020), hlm. 17.

[19] Dellia Santi Wulandari, "Pengelolaan Arsip Elektronik di Era Digital". *IKOMIK: Jurnal Ilmu Komunikasi dan Informasi*, (Volume 3 Nomor 2, 2023), hlm. 39.

Factor Authentication (MFA) adds an extra layer of security that is crucial in protecting access to systems and data. MFA requires more than one method of identity verification before granting access, such as a combination of a password and a verification code sent to the user's mobile device[20].

Strategies for Digital Transformation

Digital transformation in notary supervision is a crucial step to enhance efficiency, transparency, and accountability within the profession. However, to ensure the success of this transformation, a well-planned and structured strategy is required. Here are some strategies that can be implemented to promote digital transformation in notary supervision[21]:

1) Development of Technological Infrastructure

The first step in a successful digital transformation is to ensure that an adequate technological infrastructure is in place. This infrastructure serves as a critical foundation that enables all digital processes to run smoothly and efficiently. Without a strong infrastructure, efforts towards digital transformation will struggle to achieve optimal results. Therefore, investment in the right hardware, software, networks, and data storage systems should be a top priority. Hardware is the backbone of any digital system. This includes servers, computers, network devices, and data storage equipment. Reliable and high-performance servers are essential for running digital applications and services, particularly those that require significant data processing capacity and the ability to handle many users simultaneously. Ensuring that this hardware operates stably and has high scalability is key to supporting future data growth and user needs.

A secure data storage system is also an absolute necessity in digital transformation. Data storage must be capable of handling large volumes of data efficiently and provide quick and easy access for authorized users. This storage system should be equipped with data protection mechanisms, such as automatic backups, encryption, and redundancy, to ensure that data remains safe and can be quickly recovered in case of system failure or a cyber attack. Cloud-based platforms are increasingly becoming the preferred choice in digital transformation due to their flexibility and scalability. Cloud computing allows data storage and processing to be conducted on remote servers, accessible anytime and from anywhere via the internet. This offers significant cost-saving advantages, as organizations do not need to invest heavily in purchasing and maintaining on-premises hardware and software. Additionally, the cloud provides the capability to scale storage and data processing capacity as needed and supports more effective collaboration among various teams and stakeholders.

2) Implementation of an Integrated Supervision System

Building a digital-based integrated supervision system is at the core of this strategy. This system should be capable of integrating various aspects of supervision, including transaction recording, activity tracking, auditing, and reporting. With an integrated system, all relevant data can be accessed from a single platform, making supervision and analysis more straightforward. The system should also be equipped with advanced data analysis tools, allowing supervisors to identify patterns, trends, and potential issues more efficiently. Transaction recording is a key element in supervision, especially in the context of the notary profession. The integrated supervision system must be able to automatically record every transaction conducted by notaries, from document authentication to electronic signing

[20] Syaifudin.A, "Perlindungan Hukum Terhadap Para Pihak Di Dalam Layanan Financial Technology Berbasis Peer to Peer (P2P) Lending (Studi Kasus di PT. Pasar Dana Pinjaman Jakarta)", *Dinamika,* (Vol. 26, No. 4, 2020), hlm. 408-421.

[21] Budi Untung, *22 Karakter Pejabat Umum (Notaris dan PPAT) Kunci Sukses Melayani*, (Yogyakarta: CV. Andi Offset, 2018). hlm. 25.

processes. With integrated transaction recording, every detail, such as time, date, parties involved, and type of transaction, is captured in real-time.

Data security is a vital element in an integrated supervision system. The system must be designed with strong security protocols, including data encryption, multi-factor authentication, and real-time network monitoring, to protect sensitive data from unauthorized access and cyber threats. Additionally, the system must comply with all applicable regulations related to data protection and privacy, such as the GDPR, to ensure that the information managed remains secure and meets established legal standards. The integrated supervision system should be flexible and adaptable to the evolving needs of the organization. This means the system should be able to accommodate the addition of new modules or features and handle increased data volumes as digital operations grow. This scalability is crucial to ensure that the system can continue to operate effectively even amid significant changes in the business or regulatory environment.

