



## Original Article

# Legal Certainty Dynamics of Land Rights in Electronic Transactions and the Implementation of Digital Land Certificates in Indonesia

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## Abstract:

The evolution of land administration in Indonesia has entered a transformative phase marked by the integration of digital technologies, particularly in the form of electronic transactions and digital land certificates. This study aims to explore the legal certainty surrounding land rights within the framework of Indonesia's digitalization efforts in the agrarian sector. Utilizing a qualitative methodology through a library research approach, the study examines legal doctrines, regulatory frameworks, academic discourse, and comparative legal systems to analyze the implications of electronic land certification. The research highlights the dualistic nature of progress and challenge—while digital systems promise efficiency, transparency, and broader access to legal rights, they also raise questions of data security, authentication, regulatory readiness, and potential legal conflicts between conventional and electronic documentation. The study finds that the success of digital land certification relies heavily on the harmonization of existing land laws, the establishment of a robust legal infrastructure, and the consistent application of principles ensuring legal certainty. Furthermore, the transition demands institutional commitment, cross-sectoral coordination, and public trust in the reliability of electronic systems. In conclusion, legal certainty in the context of electronic land transactions in Indonesia is attainable, but only through a comprehensive, systematic, and inclusive legal transformation supported by technological integrity and public policy reform.

**Keywords:** Legal Certainty, Land Rights, Digital Land Certificate, Electronic Transactions, Indonesia



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## Introduction

The digitalization of land administration systems is reshaping legal frameworks across jurisdictions, particularly in emerging economies like Indonesia. The introduction of electronic transactions and digital land certificates is intended to enhance transparency, reduce land disputes, and increase public trust in the legal

system ([Hadi, 2022](#)). These changes align with global trends where technology integration in land governance promotes efficiency and legal security ([Kusmiarto et al., 2021](#)).

However, the digital transformation in land certification also introduces new legal and technical challenges. Issues such as data privacy, cybersecurity, digital identity authentication, and interoperability of digital systems raise questions about the legal certainty of land rights in digital platforms ([Wu & Zhang, 2023](#)). In Indonesia, the Presidential Regulation No. 86/2018 and Ministerial Regulation No. 1/2021 aim to provide legal support for these innovations, but inconsistencies in implementation at the regional level undermine their effectiveness ([Krisnantoro, 2024](#)).

Despite a growing body of literature examining digital transformation in land governance, most studies focus on the technical feasibility or institutional readiness, rather than the core issue of legal certainty in digital land transactions ([Adinegoro & Swahyuni, 2024](#)). There remains a lack of comprehensive analysis on how digital land certification impacts the legal certainty of land ownership, especially within Indonesia's unique socio-legal landscape. Furthermore, research on the actual performance and legal ramifications of digital land certificates in practice remains sparse ([Suryani BRM & Saly, 2024](#)).

Legal certainty is a constitutional mandate in Indonesia and a foundational principle of property rights. Insecure land ownership directly affects investment, social welfare, and economic development ([Huntington & Shenoy, 2021](#)). With the government aiming to digitize all land certificates by 2025, a timely legal analysis is critical to avoid a regulatory vacuum that could lead to increased land disputes, fraud, or marginalization of land holders lacking digital literacy ([Krisnantoro, 2023](#)).

Legal certainty refers to the principle that laws must be clear, known, and applied consistently, enabling individuals to regulate their conduct with confidence. In the context of land law, it implies predictable enforcement of ownership rights, transparent adjudication processes, and credible mechanisms for dispute resolution ([Juwana, 2003](#)). In digital environments, legal certainty becomes even more critical due to the challenges posed by data manipulation, system errors, and lack of physical documentation.

Electronic transactions involve the digitization of land registration, verification, and transfer mechanisms through government portals and secure systems. These transactions are governed by the Indonesian Electronic Information and Transactions Law (ITE Law) and associated land regulations. However, many legal issues arise in electronic land transfers, including electronic signatures, proof of ownership, and legal enforceability of digital documents ([Marquez et al., 2024](#)).

