

# Legal Certainty Regarding the Existence of Electronic Certificates Based on Welfare State Principles

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## ABSTRACT

**Background.** The adoption of electronic certificates in Indonesia's land administration system aims to enhance efficiency and accessibility by leveraging digital technology. However, their implementation faces significant challenges, including public skepticism, regulatory gaps, infrastructure limitations, and technological disparities, raising concerns about their legal certainty and societal impact.

**Purpose.** This study seeks to analyze the legal certainty of electronic certificates in Indonesia, identify obstacles hindering their adoption, and propose solutions to align their implementation with welfare state principles.

**Method.** Using a qualitative approach, the study examines legal frameworks such as Regulation of the Minister of Agrarian Affairs and Spatial Planning/BPN No. 01 of 2021, alongside insights from stakeholders, including government officials, legal experts, and the public. Data collection was conducted through literature reviews, interviews, and focus group discussions.

**Results.** The findings reveal gaps in public trust, regulatory oversight, and access to digital infrastructure, which hinder the widespread acceptance of electronic certificates. Stakeholders emphasize the need for enhanced socialization, equitable access to technology, and stricter regulatory mechanisms to ensure fairness and security.

**Conclusion.** Electronic certificates hold significant potential to modernize land administration and promote welfare state principles. However, their successful implementation requires comprehensive policy reform, public engagement, and equitable access to technology.

## KEYWORDS

Digital Technology, Electronic Certificates, Land Administration, Legal Certainty, Welfare State.

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## INTRODUCTION

The principle of legal certainty is essentially understood as a condition where the law provides concrete power over the applicable norms. The existence of this principle serves as protection for seekers of justice (yusticiabel) against arbitrary actions. Accordingly, individuals are entitled to receive the expected outcomes under certain circumstances. This statement aligns with Van Apeldoorn's view that legal certainty has two aspects: the ability to determine the law in concrete contexts and the existence of legal security (Amanze et al., 2022). It indicates that parties seeking justice want to know the applicable legal provisions in a particular case.



before commencing legal proceedings, as well as ensuring protection for them.

The era of technology is one in which all activities supporting land management are facilitated through technology application, leading to more effective and state-of-the-art processes (Antón Juárez, 2022). In land administration, electronic-based services have emerged as an unavoidable manifestation of modernized land services, with the issuance of electronic documents being one of its outputs. In 2021, the issuance of electronic certificates was realized through the policy of the Ministerial Regulation of Agrarian Affairs and Spatial Planning/Head of the National Land Agency No (Arifah et al., 2023). 1 of 2021 concerning Electronic Certificates, signed by Sofyan Djalil as Minister of Agrarian Affairs on January 12, 2021.

South Korea began using electronic land certificates in 1998 through the Korea Land Information System agency, responsible for duplicating and establishing land data. Additionally, Malaysia has also implemented land data digitization procedures since 2018, developing various land applications such as e-Tanah, e-Kadaster, and My Geo Name (Bielska-Brodziak & Suska, 2023). Other countries, such as the Philippines and Singapore, have also adopted electronic land certificate policies as a means of legitimizing land ownership rights. In this regard, Indonesia lags behind in the implementation of electronic land certificates. The adoption of technology provides ease aimed at enhancing the speed, efficiency, and flexibility of services. During the COVID-19 pandemic, the National Land Agency (BPN) hosted electronic-based land services across four areas: Electronic Mortgage Rights, land certificate examinations, explanations of Land Value Zones (ZNT), and the preparation of Land Registration Certificates (SKPT), implemented across all Land Offices in Indonesia (Boni, 2024). However, in terms of electronic land certificate services, several obstacles arose due to mixed public responses, where some argued that now is not the right time for implementing electronic certificates, given the diverse needs of society.

