

Implications of Digital Transformation of Land Registration Processes as Seen in The Face of Agrarian Law

Lia Gulianti¹⁾, Nia Kurniati²⁾ & Elis Nurhayati³⁾

¹⁾Faculty of Law, Master of Notarial Law, Universitas Padjadjaran, Indonesia, Email: Lia.gulianti@gmail.com

²⁾Faculty of Law, Universitas Padjadjaran, Indonesia, Email: nia.kurniati@unpad.ac.id

³⁾Faculty of Law, Universitas Padjadjaran, Indonesia, Email: elisnurhayati2021@gmail.com

Abstract. *Digital transformation in the Land Registration Process is part of the modernization of land administration and services in Indonesia. The digitalization of the land registration process is regulated by Regulation of the Minister of ATR/BPN No. 3 of 2023 concerning the Issuance of Electronic Documents. The land registration activity refers to Government Regulation No. 24 of 1997 and Government Regulation No. 18 of 2021. The legal umbrella for the digitalization of land registration is regulated in the UUIITE, UUSPK, PP PSTP, PBBSSN, and Presidential Decree SPBE. Digital transformation involves electronic land registration, making the shift to the UUPA a specialist lesson from the perspective of legal certainty and legal protection. There are crucial issues regarding the electronic system, the legality and evidentiary power of electronic certificates, especially in the event of a dispute or system failure. Meanwhile, the electronic system also affects legal protection faced with data security risks, the potential for digital maladministration, resulting in losses arising from system errors. The implications of digital transformation in the land registration process in the UUPA and PP are required to evaluate the extent to which the implementation of electronic systems is able to guarantee Legal Certainty which must be clear, consistent and predictable as well as Legal Protection (guarantee provided by the legal system to protect every right to land ownership for the community, as well as identifying the problem of disharmony or overlapping rules as a logical consequence of legal implications and digital implications. This qualitative research applies a juridical-normative approach and is enriched with in-depth interview data. Of course, the most fundamental implication is the emergence of disharmony of rules between lex specialis, namely the UUPA with Lex Generalis UU ITE and technical regulations that support digitalization, and overlapping regulations related to the protection of ownership rights and the validity of electronic evidence (for example between BPN government regulations and the ITE Law). This condition hinders the realization of the goals of Indonesia's Transformation Infrastructure in the land sector. This research recommends comprehensive harmonization of regulations, the establishment of clear legal responsibilities in the digitalization of the land registration process.*

Keywords: Agrarian; Digital; Land; Registration; Transformation.

1. INTRODUCTION

Geographically, Indonesia has a vast territory and is known as a maritime nation or archipelagic state. It has a land area of 8.23 million km², with a land area of 191,944,000

hectares and waters covering an area of 632,000,000 hectares. The target land area for land registration is 126,000,000.(<https://Djsppr.atrbpn.go.id>, nd)Facing the major challenges in maintaining and managing territory, the State must guarantee the rights of every individual or community as a legal subject everywhere, as well as receive justice and without discrimination as stated in Article 28D paragraph (1). On the other hand, Article 1 paragraph (3) of the 1945 Constitution, Indonesia has an obligation to implement regional management based on the principles of justice and legal certainty. The mandate stated in Article 33 paragraph (3) of the constitution states, "Earth, water, and the natural resources contained therein are controlled by the state and used as optimally as possible for the prosperity of the people."aims to ensure that rights that are highly dependent on the availability of natural resources are important. (Mandar Maju 1995)

Article 1 paragraph (1) water and the natural resources contained therein are controlled by the state in line with the concept of welfare. The goal of the welfare state is the rights of citizens in the modern era, which are very dependent on natural factors in fulfilling the basic rights of citizens. Because land has an important meaning for human life, many want to have rights to land, especially ownership rights. (Elkas, WD, Pujiwati, Y., & Nugroho, BD (2023). nd) Efendi Perangin Land Law in Indonesia has 2 classifications, including: First, Administrative Land Law which is managed by the government as the ruler, second, the state of Civil Land Law that applies (ownership and or Agency nd) Where the rights that become Buildings, Usage Rights, Business Rights, namely Ownership Rights, Land Use Rights, Rights to Collect Forest Products, and Rights stipulated by Law Article 4 in conjunction with 16 UUPA)(Furthermore, authority over the earth's surface is determined by Article 4 paragraph (2) of the UUPA.(Yusuf et al. 2024)

The existence of land rights granted to individuals and legal entities through land registration to ensure certainty of the status of registered rights, certainty of the subject of rights and certainty of objects of rights.(Santoso, 2010) The inherent rights are in the form of proof of ownership of the land in the form of a land certificate.(Harsono, 2002)regulated in Article 19 paragraph (2) letter c UUPA as strong evidence. Land registration is fundamentally regulated in UUPA based on the provisions in Article 19 paragraph (1) UUPA, namely "to guarantee legal certainty by the government, by holding land registration throughout the territory of the Republic of Indonesia according to the provisions regulated by government regulations.(Harsono, 2002) Government Regulation No. 10 of 1961 which was in effect for 27 years was no longer in effect since the enactment of Government Regulation No. 24 of 1997 concerning Land Registration (hereinafter referred to as PP No. 24 of 1997) which came into effect on October 8, 1997.

The existing laws and regulations in force in Indonesia do not rule out the possibility of frequent disharmony or overlapping, both vertically and horizontally. Law enforcement for land registration is contained in the considerations of the Regulation of the Minister of ATR/Head of the National Land Agency of the Republic of Indonesia No. 3 of 2023 concerning the Issuance of Electronic Documents as an implementing regulation for the digitalization of the land registration process. The digitalization of the registration process in the considerations of the Regulation of the Minister of ATR/Head of the National Land Agency No. 3 of 2023 inserts a reference to Law No. 11 of 2008 concerning Information and Technology (hereinafter referred to as UUIITE), which has been amended to UUIITE No. 19 of 2016 concerning electronic information and transactions, indicating that the issuance of electronic documents issued in the form of e-certificates

must comply with the rules stipulated in the ITE Law. Government Regulation of the Republic of Indonesia No. 82 of 2012 PSTE and has been revoked by Government Regulation No. 71 of 2019 PSTE, of course, is also regulated in Law of the Republic of Indonesia No. 20 of 2014 on Standardization and Conformity Assessment, and PBSSN Number 1 of 2024 on Cyber Incident Management. To realize clean, effective, transparent, and accountable governance in quality and reliable public services, Presidential Regulation Number 95 of 2018 concerning Electronic-Based Government Systems was established. The implementation of digitalization of the land registration process for the first time was enacted with the enactment of Number 6 of 2023 concerning the Stipulation of Government Regulation in Lieu of Law No. 2 of 2022 concerning Job Creation into Law. Based on the mandate of the Job Creation Law, the government issued Government Regulation Number 18 of 2021 concerning Management Rights, Land Rights, Apartment Units, and Land Registration.

