

## **ELECTRONIC LAND CERTIFICATE FOR PROPERTY SECURITY IN INDONESIA**

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**Abstract** : The development of computer network technology, including LAN and WAN, has had a significant impact on various aspects of life, including land information services. Land has a strategic role in people's lives, as regulated in Article 33 paragraph (3) of the 1945 Constitution. Good land management can support people's welfare and sustainable investment. The National Land Agency (BPN) as the institution responsible for land affairs has the main task of regulating, serving and administering land. In an effort to increase legal certainty and service efficiency, the government introduced Electronic Land Certificates (STE) based on ATR/BPN Ministerial Regulation No. 1 of 2021. STE offers easy access to information, speeds up land transactions, and increases transparency and accountability. Nonetheless, STE implementation faces challenges, including cybersecurity risks and data inaccuracies. Therefore, a strong security system, clear regulations and public education are needed to ensure the success of STE implementation. With the right strategy, STE can be an innovative solution in modernizing land administration in Indonesia, supporting legal certainty, and improving the quality of public services.

**Keywords:** Computer networks, land, BPN, STE, legal certainty, digitalization.

**Abstrak** : Perkembangan teknologi jaringan komputer, termasuk LAN dan WAN, telah membawa dampak signifikan dalam berbagai aspek kehidupan, termasuk pelayanan informasi pertanahan. Tanah memiliki peran strategis dalam kehidupan masyarakat, sebagaimana diatur dalam Pasal 33 ayat (3) UUD 1945. Pengelolaan pertanahan yang baik dapat mendukung kesejahteraan rakyat dan investasi yang berkelanjutan. Badan Pertanahan Nasional (BPN) sebagai lembaga yang bertanggung jawab atas urusan pertanahan memiliki tugas utama dalam pengaturan, pelayanan, dan administrasi pertanahan. Dalam upaya meningkatkan kepastian hukum dan efisiensi pelayanan, pemerintah memperkenalkan Sertifikat Tanah Elektronik (STE) berdasarkan Peraturan Menteri ATR/BPN No. 1 Tahun 2021. STE menawarkan kemudahan akses informasi, mempercepat transaksi pertanahan, serta meningkatkan transparansi dan akuntabilitas. Meskipun demikian, implementasi STE menghadapi tantangan, termasuk risiko keamanan siber dan ketidakakuratan data. Oleh karena itu, diperlukan sistem keamanan yang kuat, regulasi yang jelas, serta edukasi kepada masyarakat untuk memastikan keberhasilan penerapan STE. Dengan strategi yang tepat, STE dapat menjadi solusi inovatif dalam modernisasi administrasi pertanahan di Indonesia, mendukung kepastian hukum, serta meningkatkan kualitas pelayanan publik.

**Kata Kunci** : Jaringan komputer, pertanahan, BPN, STE, kepastian hukum, digitalisasi.

## INTRODUCTION

The rapid development of computer network technology is marked by the existence of LAN (Local Area Network), which is a network limited to a local geographic area, and WAN (Wide Area Network), which is a wider computer network.<sup>1</sup>The rapid development of information and communication technology (ICT) has significantly affected all areas of human life, including public information services. Currently, the presence of online media has proven to be very helpful in obtaining the information needed, especially regarding land data.

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<sup>1</sup> Anggara, et.al, 2010, *Kontroversi UU ITE: Menggugat Pencemaran Nama Baik di Dunia Maya*, Jakarta: PT Penebar Swadaya, hlm 3

Land is very important for human existence, because most human life depends on the existence and ownership of land. In Indonesia, land issues are constitutionally regulated in Article 33 paragraph (3) of the 1945 Constitution. This article states: "The state controls the earth, water, and natural resources contained therein for the greatest prosperity of the people."

Judging from its contents, this article is closely related to the issue of Indonesian welfare. Both in the article and its interpretation, it can be stated that land utilization must provide the greatest possible benefits for the prosperity of the people to achieve the goals of the state as mandated in the fourth paragraph of the opening of the 1945 Constitution. Land is seen as a potential source of future investment. Paying attention to efficient land management will have a positive impact on investment.<sup>2</sup>

It is essential that the overhaul of land structures and policies regarding control, ownership, use and exploitation of resources is carried out with strong political will from the government. This will provide a clear structure and direction for fair, democratic and sustainable reform, especially given the many problems that arise from inadequate and mismanagement.<sup>3</sup>

The National Land Agency (BPN) regulated by Government Regulation Number 10 of 2006 concerning the National Land Agency is one of the institutions that has a strong relationship with the land sector. According to Article 1 paragraph 1 of PP No. 10 of 2006, the National Land Agency is a non-ministerial government institution that is under and directly responsible to the President. Furthermore, according to Article 2 of PP No. 10 of 2006, the National Land Agency has a role in carrying out government duties in the land sector at the national, regional, and sectoral levels.