As a state governed by law, this is recognized in Article 1 Paragraph 3 of the 1945 Constitution of the Republic of Indonesia, which states that "Indonesia is a Legal State." This statement emphasizes the importance of legal values and norms such as certainty, justice, and legal utility, all aimed at achieving societal and national welfare (Cammack, 2022). In this context, Article 33 Paragraph (3) of the Constitution states that land, water, and the wealth contained therein are controlled by the state and must be utilized for the greatest prosperity of the people. This reflects the government's commitment to utilizing natural resources for the welfare of the community (Cordewener, 2023). Since its inception, the Indonesian government has enacted various regulations related to land management, one of which is the Agrarian Law No. 5 of 1960. This law serves as the legal foundation regulating various crucial aspects related to land, including control, utilization, and land use. The purpose of this regulation is to ensure a clear framework for national land administration and to guarantee land ownership rights for the community. However, the utilization, management, and use of land in Indonesia often lead to conflicting interests among the community. This situation can potentially trigger land conflicts, which, if not handled well, can lead to social instability (Dujmović & Gadžo, 2023). To prevent land ownership conflicts, the government, based on the mandate of Law No. 5 of 1960 concerning Basic Agrarian Principles (UUPA), has established various regulations focused on organizing land registration throughout Indonesia. This land registration is aimed not only at creating legal certainty for landowners but also at regulating land utilization effectively for the benefit of society and preventing land disputes in the future.

In 2021, amid the pandemic, the Ministry of Agrarian Affairs and Spatial Planning/National Land Agency (ATR/BPN) issued Ministerial Regulation ATR/BPN No. 01 of 2021 on Electronic Certificates, further referred to as the Electronic Certificate Regulation, on January 12, 2021 (García Yzaguirre, 2023). The establishment of the Electronic Certificate Regulation is expected to enhance

the effectiveness and efficiency of land services, both in terms of duration and cost reduction. Moreover, this regulation guarantees higher legal certainty and protection compared to the issuance of analog documents as evidence, aligned with increasing the accuracy of physical and legal data in electronic format (Giavazzi, 2020). By implementing the Electronic Certificate Regulation, there is a transformation of land certificates from analog to digital form, which is an important innovation by the government to address various issues occurring in the land sector. This initiative deserves appreciation, recognizing that electronic certificates also represent one of the actualizations of the "Grand Design of Land Service Modernization 2021-2022," particularly phase three (fully digital) (Gumelar, 2021). This includes the application of Electronic Certificates, changes in Land Rights in electronic format based on deeds, the simplification of the validation process for the transfer of rights (improving Ease of Doing Business/EoDB), and the provision of one-stop services for the application of rights granting and certificate issuance.

As of the latest data from the National Land Agency (ATR/BPN), there are 72,315,659 registered land certificates, covering a total area of 30,960,765 hectares (Helim et al., 2023). These certificates include 66,011,341 ownership rights certificates, 15,770 business usage rights certificates, 5,320,176 building usage rights certificates, 800,246 usage rights certificates, 5,767 management rights certificates, and 162,338 waqf land certificates. This data illustrates the success of various government programs to expedite national land registration, both through sporadic registrations and through the Complete Systematic Land Registration Program (PTSL). Electronic certificates are documents containing information and data related to certificates in digital form, reinforced by electronic signatures. These certificates include data, identities, and the legal status of the parties involved, and their administration is carried out by authorized parties or legal entities (Henckels, 2023). Such entities must have expertise in validating and auditing data related to the electronic certificates in question, ensuring the authenticity and integrity of those documents.

Legal certainty regarding electronic certificates based on the principle of the welfare state is considered the most appropriate solution for regulating the role of the state in enhancing the welfare of its citizens (Hutahayan et al., 2024). This conviction is further reinforced by empirical evidence showing both market failures and government failures in achieving optimal societal welfare goals. Based on this explanation, questions arise regarding the implementation of electronic certificates in Indonesia's land system according to applicable laws and regulations. Moreover, what are the legal and social challenges faced in the implementation of electronic certificates in Indonesia? Questions about legal vacuums arise due to the absence of comprehensive regulations governing the existence, validity, and legal force of these electronic certificates. This leads to uncertainty among business actors, the community, and government institutions regarding how electronic certificates are recognized and guaranteed in authenticity in the eyes of the law (Jan, 2021). This uncertainty also affects aspects of welfare, as laws in a welfare-based state are expected to serve as instruments that create stability and security for society. If well-regulated, electronic certificates can provide protection and certainty in digital transactions and encourage more inclusive economic development.