Article 84 of PP 18 of 2021 discusses the organization and implementation of land registration carried out electronically. Furthermore, technological developments encouraged the issuance of Regulation of the Minister of Agrarian Affairs and Spatial Planning/Head of the National Land Agency number 1 of 2021 (hereinafter referred to as Permen ATR/Head of BPN 1 of 2021) which regulates electronic registration with the introduction of electronic certificates (hereinafter referred to as e-certificates) enacted Regulation of the Minister of Agrarian Affairs and Spatial Planning/Head of the National Land Agency of the Republic of Indonesia Number 3 of 2023 (hereinafter referred to as Permen ATR/Head of BPN 3 of 2023) Electronic Documents electronic land registration activities in accordance with the vision and mission of the ministry which has world standards in serving the community. SThe electronic public service system was initially implemented in 1997 through the Land Office Computerization (LOC) program, which later changed its name to Computerization of Land Activities (KKP). This KKP also underwent a conversion, initially using KKP-Desktop, then Geo-KKP, and finally to a web-based application, namely KKP-Web.(Aries, 2021) Technology and communication (ICT) is a major catalyst for digital transformation, the existence of integrated data-based technology, digital signatures and geographic information systems (GIS) enables the implementation of electronic land registration.

The electronic system aims to provide rapid data access, increase efficiency, transparency, and accuracy in the land registration process, and prevent potential document manipulation or fraud. Furthermore, digitizing land registration also supports the One Map Policy.. Electronic land information services are explained as having 10 types of land registration process services, namely internal services at the Land Office, namely Mapping, measurement, checking, data verification and creation to issuance of land certificates. While external services are the Touch Land Application, Ministry Partners, for Legal Entities, Religious/Social Bodies, Social Subjects (organizations), Associations, Foundations, Non-Governmental Organizations, Customary Law Communities or other Subjects) and Government Agencies.(<https://www.atrbpn.go.id/sentuh-tanahku>, nd)

Migration land registration process analog certificate (in paper form) to the form of an electronic certificate of official copy sheets in the form of two sides and printed specifically (secure paper) by the BPN there is a potential discrepancy between the plot map on the application to touch my land and that stated on the e-certificate where the location of the object plot is different. Then the certificate that was given a Mortgage Right and registered in 2019 has been registered still in analog form then in 2021 it was

changed to an electronic certificate cannot be issued and or printed e-certificate. The existence of land registration and cadastre in Indonesia tends to be regulated independently without collaboration does not work together effectively according to Zevenbergen.(Zevenbergen) Researchers are interested in conducting deeper research into the electronic land registration process, which has not been regulated in the UUPA. Disharmony, especially with UUTE, UUSPK, PP PSTP, PBBSSN, and Pepres SPBE, are mentioned as digital legal umbrellas. In this case, including PP 24 of 1997, and Regulation of the Minister of ATR/Head of BPN Number 3 of 2023 concerning the Issuance of Electronic Documents in Land Registration Activities (hereinafter referred to as Regulation of the Minister of ATR/Head of BPN 3 of 2023) as guidelines and technical aspects of the electronic land registration process.

A number of similar studies were found, including the Implementation of Electronic Land Registration Activities based on Transfer of Rights Due to Sale and Purchase Reviewed from a Land Law Perspective. This study examines and analyzes the readiness and implementation of the electronic land registration system and the transfer of rights due to sale and purchase. Implementation of the Principle of Security in the First-Time Land Registration through an Electronic System After the Enactment of Government Regulation Number 18 of 2021 Concerning Management Rights, Land Rights and Apartment Units. This study examines the implementation of the electronic land rights registration policy and the principle of security in the land registration process. Implementation of the Hierarchy of the Chain of Trust of Parent Electronic Certificates in the Perspective of the Principle of Legal Certainty Theory Through the Regulation of the Minister of Communication and Information Technology Number 11 of 2022, this study is about the hierarchy of the chain of trust of parent electronic certificates in the implementation of electronic certification carried out by Indonesian electronic certification organizers.

2. RESEARCH METHODS

The approach used is normative juridical. Data were obtained from library research, legal studies, and case studies related to the topic of this paper. The normative juridical approach is a literature review dominated by secondary data, including primary, secondary, and tertiary legal materials. This approach seeks to gather as much data as possible, emphasizing applicable regulations and literature related to the issues addressed in this article.(Mamudji, 2003)

3. RESULTS AND DISCUSSION

3.1. Legal Implications of the Digital Transformation of the Land Registration Process

In the civil law system in Indonesia, agrarian law regulates written rules and regulates all agrarian legal norms, including land rights, as well as land registration mechanisms and protection of land ownership rights. Article 28D paragraph (1) constitutionally guarantees the right of every person to legal recognition, fair legal certainty, legal protection, and equal treatment before the law. Article 1 paragraph (3) of the 1945 Constitution states that the Republic of Indonesia as a State of Law has an obligation to implement territorial management based on the principles of justice and legal certainty. The concept of legal certainty was introduced by Gustav Radbruch in his book " " This requires firmness and enforcement of the law itself, where the law applies to everyone without discrimination. One way to create legal certainty is through land

registration, as Article 19 paragraph (1) of the UUPA guarantees legal certainty by the government in carrying out land registration throughout the territory of the Republic of Indonesia, which is called the legal cadaster (juridical cadastre).