3) Training and Development of Human Resources

Digital transformation is not just about technology; it's also about the people who use it. Therefore, training and human resource development are crucial. Notaries and supervisors must be trained to understand and use digital technology effectively. This includes training on the use of new systems, cybersecurity, and data analysis. Additionally, developing technical and digital skills should be part of a continuous training program to ensure that all parties stay up-to-date with the latest technological advancements. The first step in ensuring that notaries and supervisors can effectively utilize digital technology is through comprehensive training on the use of new systems. The newly introduced digital systems may have different features and functions compared to the traditional systems previously used[22]. Therefore, this training should cover an introduction to the user interface, how the system works, and the steps required to complete various operational tasks.

To ensure that training and skill development programs are effective, it is essential to have a structured evaluation and feedback mechanism. This evaluation can be carried out through competency tests after training, direct observation in daily work, or participant satisfaction surveys. Feedback from training participants is also crucial for continuously refining the training program to make it more relevant and aligned with their needs. With ongoing evaluation, organizations can ensure that the training provided truly enhances workforce competence and supports digital transformation goals. Digital transformation is not just about adopting new technologies but also about ensuring that the people using them have the necessary skills and knowledge to utilize them optimally. Human resource training and development are key in this process[23]. With a comprehensive, continuous training program supported by effective evaluation, notaries and supervisors can be better prepared to face digital challenges, increase work efficiency, and maintain security and integrity in every aspect of their operations.

4) Strengthening Data Security

Data encryption is one of the most effective methods for protecting sensitive information from unauthorized access. With encryption, stored and transferred data is converted into a code that can only be read by those who possess the correct encryption key. This means that even if the data is accessed by unauthorized parties, they will not be able to understand or utilize it without the proper encryption key. Encryption should be applied to all data considered sensitive, including personal information, financial details, and legal documents. Additionally, organizations must ensure that encryption keys are well-managed and only accessible to authorized personnel. Multi-factor authentication (MFA) is another

[22] Sjaifurrahman, *Aspek Pertanggungjawaban Notaris dalam Pembuatan Akta*. (Bandung: Mandar Maju, 2011), hlm. 65.

[23] Nikolaus Forgo, Stefanie Hanold dan Benjamin Schutze, "The Principle of Purpose Limitation", dalamMarcelo Coralles (Ed) dkk, New Technology, Big Data and the Law, (Springer Verlag, 2017), hlm. 22.

crucial step in enhancing data security. With MFA, users must go through more than one identity verification step before being granted access to a particular system or data. These steps may include a combination of something the user knows (such as a password), something the user has (such as a token or mobile device), and something inherent to the user (such as a fingerprint or facial recognition).

A firewall serves as the first line of defense that protects an internal network from external threats. It works by monitoring and controlling incoming and outgoing network traffic based on predefined security rules. This helps prevent unauthorized access and external attacks. In addition to firewalls, it is also important to implement intrusion detection and prevention systems (IDS/IPS) that can detect suspicious activity within the network and take preventive actions before the threat can cause damage. The combination of firewalls, IDS/IPS, and other network monitoring tools will help maintain the overall integrity and security of the network. Continuous network monitoring is a vital element in a data security strategy. With ongoing monitoring, organizations can detect threats in real-time and respond to them before significant damage occurs. Advanced network monitoring tools can identify unusual traffic patterns, failed login attempts, or other activities that indicate hacking attempts. A quick response to such incidents can minimize the impact of cyberattacks and protect sensitive data from unauthorized access.

5) Focus on Innovation and Continuous Improvement

Digital transformation should not stop at the initial implementation stage. In the context of notary oversight, digital transformation should be viewed as an ongoing process where innovation and continuous improvement are pursued to ensure that existing systems remain relevant, effective, and capable of addressing future challenges. With the constant evolution of technology, new needs and challenges will inevitably arise. Therefore, it is important to have a strategy that focuses on continuous innovation and responsive adaptation to change. One of the most critical aspects of continuous innovation is the ongoing adoption of new technologies that can enhance the efficiency and effectiveness of oversight[24]. Technologies such as artificial intelligence (AI), advanced data analytics, blockchain, and robotic process automation (RPA) are some examples that can be integrated into notary oversight systems. For instance, AI can be used to analyze large volumes of data more quickly and accurately, detect suspicious patterns, or even provide recommendations for corrective actions. Blockchain, on the other hand, can be utilized to create immutable audit trails, ensuring transparency and security in every transaction conducted by notaries[25].