## RESEARCH METHODOLOGY

In this research, the legal approach or statute approach, also referred to as normative legal research, is a process to discover legal norms, principles, and doctrines used to address legal issues regarding the regulation of electronic certificates in Indonesia's land system according to applicable laws and regulations (Janderová & Hubáľková, 2021). The case approach is also utilized to analyze and examine as a guide to address legal issues regarding the legal and social challenges faced in the

implementation of electronic certificates in Indonesia (Kocher, 2024). Furthermore, the conceptual approach is conducted based on views and doctrinal patterns or thoughts developed within legal science. From the various approaches and legal research presented, this study aims to answer whether the revitalization program has complied with the offenses related to land.

## RESULT AND DISCUSSION

### Regulations Regarding Electronic Certificates in the Land System of Indonesia According to Applicable Laws Based on Welfare State Principles

The implementation of electronic certificates in the land system in Indonesia is a progressive step regulated by the Minister of Agrarian Affairs and Spatial Planning/National Land Agency (Permen ATR/BPN) Number 1 of 2021 concerning Electronic Certificates. This regulation marks a significant transformation from the use of analog land certificates to digital-based certificates, aimed at enhancing the efficiency and effectiveness of land services and providing better legal certainty (Lacoere & Leinfelder, 2023). The application of electronic certificates is essential in modernizing land administration, with the main goal of improving public service efficiency in the land sector. Electronic certificates not only replace the physical certificates previously used but also introduce various advantages that are expected to address numerous issues in land rights management.

The transformation from analog land certificates to electronic certificates also aims to enhance transparency and accountability in land administration processes. By utilizing digital technology, information regarding ownership and land rights can be more easily accessed by the community and relevant parties. This is expected to reduce the potential for conflicts and land disputes that frequently arise due to the lack of accurate and up-to-date information. Additionally, electronic certificates provide better data security assurances, safeguarding stored information from forgery and misuse (Lasiński-Sulecki, 2024). Electronic certificates also contribute to the government's efforts to create a more inclusive land system that responds to community needs. By accelerating the registration and issuance process of certificates, the public is expected to gain legal certainty regarding their land rights more quickly. Legal certainty is a crucial aspect in creating a conducive investment climate and supporting economic growth, particularly in the land and property sectors. Through the implementation of electronic certificates, the government is committed to providing better services and increasing public confidence in the existing land system.

However, despite the many potential benefits of implementing electronic certificates, the challenges faced in its implementation must also be acknowledged. Various issues, such as uneven technological infrastructure and the lack of public understanding regarding this new system, can hinder the achievement of the desired goals. Therefore, more intensive socialization and education efforts are needed to ensure that the public can understand and optimally utilize electronic certificates. The success of the implementation of electronic certificates will largely depend on the collaboration between the government, the community, and other stakeholders in creating a just system that provides welfare for all.

Based on this regulation, electronic certificates are issued as electronic documents that have the same legal force as physical certificates. Electronic certificates contain information about land rights and the juridical and physical data related to the land object recorded in the electronic system. This system is supported by information technology infrastructure that allows the validation and authentication of data to be carried out digitally by the National Land Agency (BPN).

According to Permen ATR/BPN Number 1 of 2021, electronic certificates are issued as electronic documents with legal force equal to that of physical certificates. This indicates that

electronic certificates are not merely an alternative but are officially recognized as valid proof of lawful land ownership. Thus, the public can be assured that electronic certificates have the same evidential value and can be relied upon in legal contexts. Electronic certificates contain essential information regarding land rights, including juridical and physical data pertaining to the land object recorded in the electronic system (Maskun et al., 2021). This information includes the owner's identity, land boundaries, land area, and the status of the rights held. With the integration of all this data into one digital system, users can easily access and verify this information. This is crucial to reducing the risks of disputes or conflicts that often arise due to uncertainty surrounding land rights information. The system supporting the issuance of electronic certificates relies on a strong and reliable information technology infrastructure. The BPN plays a vital role in validating and authenticating data digitally. By using electronic systems, data verification processes can be conducted more quickly and efficiently, thus reducing the time required for the issuance of certificates. Additionally, the implementation of this technology is also expected to enhance data accuracy, reduce human error, and minimize the risk of certificate forgery.