As the leading institution under the National Land Agency, the Land Office has the task of providing land services directly to the community by carrying out three main tasks, namely:

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<sup>2</sup> Chavunduka Charles, 2021, *Land, Investment and Production in Agraria Transformation I Zimbabwe*, Vol 105 No 05

<sup>3</sup> Maria SUMardjono, S.W. 2006, *Kebijakan Pertanahan Antara Regulasi dan Implementasi*, Jakarta: Kompas, hlm 45

1. Supervise operations related to land management, land rights control, land exploitation, and property rights evaluation and registration;
2. Implementation of service operations in the field of land management, property rights management, land utilization, as well as measurement and registration of land rights;
3. Performing administrative and household duties.<sup>4</sup>

One of the objectives stated in Article 18 of Law Number 25 of 2009 concerning Public Services, which is intended to meet public expectations regarding service quality, is to ensure service reliability, fairness in treatment, speed, and financial accessibility to the services provided. Therefore, policies, formulations, and innovations need to be implemented to achieve these objectives.

Public satisfaction as service users is greatly influenced by service quality. Indeed, if the service is of good quality, public satisfaction will also be high. Therefore, service quality is a priority for service providers or public agencies.

Certificates of ownership issued based on the Basic Agrarian Law (UUPA) have quite strong evidentiary power, in accordance with Article 19 paragraph (2) letter c. This shows that the certificate does not have an indisputable evidentiary value, but is quite strong. As long as the physical and legal information is in accordance with the information on the land certificate and measurement letter, then the information is considered valid, unless proven otherwise in court. In Indonesia, land certificates can always be changed if there are any deficiencies either legally or administratively when issued. This action is taken with the aim of ensuring legal protection for those who buy or own land with a positive spirit.<sup>5</sup>

Under Indonesian law, the introduction of digital land certificates is a step forward that can increase legal certainty in proving land ownership.<sup>6</sup> According to Regulation

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<sup>4</sup> Herman Hermit, *Cara Memperoleh Sertifikat Tanah Hak Milik, Tanah Negara dan Tanah Pemda, Teori dan Praktek Pendaftaran Tanah di Indonesia*, Bandung: Mandar Maju, hlm 86

<sup>5</sup> Undang Undang Pokok Agraria Pasal 19 Ayat (2) Huruf C

<sup>6</sup> Sapardiyono dan Sukmu Pinuji, 2022, *Konsistensi Perlindungan Hukum Kepemilikan dan Hak Atas Tanah Melalui Sertifikat Tanah Elektronik*, Jurnal Widya Bhumi, Vol 2 No 1, hlm 33

Number 1 of 2021 of the Minister of Agrarian Affairs and Spatial Planning/Head of the National Land Agency concerning electronic certificates, electronic certificates have significant legal value. STE, as a valid means of proof, facilitates land rights holders' access to real estate data and allows them to provide explicit evidence of land ownership and the types of rights they hold. The use of STE is an encouraging step towards digital transformation and the establishment of e-government in Indonesia. Government Regulation No. 18 of 2021, Article 84, introduces the possibility of land rights registration through electronic methods. Electronic data and information from the registration process can be considered valid legal evidence.<sup>7</sup>

In the legal field, STE is a tool that increases legal certainty and reduces the risk of document forgery. With the implementation of the Land Information and Exploration System (STE), individuals who own land have the possibility to easily consult information and data related to their land ownership. In addition, STE can facilitate the process of buying and selling land while providing proof of legal rights to land ownership in court. The use of the electronic witness system (STE) as evidence also further simplifies legal practice. Physical and legal data contained in the digital signature system are considered valid unless evidence to the contrary is found through other means of proof. This method can speed up the legal process and minimize the risk of information redundancy often found in traditional documents.<sup>8</sup>

However, any innovation, including the implementation of STE, encounters obstacles and doubts in the community. Some of these doubts are related to technical and legal issues. One of the identified technical issues concerns the potential risk of data compromise and forgery of electronic certificates by negligent entities. To address this issue, it is imperative to build a robust and continuously improved security system to ensure that digital information and STE remain protected from cybercrime threats. Furthermore, there is a need for authorities to intensify public awareness and training regarding the proper and safe use of STE. There are also concerns about possible errors in

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<sup>7</sup> Peraturan Pemerintah No. 18 Tahun 2021, Pasal 84

<sup>8</sup> Peraturan Pemerintah Nomor 71 Tahun 2019

data entry or the presence of inaccurate data on STE. If such errors occur, it is imperative for authorities to make corrections and issue revisions to STE with subsequent numbering. It is imperative that the procedures for correcting and adjusting information on STE are governed by proper and transparent rules to prevent potential misuse or errors in its implementation. Despite concerns raised by some parties about the potential dangers of data theft and inaccuracy of physical information on Indonesia's land system, this amendment is still a step towards modernizing land services in Indonesia. With the advancement of technology and the improvement of security systems, STE is expected to become a safe, reliable and effective tool to ensure legal protection for landowners.<sup>9</sup>

To maintain public trust in the circular economy, it is essential for governments and entities involved to ensure exemplary transparency and accountability in the implementation and management of this economic model. It is essential for authorities to provide easy and transparent access to data and information regarding STEs, allowing land rights holders to confirm the accuracy and relevance of certificates. In addition, the implementation of STEs requires the support of advanced technology and enhanced cybersecurity to address potential risks of hacking and data falsification. Furthermore, more transparent and stringent legal rules are needed to ensure the recognition of STEs as admissible evidence in court. To maintain public trust and improve the efficiency of the current justice system, it is essential to encourage collaboration between relevant entities, legal specialists, and the business community in the development of STEs.<sup>10</sup>

