

RESEARCH ARTICLE

Institutional Challenges in the Implementation of Electronic Certificates in Land Services

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ABSTRACT

The Indonesia land administration system is presently undergoing a digitalization process, a highly significant development towards having a more transparent and accountable administration. However, the use of digital land certificates has still been facing a number of legal and institutional problems, making them rather ineffective to use. The objective of this research is to investigate the institutional problems involved in the creation of digital land certificates within the Indonesia land administration system. Using a qualitative methodology with a focus on empirical legal studies, the research combines legal framework analysis and data collection procedures carried out through personal interviews, observation, and documentation, all done within the ATR/BPN Office, located within the Boyolali Regency. Data analysis involved a three-stage process: data reduction, data presentation, and drawing a conclusion, according to qualitative analysis principles. The research focuses on the relationship between legal frameworks such as Law Number 5 of 1960 regarding the Principle of Agrarian Law and Government Regulation of the Minister of ATR/BPN Number 3 of 2023, and digital land registration process within Indonesia's land administration system. The results showed a significant problem with the process of digitalization, including a lack of infrastructure, a discrepancy in the capacity among personnel, lack of cooperation, and lack of public trust. The findings showed that the successful digitalization process within Indonesia's land administration system can only be accomplished by making the process legal and institutionally ready for such a digitalization process to occur effectively within Indonesia's land administration system.

Keywords: institutional challenges, electronic certificates, land services

INTRODUCTION

Digital transformation in the land sector is an essential component of the government's attempts to provide transparent, efficient, and responsible governance (Hersperger et al., 2022). One of Indonesia's strategic policies for digital transformation in land services is the implementation of electronic certificates, which is governed by Regulation of the Minister of Agrarian Affairs and Spatial Planning/Head of the National Land Agency Number 1 of 2021 concerning Electronic Certificates and updated by

Regulation of the Minister of ATR/BPN No. 3 of 2023. This policy is consistent with the national development strategy to build the e-government system and supports Indonesia's vision of a digital government by 2045 (Adnyana & Wijaya, 2025).

However, the adoption of electronic certificates in Indonesia faces several practical problems. These include concerns such as information technology infrastructure readiness (Anggraini et al., 2024), uniform legal understanding (Syarafina & Susilowardani, 2025), and institutional capacity to manage digital land systems (Richard, 2025). The idealism of land digitalization strategies differs from the institutional and legal reality at the implementation level (Erfa, 2021). This gap is visible in varying legal interpretations, insufficient institutional coordination, and the preservation of traditional paradigms in land services.

Land digitization is both a technology and a legal/institutional concern. Digital technology improves land record administration by decreasing duplication and inaccurate records (Anjanah G J & Subhashini S, 2024). The digitization process can improve openness and efficiency by allowing for autonomous transactions without intermediaries (Rahim et al., 2024). The institutional readiness of human resources, monitoring mechanisms, and data verification systems remains unsatisfactory (Kusmiarto et al., 2021). This position raises the possibility of fresh land disputes and undermines public confidence in digitization efforts. As a result, further research on institutional challenges is required to ensure the effective implementation of electronic certificates and provide legal clarity.

Previous research, such as that conducted by Yulia (2025), highlighted initial success in Sukajaya Village, Sumedang, where increased legal awareness, active system users, reduced land disputes, and compliance with data protection standards demonstrated the effectiveness of land certificate digitization. Furthermore, research by Mujiburohman (2021) found that initial success in land certificate digitization in Indonesia was evident in five land offices in Jakarta and two in Surabaya, with adequate infrastructure and technology, and with the initial implementation focused on government-owned land to improve efficiency and transparency in land registration. Existing research has not yet investigated the institutional factors that constitute the primary barriers to implementation. This research is unique in that it examines institutional barriers to adopting electronic certificates as a critical component of the long-term viability of land digitalization plans. As a result, the purpose of this study is to identify institutional barriers in the adoption of electronic certificates in Indonesian land services.

METHODS

In this research, the method used is qualitative and involves the use of an empirical juridical method to investigate the relationship between legal norms and institutional practices in the implementation of electronic land certificates. The above-mentioned method is beneficial in gaining an in-depth understanding of the relationship between legal norms and institutional practices. The collection of legal normative data was carried out from both primary and secondary materials. These include Law Number 5 of 1960 concerning the Basic Principles of Agrarian Law and the Regulation of the Minister of