The importance of data security systems cannot be overlooked. Electronic certificates, as digital documents, must be protected with stringent security measures to avoid risks of hacking or data misuse. Therefore, the information technology infrastructure supporting the issuance of electronic certificates must be equipped with encryption systems and other security mechanisms to ensure that sensitive information does not fall into the wrong hands. Thus, electronic certificates not only provide convenient access and efficiency but also ensure the security and reliability of the data stored within them.

Overall, the implementation of electronic certificates in the land system reflects a significant advancement towards modernization and efficiency in land administration in Indonesia. By integrating digital technology, this system is expected to support the creation of better legal certainty for the public and promote more effective and sustainable land resource management. The characteristics of an authentic act are that it is perfect, binding, and must be considered true by judges, as long as its invalidity has not been proven, and it does not require additional evidence. According to GHS Lumban Tobing, an authentic act has three evidentiary capabilities, namely: a). Authority of Formal Proof, because the act is protected in its validity by the authorized official as stated in the act. b). Authority of Apparent Proof, because the act can independently prove its truth. c). Authority of Material Proof, because the contents of the act are considered true and can be enforced against any person or third party.

According to R. Subekti, an act is a written document created with the purpose of serving as evidence of a particular matter and is signed. As an authentic act, it possesses perfect evidentiary power, where if one party presents an official act, the judge is obliged to accept it as truth and cannot request additional evidence (Nasrullah, 2020). Article 15 of the Electronic Information and Transactions Law (UU ITE) mandates that every electronic system must be carried out reliably, responsibly, and securely. In this context, aspects of security and accountability not only encompass the security of use but also relate to the consequences of electronic information and/or electronic documents that will later serve as valid and binding evidence. The more accountable a system is, the higher the value of the authenticity of the electronic document as evidence in the future.

Although public information has been presented, it does not necessarily guarantee that the information is the same as the original document. This issue cannot be resolved merely by scanning documents into a soft file in PDF format; there also needs to be certainty regarding the authenticity of electronic documents (Nurdin & Rajab, 2020). The use of national encryption algorithms is



crucial to ensure this. This also applies to electronic administrative decision documents, which still cannot guarantee their authenticity technically without support from a centralized public key infrastructure based on a root Certificate Authority (CA) owned by the government or national institutions.

Despite public information now being presented digitally, there are significant challenges regarding the authenticity and validity of that information compared to original physical documents (Oral & Aurescu, 2024). In many cases, simply scanning documents into digital formats such as PDF is insufficient to guarantee that the displayed information is accurate and identical to the original document. Differences in the transfer process, potential errors in scanning, or even manipulation of digital data can result in inconsistent or misleading information. Therefore, additional measures are needed to ensure that electronic documents truly reflect the authenticity and integrity of the original documents. To address this issue, strong encryption algorithms need to be used. National encryption algorithms can provide an additional layer of protection for data and information stored electronically. By implementing encryption, sensitive data can be protected from unauthorized access and unwanted alterations. Encryption not only serves to protect data when stored but also when it is transmitted over networks, thereby reducing the risk of hacking or information misuse. With a reliable encryption system, users can have greater confidence in using electronic documents as valid evidence.

Challenges also arise in the context of electronically administered state administrative decision documents. Without adequate public key infrastructure support, these documents remain vulnerable to questions regarding their authenticity. Public key infrastructure, particularly those managed by the government's root Certificate Authority (CA) or national institutions, plays a vital role in providing assurance that information stored and exchanged electronically is legitimate and trustworthy. This system enables digital identity authentication, ensuring that users can confirm they are transacting with valid and trustworthy entities. Overall, to create an environment that supports the effective use of electronic certificates and other digital documents, it is essential for the government and relevant agencies to build a comprehensive technology infrastructure. This includes the development and implementation of robust cybersecurity policies, utilizing advanced encryption algorithms, and providing reliable public key infrastructure. With these measures in place, it is hoped that the authenticity of electronic documents can be guaranteed, and public trust in the electronic-based land system will increase.

