



Electronic Land Certificates as Evidence of Ownership: An Analysis under Indonesian Civil Procedure Law

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ABSTRACT

This study aims to analyse the implementation of electronic land certificates in Indonesia and their role within the civil procedural law framework, particularly in strengthening legal certainty and protection for landowners. The research further seeks to identify challenges associated with electronic certification, such as data security risks and potential disputes, and to explore strategies for enhancing trust and reliability in the electronic certificate system. Employing a normative legal research method, this study relies on statutory and conceptual approaches. Primary legal sources include relevant legislation, notably the Agrarian Affairs and Spatial Planning/National Land Agency (ATR/BPN) Regulation No. 3 of 2023 on the issuance of electronic certificates, as well as the ITE Law. Secondary and tertiary sources, including scholarly literature and legal dictionaries, are used to provide interpretive depth and contextual analysis. The findings reveal that electronic certificates are legally recognized as valid evidence, bearing equal probative value to physical certificates in civil litigation. Their introduction enhances administrative efficiency, reduces risks of loss, forgery, and corruption, and promotes transparency in land management. Legal protection for certificate holders is provided through consumer rights, personal data protection regulations, and safeguards against cybercrime. However, implementation faces obstacles related to infrastructure readiness, regulatory harmonization, cyber security threats, and limited public awareness. In conclusion, the transition toward electronic land certification represents a significant step in digitalizing public administration, reinforcing legal certainty, and fostering efficiency in land registration. Nevertheless, sustained efforts are required to strengthen security protocols, enhance legal frameworks, and promote public trust through socialization and education programs. The contribution of this study lies in offering a comprehensive legal analysis of electronic land certificates as instruments of evidence in civil proceedings, while also providing practical insights for policymakers, legal practitioners, and stakeholders in advancing a more secure and transparent land administration system.

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INTRODUCTION

The rapid advancement of information and communication technology has transformed nearly all aspects of human activity, including legal and administrative practices (Law et al., 2020). In the context of land law in Indonesia, one of the most significant innovations is the introduction of electronic land certificates, which serve as digital evidence of ownership in place of traditional paper-based certificates (Syarief, 2021). This transformation reflects the government's broader digitalization agenda, aimed at improving public service delivery, reducing inefficiencies, and strengthening legal certainty in civil matters (Latupeirissa et al., 2024). However, despite its potential, the implementation of electronic land certificates raises fundamental legal, technical, and social questions that require critical scholarly attention (Haspada, 2025).

Land has always been a highly sensitive issue in Indonesia, both socially and economically. The possession of land certificates is crucial because they serve as formal proof of ownership recognized by the state and upheld in judicial processes (Nikmah & Azhar Siregar, 2025). Traditionally, physical certificates have fulfilled this role; yet, they are vulnerable to loss, destruction, and forgery, often giving rise to land disputes, fraud, and the activities of so-called "land mafias" (Bachriadi & Aspinall, 2023). In this regard, the digitalization of certificates represents a paradigm shift designed to address long-standing weaknesses in the paper-based system (Khanh et al., 2024). Through electronic documentation supported by security technologies such as encryption, hash codes, QR codes, and electronic signatures, the government aspires to create a more secure, efficient, and transparent land administration system.

Nevertheless, the transition to electronic land certification is not without challenges. From a legal perspective, questions arise regarding its evidentiary value in civil proceedings, the adequacy of existing legal frameworks, and the extent of protection offered to landowners in cases of disputes or cyberattacks (Peráček & Kaššaj, 2025; Wu & Lu, 2024). Technically, the resilience of digital infrastructure, the reliability of data security mechanisms, and the risk of system manipulation are issues of concern (Salvi et al., 2022). Socially, public skepticism and limited digital literacy may hinder widespread acceptance of electronic certificates (AbdulKareem & Oladimeji, 2024). These intersecting challenges underscore the urgency of evaluating the role of electronic certificates within the framework of civil procedural law, which ultimately determines their legitimacy and practical enforceability in the courtroom (Awaishah, 2025).