Agrarian Affairs and Spatial Planning and National Land Agency Number 3 of 2023 concerning the Issuance of Electronic Certificates. Data collection from the institutional point of view aims to identify the behavior of an institution in the process of implementing the digitalization of land certificates (Firmansyah et al., 2024). This study was conducted at the Office of the Boyolali Regency of Agrarian Affairs and Spatial Planning, commonly denoted as the National Land Agency. The six research informants comprised two structural officials, and the rest, four, consisted of technical staff. Among the structural officials identified are the Head of the Land Office and the Head of the Land Registration Section. They have the responsibilities regarding the guidance, coordination, and oversight of land administration services. Among the technical staff who are part of the research informants are personnel from the Land Registration Unit and the Information Technology and Data Management Unit, who have direct involvement with the operational work related to the issuance of the electronic land certificate. The research informants for this investigation were chosen using purposive sampling. The study adopts a guided interviewing technique, direct observation, and documentation analysis. To ensure the validity of the study findings, triangulation is applied. This involves comparing findings from interviewing with direct observation and documentation. The reliability of the findings is strengthened by consistency checking and validation of key findings throughout the process of data collection. The findings are analyzed based on qualitative descriptive analysis procedures, comprising three systematic steps: (1) data reduction, (2) data presentation, and (3) data verification. The procedures for data reduction and presentation form the basis for data verification.

RESULTS AND DISCUSSION

The findings are based on empirical observations at the ATR/BPN Office in Boyolali Regency and are interpreted as a context-specific demonstration of the implementation of electronic land certificates within a specific administrative framework. From a legal standpoint, the electronic land certificate policy is supported by Law Number 5 of 1960 Concerning the Principles of Agrarian Law, particularly Article 19, which affirms the state's obligation to organize land registration in order to provide legal certainty to rights holders. This strategy is further strengthened by Regulation of the Minister of Agrarian Affairs and Spatial Planning of the National Land Agency Number 3 of 2023 concerning the issuance of electronic certificates. However, within the empirical scope of the Boyolali case, local institutional capability and administrative practice influence the attainment of these normative objectives. Empirical data show that these normative ideals have yet to be fully realized due to institutional and administrative impediments that limit the law's effectiveness in practice.

3.1 Infrastructure and Technical Capacity Limitations

Findings from the interviews indicate that the land offices in the Boyolali region are still facing challenges with internet connectivity, hardware, and server systems. These issues hinder the shift from manual to digital data management. problems arising from

integrated systems also form an additional burden, considering issues affecting one server could affect the entire country. This research is similar to that by Priadnyani et al. (2022), which cited slow processing of applications and verification processes as challenges in the electronic rights registration at the Denpasar National Land Agency (BPN). Challenges associated with internet, hardware, and server system capabilities may hamper the transformation from manual to digital land management, having significant national repercussions (Chowdhury, 2025).

On the legal side, these criteria are closely related to the application of Article 19 of the UUPA, which requires constant land registration to guarantee legal certainty. Legal effectiveness theory says that insufficient digital infrastructure represents a structural barrier, hindering the effective application of legal criteria. The reliability of digital infrastructure represents a condition necessary to guarantee legal certainty, especially in relation to digital contracts and transactions. A weak digital legal system could potentially weaken the certainty and authenticity of digital contracts (Inayah & Priyono, 2025). An unreliable digital system could potentially impair the process of proof and authentication, which are very important aspects of digital transaction legal certainty (Mu'min et al., 2025).

Additionally, articles 8-11 of the Minister of ATR/BPN Regulation No. 3 of 2023 describe an integrated database system concerning the conversion of conventional certificates into digital certificates. The distance between the regulations and reality indicates that there is a gap between implementation and regulation. As explained by Soekanto, lack of effectiveness is evident due to the lack of supportive infrastructures for regulations (Ma, 2025). Therefore, the legal certainty of the rights concerning the soil granted by the UUPA and the ATR/BPN Regulation is dependent upon the technical preparedness of the implementing bodies.

3.2 Human Resources Readiness and Competence

On the strength of the research findings, the personnel working within BPN need to develop new technical abilities as a prerequisite during the digital transformation. Data gathered from the field suggests that employees still need to adapt to the application and use of digital application systems. Training has been conducted periodically. However, the training has not been done uniformly across all regions. This has led to a mismatch of competencies between the employees. This research outcome agrees with the research conducted by Harefa et al. (2024). However, the issue of adapting to the use of technology by the employees still arises, especially those who lack familiarity. Employee competence, especially when it comes to adapting to technology, plays an important role as the workforce performs in the digital age (Adhim & Suherman, 2024).

On the legal angle, such matters illustrate the lack of capacity in the administration, which could hamper the exercise of public power. This was supported by Article 18 of the ATR/BPN Regulation No. 3 of 2023, which placed emphasis on improving human resource capacity and system security to guarantee the accuracy of data within the electronic system. On the legal effectiveness approach, such lack of human resource readiness showed the weakness in the legal structure component, which caused implementing agents to fail to fully develop legal standards. The lack of readiness of

human resource capacity at the operational level resulted in the implementation of legal standards in the system not going as planned (Kumurur et al., 2008). The application of the principle of the rule of law in digital management has not been fully attained. Regarding the application of the UPPA, this meant that the government failed to fully meet the obligation to ensure legal certainty, as required by Article 19, since there are administrative structures that impede the application of policies in the country uniformly.