Regarding electronic documents/acts and other documents issued in electronic form (rather than physical), Article 5 paragraph (1) of the ITE Law states that: "Electronic Information and/or Electronic Documents and/or their printouts are valid legal evidence." However, Article 1869 of the Civil Code states that if the act is made by an unauthorized official or contains formal defects, then the act cannot be referred to as an authentic act. Such an act only has evidentiary power equivalent to a private written document, as long as it is signed by the parties concerned (Papis-Almansa & Herbain, 2023). Referring to the provisions of Article 6 of the ITE Law, an electronic information and/or electronic document is considered valid if it meets the following conditions: a). Accessible, meaning that the digital information within the electronic system must be accessible. b). Displayable, meaning that the digital information must be able to be displayed by the electronic system. c). Completeness maintained, meaning that the digital evidence obtained from the investigation and analysis process must have complete substance. d). Accountable, meaning that the authenticity of the information produced, from the creation of the document to its transmission, must be guaranteed.

Then, regarding the procedure for obtaining electronic land certificates as proof of land rights. The Minister of Agrarian and Spatial Planning/National Land Agency Regulation (Permen ATR/BPN) Number 1 of 2021 concerning Electronic Certificates states that documents in electronic form, known as Electronic Certificates, play an essential role in land registration. This Electronic Certificate has a function equivalent to an "Electronic Passport" in the land system and is inseparable from the process of acquiring rights to land. The government has proposed the issuance of Electronic Certificates to reduce abuse of authority in the issuance of conventional certificates in the form of land rights books and land measurement documents, which enables the relevant institutions to access information related to these certificates, thus providing clear legal certainty. In the process of registering land for the first time, the procedures that must be followed in accordance with the provisions of Article 12 of Government Regulation (PP) Number 24 of 1997 concerning Land Registration include: a). Collection and processing of physical data; b). Proof of rights and recording of rights; c). Issuance of Certificates; d). Presentation of physical and legal data; e). Storage of the general registry and documents.

Land certificates function as legitimate proof of land ownership. However, there is a potential for certificate forgery by irresponsible parties, including officials in land agencies. Additionally, there can be cases of two or more overlapping land certificates related to the same land. This may be caused by errors from the land agency in conducting land measurements before issuing the certificate. In situations where overlapping certificates exist, the parties authorized to possess and use the land based on these certificates can only exercise their rights through dispute resolution or lawsuits in court (Pinheiro & Oliveira, 2022). Land certificates play a crucial role as valid proof of land ownership. As an official document issued by the National Land Agency (BPN), the certificate provides legal assurance to landowners regarding their rights to the land. However, the existence of the certificate does not fully guarantee that abuse or fraud will not occur. The potential for land certificate forgery is a serious issue that needs to be addressed. Irresponsible parties, including certain officials within land agencies, may commit this criminal act for personal interests or those of specific parties.

In addition to the potential for forgery, another common issue is overlapping land certificates. This situation occurs when two or more certificates are issued for the same piece of land. Overlapping certificates can be caused by various factors, including measurement errors by authorities or a lack of coordination in land registration. For example, if land measurement is not conducted carefully, unclear boundaries between two parcels of land can emerge, resulting in complex ownership conflicts (Pino, 2023). This overlap not only creates confusion for landowners but can also lead to protracted legal disputes. In conditions where certificates are overlapping, the rightful landowner can only exercise their rights through legal avenues. Dispute resolution or lawsuits in court become necessary steps to achieve clarity regarding ownership rights. This process can be lengthy and exhausting, depending on the nature of the conflict and how well ownership documentation can be proven. Furthermore, the legal uncertainty caused by overlapping certificates can diminish the economic value of the land and complicate transactions related to buying, selling, or developing the land.

In facing these challenges, it is vital for the land system in Indonesia to improve the verification and validation processes in land certificate issuance. The use of modern technology, such as GIS (Geographic Information System) mapping and integrated database systems, can help prevent measurement errors and detect potential overlapping certificates at an early stage. Additionally, transparency in the registration process and public education regarding the rights and obligations related to land ownership should also be strengthened to create better legal certainty.

These efforts are expected to minimize the risks of forgery and land disputes and to provide better protection for land rights holders in Indonesia.

The principle of the binding force of agreements or contracts is a logical implication of the effectiveness of contract binding power. This principle indicates that every agreement made by the parties becomes law for each party, and each clause contained in the contract binds the parties to implement it (Puharinen, 2022). Essentially, contracts and agreements have similar meanings as promises made by one or more individuals to perform or refrain from certain actions. However, the outcomes of an agreement can differ if problems arise during its implementation.