There are many benefits associated with digital land certificates, but digital land certificates cannot replace traditional land certificates that serve as legal proof of real estate ownership. Both electronic land certificates and traditional land certificates play the same role as valid legal evidence. As referred to in paragraph (1), the results of the implementation of digital land registration can be in the form of information, data, and/or documents in electronic form. Furthermore, digital information and data and the results of examinations on paper as referred to in paragraph (3) are valid evidence according to

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<sup>9</sup> Peraturan Pemerintah Nomor 71 Tahun 2019

<sup>10</sup> Undang-Undang Nomor 11 Tahun 2008 tentang Informasi dan Transaksi Elektronik (ITE) beserta perubahannya

procedural law in Indonesia as referred to in Article 84 paragraph (4). Furthermore, this regulation stipulates that land registration must be carried out systematically and sporadically to facilitate the land registration process.<sup>11</sup>

## FORMULATION OF THE PROBLEM

Based on the background of the problem, the problem formulation is determined as follows: 1.)How valid is the electronic certificate for the legal security of property? 2.)What is the impact if the property certificate is in the form of an electronic certificate?

## METHOD

This study uses a descriptive qualitative approach, namely a detailed study of legal facts that aims to describe them in depth. It is carried out systematically to not only clarify and study social phenomena, but also to explore the relationship of interaction and causality based on a series of selected data collected.<sup>12</sup>The goal of descriptive qualitative is to provide the most accurate information possible by offering detailed discussion.<sup>13</sup>

In this study, the information used comes from secondary data collected through a literature review.<sup>14</sup>In literary research, information is collected from several sources such as reference books, scientific articles, research reports, archives, and various documents related to the research subject. This secondary information comes from sources that do not come directly from the entity providing the data.

The main legal documents for this research are:

- a) The 1945 Constitution of the Republic of Indonesia
- b) Law Number 5 of 1960 concerning Basic Agrarian Principles.
- c) Law Number 11 of 2008 concerning Electronic Information and Transactions.
- d) Government Regulation Number 24 of 1997 Concerning Land Registration

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<sup>11</sup> Petunjuk Teknis Menteri Agraria Dan Tata Ruang/Kepala Badan Pertanahan Nasional Nomor3/Juknis-Hk.02/IV/2022 Tahun

<sup>12</sup> Sanapiah Faisal, 1995, *Format- Format Penelitian Sosial*, Jakarta: Rajawali Pers, hlm 25

<sup>13</sup> Eni Puji Estuti, Wchidah Fauziyanti, Silvia Hendrayanti, 2021, *Analisis Deskriptif dan kuantitatif Produktivitas Garam Indonesia: Studi Kasus pada Petani Garam Kabupaten pati*, Pekalongan: Penerbit NEM, hlm 101

<sup>14</sup> Maman, Rahman, 1999, *Strategi dan Langkah- Langkah Penelitian*, Semarang: IKIP Semarang, hlm 1

- e) Government Regulation Number 71 of 2019 Concerning the Implementation of Electronic Systems and Transactions
- f) Regulation of the Minister of Agrarian Affairs and Spatial Planning / National Land Agency Number 19 of 2020 concerning Electronic Land Information Services
- g) Regulation of the Minister of Agrarian Affairs and Spatial Planning / National Land Agency Number 1 of 2021 concerning Electronic Certificates.

This study uses data from several leading academic journals, including Ejournal Warmadewa, Lex Privatum, Jurnal Ilmu Kenotariatan, Ejournal Unesa, Repository Unja, Submitted to Universitas Diponegoro, Scribd, and the Google Scholar platform. By relying on various sources of information, researchers can ensure that the data obtained has high validity and can be scientifically accounted for. The use of diverse sources also allows researchers to gain a deeper and more comprehensive understanding of conditions from various analytical perspectives.

## **DISCUSSION**

### **VALIDITY OF ELECTRONIC CERTIFICATES FOR LEGAL SECURITY OF PROPERTY**

Along with the rapid development of information and communication technology, many sectors of life have begun to adapt the use of digital technology, including in the fields of law and property transactions. One of the innovations that has emerged is the use of electronic certificates as a substitute or complement to physical certificates in legal transactions, especially those related to property rights.<sup>15</sup> This electronic certificate is designed to simplify the process of verification, transfer, and ratification of property rights, and provide better security guarantees compared to physical documents that are susceptible to damage, forgery, or loss.

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<sup>15</sup> Fernanda, M. F., & Apriani, R. (2024). KEKUATAN MENGIKAT SERTIFIKAT ELEKTRONIK HAK ATAS TANAH DITINJAU DARI PARATURAN PERTANAHAN INDONESIA. NUSANTARA: Jurnal Ilmu Pengetahuan Sosial, 11(7), 2576-2584.

In the context of property law, certificates have a very important role as legal evidence that confirms ownership or rights to a property.<sup>16</sup> Traditionally, property certificates in Indonesia are issued in physical form by the National Land Agency (BPN), which serves as legal evidence of ownership or rights to land and buildings. However, with the increasing need for speed, transparency, and efficiency in property transactions, electronic certificates are present as a more practical and modern solution.