The urgency of this study derives from two interrelated factors: the increasing prevalence of land disputes and the government's ambitious push toward digital governance. Land disputes remain one of the most frequent legal cases brought before Indonesian courts, often involving contested certificates, unclear ownership histories, and fraudulent practices. Such disputes not only burden the judiciary but also undermine investor confidence and economic development. By replacing vulnerable paper certificates with secure digital documents, electronic certification promises to reduce fraudulent claims and enhance the reliability of land records.

At the same time, the government of Indonesia has prioritized digital transformation as part of its strategy to improve the ease of doing business, particularly in the land sector. The issuance of electronic certificates through the Ministry of Agrarian Affairs and Spatial Planning/National Land Agency (ATR/BPN) is expected to streamline procedures, cut bureaucratic inefficiencies, and align with global best practices in e-governance. Failure to rigorously assess the legal implications of this innovation could create uncertainty, undermining

the very goals of modernization. Hence, a comprehensive legal analysis is not only timely but also necessary to ensure that electronic certificates function effectively as instruments of evidence within the civil procedural framework.

Preliminary legal observations indicate that electronic certificates have been granted formal recognition under several statutory provisions, most notably the ITE Law and the ATR/BPN regulations. These provisions affirm that electronic documents, when properly authenticated, possess equal evidentiary power to physical documents. However, practical implementation remains inconsistent across regions, and questions persist regarding judicial acceptance of electronic evidence, particularly in complex land disputes. Early assessments suggest that while electronic certificates enhance efficiency and reduce administrative risks, they also expose landowners to new vulnerabilities, especially in relation to cybersecurity threats. These observations highlight the importance of developing robust safeguards and adaptive legal frameworks to support the digital transition.

Previous studies on land certification in Indonesia have largely concentrated on the vulnerabilities of the paper-based system, emphasizing issues such as document forgery, overlapping claims, and bureaucratic corruption (Aditya et al., 2021; Pramudya et al., 2022). More recent scholarship has explored the potential of electronic certificates, often presenting optimistic assessments of their capacity to resolve long-standing administrative inefficiencies (Karopoulos et al., 2021). However, much of this research remains descriptive, focusing on regulatory frameworks or technological aspects without sufficiently addressing the evidentiary role of electronic certificates in civil procedural law.

The existing literature tends to overlook several critical questions: To what extent can electronic certificates withstand scrutiny in court as conclusive evidence of ownership? How does the legal framework reconcile the intangible nature of electronic documents with the procedural requirements of civil litigation? What protections are afforded to landowners in cases of disputes involving cybercrime or system manipulation? (Haspada, 2025; Hung, 2024; Ontanu, 2022). These gaps are particularly significant because the judiciary's stance ultimately determines the effectiveness of electronic certificates as instruments of legal certainty.

This research distinguishes itself by directly addressing these gaps through a normative legal analysis that integrates statutory provisions, conceptual frameworks, and doctrinal interpretation. Unlike earlier studies that focus on administrative efficiency or technological innovation, this article centers on the legal evidentiary dimension of electronic certificates within civil proceedings. In doing so, it provides a more comprehensive understanding of their practical and juridical significance.

The stance of this research is both supportive and critical. It supports the introduction of electronic certificates as a progressive step toward digital governance and acknowledges their potential to enhance efficiency, transparency, and legal certainty. At the same time, it critically examines the current regulatory framework, highlighting areas where legal provisions remain insufficient to address emerging risks. In particular, this study debates the assumption commonly found in previous scholarship that the mere digitalization of certificates automatically guarantees security and reliability. By scrutinizing both strengths and weaknesses, the research contributes to a balanced perspective that supports the policy direction while urging refinements in implementation and legal safeguards.

Based on the above context, the primary objectives of this research are threefold. First, to analyze the implementation of electronic land certificates in Indonesia and their role as instruments of legal protection for landowners. Second, to assess the evidentiary value of electronic certificates in civil procedural law, identifying both strengths and limitations. Third, to propose recommendations for strengthening the legal and institutional framework governing electronic certification, thereby enhancing public trust and mitigating risks associated with digital transformation.