As a country that promotes the rule of law principle, the concept of the Pancasila state serves as the foundation for legal policy and legal protection strategies for land rights holders and access to natural resources. The theory of the rule of law is a consequence of the choice of state principles based on law, as reflected in the spirit or philosophy of the Indonesian nation, namely Pancasila and the 1945 Constitution, which emphasize the objectives of Indonesia's rule of law. Land registration aims to provide legal certainty, known as *rechts cadaster* or legal cadaster. The concept of the Pancasila state emphasizes that law must be the foundation for all aspects of national life in Indonesia. In this context, Pancasila is not merely an ideology but also an ethical and moral guide in law enforcement. The Pancasila state prioritizes justice and social welfare for all people, ensuring that each individual has equal rights before the law. This aligns with the principles contained in the 1945 Constitution, which serves as the constitution of the state and the basis for all legal policies taken. One implementation of this state law concept is in land registration, which aims to provide legal certainty over land rights and natural resources. The land registration process, known as *rechts cadaster* or legal cadaster, aims to create a clear information system regarding land ownership. With land registration, it is hoped that disputes or overlaps in ownership will no longer occur, thus guaranteeing individual and community rights over land. This registration also serves as a tool to regulate the sustainable use and management of natural resources, which is the state's responsibility in maintaining the welfare of society.

Regarding legal protection, the Pancasila state provides grounds for the government to develop policies that protect the rights of land holders. This includes efforts to address issues such as land seizures, agrarian conflicts, and injustices in access to natural resources. Through clear and transparent legal mechanisms, the community can gain better access to justice and feel secure in managing and utilizing the resources they own. Thus, land registration and legal protection based on Pancasila become key to creating a just and prosperous society. The importance of education and understanding of land rights cannot be overlooked. In order to realize the Pancasila state of law, the community needs to be involved in the land registration process and empowered to understand their rights. Through adequate socialization and education, the community will become more aware of the importance of land registration as part of legal certainty and be able to actively participate in safeguarding their rights. In this way, synergy between the state, law, and society can be created to realize social justice and the protection of land rights in Indonesia.

The legal certainty that is desired to be realized through land registration includes certainty regarding land rights status, legal subjects, and legal objects. Through this land registration, certificates are issued as proof of land rights. Conversely, land registration serving as *rechts cadaster* differs from *fiscal cadaster*, which aims to determine which party is obligated to pay taxes on the land. Land registration also produces documents as proof of tax payment now known as Land and Building Tax Documents (*Surat Pajak Bumi dan Bangunan*). It is important to distinguish between land registration for legal purposes (*rechts cadaster*) and land registration for tax purposes (*fiscal cadaster*). *Rechts cadaster* aims to provide legal certainty over land ownership, while *fiscal*



cadaster focuses on identifying tax objects and subjects responsible for paying taxes related to the land. Fiscal cadaster generates tax documents, such as Land and Building Tax (SPPT PBB), indicating tax obligations on a piece of land and buildings. Although both relate to land, their objectives and functions differ significantly.

Regarding electronic certificates based on the principle of the welfare state, this concept entails that the state is responsible for the welfare and social protection of its citizens. In this context, the state plays an active role in providing public services, including social security, health, education, and also providing legal assurances that protect the rights of its citizens. Electronic certificates, as part of technological development in the digital era, hold significant importance in supporting the functions of the welfare state because these certificates facilitate secure, efficient, and trustworthy digital transactions and interactions. Legal certainty is one of the vital pillars of the welfare state, where the state is obliged to protect the rights of citizens through a clear and reliable legal system (Quereda Sabater, 2024). This legal certainty not only pertains to conventional rights such as property ownership or individual freedom, but also includes digital transactions that are increasingly dominating the economic and social activities of modern society. Electronic certificates play a crucial role as tools that ensure the security and validity of digital transactions, particularly in finance, e-commerce, public services, and government administration. Electronic certificates serve as proof of authenticity and validity of an identity or document in electronic transactions, ensuring that the data or documents used in a digital transaction are legally recognized. However, to provide legal certainty, the existence of electronic certificates must be explicitly regulated within the framework of legislation. This means that the state must establish clear regulations regarding the issuance, use, and recognition of electronic certificates in order for them to have legal force in the eyes of the law. Without clear regulation, electronic certificates will lose their function as tools that provide certainty, instead leading to uncertainty for the public and business actors.