Digital land certificates are electronic versions of conventional land titles issued by authorized land offices. These certificates contain metadata, ownership information, and verification tools stored in national databases. While they promise efficiency and fraud reduction, their success depends on the legal system's ability to protect ownership rights and resolve conflicts fairly. Concerns also remain over digital exclusion and administrative malpractice in the certification process ([House of Lords, 2022](#)).

This study introduces a multidimensional framework analyzing legal certainty within the context of digital land certification, integrating legal theory, empirical data, and policy analysis specific to the Indonesian context. Unlike earlier studies, it addresses how e-certification affects landholder rights, the credibility of electronic

evidence, and administrative accountability. It also explores the implications of the transition from analog to digital property registration in a developing legal system.

## Methods

This study adopts a qualitative research design using a library research or doctrinal legal research approach. It focuses on the conceptual and normative analysis of legal certainty in the implementation of digital land certificates and electronic land transactions in Indonesia. The research emphasizes the interpretative examination of statutory regulations, court decisions, scholarly articles, and legal doctrines to explore the dynamics of land rights under digital transformation. This type of research is suitable for understanding legal phenomena that are complex, multi-dimensional, and embedded in specific socio-legal contexts ([Rihesta & Riyanto, 2025](#)); ([Azzahra & Rizkianti, 2024](#)).

The data sources for this study are primarily secondary in nature, including: (1) primary legal materials such as laws and regulations (e.g., Law No. 5 of 1960 on Agrarian Principles, Law No. 11 of 2008 on Electronic Information and Transactions as amended by Law No. 19 of 2016, and Ministerial Regulation No. 1 of 2021 on Electronic Certificates); (2) secondary legal materials such as books, peer-reviewed journals, legal commentaries, and dissertations; and (3) tertiary legal materials including legal dictionaries and legal encyclopedias ([Lius, 2024](#)).

Data collection techniques involve structured document analysis, which systematically examines the contents of legal texts and academic literature relevant to digital land rights and electronic transactions. Legal instruments are analyzed through normative interpretation, while academic sources are synthesized through thematic content analysis ([Manurung, 2024](#)).

The data analysis method employed is qualitative-descriptive, where legal materials are examined using legal reasoning and content analysis to identify core legal principles, evaluate normative consistency, and detect gaps or ambiguities in the existing legal framework. The study also compares doctrinal provisions with real-life legal challenges to evaluate whether the current legal system ensures legal certainty for digital landholders ([Rihesta & Riyanto, 2025](#)) ([Azzahra & Rizkianti, 2024](#)).

## Result

The following table presents ten selected articles published in the last five years retrieved from Google Scholar, specifically focused on the legal certainty of land rights in electronic transactions and the implementation of digital land certificates in Indonesia. These articles were screened based on relevance, academic rigor, and their contribution to the discourse on land law and digital transformation in Indonesia.

Table 1 Literature Review

| No | Author(s) & Year          | Title                                                 | Focus Area                                                     | Methodology              | Key Findings                                                                          |
|----|---------------------------|-------------------------------------------------------|----------------------------------------------------------------|--------------------------|---------------------------------------------------------------------------------------|
| 1  | Chascarino et al., (2024) | Legal Certainty of Electronic Land Title Certificates | Normative evaluation of legal certainty in digital land titles | Doctrinal legal analysis | Legal certainty remains ambiguous without a national digital land record integration. |