Organic regulations in the form of Government Regulations, Presidential Decrees, Presidential Regulations, Government Regulations and Regulations issued by the heads of technical agencies in the land sector. (Lubis, 2008) The land registration process is PP number 24 of 1997, PP number 18 of 2021, Permen Number 3 of 2023 with reference to UUPA. Land registration according to Article 3 is to provide legal certainty and legal protection to holders of land rights and other registered rights that can be proven as the holders of the rights concerned. Article 2 paragraph (2) of UUPA regulates substantively the government's authority in the land sector, especially in legal traffic and land use, of course the government is given legal authority to make rules and regulations (bestenmming) in the agrarian field in the form of land. and implement these rules (execution) concerning the subjects, objects and legal relationships between the subjects and objects as long as they concern agrarian resources. (Lubis, 2008) Gustav Radbruch's concept of legal certainty means that registered land plots will be protected from arbitrariness. (Sibuea, 2011) Meanwhile, Sudikno Mertokusumo, regarding legal certainty, stated that without legal certainty, it would cause unrest. (Sibuea, 2011)

Indonesia adheres to a system of negative publicity with a positive tendency as stated in Article 19 of the UUPA in conjunction with PP 24 of 1997. guaranteeing legal certainty for land registration throughout the Republic of Indonesia. This includes land measurement, mapping and bookkeeping, registration of land rights and the transfer of those rights, and the issuance of certificates of title, which serve as strong evidence. Conventional land registration guarantees legal certainty for physical documents such as land books and certificates, the validity of which can be proven otherwise by other parties in court. Adjustments to information and technology norms emphasize that legal data is no longer tied to physical paper, but rather to the integrity of digital data stored securely in the National Land Agency's electronic system. However, this does not comply with the provisions stipulated in Government Regulation No. 24 of 1997, which aims to ensure legal certainty in the field of land control and ownership. (Santoso, 2010) From past experience, quite a lot of land disputes arise as a result of the incorrect location of land plots, to speed up the measurement and mapping of land plots that must be registered, it is possible to use modern technology, such as the Global Positioning System (GPS) and computerized data processing and storage. The substance of computerization is contained in Article 35 paragraph (5) of PP 24 of 1997 which states that land registration is gradually stored and presented using electronic equipment and microfilm. PP No. 18 of 2021 all matters regarding land registration can be done electronically, especially in Article 84 paragraph (1) and in paragraph (2) which states that the implementation and implementation of land registration can be done electronically. referred to in paragraph (1) in the form of data, electronic information and/or electronic documents."

Article 5 of the UUIITE and Article 5 of the ATR/BPN Regulation No. 3 of 2023 recognize electronic documents as valid evidence, Article 6 electronic documents are accessed and/or printed through electronic systems. Electronic land registration refers to UUIITE and its derivatives namely the ITE Law/UU, SPK Law, PERMEN, PBSSN, PERPRES SPBE and PDP, while storage using electronic equipment is regulated in PP No. 24 of 1997 and PP 18 of 2021. The implementation of electronic systems is regulated by Ministerial Regulation Number 3 of 2023 Article 3 paragraph (3) and paragraph (4), namely The Ministry organizes the Electronic System reliably and safely and is responsible for the

proper operation of the Electronic System. Article 3 paragraph (3) of PP No. 71 PSTE in conjunction with Regulation of the Minister of ATR/Head of BPN No. 3 of 2023 is carried out at every office of the National Land Agency. Pusdatin as a Government organizer strives to carry out standardization for the interests of the state, safety, security and conformity assessment that implements the provisions of Article 15 paragraph (7) of Presidential Regulation Number 47 of 2023 PBSSN concerning the National Action Plan for Cyber Security for 2024-2028 as a mandate from Government Regulation Number 71 of 2019 PSTE to realize the Development and strengthening of rapid response teams in cybersecurity, strengthening infrastructure, human resources and cybersecurity regulations, preventing cybercrime and increasing international cooperation in the cyber field and resolving cybercrime. As in Article 1 number 1, namely Cyber security is an adaptive and innovative effort to protect all layers of cyberspace, including the information assets contained therein, from cyber threats and attacks, both technical and social. This includes protecting computer systems, networks, applications, and data from various cyber threats and attacks, both technical and social. This concept is based on the key principles known as the CIA Triad for cybersecurity, which involves the use of comprehensive risk management technologies, processes, and policies to maintain security, namely (Aldino Marga Pratama, 2024) Confidentiality ensuring that information can only be accessed by authorized parties. These include data encryption, role-based access control, strong passwords, and multifactor authentication (MFA). Integrity ensures that information cannot be altered or damaged by unauthorized parties. These include checksums, digital signatures, hashing, and version control to track data changes. Availability ensures that information and computer resources are available to authorized users whenever needed. These include system redundancy, data backup, load balancing, and disaster recovery.

BSN has established SNI 8799 series which consists of: (Data Center) SNI 8799-1-2023 Data center technical specifications. SNI 8799-2-2023, Data center management system. SNI 8799-3-2019 Amd 1-2020, Data center audit guide Amendment 1. Third, KKP (<https://aplikasi.atrbpn.go.id>) Electronic System Category (Strategic) land data management services and internal land administration consisting of counter web applications, back office, approval, maps, and SITATA desktop. Even in line with the BSSN Decree service as a legal basis, the 2024 Government Administration Sector Information Infrastructure electronic system includes: (Data Center) Iso 27001:2022 Scope of HT EI and INTAN Applications (Certificate Checking feature), Iso 20000-1:2018 Scope of HT EI and INTAN Applications (Certificate Checking feature), Iso 27001:2022 Scope of Data Center facilities, Iso 27001:2022 Scope of Electronic Certificate validation Application, Iso 27701:2019 Scope of Electronic Certificate validation. The Land Information Data Center, Spatial Planning held a socialization that has prepared to implement ISO 27001:2022, which focuses on strengthening the information security management system, as well as ISO 20000-1:2018, which emphasizes information technology service management to be more effective, integrated, and oriented to the needs of the Community. ISO certification is not just an administrative achievement, but a form of real commitment to providing public services that are transparent, accountable, and able to maintain the confidentiality and integrity of land data. (Data Center) At the BPN of Bandung City there are external services, namely <https://mitra.atrbpn.go.id> and the "touch my land" app.