Clear legal regulation regarding electronic certificates must also encompass aspects of security and responsibility in the use of digital technologies. The state needs to adopt stringent security standards to prevent forgery or misuse of electronic certificates. Additionally, adequate supervision and dispute resolution mechanisms must be provided so that individuals using electronic certificates have sufficient legal protection guarantees. With this legal certainty, business actors and the general public can conduct digital transactions with peace of mind, without worrying about uncertainty or legal risks. The existence of legally regulated electronic certificates also strengthens public trust in the digital systems used by the state and the private sector. As an important instrument in digital transformation, electronic certificates help to realize transparent and efficient governance, which aligns with the welfare state's goal of providing better services to its citizens. Thus, clear regulation regarding electronic certificates not only supports legal certainty but also enhances the integrity and trustworthiness of digital transactions across various sectors.

In a welfare state, the state has a central role in protecting the rights of its citizens, including ensuring the legality and validity of electronic certificates used in digital transactions. Electronic certificates, serving as tools for identity verification and authentication in the digital realm, are vital for maintaining the integrity and security of transactions across various sectors, such as finance, e-commerce, public administration, and government services. The state's responsibility in this regard is to ensure that the electronic certificates used by the public meet recognized legal and technical standards (Rodríguez Rodrigo, 2023). The state must provide a robust legal infrastructure to regulate the issuance, use, and oversight of electronic certificates. This includes regulations governing the certification process, digital identities, and the official recognition of these

certificates in various transactions. With clear regulations, the public and business actors can be confident that the certificates they use or receive in transactions have a legal basis.

The state should also ensure that there are mechanisms for supervision and law enforcement to protect users of electronic certificates from misuse or fraud. In addition to legal infrastructure, the state also needs to develop technical infrastructure that supports the issuance and use of electronic certificates. Authorized certification bodies, whether government or recognized private entities, should operate according to strict security and reliability standards. The process of issuing electronic certificates must be guaranteed safe to prevent risks of forgery, data leakage, or identity misuse. The use of advanced encryption technology and tested security protocols is a necessary step that the government must take to maintain the integrity of electronic certificates. The state must also provide transparent certification services accessible to the general public. Users of electronic certificates should understand the process of issuance and validation of certificates, as well as have access to information related to the security and validity of the certificates they use. The state needs to ensure public education on the importance of digital security and how to use electronic certificates wisely. This way, public confidence in digital technology and online transactions can be enhanced. The state's accountability also includes protecting the rights of users of electronic certificates, such as rights to privacy and personal data protection. Each electronic certificate issued must comply with strict legal standards regarding personal data protection to ensure that the information contained within the certificate is not misused. The state needs to ensure strong privacy policies and support law enforcement efforts that protect users from potential cyber security threats.

### **Challenges and Efforts Faced in the Implementation of Electronic Certificates in Indonesia**

Legal certainty is one of the fundamental elements of a country's legal system, providing assurance that every legal action will have clear and predictable consequences. In the context of electronic certificates, there remains doubt among the public regarding the validity of these certificates compared to physical certificates. The public tends to have more trust in the physical forms that have been long used and recognized, while electronic certificates are a relatively new innovation. This skepticism may stem from a lack of understanding of the electronic system itself, as well as concerns about potential misuse and data security. This uncertainty can hinder the acceptance of electronic certificates as legitimate proof of ownership, thereby reducing the effectiveness of technology-based land registration programs.

In addition, challenges in law enforcement are also a major concern regarding the use of electronic certificates. Land disputes often involve claims from various parties asserting rights over the same land. If there are conflicting electronic and physical certificates, the resolution of these disputes becomes more complex (Sadino & Wiyono, 2024). The parties involved may experience confusion about which should be recognized as valid proof. In situations like this, judges or other law enforcement authorities need clear guidelines on which type of certificate should take precedence, whether it be the electronic or the physical certificate. This ambiguity can lead to inconsistent law enforcement and ultimately disadvantage those with legitimate rights.