METHODS

This research adopts a normative legal research approach, also referred to as doctrinal legal research, which emphasizes the analysis of written legal norms, statutory provisions, and doctrinal interpretations (Soerjono Soekanto, 2004). Unlike empirical legal research, which focuses on the law in action, normative research examines the law in its formal textual manifestation and evaluates its coherence, consistency, and applicability. This approach is considered appropriate because the study investigates the legal recognition, evidentiary value, and protective role of electronic land certificates within the framework of Indonesian civil procedural law.

Research stages

The research process followed several systematic stages:

1. Identification of legal issues

The first stage involved formulating the central legal questions, namely: (a) how electronic land certificates are implemented in Indonesia and their role as instruments of legal protection, and (b) how their status as electronic documents affects their admissibility and strength as evidence in civil proceedings.

2. Collection of legal materials

Legal sources were classified into three categories:

- a. Primary legal sources, consisting of binding regulations such as Law No. 5 of 1960 on Basic Agrarian Principles (UUPA), Law No. 19 of 2016 on Electronic Information and Transactions (ITE Law), and Ministerial Regulations of ATR/BPN No. 1 of 2021 and No. 3 of 2023 concerning electronic certificates.
- b. Secondary legal sources, including academic writings, journal articles, books, and previous research that analyze land registration, electronic transactions, and civil procedural law (e.g., Yudistira & Santoso, 2010; Bayu Aji et al., 2024).
- c. Tertiary legal sources, such as legal dictionaries and encyclopedias, which support the clarification of terms and concepts.

3. Legal analysis

The analysis was carried out using three normative approaches:

- a. Statute approach, examining statutory provisions and their interrelation in regulating electronic certificates.
- b. Conceptual approach, analyzing theoretical constructs of evidence, legal certainty, and digital documentation.
- c. Comparative and evaluative analysis, contrasting the Indonesian framework with broader principles of civil evidentiary law to identify strengths and weaknesses.

4. Synthesis and interpretation

The findings from legal sources were systematically interpreted to assess whether electronic land certificates provide equal probative value to physical certificates, how civil courts may treat such documents, and what legal protections are afforded to certificate holders.

5. Data analysis technique

The research employed qualitative legal analysis, emphasizing logical reasoning, systematic interpretation, and doctrinal consistency (Rusli, 2006). Data were not quantified but categorized and critically evaluated. The analysis relied on the hermeneutic method of legal interpretation to reconcile statutory texts with practical concerns of implementation. The validity of the findings was strengthened through triangulation of primary statutes, judicial doctrines, and scholarly commentary.

6. Methodological modification

While conventional normative legal research focuses primarily on statutory and doctrinal analysis, this study incorporated a policy-oriented dimension by evaluating the practical challenges of implementing electronic certificates, such as cybersecurity risks and public trust. This modification ensures that the research not only addresses legal theory but also offers recommendations for regulatory refinement, thereby bridging the gap between normative analysis and policy implications.

RESULTS AND DISCUSSION

Implementation of Electronic Certificates in Indonesia and Their Role in Legal Protection Transformation of Land Registration Practices

Land registration in Indonesia has historically been a complex and paper-based process, managed by the National Land Agency and its regional offices. It involves continuous and systematic activities of collecting, processing, documenting, and storing both physical and legal data related to land parcels and property units (Abdulai & Ochieng, 2017; Boone, 2019). Traditionally, the outcome of this process has been a physical land certificate, which serves as official proof of ownership and has binding authority in judicial proceedings.

The legal framework for land registration is deeply rooted in the Basic Agrarian Law (UUPA) of 1960 and has evolved through subsequent regulations, including Government Regulation No. 10 of 1961, Government Regulation No. 24 of 1997, and most recently, Government Regulation No. 18 of 2021. These regulations consistently affirm the state's role in guaranteeing legal certainty and protection for landowners. In essence, a certificate of ownership functions not only as an administrative document but also as a legal safeguard, ensuring that ownership rights are recognized and enforceable in court.