In Indonesia, until now, physical certificates remain the dominant documents in property transactions, although a number of attempts to introduce electronic certificates have been made. In recent years, the government through the BPN has begun to trial the issuance of electronic certificates for land, especially to simplify and speed up the process of land registration and transactions. However, to achieve wider acceptance, an in-depth discussion is needed regarding the legal validity and security of electronic certificates in the context of property law.

In general, the validity of electronic certificates can be seen from two main aspects, namely from the legal and technical aspects.<sup>17</sup> Legally, electronic certificates must meet applicable legal requirements, including recognition from authorized state institutions, in this case the BPN and other related institutions, which ensure that the electronic certificate is valid and recognized in the Indonesian legal system. On the technical side, the existence of electronic certificates must also be equipped with high security mechanisms, such as the use of recognized digital signatures, encryption to protect data, and the use of blockchain technology that guarantees the integrity and authenticity of data.

a. Concept of Validity of Electronic Certificates

The validity of electronic certificates in property law is not only determined by the existence of regulations governing their issuance, but also by acceptance by the community and legal actors. This concept of validity involves several elements, including:

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<sup>16</sup> Setiawan, A. B. (2014). Studi Standardisasi Sertifikat Elektronik dan Keandalan dalam Penyelenggaraan Sistem Transaksi Elektronik. *Buletin Pos dan Telekomunikasi*, 12(2), 119-134.

<sup>17</sup> Andari, D. W. T., & Mujiburohman, D. A. (2023). Aspek Hukum Layanan Sertifikat Tanah Elektronik. *Al-Adl: Jurnal Hukum*, 15(1), 154-170.

- **Authenticity:** Electronic certificates must be authentic. In this case, the certificate must be verifiable through supporting technology, such as digital signatures and encryption systems. This verification process ensures that the issued certificate is valid and issued by an authorized institution, and has not been changed after being issued.
- **Legal Binding:** A valid electronic certificate must have legal binding force, meaning that the certificate can be used as valid evidence in court. This means that the party holding the valid electronic certificate has the right to take legal action against the property stated in the certificate.
- **Recognition by Authorized Institutions:** To ensure the validity of electronic certificates, authorized institutions such as the National Land Agency (BPN) and other state institutions must accept and recognize electronic certificates as valid evidence in property transactions.
- **Security Standard Compliance:** Electronic certificates must be equipped with high security standards to ensure that the data contained therein is not easily manipulated or damaged by unauthorized parties. Technologies such as data encryption, digital signatures, and the use of transparent and integrated systems such as blockchain are one way to ensure this security.

### **Legal Basis for Electronic Certificates in Property Law**

To ensure that electronic certificates can be accepted and legally recognized in the Indonesian legal system, a number of regulations have been set out in related laws and regulations. Law Number 11 of 2008 concerning Information and Electronic Transactions (ITE), which was later updated by Law Number 19 of 2016, provides a legal basis for electronic transactions and recognition of electronic documents as valid evidence in law.

In addition, the Government Regulation governing land administration and the use of information technology in land registration and certification also serves as the basis for the implementation of electronic certificates. On the other hand, the National Land Agency (BPN) has also begun digitizing land data, including discussions on the issuance of electronic certificates to improve transparency and efficiency of public services in the land sector.

### **Challenges in Implementing Electronic Certificates in Indonesia**

Despite efforts to introduce and implement electronic certificates, the challenges faced in their implementation are quite large. One of them is the still low public trust in electronic

certificates.<sup>18</sup> Many people still trust physical certificates more because they are more familiar and have a longer track record.

In addition, there are also technical challenges related to uneven digital infrastructure, especially in areas with limited internet access. A more integrated and efficient system must be built so that the issuance and verification of electronic certificates can be done more easily and quickly.

### **Electronic Certificates and Legal Aspects of Property**

An electronic certificate is a digital document used to prove ownership or rights to property, issued by an authorized institution through an electronic system.<sup>19</sup> In the context of property law, this certificate serves to confirm the rights to land or buildings registered in the land system. However, the recognition of electronic certificates in property transactions requires an update in the legal system, because the transition from physical documents to digital documents requires adaptation in terms of legal validity and technical arrangements.

Electronic certificates in the context of property law can be interpreted as a digital form of a certificate issued by an authorized institution stating ownership rights or rights to certain properties, whether in the form of land or buildings. This electronic certificate functions not only as legal evidence of ownership rights or other rights, but also as a tool to facilitate and accelerate transactions or transfers of property rights.

More technically, electronic certificates use digital signatures and encryption technology to ensure the integrity and authenticity of data. In this case, the digital signature is used to ensure that the certificate was issued by an authorized institution and has not been manipulated, while encryption is used to keep the information contained in the certificate safe and cannot be changed by unauthorized parties.<sup>20</sup>

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<sup>18</sup> Rohman, R. S., Wahyudin, Y., Oktapiani, R., & Firmansah, D. A. (2023). Rancang Bangun Website desain Sertifikat Elektronik Menggunakan Metode User Centered Design. *Jurnal Responsif: Riset Sains dan Informatika*, 5(1), 70-79.