Candy No. 3 of 2023 Article 1 number 10, namely The electronic system provided by the Ministry of ATR/BPN, hereinafter referred to as the Electronic System, is a series of electronic devices and procedures that function to prepare, collect, process, analyze,

store, display, announce, send and/or distribute electronic information in registration activities. Referring to Ministerial Regulation 3 of 2023 Article 44 paragraph 3 and paragraph 4 which reads The Minister ensures the security of the storage of BT-el Data and e-Certificates from certain circumstances that cause the Electronic System as referred to in Article 3 paragraph (1) to be disrupted. In the event of an electronic system disruption as referred to in paragraph (1), the land registration process is carried out manually in accordance with the provisions of laws and regulations. Documents stored digitally are less likely to be lost, minimizing document damage, both naturally (blurred paper, eaten by termites) and due to natural disasters (floods, fires) which occurs when using paper printing. Easy searching, fast finding will save time. Save costs. Document security is more guaranteed, because using a certain code or password, only certain authorized people can access it. Easy data recovery, backing up data, compared to recovering paper documents, for example due to fire, flooding or theft, it will be difficult to back up data. *The principle of ideas of the law* or the principle of legal certainty demands that every state administrative process, including land registration, must be carried out without obstacles and result in legal certainty for the community. Even the legal certainty of Registration for the Granting of Mortgage Rights for HT-el certificates that cannot be printed as stated in Article 6 of the Regulation of the Minister of ATR/Head of BPN No. 3 of 2023 electronic documents are valid legal evidence and can be accessed and printed through an electronic system. Responsibility for the implementation of electronic systems is regulated in UUTE Article 15 paragraphs (2), (3) and (4) The Electronic System Organizer must organize the Electronic System reliably and safely and be responsible for the proper operation of the Electronic System. Paragraph (2) does not apply if it can be proven that there has been a force majeure, error and/or negligence on the part of the user of the Electronic System.

Article 15 of the UUTE does not specifically regulate printed land documents, but rather regulates general principles regarding the responsibilities of electronic system administrators. This requires the Ministry of ATR/BPN, as the electronic system administrator, to ensure that the system for issuing electronic documents, such as electronic certificates, functions properly, reliably, and securely. Article 6 of the Regulation of the Minister of ATR/Head of BPN Number 3 of 2023 concerning electronic land registration does not regulate responsibility for failure to print. Recognition of printed results is a logical consequence of the validity of electronic documents, the integrity and security of which have been guaranteed by the electronic system administrator. This change with the media transfer has a big influence on the validation of measurement letters with inconsistencies that should be in line with the one map policy (one map policy). is a strategic direction in fulfilling one map that refers to one geospatial reference, one standard, one database, and one geoportal at a map accuracy level of 1:50,000 scale, along with the location of fields and the issuance of roads on the physical electronic certificate for the issuance of a policy for creating one single map (one map policy) is that the existing Thematic Geospatial Information (IGT) still overlaps with each other. (ana, 2019)

Law No. 27 of 2022 concerning Personal Data Protection. Data access management limits access to authorized parties only, and applications utilize a multi-layered digital security system (OTP, authentication, encryption, audit logs). Internal oversight and legal sanctions are also in place to prevent and address data misuse or leaks. As in PP 18 of 2021, there is an inconsistency because it is based on Law No. 11 of 2020 or the Job Creation Law and does not mention the UUPA as a reference basis. Although the UUPA is not mentioned as a basis "remembering" according to the UUPA, it is still mandatory

to be a reference. The consideration is that the UUPA contains legal principles as a special law or *lex specialis* while the UUCP is positioned as general law. Consequently, the UUCK cannot contain legal substance that conflicts with the UUPA and the same is the case with PP No. 18 of 2021. This mention results in the lack of harmonization as in Article 19 paragraph (1). Meanwhile, Regulation of the Minister of ATR/Head of BPN No. 3 of 2023 emphasizes electronic documents.

The national legal structure and system seem trapped in the notion of digital transformation, where digital registration processes produce electronic certificates with efficient land registration processes, especially public services, both electronic registration processes, internal and external land registration services, which create friction and gaps between the Basic Agrarian Law and organic regulations under it, such as Government Regulation Number 18 of 2021 concerning Land Registration, and the UUIE and its derivatives, namely the ITE Law/UU, the SPK Law, the Ministerial Regulation, the PBSSN, the Presidential Regulation on the SPBE and the PDP, have the potential to create normative conflicts that require harmonization. Regulatory disharmony between the Basic Agrarian Law (UUPA) as *lex specialis* and the Electronic Information and Transactions Law (UU ITE) as *lex generalis*. Evaluative analysis shows that the UUPA, designed as a specific law to regulate land, has not fully accommodated digital elements such as electronic documents and online transactions, thus creating legal uncertainty. Conversely, the ITE Law as a general law provides a strong foundation for electronic transactions, but is not specific to the agrarian context, thus potentially giving rise to normative conflicts. The UUPA does not explicitly regulate electronic documents or digital systems, leaving the implementation of electronic certificates (as stipulated in the ATR/BPN Regulation No. 3 of 2023) ambiguous. This could create the risk of a legal vacuum, where electronic certificates may not be recognized as conclusive evidence in court, reducing the effectiveness of agrarian law as a social engineering instrument for the people's prosperity, in line with Mochtar Kusumaatmadja's theory.

UUIE as *Lex Generalis* regulates electronic transactions in general, UUPA *Lex specialis* is a special rule, this conflict is also seen in the Regulation of the Minister of ATR/BPN No. 3 of 2023, which refers to the ITE Law without full harmonization with the UUPA, thus giving rise to inconsistencies in the evidentiary power of electronic certificates. The need for regulatory harmonization will ensure that digital agrarian law meets three values according to Gustav Radbruch Certainty, justice and utility, with a focus on clarity in the digitalization of land registration processes as well as electronic system procedures and data protection to prevent social unrest. Of course, changes as in the Law in the Indonesian legal system, the types and hierarchy of laws and regulations are regulated in the provisions of Article 7 and Article 8 of Law No. 12 of 2011 concerning the Formation of Legislation consisting of the 1945 Constitution of the Republic of Indonesia, Decrees of the People's Consultative Assembly Laws/Government Regulations in Lieu of Laws (*perppu*), Government Regulations, Presidential Regulations. Provincial Regulations, and Regency/City Regulations.