The needs in notary oversight are not static; they continuously evolve alongside developments in law, regulations, and technology. Therefore, the strategies implemented must be flexible and adaptable to these changing needs. This entails periodically reviewing policies, procedures, and tools used in oversight, and making adjustments as necessary. These adjustments might include enhancing data security systems to counter emerging cyber threats or updating oversight procedures to comply with new regulations imposed by the government. Technological innovation must be complemented by the enhancement of the human resources capacity that utilizes it. Continuous training and development for notaries and supervisors are essential to ensure they can effectively use the latest technology. Ongoing training programs will help them stay up-to-date with the latest developments, both in terms of technology and applicable regulations[26].

[24] Sarah Myers West, "Data Capitalism: Redefining the Logics of Surveillance and Privacy", *Business & Society,* (Vol. 58, 1, 2019), hlm. 20–41.

[25] Liu, C. H., Lin, Q., & Wen, S. "Blockchain-Enabled Data Collection and Sharing for Industrial IoT With Deep Reinforcement Learning". *IEEE Transactions on Industrial Informatics,* (Vol. 15, No. 6), hlm. 3516-3526.

[26] Estikharisma Harun, dan Akhmad Khisni, "Perbedaan Kewenangan dan Syarat Tata Cara Pengangkatan Antara Notaris dan Notaris Pengganti", *Jurnal Akta,* (Volume 4 Nomor 4, 2017).

Adaptation of Regulations to the Digital Era

The use of digital technology in notary oversight has a significant impact, not only changing the way work is conducted but also driving the need for relevant regulatory adaptation. As technology evolves, the laws and regulations governing the notary profession must be updated to accommodate the changes brought about by digitalization. These regulations should cover various critical aspects, such as the validity of digital signatures, the authentication of electronic documents, and standards for data security and privacy. Without appropriate regulations, there is a risk that digital technology could be used in ways that are unauthorized or inconsistent with existing legal principles, ultimately jeopardizing the integrity of the notary profession[27].

One crucial aspect that requires attention in regulation is the validity of digital signatures. In the digital era, digital signatures have become a legitimate substitute for physical signatures in many transactions. However, for digital signatures to be widely accepted and hold the same legal force as traditional signatures, clear and comprehensive regulations are necessary. These regulations should establish standards for the technology used in creating digital signatures, ensuring that they cannot be forged and can be easily verified by authorized parties. Additionally, the regulations should define the notary's authority in certifying digital signatures and outline the procedures that must be followed to ensure their validity and security. Regulations should outline the technical and procedural requirements for the authentication of electronic documents, including how notaries should verify the identities of the parties involved, methods for storing and protecting electronic documents, and steps to prevent forgery or unauthorized alterations. Security standards must also be established to ensure that electronic documents are safeguarded against cyber threats and can be securely stored for the long term[28].

Another challenge faced is the technological disparity across different regions. Not all areas have equal access to advanced technology, which can affect the consistency and effectiveness of notary oversight. In regions with less developed technological infrastructure, implementing digital oversight can be difficult and inefficient. Therefore, it is important to develop solutions that can be adapted to varying infrastructure conditions, as well as to ensure that training and support are equally available in all regions. Additionally, the government and relevant institutions need to collaborate to improve technological infrastructure in underdeveloped areas, so that digitalization can be implemented uniformly and effectively across the board[29].

Digital transformation in notary oversight brings significant changes that require adjustments to existing regulations and policies. As digital technology is adopted, governments and related institutions have a major responsibility to update regulations to accommodate the safe and effective use of these technologies. Existing regulations may no longer be sufficient to address the challenges posed by digitalization, so new policies must be designed to create a clear and comprehensive legal framework. One crucial aspect of digital transformation is the recognition and validity of digital documents. In traditional legal contexts, physical documents with manual signatures have clear legal standing. However, as digital transactions become more prevalent, digital documents also need to be legally recognized. New regulations must establish clear rules regarding the validity of digital documents, including how these documents are created, authenticated, and stored[30].