<sup>19</sup> Hermawan, W. (2019). Perancangan Manajemen Risiko Keamanan Informasi pada Penyelenggara Sertifikasi Elektronik (PSrE). *InComTech: Jurnal Telekomunikasi dan Komputer*, 9(2), 129-140.

<sup>20</sup> Nafisah, R. (2022). Keabsahan Hukum Sertifikat Elektronik Dalam Kepemilikan Tanah Berdasarkan Peraturan Menteri Agraria Dan Tata Ruang/Badan Pertanahan Nasional Nomor 1 Tahun 2021 Tentang Sertifikat Elektronik. *Dinamika*, 28(3), 3497-3518.

The process of issuing electronic certificates for property begins with the registration and verification of data related to land or building rights owned by a person. After the data has been verified, the authorized institution (for example the National Land Agency/BPN) will issue an electronic certificate that is connected to a digitally integrated land information system.

### **The Role of Electronic Certificates in the Indonesian Legal System**

In the Indonesian legal system, electronic certificates play an important role in ensuring the legal validity of a property transaction.<sup>21</sup> This validity is based on the state's recognition of the certificate as valid and binding evidence in land transactions. This is in line with technological developments that support the digitalization of documents in various sectors, including the land sector.

Some of the main roles of electronic certificates in the property law system include:

a. **Improving Land Administration Efficiency**

Electronic certificates simplify the land administration process, which often takes a long time when done manually using physical certificates. The verification, registration, and transfer of rights processes can be carried out more quickly, transparently, and accurately.

b. **Reducing the Risk of Counterfeiting and Duplication**

The use of electronic certificates with sophisticated security systems, such as digital signatures and encryption, reduces the possibility of certificate forgery or duplication. Electronic certificates integrated into a secure system make any changes or transfers of rights digitally and in real time trackable.

c. **Facilitating the Transfer of Property Rights**

Electronic certificates make it easier to transact or transfer property rights.<sup>22</sup> The more transparent and faster process allows parties involved in property transactions to carry out the transfer of rights without having to go through complicated and time-consuming procedures.

d. **Improving Security and Trust in Property Transactions**

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<sup>21</sup> Sholeh, M. C. (2021). Analisis Yuridis Resiko Pemalsuan Terhadap Pengadaan Sertifikat Elektronik Di Indonesia. *Dinamika*, 27(10), 1517-1543.

<sup>22</sup> Apriansyah, N. (2018). Keabsahan Sertifikat Jaminan Fidusia yang Didaftarkan Secara Elektronik. *Jurnal Ilmiah Kebijakan Hukum*, 12(3), 227-241.

With a more secure verification and recording system, electronic certificates help create a sense of security and trust for parties involved in property transactions, considering that the potential for fraud in property transactions is often caused by manipulation of physical certificate data.

However, in order for electronic certificates to function optimally in the Indonesian legal system, several aspects must be considered, especially those related to the legal and technical standards that govern their issuance.

### **Compliance of Electronic Certificates with Indonesian Legal Principles**

Acceptance of electronic certificates in Indonesian law must be based on applicable legal principles, so that the existing legal system can accommodate this digital innovation without creating legal uncertainty.<sup>23</sup> Some legal principles that need to be considered in accepting electronic certificates are:

a) **Principles of Validity and Authenticity**

Electronic certificates must meet the principles of validity and authenticity in Indonesian law. This means that electronic certificates must be legally accountable as valid evidence in property transactions. A valid electronic certificate must be verifiable and guarantee that the information contained therein has not been changed or falsified after issuance.

b) **Principle of Legal Boundaries**

Electronic certificates must have the same legal force as physical certificates, meaning that a valid electronic certificate must be able to be used as binding legal evidence in property transactions. Therefore, courts or legal institutions must accept electronic certificates as valid evidence in disputes related to property rights.

c) **Principle of Transparency**

The principle of transparency is important in the acceptance of electronic certificates. The use of digital technology that allows open recording and can be accessed by related parties

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<sup>23</sup> Apriansyah, N. (2018). Keabsahan Sertifikat Jaminan Fidusia yang Didaftarkan Secara Elektronik. *Jurnal Ilmiah Kebijakan Hukum*, 12(3), 227-241.

will increase accountability and reduce the potential for manipulation in property transactions. Electronic certificates issued and processed through an integrated digital system provide higher transparency compared to land administration systems based on physical documents.

d) **Principles of Human Rights Protection**

The use of electronic certificates must also consider the protection of individual rights, especially regarding privacy and security of personal data. Electronic certificates containing important information related to the property and its owner must be kept from falling into the hands of unauthorized parties, to avoid potential misuse of data that could harm the property owner.

**Legal Challenges in Implementing Electronic Certificates**

Although the use of electronic certificates offers many advantages, there are a number of legal challenges that must be faced in their implementation in Indonesia, including:

a) **Lack of Public Awareness and Trust**

Most Indonesians still feel hesitant about using electronic certificates. Legal uncertainty and fear of possible misuse or manipulation of electronic certificates make many people choose to continue using physical certificates, even though digital procedures are more efficient.

b) **Limitations of Technology Infrastructure**

Although information technology has developed rapidly, not all regions in Indonesia have adequate infrastructure to support the widespread implementation of electronic certificates. Infrastructure such as stable internet access, adequate hardware, and secure systems need to be improved to ensure that the implementation of electronic certificates can run smoothly.

c) **The Need for Comprehensive Regulation**

Regulations related to electronic certificates in property transactions are still limited, so there is still confusion regarding the acceptance of electronic certificates in courts or other legal institutions. Therefore, there needs to be an update and strengthening of regulations related to electronic certificates, including in terms of regulating digital signatures, encryption, and issuance procedures.