However, the reliance on physical certificates has long posed significant vulnerabilities (Islam et al., 2019). They are susceptible to theft, loss, damage by natural disasters, and forgery. Cases of overlapping claims, fabricated certificates, and fraudulent transfers have fueled widespread distrust in the land administration system (Andon & Free, 2025). This reality has been exploited by land mafias, resulting in prolonged disputes and undermining public confidence. The urgency to modernize the system became apparent, particularly as Indonesia sought to improve governance, transparency, and its global ranking in the Ease of Doing Business index.

The Introduction of Electronic Certificates

In 2021, the Ministry of Agrarian Affairs and Spatial Planning/National Land Agency (ATR/BPN) introduced electronic certificates through Ministerial Regulation No. 1 of 2021, later refined under Ministerial Regulation No. 3 of 2023. These regulations established the legal basis for replacing paper-based certificates with digital documents. The e-certificates are securely stored in digital vaults, authenticated by electronic signatures of authorized officials, and accessible through official applications such as *Sentuh Tanahku*.

This digital transformation was envisioned as a strategic solution to long-standing inefficiencies and security gaps. The use of encryption, QR codes, hash codes, and electronic signatures provides enhanced protection against falsification and unauthorized alteration. Additionally, the system incorporates rigorous validation mechanisms, requiring cadastral data and land books to undergo accuracy checks before the issuance of an e-certificate. This ensures that every digital document aligns with the official registry, thereby strengthening its legitimacy as legal evidence. Another key feature of the digital system is its self-updating mechanism. Any alteration or update to land data triggers the issuance of a new version of the certificate, automatically invalidating earlier editions. This dynamic system prevents inconsistencies and ensures that the data presented in disputes or transactions is always current and verifiable.

Benefits for Legal Protection

The introduction of electronic certificates has reinforced legal protection in several ways:

1. Increased certainty – By minimizing risks of forgery and duplication, e-certificates provide stronger assurance to landowners and reduce opportunities for fraudulent claims.
2. Administrative efficiency – Digital documentation streamlines processes, reducing bureaucracy and saving time for both officials and citizens.
3. Disaster resilience – Unlike physical certificates, which may be lost or destroyed, e-certificates stored in secure digital vaults remain accessible regardless of physical events.
4. Transparency and accountability – The digital system enables real-time monitoring and auditing, reducing opportunities for corruption within land administration offices.
5. In short, e-certificates represent a paradigm shift in Indonesian land law, aligning the system with modern governance principles and strengthening the state's capacity to uphold legal certainty.

Legal Protection for Holders of Electronic Certificates: Disputes, Cybersecurity, and Trust Equal Recognition in Civil Law

A central finding of this research is that electronic land certificates enjoy the same legal standing as physical certificates in civil litigation. This parity is enshrined in ATR/BPN Regulation No. 3 of 2023, which explicitly affirms that ownership rights do not depend on the physical form of documentation but rather on their conformity with the official land registry. Courts are thus required to recognize e-certificates as admissible and binding evidence in disputes.

This recognition reflects the broader legal principle of functional equivalence, which holds that electronic documents can serve the same functions as paper documents when equipped with reliable security features. In practice, this means that a digitally signed e-certificate can be presented in court with the same probative force as its physical counterpart.

Multi-Layered Legal Protection

Holders of e-certificates are protected under multiple legal regimes:

1. Civil procedural law guarantees that certificates serve as binding evidence of ownership.
2. Consumer protection law (Law No. 8 of 1999) entitles landowners to accurate, transparent, and fair information about digital services, ensuring they are not disadvantaged as users of electronic systems.
3. Personal data protection law (Law No. 27 of 2022) obliges BPN to safeguard ownership data, addressing concerns about data breaches and unauthorized exploitation.
4. Cybersecurity regulations overseen by the National Cyber and Encryption Agency (BSSN) ensure the integrity of digital signatures and protect documents against manipulation.
5. Together, these regimes establish a strong legal foundation, although practical enforcement remains an ongoing challenge.