3.3. Inter-agency Coordination

The use of electronic certificates also entails the involvement of various participants, such as the National Land Agency (BPN), officials in charge of land deeds (PPAT), banks, and local governments. There are inefficiencies in the agencies, which are shown by the delay in harmonization and inconsistencies in the data available at the central and local levels, which slow down the entire land administration (Agunbiade et al., 2014; Chidubem Azie et al., 2024).

From a legal perspective regarding the efficiency of legal norms, UUPA Article 19(2)(c) provides that land registration must be done on a regular, simple, and integrated basis. However, to achieve data integration in the land system, there must be a high level of cooperation between institutions. This is regulated by Article 12 of the Regulation of the Minister of Agrarian Affairs and Spatial Planning/National Land Agency No. 3 of 2023. However, the lack of coordination between institutions undermines the data integration principle that must support the legality of the land system's electronic system. According to legal effectiveness theory, ineffective or poor coordination between the institutions creates structural or institutional fragmentation that makes the legal norms ineffective in fulfilling the desired goals. Lack of cooperation can also be considered a violation of principles related to efficiency and effectiveness. This principle is very much needed within the framework of good governance (Nubatonis et al., 2014). Good governance requires that all stakeholders work together as an integrated whole for the efficiency of public policies (Boero, 2015). Poor cooperation or poor coordination between institutions can manifest as a lack of efficiency and coherence between policies. This lack of efficiency can disregard the complexities of governance. This creates ineffective policies (Peters, 2021).

3.4 Public Understanding and Trust

Interviews show that a section of the population does not understand the concept of e-certificates and still regards physical certificates as more secure. The resistance to digitization of the land, it appears, has roots in a lack of formal awareness among the public and incidents of fraud. A section of the public is also ignorant of the benefits associated with e-certificates, and this has slowed the adoption process (Japar et al., 2024). In spite of security concerns associated with digital data, e-certificates use very sophisticated algorithms, which make them even more securer than physical certificates (Mujiburohman, 2021).

Article 5 of Law Number 11 of 2008 concerning Electronic Information and Transactions "ITE Law" regulates that this kind of document will have legal value and be

considered admissible as evidence. This regulation is reiterated by Articles 14-15 of the Minister of ATR/BPN Regulation No. 3 of 2023, regarding the protection of data security and the use of the electronic signature. However, the authors find that the disparity between legal legitimacy and the societal acceptance thereof still exists. With regard to the theories of legal legitimacy brought forth by Fuller, Hart, and Habermas, the success of legal norms not only comes from hitting the target as a theoretical norm, but as a norm that finds its way into the collective consciousness of the people as a legitimate norm. Although the electronic certificate system fulfills the requirements of legal norms, the societal credibility of the system has not been firmly placed. This, according to Habermas, illustrates that the translation of legal rationality between the legal system and the societal system is not yet complete. This generates the issue regarding the legal certainty that relies not only upon the clarity of the norms, but the societal willingness to endorse the norms as such (Khasanah, 2021).

CONCLUSION

The implementation of electronic land certificates in Indonesia continues to face several legal and administrative hurdles such as limiting the effectiveness of land digitization plans. Legally, although this policy is supported by a strong normative framework through Law Number 5 of 1960 concerning the Basic Principles of Agrarian Law and Regulation of the Minister of Agrarian Affairs and Spatial Planning or the National Land Agency Number 3 of 2023 concerning the Issuance of Electronic Certificates, the principle of legal certainty mandated in Article 19 of the UUPA has yet to be fully realized. This circumstance is primarily caused by technical and administrative constraints in complying with legal requirements, such as difficulties in converting physical documents to digital formats and ensuring data security. Institutionally, inadequate infrastructure readiness, disparities in human resource competence, poor inter-agency coordination, and a lack of public understanding and trust in the legitimacy of electronic certificates all point to a persistent gap between legal norms and their practical implementation. In this context, the findings show that the efficiency of digital land management depends on the interaction among legal norms, institutional capacity, technological infrastructure, and social legitimacy. As a result, this study contributes to legal scholarship by giving analytical insights into the application of legal effectiveness theory in the field of digital administrative law, notably in the context of land governance. At the practical level, the study assists the Ministry of ATR or BPN and related institutions in developing strategies to strengthen infrastructure, increase institutional capacity, and improve legal socialization efforts, resulting in a more effective, transparent, and socially acceptable implementation of electronic land certificates.

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