**Legal Security in Property Transactions with Electronic Certificates**

Legal security in property transactions is a very important aspect in ensuring that the process of buying and selling, granting or transferring property rights is carried out legally and securely.<sup>24</sup> In the context of electronic certificates, this legal security is closely related to how the digital system that supports the issuance and verification of certificates is able to protect the rights of property owners from potential misuse or actions that could harm them.

Electronic certificates, which are issued and managed digitally, can offer several advantages in terms of security, but also bring certain challenges. Legal security in the use of electronic certificates covers various aspects, from the authenticity of the certificate itself, to how property transactions involving electronic certificates can be guaranteed from the risk of manipulation or fraud.

### **Security Aspects in Issuing Electronic Certificates**

The security of electronic certificates in property transactions begins at the issuance stage. To ensure that the issued electronic certificates are valid and cannot be forged or manipulated, several technical and procedural elements need to be strictly implemented. The following are several aspects related to the security of electronic certificate issuance:

a) **Use of Digital Signatures**

Digital signature is one of the main tools used to guarantee the authenticity and integrity of electronic certificates.<sup>25</sup> This digital signature uses public key cryptography (Public Key Infrastructure/PKI) technology to verify that the certificate was actually issued by an authorized institution, such as the National Land Agency (BPN), and that the contents of the certificate have not been changed after issuance. Any changes to the certificate will invalidate the digital signature, which can be detected immediately.

b) **Data Encryption**

Encryption is used to ensure that the data contained in the electronic certificate remains protected and cannot be changed or misused by unauthorized parties. This encryption process

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<sup>24</sup> Dewi, R. A. R. M., & Susantio, C. (2024). Penggunaan Sertifikat Elektronik Untuk Meningkatkan Efisiensi Pendaftaran Tanah Dalam Upaya Pencegahan Mafia Tanah. *Jurnal Syntax Admiration*, 5(9), 3382-3392.

<sup>25</sup> Setiawan, A. B. (2014). Studi Standardisasi Sertifikat Elektronik dan Keandalan dalam Penyelenggaraan Sistem Transaksi Elektronik. *Buletin Pos dan Telekomunikasi*, 12(2), 119-134.

ensures that information related to property rights, their owners, and transaction history can only be accessed by parties with valid authorization. Thus, electronic certificates will be safe from potential data manipulation by irresponsible parties.

c) **Security Certification by Authorized Institution**

To increase the level of public trust in electronic certificates, authorized institutions, such as the National Cyber and Crypto Agency (BSSN), need to provide certification regarding the security standards of the system used to issue electronic certificates. This system must meet the established security standards, including protection against threats from hacking, data leaks, or other cyber attacks.

d) **System Audit and Monitoring**

The system used to manage electronic certificates must be continuously monitored to detect potential threats or abuse. Regular audits of the systems that issue and store electronic certificates are important to maintain the integrity and security of the system as a whole. With regular audits, potential system errors or data manipulation can be immediately identified and corrected.

### **Legal Security Challenges of Electronic Certificates**

Although electronic certificates bring various advantages in terms of efficiency and reliability, there are several challenges that must be overcome regarding their legal security aspects, including:

a) **Cyber Attack Threat**

One of the main challenges in maintaining the security of electronic certificates is the risk of cyber attacks, such as hacking or data breaches. If the system that manages electronic certificates is not properly protected, the data contained therein can be accessed by unauthorized parties, potentially changing the status or ownership of the property. Therefore, it is important to have a very strong security system, such as high-level encryption, reliable firewalls, and effective data backup procedures.

b) **Uneven Digital Infrastructure Security**

One of the challenges faced by Indonesia in implementing electronic certificates is the limited digital infrastructure, especially in areas that do not yet have stable internet access or

adequate hardware. Systems integrated with digital technology must be securely accessible throughout Indonesia, ensuring that electronic certificates can be easily accepted and verified anywhere.

c) **Risk of Abuse by Irresponsible Persons**

The legal security of electronic certificates also depends on who has access to verify and issue the certificates. There is a risk that irresponsible individuals in authorized institutions have access to this system and could manipulate or issue fake certificates for personal gain. Therefore, it is very important to implement strict internal controls at every level of the organization involved in issuing and managing electronic certificates.

d) **Legal Issues Regarding Digital Identity Forgery**

As with physical signatures, identity forgery in electronic certificates is also a serious potential threat. If irresponsible parties can imitate digital signatures or gain access to the system that manages electronic certificates, they can easily create fake certificates. To overcome this problem, the development of a more sophisticated verification system, such as the use of biometrics or a more transparent and immutable blockchain, needs to be considered.