Emerging Challenges

Despite these advances, implementation is hindered by several obstacles:

1. Cybersecurity vulnerabilities – The risk of hacking, phishing, and system breaches remains a major concern. Although encryption and authentication systems are in place, no digital infrastructure is entirely immune to attack.
2. Judicial adaptation – Judges and legal practitioners must adjust to the use of digital evidence. Without sufficient training and precedents, inconsistencies may arise in how courts interpret and weigh e-certificates.
3. Unequal infrastructure – Not all regions of Indonesia have adequate digital capacity. In rural or remote areas, lack of access to reliable internet and technology may exclude landowners from effectively using e-certificates.
4. Public skepticism – Many landowners still prefer tangible documents, perceiving digital certificates as abstract and less trustworthy. Building public confidence remains a significant hurdle.

Strategies to Enhance Trust and Security

To address these challenges, several strategies are necessary:

1. Strengthening technological infrastructure – Investments in cybersecurity, including advanced encryption, blockchain integration, and multi-factor authentication, are critical to safeguard the system.
2. Capacity building in the judiciary – Training programs for judges, lawyers, and notaries are needed to standardize the interpretation and acceptance of e-certificates in litigation.
3. Public education campaigns – Outreach programs can familiarize citizens with the safety features of e-certificates, dispelling fears and promoting digital literacy.
4. Regulatory refinement – Continuous updates to legal frameworks should clarify dispute-resolution mechanisms and provide clear guidelines for handling cyber-related incidents.
5. These measures would not only reinforce security but also build trust, which is essential for the long-term success of digital land certification.

Comparative Perspectives and Gap Analysis

Experiences from other jurisdictions provide useful benchmarks. For instance, Singapore has fully digitized its land registration system under the Singapore Land Authority, using electronic titles as exclusive proof of ownership. Similarly, Estonia has integrated blockchain technology into its property registry, enhancing transparency and resistance to tampering. These models illustrate that digital land certification can be highly effective, provided that security infrastructure, legal frameworks, and public trust are adequately developed.

Compared to these countries, Indonesia's system remains in its early stages. While regulatory recognition has been established, gaps remain in enforcement, infrastructure, and public acceptance. Unlike Singapore's centralized and technologically mature system, Indonesia must contend with disparities in regional capacity and a larger population with varying levels of digital literacy.

Previous studies on Indonesian land certification have largely emphasized administrative efficiency or technological potential. However, they often overlook the critical role of e-certificates as legal evidence in civil disputes. This research fills that gap by highlighting the evidentiary dimension, examining not only the legality of e-certificates but also their enforceability in practice. It shows that legal certainty is not guaranteed by digitalization alone; it requires judicial adaptation, regulatory coherence, and societal trust.

Implications for Civil Procedural Law and Legal Certainty

From the perspective of civil procedural law, the recognition of e-certificates as valid evidence strengthens the principle of legal certainty (*rechtszekerheid*). It ensures that ownership rights are protected not only administratively but also judicially (Haspada, 2025; Syarief, 2021). However, this certainty is conditional. It depends on the ability of institutions to safeguard digital systems, the readiness of courts to interpret electronic documents consistently, and the willingness of society to embrace intangible legal instruments.

Legal certainty in this context is therefore dynamic rather than absolute. It requires continuous monitoring, regulatory refinement, and technological upgrading. Importantly, it also requires cultural change both within legal institutions and among the public to accept digital documentation as trustworthy evidence.

CONCLUSION

The adoption of electronic land certificates marks a transformative step in Indonesia's land administration system. By replacing conventional paper-based documents with secure digital certificates, the government has enhanced administrative efficiency, reduced the risks of loss and forgery, and strengthened transparency in land governance. Legally, e-certificates have been granted equal probative value to traditional certificates in civil proceedings, ensuring their enforceability as evidence of ownership. However, the effectiveness of this innovation depends on the robustness of its supporting infrastructure, regulatory clarity, and public acceptance. Although laws governing public services, consumer protection, and data privacy provide a strong legal foundation, continuous monitoring and refinement are necessary to guarantee security and reliability. Public trust, in particular, must be nurtured through education, transparency, and consistent enforcement. In sum, electronic land certification offers significant potential to reinforce legal certainty and protect ownership rights, but its success requires sustained legal, institutional, and technological commitment.

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