The UUPA does not recognize electronic certificates and only regulates physical forms (paper) as authentic evidence, especially regarding the validity of electronic evidence and potential norm conflicts. Government Regulation Number 18 of 2021, a regulation for electronic land administration, does not refer to the UUPA or even to PP 24 of 1997 as the implementing regulation for land registration. One of the Ministerial Regulations for the National Land Agency (BPN) regulates electronic certificates and refers to the UUPA and UUIE. Even derivatives of the UUIE include the UUSPK (Use of Information

and Communication Technology), PP PSTE (State Information System), PBSSN (National Land Agency), Presidential Regulation SPBE (State Information System), and PDP (Public Information and Communication Technology), which are issued separately, namely Regulation of the Cyber and Crypto Agency of the Republic of Indonesia Number 1 of 2024 concerning the Management of Cyber Incidents. Thus, there is overlapping regulations, where electronic document regulations are regulated in Ministerial Regulation Number 3 of 2023. As a mitigation measure, the regulation risks being overturned by the Supreme Court (MA) through a Judicial Review. Because the substance of the regulation does not establish a hierarchy according to the law, it creates legal uncertainty regarding the status of electronic certificates. The issuance of UUTE does not mention "remembering", referring to UUPA as a pillar, UUPA which contains the legal principle of *lex specialist* while UUTE is general law *lex generalis*.

The development of legal material (legal substance) for legislation in Indonesia is an ongoing (never-ending process). One of the main pillars of the national legal system is errors in substance, process and procedure, and legal drafting. These regulatory inconsistencies create legal uncertainty in their implementation. This contradicts the principles of the rule of law, both formally and materially. There are at least three main problematic factors in this area: (Maufiroh, Renata, & Punaningrum, 2021) Overlapping and inconsistencies in laws and regulations, unclear formulation of laws and regulations, and implementation of laws hampered by implementing regulations. The application of digital in electronic certificates and electronic land administration processes requires clarity of the digital identity of legal subjects, the validity of legal objects (such as land), and the reliability of electronically recorded legal data. Legal certainty as needed to be considered in the transformation of the legal system in Indonesia in accordance with the digital context. (Maufiroh, Renata, & Punaningrum, 2021) and development of legal principles that are appropriate to the digital context, ensuring social justice in the use of technology, regulating responsibilities in the digital world, establishing legal ethics in the use of technology, drafting laws that are responsive to technological changes, protecting human rights in the digital world, educating and empowering the community regarding digital law, fair and transparent law enforcement, strengthening legal concepts that are oriented towards shared welfare.

3.2. Implications of Digitalization of Land Registration Processes Affect Legal Certainty and Legal Protection

A digital-based land registration system must be equitable, not only from a formal legal perspective, but also from a perspective of how technology can be accessed and utilized fairly by all levels of society. The law must address the unequal access to technology between urban and rural areas, or between the rich and the poor, to ensure that digital technology does not exacerbate social disparities. The current land registration process requires improvements in the infrastructure for issuing electronic certificates for both physical and legal data. Real-time data synchronization between the central and regional governments prevents overlapping or falsification of data, and increases information transparency for the public. Land business processes have undergone significant elimination, simplification, integration, and automation. Electronic certificates have been legally recognized as equivalent to physical certificates, providing convenience and trust in legal and financing matters. Programs such as the "Sentuh Tanahku" application also provide digital solutions for communities to independently monitor land ownership. (Riswan, 2020)

Article 5 of the ITE Law and the ATR/BPN Ministerial Regulation affirm that Electronic Information and/or Electronic Documents constitute legal evidence recognized by law. The registration process will be more efficient, faster, and more accessible to the public, thus reducing the likelihood of corruption or other abuses of authority.(Maulana and Hashfi, 2024)Article 19 UUPA in conjunction with the Regulation of the Minister of ATR/Head of BPN, electronic certificates are issued through an electronic system whose physical and legal data have been stored in BT-el.(Salim, 2019)The National Cyber and Crypto Agency (BSSN)'s use of cryptography strengthens the security of electronic certificate data, reducing the risk of loss, damage, or theft of physical documents. Data Validity: The use of electronic systems and digital signatures ensures that both physical and legal data are protected, reducing the risk of manipulation. This aligns with the theory that positive law creates certainty.(Retired, 2023)Digitalization offers a counterfeiting resistance solution. E-certificates are protected by digital security technologies (such as encryption, QR codes, and electronic signatures), making them much more difficult to counterfeit than paper certificates. An electronic signature that shows the identity of the person signing the electronic document and the BSRe logo that provides information that the electronic signature uses the Root Certificate Authority from BSRE. Digital data storage by ATR/BPN is carried out using encryption methods and is routinely backed up in the Data Center and DRC functions to save data and duplicate data from the main site to the data center, and is supported by digital signatures encoded using cryptographic calculations, Hash Codes, and QR Codes, its security is guaranteed to be safer than conventional certificates.(Son, 2024)QR Code checking can only be done via the Touch My Land application.

five important aspects to support the reliability and security of implementing an electronic-based government system, namely(Azhar, 2024) **First**, confidentiality aspects can be known/accessed by unauthorized parties, secondly the Authenticity Aspect to ensure certainty that the information presented in the information system comes from legitimate related parties, thirdly the integrity aspect of information is always complete, consistent and protected from damage or threats that can cause changes to the original information data, Fourthly the non-repudiation aspect to ensure that there is no denial by a person or certain party of an action that has been carried out in the use of an information system, and fifthly the Availability Aspect to ensure that data/information is always available. Reliable and secure challenges faced are digital infrastructure itself such as internet availability, internet equality, not having electronic devices, not being able to access. The main challenges of cyber attacks, including data theft, illegal access, and ransomware attacks, can damage the digital land registration system causing major losses for landowners and institutions. Land officers also need special training to operate the digital system properly.(Susantio, 2024)