### **Verification System to Ensure Legal Security**

One of the main ways to ensure the legal security of electronic certificates is to implement an efficient and secure verification system.<sup>26</sup> This verification system allows parties involved in property transactions to check the authenticity and integrity of electronic certificates. Here are some important elements in the electronic certificate verification system:

a) **Integration with the National Land System**

To improve the security and validity of electronic certificates, the electronic certificate verification system must be integrated with the National Land Agency (BPN) or other state institutions authorized to manage land data. Through this integrated system, any changes or transactions related to property certificates can be detected clearly and quickly.

b) **Using Blockchain to Improve Security**

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<sup>26</sup> Fernanda, M. F., & Apriani, R. (2024). KEKUATAN MENGIKAT SERTIFIKAT ELEKTRONIK HAK ATAS TANAH DITINJAU DARI PARATURAN PERTANAHAN INDONESIA. NUSANTARA: Jurnal Ilmu Pengetahuan Sosial, 11(7), 2576-2584.

Blockchain can be a solution to increase security and transparency in the issuance and transfer of property rights. With blockchain technology, every transaction involving electronic certificates can be recorded permanently and can be easily tracked, ensuring that transaction data cannot be changed or falsified once recorded. The use of blockchain can increase trust in the electronic certificate system, reduce the risk of fraud, and strengthen legal evidence in property disputes.

c) **User Authentication and Access Restrictions**

The electronic certificate verification system must also prioritize strict user authentication. Users involved in transactions or certificate verification processes must go through more secure identity verification stages, such as using two-factor authentication or biometrics. This access restriction will ensure that only authorized parties can access and manage electronic certificates.

**Legal Protection Steps for Electronic Certificate Owners**

To protect electronic certificate owners and prevent losses due to misuse, several legal protection measures need to be implemented, including:

a) **Comprehensive Regulation Preparation**

The government must formulate clear regulations regarding the use of electronic certificates, both in terms of issuance, verification, and dispute resolution. These regulations must also include sanctions for individuals who are proven to have falsified or manipulated electronic certificate data.

b) **Education and Socialization to the Community**

It is important for the government and related institutions to educate the public on how to verify electronic certificates and protect their personal data from misuse. With a good understanding, the public will be more aware of potential fraud and more confident in the use of electronic certificates in property transactions.

**IMPACT OF PROPERTY CERTIFICATES IN THE FORM OF ELECTRONIC CERTIFICATES**

The implementation of electronic certificates in the property sector brings significant changes in terms of land administration, property transactions, and the legal system that regulates

them. Property certificates that were originally in physical form have changed to electronic form accompanied by various supporting technologies, such as digital signatures and data encryption.<sup>27</sup> Although it provides many conveniences, the implementation of electronic certificates also brings various impacts, both positive and negative, both in terms of efficiency, security, and its impact on society.

### **Positive Impact of Property Certificates in the Form of Electronic Certificates**

#### **1. Improving the Efficiency of Property Administration and Transaction Processes**

One of the most obvious positive impacts of implementing electronic certificates is increased efficiency in property administration and transaction processes.<sup>28</sup> Certificates that were previously in physical form, with time-consuming printing and archiving processes, can now be managed digitally more quickly and practically. Property owners, notaries, lawyers, and other related parties can access certificates directly through an electronic system without having to deal with physical documents.

The verification process is also faster, because information about the ownership status and transaction history of the property can be immediately accessed and verified in real-time. This reduces the time needed to carry out a property transaction, which previously could take several weeks or even months, to be shorter.

#### **2. Reducing the Potential for Counterfeiting and Abuse**

One of the major problems that often arise in traditional property certification systems is forgery or misuse of certificates. With electronic certificates, which are equipped with security systems such as digital signatures and encryption, the potential for forgery is much smaller. Any changes or updates to the electronic certificate will be automatically recorded in the system and can be easily tracked.

Blockchain technology used in some electronic certificate systems also plays an important role in creating transparency. Data recorded in the blockchain cannot be changed or

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<sup>27</sup> Apriana, M. L., & Hamid, A. (2024). DAMPAK SERTIFIKAT ELEKTRONIK TERHADAP KEPERCAYAAN PELAYANAN PUBLIK KEPADA LAYANAN NOTARIS/PPAT DI KABUPATEN KEDIRI. *Jurnal Studi Multidisipliner*, 8(12).

<sup>28</sup> Nafisah, R. (2022). Keabsahan Hukum Sertifikat Elektronik Dalam Kepemilikan Tanah Berdasarkan Peraturan Menteri Agraria Dan Tata Ruang/Badan Pertanahan Nasional Nomor 1 Tahun 2021 Tentang Sertifikat Elektronik. *Dinamika*, 28(3), 3497-3518.

manipulated without a trace, thus providing a higher level of security and more trustworthiness in property transactions.

### 3. Improving Accessibility and Transparency of Property Information

Electronic certificates allow easier and more transparent access to property information. Previously, information on property ownership status and transaction history could only be obtained through the BPN or related institutions with complicated procedures and a long time. With electronic certificates, this information can be quickly accessed by owners, prospective buyers, or authorities through digital platforms.

The existence of this open data also allows the public to more easily identify whether a property has legal issues, such as disputes or administrative issues. This increases transparency in property transactions, so prospective buyers can be more confident in making decisions.