|    |                                 |                                                                                 |                                                                |                                 |                                                                                  |
|----|---------------------------------|---------------------------------------------------------------------------------|----------------------------------------------------------------|---------------------------------|----------------------------------------------------------------------------------|
| 2  | Oktavianto & Riyanto, (2024)    | Optimization of Land Services Through Adoption of Electronic Land Certificates  | Legal and administrative improvements in digital land services | Qualitative - literature review | BPN digitization improves efficiency, but lacks uniform legal standardization.   |
| 3  | Noor et al., (2024)             | Implications of the Use of Electronic Certificates in Proving Land Rights       | Procedural legality in civil litigation using e-certificates   | Normative-empirical             | Courts still demand physical documents, causing legal uncertainty in practice.   |
| 4  | Azzahra & Rizkianti, (2024)     | Civil Liability in Protection of Personal Data on E-Certificates                | Legal protection of personal data in land certification        | Normative juridical             | Weaknesses in cybersecurity laws impact landowner rights.                        |
| 5  | Rihesta & Riyanto (2023)        | Legal Force of Electronic Certificates by BPN                                   | Institutional legal authority and policy analysis              | Legal-normative                 | Lack of legal harmonization between PP No. 18/2021 and Agrarian Law.             |
| 6  | Lius (2023)                     | Legal Protection for E-Certificate Holders in Indonesian Land Law               | Landowner legal certainty and rights protection                | Library research                | Digital land system increases transparency but lacks error resolution mechanism. |
| 7  | Manurung (2024)                 | Legal Administration of Electronic Land Registration in Garut                   | Case study of local BPN implementation                         | Empirical case study            | Local resistance and lack of digital literacy hinder implementation.             |
| 8  | Putri & Putri, (2024)           | Concepts and Challenges in Digitalizing the Land Management System in Indonesia | Systematic review of legal obstacles                           | Literature study                | Inter-agency data fragmentation limits the effectiveness of e-certification.     |
| 9  | M. C. Putri & Kurniawan, (2022) | Digital Constitutionalism Era In The Development Of Banking Law In Indonesia    | Legal interpretation and compatibility with UUD 1945           | Legal doctrinal                 | Constitutional gap identified in electronic transformation of land law.          |
| 10 | Adinegoro & Swahyuni, (2024)    | Land Rights Conflicts in Digital Certificate Era                                | Conflict and dispute resolution mechanisms                     | Qualitative-legal               | E-certificates increase boundary disputes without clear land zoning regulation.  |

The literature reviewed reveals that although the transition toward digital land certification in Indonesia is progressing, legal certainty remains a key issue across multiple domains. Most scholars emphasize the partial or fragmented implementation of legal instruments, particularly between existing agrarian law (Law No. 5 of 1960) and newer regulations (e.g., Permen ATR No. 1/2021) governing electronic land certificates. This legal misalignment results in inconsistencies in administrative practice and legal interpretation ([Chascarino et al., 2024](#)); recurring theme is the administrative gap between national-level digitization initiatives and regional readiness. [Manurung \(2024\)](#) demonstrates how digital illiteracy, resistance to technological change, and infrastructure limitations at the district level challenge the equitable rollout of digital land services. Such discrepancies can undermine public trust in the legal certainty of digital certificates.

Data privacy and cybersecurity also emerge as serious concerns, as digital land systems often contain sensitive personal information. Rizkianti & Azzahra (2024) reveal significant vulnerabilities in the legal framework for personal data protection within the land sector. Without stringent cybersecurity measures and legal remedies, digital land certificates risk exploitation, thereby reducing legal protection for certificate holders.

Litigation and legal proof in courts remain a procedural gray area. [Noor et al., \(2024\)](#) and [\(M. C. Putri & Kurniawan, 2022\)](#) observe that courts still prioritize physical documents over digital ones, thus reinforcing legal uncertainty in real property disputes. This also calls into question the procedural validity of e-certificates under Indonesia's civil procedural law.

Scholars also note the constitutional ambiguity of applying digital frameworks within the traditionally physical-based rights structure of the UUPA. [M. C. Putri & Kurniawan, \(2022\)](#) raise concerns that the lack of explicit constitutional provisions for digital land rights might hinder enforceability and judicial recognition, especially in rural disputes.

Finally, many articles ([Adinegoro & Swahyuni, 2024](#)) point to a growing number of boundary and ownership conflicts due to overlapping data systems and lack of updated zoning regulations. Without comprehensive spatial data integration, digital land reform may inadvertently fuel legal disputes rather than resolve them.