To address this skepticism, it is important to enhance education and socialization regarding electronic certificates within the community. Clear explanations of how the system works, its benefits, and the security guarantees in place will help the public to understand and accept electronic certificates as valid proof. Furthermore, strengthening regulations and legal policies governing the use of electronic certificates is also necessary to provide stronger legal certainty. Thus, through a comprehensive approach—spanning both education and law enforcement—it is

expected that public trust in electronic certificates can increase, and conflicts between electronic and physical certificates can be minimized.

The availability of adequate technological infrastructure is a crucial factor in the successful implementation of electronic certificates in Indonesia. Although information and communication technology has rapidly developed in some areas, there remains significant inequality between urban and remote regions. In remote areas, access to the internet and technological devices is often limited, resulting in difficulties in accessing registration and verification services for electronic certificates. This can create a gap in terms of ownership and control of land rights, where communities located in areas with limited technological infrastructure will lag behind in accessing modern legal services.

Additionally, data security challenges also pose a serious concern in the implementation of electronic certificates. With the increasing use of digital technology, risks related to cyber security, such as hacking, data theft, and information misuse, are on the rise. The information contained in electronic certificates is often highly sensitive and related to land rights, making it critical to protect this data from emerging threats. Data storage systems must be designed with robust security protocols, including encryption, authentication, and ongoing monitoring, to prevent unauthorized access and ensure data integrity. Without adequate security measures, public trust in electronic certificates can diminish, which in turn may hinder the broader application of this system. To address infrastructure challenges, the government needs to make significant investments in the development of information technology infrastructure across Indonesia, particularly in remote areas (Šafranko, 2024). Training and capacity-building programs for local communities are also important to ensure they can effectively utilize available technology. Regarding data security, collaboration among the government, technology service providers, and other stakeholders is necessary to develop systems that are not only efficient but also secure. With these steps in place, it is hoped that the implementation of electronic certificates can proceed smoothly, maximizing benefits for the community and ensuring better data protection.

## CONCLUSION

Land registration is a crucial step in providing legal certainty and protecting land rights. This process includes the collection and processing of physical data, proof of rights, issuance of certificates, presentation of data, and storage of documents. Land certificates serve as legitimate proof of ownership, but there is potential for forgery and overlaps in certificates that can lead to legal disputes. Overlapping certificates, which can be caused by measurement errors or lack of coordination, create legal uncertainty that impacts land economic value and complicates transactions. The Pancasila state of law provides a strong foundation for the government to protect the rights of land holders and address issues such as land appropriation, agrarian conflict, and injustices in access to natural resources. Through effective land registration, communities can achieve legal certainty, feel secure in managing their resources, and actively participate in legal processes. Land registration as *rechts cadaster* is crucial for ensuring clear ownership, in contrast to *fiscal cadaster*, which focuses on identifying tax objects. In the digital era, electronic certificates play a vital role in supporting the welfare state by ensuring the security, validity, and legality of digital transactions. The state is responsible for providing clear regulations regarding electronic certificates, including aspects of security, liability, and dispute resolution mechanisms. A robust legal and technical infrastructure is necessary to prevent forgery and misuse of certificates and to protect user rights, such as privacy and personal data protection.

Legal certainty is a fundamental element of the legal system, and in the context of electronic certificates, there remains public doubt regarding the validity of these certificates compared to physical certificates. This skepticism is caused by a lack of understanding of the electronic system and concerns about potential misuse and data security. This uncertainty can hinder the acceptance of electronic certificates as legitimate proof of ownership and create challenges in law enforcement, especially when land disputes involve conflicting electronic and physical certificates. To address this doubt, effective education and socialization about electronic certificates, as well as the strengthening of regulations and legal policies to provide stronger legal certainty, are required. Additionally, the availability of adequate technological infrastructure is crucial to ensure equal access to electronic certificate registration and verification services, particularly in remote areas. Data security is also a significant concern, with increased risks related to cyber security accompanying the use of digital technologies. Therefore, data storage systems must be equipped with robust security protocols to protect sensitive information related to land rights.

## AUTHORS' CONTRIBUTION

Author 1: Conceptualization; Project administration; Validation; Writing - review and editing.

Author 2: Conceptualization; Data curation; In-vestigation.

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