### 4. Reducing Costs and Administrative Burdens

Electronic certificates reduce administrative costs previously incurred for printing, filing, and sending physical documents. Property owners or parties involved in transactions also no longer need to spend money on managing physical documents or traveling to verify at the land office. This also reduces bureaucracy and increases operational efficiency in land administration.

In addition, property transactions using electronic certificates can be cheaper due to reduced costs related to printing, storing, and sending documents. Thus, the overall cost of property transactions can be reduced, making it more affordable for the public.

## **Negative Impact of Property Certificates in the Form of Electronic Certificates**

### 1. Dependence on Digital Infrastructure

One of the negative impacts of implementing e-certificates is the dependence on adequate digital infrastructure. Not all regions in Indonesia have stable internet access or adequate hardware to access the e-certificate system. People in rural or remote areas may face difficulties in accessing e-certificates or conducting property transactions digitally.

Although this system can provide convenience for those in big cities, in areas with limited digital infrastructure, the adoption of electronic certificates can be a challenge. This requires government attention to improve digital infrastructure throughout Indonesia.

## 2. Potential for Legal and Social Uncertainty

The application of electronic certificates can create legal uncertainty, especially related to the legal recognition of electronic certificates in the context of property disputes. Although this system is guaranteed by technology, there are concerns that not all parties, including courts and other legal institutions, fully understand and recognize the legal force of electronic certificates, especially in terms of dispute resolution.

Insufficient socialization and education regarding electronic certificates can cause doubts among the public and related parties regarding the legality and validity of these certificates, which has the potential to slow down the widespread acceptance of the system.

## 3. Cyber Security Risks and Digital Fraud

Although electronic certificates have various layers of security, such as encryption and digital signatures, the system is still vulnerable to cyber threats. Attacks such as hacking or phishing can compromise the integrity of the certificate and the property data stored in the system.<sup>29</sup> If the security system is not strong enough, there may be data leaks or information manipulation that could potentially harm the property owner or parties involved in the transaction.

In addition, there is a possibility that irresponsible parties can exploit loopholes in the system to manipulate electronic certificates or create fake certificates. Therefore, developing a more secure and cyber-resistant system is very important to increase trust in electronic certificates.

## 4. Changes in Transaction Patterns that Confuse the Public

The change in property transaction patterns from physical to digital systems can be confusing for some people, especially those who are not familiar with technology. For example, checking or verifying the status of a certificate that is now done through a digital application or official website may feel foreign to some who are more comfortable with the manual method.

Therefore, more intensive assistance and education are needed to help people understand how to use electronic certificates and conduct transactions digitally. This lack of

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<sup>29</sup> Apriana, M. L., & Hamid, A. (2024). DAMPAK SERTIFIKAT ELEKTRONIK TERHADAP KEPERCAYAAN PELAYANAN PUBLIK KEPADA LAYANAN NOTARIS/PPAT DI KABUPATEN KEDIRI. *Jurnal Studi Multidisipliner*, 8(12).

understanding can be a barrier to widespread adoption of the system, especially among older people or those less experienced with technology.

#### 5. Limitations in Law Enforcement against Digital Crime

With electronic certificates accompanied by sophisticated technology, law enforcement in cases of digital crime or property fraud involving electronic certificates can become more complex. If there is a dispute or fraud related to electronic certificates, the injured party must be able to identify and prove the manipulation or violation that occurred.

Limitations in law enforcement in the digital realm and the still limited understanding among law enforcement officers about electronic-based property transactions can complicate the dispute resolution process. Therefore, there needs to be an update and capacity building in the legal system to handle issues related to digital property transactions.

Property certificates in the form of electronic certificates have a significant impact in accelerating the process of property administration and transactions, reducing the potential for forgery, and increasing transparency and efficiency. However, its implementation also faces various challenges, especially related to uneven digital infrastructure, legal uncertainty, and cybersecurity risks. It is important for the government and related institutions to continue to develop digital infrastructure, update regulations, and educate the public so that the negative impacts of implementing electronic certificates can be minimized. Thus, electronic certificates can be an effective solution to create a safer, more transparent, and more efficient land system in Indonesia.

### CONCLUSION

Based on the explanation above, the author draws the following conclusions:

1. A previously analyzed problem can be concluded that, Electronic land certificates have the power of proof comparable to physical land certificates in the context of land disputes. The provisions of Law Number 5 of 1986 and Article 11 of Law Number 11 of 2008 which regulate the legal authority of electronic signatures support the use of electronic land certificates as evidence. Electronic land certificates are considered authentic documents that can prove the truth

regarding land ownership, as long as they meet the requirements of electronic documents, especially regarding valid electronic signatures.

2. It causes anxiety in the community, because many people are starting to feel distrustful of the services provided by public servants such as PPAT. Of course this is something dangerous, because basically public trust is something important. In relation to this, PPAT must maintain public trust and must also provide education and correct information regarding all obstacles that occur. Also related to the reason why the transition process is currently taking a little more time than the previous process. In this way, the things that need to be done by the government and also PPAT are to build good communication with the community about everything that is happening. And also public service actors must also provide education and understanding to the community in a transparent and good manner about the transition process from analog certificates to electronic certificates. In this way, it can make the community calmer and understand why the process is currently taking more time than before.

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