## Discussion

The transition from manual to digital land certificates in Indonesia represents a significant legal and administrative transformation. However, this shift also reveals complex legal uncertainties. From the review of selected literature, it is clear that legal certainty remains fragile due to regulatory inconsistencies. The foundational Agrarian Law (Law No. 5 of 1960) does not yet fully accommodate the digital framework introduced by Government Regulation No. 18 of 2021 and Permen ATR/BPN No. 1 of 2021. This legal mismatch creates ambiguity in the recognition and enforcement of electronic certificates.

At the core of this issue lies the absence of unified digital infrastructure across government institutions. Several studies note that land offices in different regions have varying levels of digital readiness ([Manurung, 2024](#); [Lius, 2023](#)). This affects the uniform implementation of digital services and raises concerns about administrative fairness and equal access to justice. Furthermore, legal interpretations of electronic

evidence in court remain inconsistent, with judges often requiring physical documents despite the legal status of e-certificates ([Anggraini et al., 2024](#)).

Data privacy and cybersecurity are also critical. Since digital certificates contain personal and property-sensitive information, weak legal safeguards can expose landowners to fraud and data abuse ([Rizkianti & Azzahra, 2024](#)). This calls for the integration of land governance with Indonesia's personal data protection laws.

Another challenge is the growing number of land disputes triggered by overlapping data, outdated zoning, and unclear boundaries. Instead of reducing conflicts, digital systems sometimes intensify them, especially where manual data has not been accurately migrated ([Yani & Faiz, 2023](#)). The literature suggests that the solution lies in comprehensive cadastral reform and inter-agency spatial data integration.

In terms of legal theory, the shift to digital certificates challenges traditional land tenure principles that emphasize physical proof and direct possession. Scholars argue that the absence of constitutional amendments supporting electronic systems may reduce the legitimacy of digital land rights in legal disputes ([Tanjung & Ismail, 2021](#)).

From the community's perspective, the transition to digital land certificates is met with both hope and hesitation. On one hand, many landowners welcome the efficiency, transparency, and time-saving potential of digital services, especially in urban areas where digital literacy is relatively high. On the other hand, in rural and remote communities, concerns arise about accessibility, technological barriers, and a lack of understanding of digital legal processes. There is a general fear of being left behind or becoming victims of land fraud due to unfamiliarity with digital systems. Community members also emphasize the need for inclusive socialization, assistance programs, and assurance from the government that digitalization will not compromise their land rights. This highlights the critical need for public engagement and education to build trust and ensure that digital land reform benefits all levels of society equally.

In summary, the literature reveals that digital land certificates in Indonesia are a legal innovation in progress. While they offer potential efficiency and transparency, they also demand deeper structural reforms, updated legal frameworks, and stronger public digital literacy to ensure that the promise of legal certainty becomes a reality.

## Conclusion

The findings from this literature review highlight that the implementation of electronic land certificates in Indonesia remains at a transitional stage, marked by legal, technical, and institutional challenges. Although the policy shift aims to increase administrative efficiency and transparency in land ownership, the absence of comprehensive regulatory harmonization—particularly between existing agrarian laws and newly introduced digital frameworks—undermines the intended legal certainty. Several studies underscore that without solid legal backing and clear operational standards, digital certificates are at risk of being treated as secondary or incomplete legal proof in practice.

Moreover, the disparities in technological readiness across regions, limited digital literacy among landowners, and fragmented land data systems further contribute to inconsistency in implementation. This inequality raises concerns about access to justice and the principle of legal equity. Additionally, cybersecurity vulnerabilities and insufficient legal protection of personal data present substantial risks that could compromise the reliability and trustworthiness of digital certificates, especially in the

context of electronic transactions and dispute resolution.

Therefore, while the digitization of land administration marks a progressive step, it must be supported by robust and synchronized legal instruments, nationwide capacity building, and an integrated digital governance infrastructure. Only then can the promise of legal certainty and land protection be fully realized under a digital land system.

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