Digitalization requires strong regulations, including privacy rights, ownership rights, and electronic data-based dispute resolution mechanisms.(Devita)Existing regulations, such as the UUPA (UUPA), UUPK (Using Electronic Certificates), PP PSE (Government Regulation on Electronic Certificates), Perpres SPBE (Presidential Regulation on Electronic Certificates), PBSSN (National Civil Registration Agency), and of course the PBSN of the Republic of Indonesia, are all regulations born from the digital transformation to ensure legal certainty and legal protection for electronic certificate ownership and data security. The National Land Agency (BPN) must prepare technical skills, a basic understanding of how to operate digital devices, use various software and applications, and the ability to adapt to new technologies. Critical thinking, the ability to critically analyze digital information, evaluate arguments and claims encountered online,

and make decisions based on available information.(Indarta, 2024) According to Gustav Rudbruch, the facts that form the basis for determining electronic certificates as proof of land ownership rights must be easy for the community to implement and not burdensome. The rules or regulations that have been implemented are in accordance with legal principles such as the Principle of Legal Certainty (*rechtmatigheid*), the Principle of Legal Justice (*gerechtigheit*), and the Principle of Legal Benefit (*zwechmatigheid* or *doelmatigheid* or *utility*). Based on the terminology of Law No. 11 of 2008 concerning Electronic Information and Transactions (UU ITE) and Government Regulation No. 82 of 2012 concerning the Implementation of Electronic Systems and Transactions (PP PSTE), Article 1 paragraph (2) electronic transactions states that the process carried out in electronic certificates is carried out digitally using computers or electronic media.

Satjipto Rahardjo's opinion is that the law can be tasked with implementing protection that is not only adaptive and flexible, but also predictive and anticipatory for the future.(Rahardjo, 2021)Legal protection (*Rechtsbescherming*) for land rights holders includes preventive and repressive aspects.(Kansil, 1989) Preventive Legal Protection Legal subjects in this preventive legal protection are given the opportunity to submit objections or opinions before a government Decision. Land Mafia Prevention, A transparent, integrated digital system with a clear audit trail complicates the practice of land mafia, which often exploits loopholes in manual processes or physical documents. Data Security Guarantee Through technologies such as Blockchain (in the context of its development discourse) or a strong centralized database security system, ownership data is protected from unauthorized access and changes (data leaks/hacking). Personal Data Protection is an integral part of this legal protection. The Personal Data Protection Law (PDP Law) is the law that regulates personal data protection in Indonesia.(Septia, 2023)Blockchain technology effectively improves the competitiveness of supply chains, providing broad prospects for the application of blockchain technology in supply chain management.(MI Khalis, 2022)

Digital systems that use high-level authentication and encryption (e.g., certified electronic signatures) significantly prevent certificate forgery (analog crime). Integrated database rights overlap prevention and geospatial information systems (GIS) can automatically detect and prevent overlapping rights registrations before new rights are issued. Philipus Hadjon's theory states that the state utilizes technology as an instrument of social control and early prevention of rights violations. Challenges and Repressive Legal Protection Although digitalization improves protection, it also presents new challenges that require an adaptive legal protection framework:(Arafat and Zarisnov, 2025) Legally, digitalization is the embodiment of the principle of Good Public Service (Good Governance), demanding a bureaucracy that is fast, transparent, and free from extortion. Service time standards and electronic complaint mechanisms for data security, data leaks on the responsible Legal Subjects, namely the Ministry of ATR/BPN and the National Land Agency (BPN) of the City and Regency which are positioned as Personal Data Controllers in the land registration system. Legal Sanctions are required for data security failures that can trigger administrative sanctions to criminal sanctions, in accordance with the provisions of the ITE Law and the PDP Law, as well as civil compensation demands by rights owners.

Digitalization requires a Regulation of the Head of the National Land Agency (BPN) or a Government Regulation that specifically regulates the encryption and authentication standards for electronic certificate data. Regular cybersecurity audits of the land

database system are mandatory. Ensure that the law serves as a supporting infrastructure for transformational development, not a barrier to both. To respond to rapid global change, it is necessary to amend the law to avoid disharmony in land registration processes, resulting in fast, efficient, targeted, and accountable regulations, as well as legal certainty and legal protection to protect land ownership rights. The government needs to apply the principle of transformative law, namely not merely functioning the law to maintain order, certainty, and justice, but further adding one function of law as a transformation infrastructure. Regulators and law enforcers progressively change the processes of lawmaking, implementation, and enforcement in line with the real journey of global transformation. (Ahmad M. Ramli, 2022)

4. CONCLUSION

Based on normative and legal analysis the theoretical description and analysis results regarding the implications of digital transformation of the land registration process from an agrarian law perspective, the following conclusions can be drawn: 1) Regulatory disharmony between the Basic Agrarian Law (UUPA) as *lex specialis* and the Electronic Information and Transactions Law (UU ITE) as *lex generalis*. UUPA with the principles of physical certainty and *rechtszekerheid* (legal certainty) with UU ITE as the information technology law for the certainty of electronic systems and electronic documents that focuses on data efficiency and digital authentication. Digital land registration is available overlapping regulations, especially UU ITE, UUSPK, PP PSTP, PBBSSN, Presidential Decree SPBE as a digital legal umbrella PP 24 of 1997 and Regulation of the Minister of ATR/Head of BPN Number 3 of 2023 concerning the Issuance of Electronic Documents in Land Registration Activities (hereinafter referred to as Regulation of the Minister of ATR/Head of BPN 3 of 2023) technical implementation of the electronic land registration process. Explicitly harmonized regulations on electronic certificates as an authentic form of land registration can eliminate overlapping, disharmonization and dualism of regulations as well as legal vacuums, ensure legal certainty for land ownership rights, and increase legal protection for the validity of legal objects, namely land. 2) The digitalization of land registration requires a reliable and secure information technology infrastructure. This reliability, in terms of technology, encompasses servers, networks, data centers, and human resources, embodies the principles of good public service (good governance). The resulting digital innovations, which lead to changes in structures, values, and processes, must be implemented positively, clearly, and consistently to avoid multiple interpretations of regulations. A positional infrastructure or ecosystem is required. Legal protection theory and legal theory as the infrastructure of Indonesia's transformation, especially in the process of land registration with an electronic system that issues certificates from analog to e-certificates. The ministry's electronic system administration will be responsible for the reliable and safe operation of the Electronic System.

5. REFERENCES

Journals:

- Adinegoro, Kurnia Rheza Randy. Analisis transformasi digital layanan publik pertanahan: Hak tanggungan elektronik pada Kementerian Agraria dan Tata Ruang. *Jurnal Administrasi Publik*, 2023, 19.1: 26-49.
- Antoine, Revalina Annisa, et al. Pelaksanaan Pendaftaran Tanah Pertama Kali Menjadi Hak Milik. *JURNAL ILMIAH NUSANTARA*, Vol 2, 2025.