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[27] Pratiwi Ayuningtyas, "Sanksi Terhadap Notaris dalam Melanggar Kode Etik", *Jurnal Ilmiah Hukum Kenotariatan,* (Volume 9 Nomor 2, 2020), hlm. 101.

[28] Salmudin, A. M., Sakharina, I. K., & Arisaputra, M. I. (2024). Cyber Notary Dalam Pembuatan Akta. Widya *Yuridika: Jurnal Hukum*, (Volume 7, No. 2, 2024). doi:https://doi.org/10.31328/wy.v7i2.4969.

[29] Amankwah-Amoah, J., Khan, Z., Wood, G., & Knight, G. "COVID-19 and digitalization: The great acceleration", *Journal of Business Research*, (Vol. 136), hlm. 602–611.

[30] Tan Thong Kie, Studi Notariat dan Serba-Serbi Praktek Notaris, (Jakarta: PT. Ichtiar Baru Van Hoeve, 2007), hlm. 473.

Electronic signatures are a crucial element in digital documents. For electronic signatures to have the same legal standing as physical signatures, regulations must specifically address their use and validity. These regulations should cover various types of electronic signatures, ranging from the simplest forms to more complex ones, such as digital signatures that use cryptographic technology. Additionally, regulations must ensure that electronic signatures cannot be forged and can be verified by authorized parties, thereby maintaining the integrity and security of the signed documents. With the increasing use of digital technology, data security and privacy have become primary concerns. Regulations should establish strict security standards to protect data managed digitally, including sensitive personal data. This includes requirements for data encryption, user authentication, and access controls to ensure that data can only be accessed by authorized parties. Furthermore, regulations should outline how data should be stored, processed, and transferred to ensure that individual privacy is preserved and that data is not misused or exploited.

Updated regulations and policies must be designed with the flexibility to quickly adapt to rapid technological developments. Digital technology continues to evolve, and rigid regulations may struggle to keep pace with these changes. Therefore, the policies created should include mechanisms for periodic updates and allow for interpretation that can be adjusted to new technologies and practices. This flexibility will enable regulations to remain relevant and effective, even as technology and legal needs evolve. Digital transformation not only requires regulatory updates but also capacity building for stakeholders, including notaries, lawyers, and regulators. Adequate education and training should be integral parts of the new policies, ensuring that all parties understand the legal implications of using digital technology and are capable of applying it effectively. These training programs should cover both the technical and legal aspects of digital documents, electronic signatures, and data management, as well as strategies for maintaining data security and privacy[31].

CLOSING

Appropriate regulation is a crucial foundation in ensuring that the use of digital technology in notary oversight aligns with existing legal principles. These regulations must cover various important aspects, from the validity of digital documents and the authentication of electronic signatures to the protection of data privacy. Without strong and comprehensive regulations, there is a risk that technology, which is intended to enhance efficiency and trust, could instead create legal uncertainty and privacy violations. While the challenges of integrating digital technology into notary oversight are significant, the opportunities presented by digitalization are equally substantial. Digitalization is not just about modernizing systems; it is also about improving efficiency, transparency, and accountability in notarial operations. With digital technology, notaries can more easily manage and track transactions, reduce the risk of errors, and build greater public trust in the profession.

However, digital transformation in notary oversight should not be viewed as a one-time process, but rather as an ongoing journey that requires continuous innovation, regulatory enhancement, and adaptation to rapidly evolving technologies. Collaboration among various stakeholders—including the government, legal institutions, and the technology industry—is also crucial to ensuring that the existing oversight systems remain relevant and effective. With the right approach, the notary profession can continue to adapt to the dynamic nature of technological advancements, meet the legal needs of modern society, and maintain high standards of integrity and professionalism. Success in this

[31] Soemarno Partodihardjo, *Tanya Jawab Sekitar Undang-Undang No.11 Tahun 2008 tentang Informasi Dan Transaksi Elektronik,* (Jakarta: PT Gramedia Pustaka Utama, 2009), hlm. 20.

transformation will position the notary profession at the forefront of legal innovation, making it more responsive, reliable, and trusted by the broader community.

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