- Aulani, Intan Rifka; Rosiah, Kholis. Peranan Pejabat Pembuat Akta Tanah dalam Pelaksanaan Transformasi Digital Layanan Pertanahan melalui Sertipikat Tanah Elektronik. *Legal Standing: Jurnal Ilmu Hukum*, Vol 9 2025.
- Elkas, W. D., Pujiwati, Y., & Nugroho, B. D. (2023). pada masyarakat adat Minangkabau. *ACTA DIURNAL Jurnal Ilmu Hukum Kenotariatan*, Vol 7, 2023
- Erwin, E., Pasaribu, A. W., Novel, N. J. A., Thaha, A. R., Adhicandra, I., Suardi, C., ... & Syafaat, M. (2023). *Transformasi Digital*. PT. Sonpedia Publishing Indonesia
- Esmi Warassih, "Implementasi Kebijakan Pemerintah melalui Peraturan Perundang-Undangan dalam Perspektif Sosiologis", *Desertasi, Surabaya: Program Pascasarjana Universitas Airlangga*, 1991, p. 85, Academia Edu.
- Ian Aries Mujiburohman, (2021), Transformasi dari Kertas ke Elektronik: Telaah Yuridis dan Teknis Sertipikat Tanah Elektronik, *BHUMI: Jurnal Agraria dan Pertanahan*, Volume 7 Nomor 1, p. 57-67 dan Akur Nurasa & Dian Aries Mujiburohman, (2020), Pemeliharaan Data Pendaftaran Tanah, Yogyakarta: STPN Press.
- Jaap Zevenbergen, (2004), A systems approach to land registration and cadastre." *Nordic journal of surveying and real estate research*, Volume 1 No. 1, p. 11-24.
- Julyano, Mario; Sulistyawan, Aditya Yuli. Pemahaman terhadap asas kepastian hukum melalui konstruksi penalaran positivisme hukum. *Crepido*, 2019, 1.1: 13-22.
- Moho, Hasaziduhu, Penegakan Hukum Di Indonesia Menurut Aspek Kepastian Hukum, Keadilan dan Kemanfaatan. *Warta Dharmawangsa*, 13(1).
- Muhamad Amirulloh (et.al), "Strengthening The Independent Execution Of The Rulings Of The National Arbitration Body Based On Legal Principles And Theories", *Journal of Legal, Ethical and Regulatory Issues* Volume 25, Issue 1, 2022.
- Muhamad Amirulloh dan Vidya Noor Rachmadini, "Legal Certainty in the Use of Certification of Trustworthiness by Indonesian E-Commerce Business", *Central European Journal of International and Security Studies* 12, no. 4: 564–575, 2018.
- Ramli, T. S., Ramli, A. M., Budhijanto, D., Permata, R. R., Adolf, H., Damian, E., & Palar, M. R. A. (2019). Prinsip-prinsip Cyber law Pada Media Over The Top E-Commerce Berdasarkan Transformasi Digital Di Indonesia. *Jurnal Legislasi Indonesia*, 16(3), 392-398.
- Rizky Syahputra, "Hukum Agraria Dan Kebijakan Agraria Di Indonesia", *Court Review: Jurnal Penelitian Hukum*, Volume 3, No. 4, p. 27, 2023.
- Rommy Haryono Djojarahardjo, "Mewujudkan Aspek Keadilan Dalam Putusan Hakim Di Peradilan Perdata", *Jurnal Media Hukum dan Peradilan Program Pascasarjana Universitas Sunan Giri Surabaya*, Volume 88, No. 100, p. 94, 2021.
- Sefudin, A., & Darwin, M. (2020). Perbandingan teori disrupsi pada marketing di era industri 4.0 menurut hermawan Kartajaya dan Rhenald Kasali. *KOMITMEN: Jurnal Ilmiah Manajemen*, 1(2), 25-39.
- Satriyo Ardi dan Bha'iq Roza, "Efektivitas Pendaftaran Tanah Sertipikat Elektronik Aset Pemerintah", *UMPurwokerto Law Review*, Volume 4, No. 2, 2023, p. 314-315.

Books:

- Badrudin, S., Halim, P., & Ismowati, M. (2022). *Transformasi Digital Dalam Pelayanan Publik*. zahir publishing.
- Elita ahmi, *Hukum Pertanahan Dalam Sistem Hukum Indonesia*, Unpad Press.
- Abdulkadir Muhammad. *Hukum dan Penelitian Hukum*, Bandung: Citra Aditya Bakti, 2004.
- Adrian Sutedi, *Peralihan Hak Atas Tanah dan Pendaftarannya*, Jakarta:Sinar Grafika,2008.
- Adrian Sutedi, *Sertifikat Hak Atas Tanah*, Jakarta: Sinar Grafika, 2012

- Ahmad M. Ramli, Tasya Safiranita Ramli, *Hukum sebagai Infrastruktur Transformasi Indonesia Regulasi dan Kebijakan Digital*, Repika Aditama, Bandung, 2022.
- Amiruddin dan Zainal Asikin, *Pengantar Metode Penelitian Hukum*, PT Raja Grafindo Persada, Jakarta, 2004.
- Bagir Manan, *Pertumbuhan dan Perkembangan Konstitusi Suatu Negara*, Bandung: Mandar Maju, 1995.
- Bernhard Limbong, *Politik Pertanahan*, Margaretha Pustaka, Jakarta: 2014.
- Boedi Harsono, (2002). *Hukum Agraria Indonesia, Sejarah Pembentukan Undang-Undang Pokok Agraria, Isi dan Pelaksanaannya*, Hukum Tanah Nasional, Jakarta: Jambatan,
- Djuhaendah Hasan, *Lembaga Jaminan Kebendaan Bagi Tanah Dan Benda Lain Yang Melekat Pada Tanah Dalam Konsepsi Penerapan Asas Pemisahan Horizontal*, Jakarta: Nuansa Madani, 2011.
- Elisabeth Nurhaini Butar-butar. (2018). *Metode Penelitian Hukum, Langkah-Langkah Untuk Menemukan Kebenaran Dalam Ilmu Hukum*, Bandung: Refika Aditama,
- H. M. Arba, (2015). *Hukum Agraria Indonesia*, Sinar Grafika, Jakarta,
- _____, (2016). *Hukum Agraria Indonesia*, Jakarta: Sinar Grafika,
- Imamulhadi, (2017). *Ikhtisar Ilmu Hukum*, K-Media, Yogyakarta,
- Lili Rasjidi 7 Ira Thania Rasjidi. (2018). *Pengantar Filsafat Hukum edisi revisi ke-7*. Jakarta: Bandar Maju.
- Lili Rasjidi, Liza Sonia Rasjidi, (2019). *Dasar-Dasar Filsafat dan Teori Hukum*, Citra Aditya Bakti, Bandung,
- M Soerjono Soekanto, (2006). *Pengantar Penelitian Hukum*, Jakarta: UI- Perss,
- Maria SW. Soemardjono, (2000). *Hukum Pertanahan Dalam Berbagai Aspek*, Medan: Bina Cipta Media,
- Nia Kurniati, (2016). *Hukum Agraria Sengketa Pertanahan Penyelesaian Melalui Arbitrase dalam Teori dan Praktik*, Bandung: Refika Aditama,
- Otje Salman & Eddy Damian, (2013). *Kumpulan Karya-Karya Tulis Mochtar Kusumaatmadja: Konsep-Konsep Hukum Dalam Pembangunan*, PT. Alumni, Bandung,
- Peter Mahmud Marzuki. (2008). *Pengantar Ilmu Hukum*, Kencana, Jakarta,
- Ronny Haniatjo Soemitro, (1990). *Metode Penelitian Hukum dan Jurumetri*, Jakarta: PT Ghalia Indonesia,
- Satjipto Rahardjo, (2012). *Ilmu Hukum*, Citra Aditya Bakti: Bandung,
- Sonny Keraf, (1998). *"Etika Bisnis Tuntunan dan Relevansinya"*, Kanisius, Yogyakarta,
- Sri Warijayati, (2018). *Memahami Dasar Ilmu Hukum Konsep Dasar Ilmu Hukum*, Prenamedia Group Divisi Kencana, Jakarta,
- Urif Santoso, (2010). *Pendaftaran Dan Pengalihan Hak Atas Tanah*, Jakarta: Kencana,
- Santoso, (2010). *Hukum Agraria & Hak-Hak Atas Tanah*, Jakarta: Kencana,
- Santoso, (2005). *Hukum Agraria dan Hak-hak Atas Tanah*, Jakarta: Prenada Media,
- Soerjono Soekanto, (1984). *Pengantar Penelitian Hukum: Cetakan ke-3*, Jakarta: UI Press,
- Soerjono Soekanto & Sri Mamudi, (2003). *Penelitian Hukum Normatif: Suatu Tinjauan Singkat*, Jakarta: PT. Raja Grafindo Persada,
- Sri Warijayati, (2018). *Memahami Dasar Ilmu Hukum Konsep Dasar Ilmu Hukum*, Prenamedia Group Divisi Kencana, Jakarta,

Internet:

<https://djsppr.atrbpn.go.id/ptsl>, [accessed on 25/06/2025].

<https://www.atrbpn.go.id/sentuh-tanahku>, [accessed on 25/06/2025].

https://badilum.mahkamahagung.go.id/upload_file/img/article/doc/kajian_deskriptif_analisis_teoris_hukum_pembangunan.pdf [accessed on 22 August 2025]

Moh. Mahfud MD, "Penegakan Hukum Dan Tata Kelola Pemerintahan Yang Baik, Bahan pada Acara Seminar Nasional: Saatnya Hati Nurani Bicara" yang diselenggarakan oleh DPP Partai HANURA, Mahkamah Konstitusi Jakarta, 8 January 2009.

Prasetyo, Agung; Poli, Arnold. Implementation of the Self-Data Integration Utility Program (Free Bag) in Population Administration Services at the Population and Civil Registration Service of Palu City, Central Sulawesi Province. 2025. Phd thesis. Institute of Domestic Government.

Technical Instructions for Procedures for Issuing Electronic Certificates Version 1.0 Number 3/JUKNIS-HR.02/III/2024, March 1, 2024

Regulation:

Indonesian Constitution of 1945;

Law No. 5 of 1960 concerning Basic Agrarian Regulations;

Law No. 11 of 2008 concerning Electronic Information and Transactions;

Law No. 6 of 2023 concerning the Stipulation of Substitute Government Regulations;

Law No. 1 of 2022 concerning the Job Creation Law;

Government Regulation Number 24 of 1997 concerning Land Registration;

Government Regulation Number 18 of 2021 concerning Management Rights, Land Rights, Apartment Units, and Land Registration;

Presidential Regulation Number 47 of 2020 concerning the Ministry of Agrarian Affairs and Spatial Planning;

Presidential Regulation Number 48 of 2020 concerning the National Land Agency;

Regulation of the Minister of State for Agrarian Affairs, Head of the National Land Agency Number 3 of 1997 concerning implementing provisions;

Regulation of the Minister of Agrarian Affairs and Spatial Planning Head of the National Land Agency Number 16 of 2020 concerning the Organization and Work Procedures of the Ministry of Agrarian Affairs and Spatial Planning of the National Land Agency;

Regulation of the Minister of Agrarian Affairs and Spatial Planning of the Head of the National Land Agency Number 17 of 2020 concerning the Organization and Work Procedures of the Regional Offices of the National Land Agency and the Land Office;

Regulation of the Minister of Agrarian Affairs and Spatial Planning/Head of the National Land Agency Number 3 of 2023, concerning the Issuance of Electronic Documents in Land Registration Activities.

Interview:

Results of an Interview with Fadhl Dzikri Muhammad, ST, as an Associate Expert Cadastral Arranger at the Ministry of ATR/BPN, Center for Data and Information Technology, on October 6, 2025.

Results of an interview with Dian Prihanto, one of the staff of Johan Kaedi, the first Expert Land Arrangement Officer of the ATR/BPN Land Agency of Bandung City, September 2, 2025.

Results of an interview with Elsy Javanka as a Land Deed Making Officer based in Bandung City, on October 3, 2025.