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Evaluating Pre-Electronic Certificate Readiness at the Langsa Land Office

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Original Article

Abstract

The transformation of electronic-based land services through the issuance of electronic certificates (Sert-el) requires the availability of accurate and reliable land data, particularly through the verification of Land Books (BT) and Measurement Letters (SU). Despite ongoing digitalization efforts, the implementation of Pre-Electronic Certificates (Pra-Sert-el) continues to face substantial challenges, especially regarding the integration of historical land records and the validation of supporting documents. This study aims to examine the implementation mechanism of Land Book verification in the transition toward Pra-Sert-el at the Langsa City Land Office, based on the Regulation of the Minister of Agrarian Affairs and Spatial Planning/National Land Agency (ATR/BPN) Number 3 of 2023. Using an empirical legal research method with a qualitative descriptive approach, data were collected through interviews, observations, and document analysis. The findings reveal that verification involves preparation, implementation, and quality control stages, although several technical, administrative, and institutional obstacles continue to impede effective implementation.

Keywords: *Land Rights, Legal Awareness, Land Registration.*

Abstrak

Perubahan layanan pertanahan berbasis elektronik melalui penerbitan Sertipikat elektronik (Sert-el) menuntut kesiapan data pertanahan yang valid melalui verifikasi Buku Tanah (BT) dan Surat Ukur (SU). Namun, implementasi Pra-Sertipikat elektronik (Pra-Sert-el) masih menghadapi berbagai kendala, khususnya pada integrasi data historis dan validasi dokumen. Penelitian ini bertujuan menganalisis mekanisme pelaksanaan verifikasi BT menuju Pra-Sert-el di Kantor Pertanahan Kota Langsa berdasarkan Permen ATR/BPN Nomor 3 Tahun 2023 serta mengidentifikasi kendala teknis, administratif, dan kelembagaan dalam proses verifikasi. Penelitian menggunakan metode hukum empiris dengan pendekatan kualitatif-deskriptif melalui wawancara, observasi, dan dokumentasi. Hasil penelitian menunjukkan bahwa verifikasi BT dilaksanakan melalui tahap persiapan, pelaksanaan, dan quality control, namun masih terkendala inkonsistensi data historis, ketidaksesuaian dokumen, keterbatasan SDM, serta gangguan sistem SITATA. Penelitian ini menyimpulkan bahwa keberhasilan transformasi sertipikat elektronik bergantung pada kualitas data, kesiapan kelembagaan, dan penguatan infrastruktur digital.

Kata kunci: *Verifikasi Buku Tanah, Sertipikat Elektronik, Digitalisasi Arsip*

1. INTRODUCTION

Digital transformation has emerged as a central paradigm in the delivery of public services in Indonesia, driven by rapid developments in information and communication technology. The government has increasingly been encouraged to modernize administrative systems to ensure services that are more effective, efficient, transparent, and accountable. In this context, the concept of electronic government (e-government) has become an essential instrument for enhancing governance quality through digital technology, enabling faster and more accessible public services while reducing bureaucratic inefficiencies. Consequently, digitalization is no longer regarded as an alternative but rather as a strategic necessity in responding to the challenges of the Industrial Revolution 4.0 era.

One sector undergoing substantial transformation is land administration. Land possesses significant economic, social, legal, and cultural value, thereby requiring legal certainty through a reliable land registration system. Pursuant to Article 19 of Law Number 5 of 1960 concerning Basic Agrarian Regulations (UUPA), the government is obligated to administer land registration to ensure legal certainty for rights holders.¹ The principal outcome of this process is the issuance of land certificates as legal proof of ownership.

Nevertheless, the conventional land administration system, which relies heavily on physical documentation, continues to face various challenges, including certificate forgery, duplicate certificates, lost archives, overlapping ownership claims, and the persistence of land mafia practices.² In response, the government, through the Ministry of Agrarian Affairs and Spatial Planning/National Land Agency (ATR/BPN), has initiated the digitalization of land services, including the implementation of electronic certificates. This policy is reinforced by Regulation of the Minister of ATR/Head of BPN Number 3 of 2023 concerning the Issuance of Electronic Documents in Land Registration Activities, which regulates the conversion of physical and legal land data into electronic media through verification and validation procedures.

Despite these regulatory developments, implementation continues to encounter substantial obstacles, particularly in the validation of Land Books (BT) and Measurement Letters (SU) for the issuance of Pre-Electronic Certificates (Pra-Sert-el). Challenges such as outdated and non-digitized records, inconsistencies in land data, and deteriorated archival materials remain significant barriers to implementation. These conditions are also evident at the Langsa City Land Office, one of the pilot institutions

¹ Sophia Nopitasari Rahim et al., "Legal Implications of the Use of Digitalization of Online Land Registration," *Path of Science* 10, no. 5 (2024): 2011–18, <https://doi.org/10.22178/pos.104-12>.

² Aarce Tehupeiori, "Land Mafia Case Handling Through the Optimization of Land Mafia Task Force Role," *Sasi* 29, no. 2 (2023): 214–26, <https://doi.org/10.47268/sasi.v29i2.1185>; Vani Wirawan et al., "Measuring the Land Mafia in Indonesia: New Phenomenon of Extraordinary Crime," *Novum Jus* 18, no. 1 (2024): 311–53, <https://doi.org/10.14718/NovumJus.2024.18.1.11>.

for electronic land services in Aceh, where difficulties persist in achieving optimal electronic data readiness.

The digital transformation of the land sector constitutes a critical component of bureaucratic reform and the strengthening of Indonesia's e-government system. The policy governing electronic land certificates (e-certificates), initially regulated under Ministerial Regulation Number 1 of 2021 and subsequently revised through Ministerial Regulation Number 3 of 2023, reflects regulatory adaptation to the growing demands of electronic-based land services. Previous studies have examined electronic certificates from normative, policy, and implementation perspectives. However, research focusing specifically on the verification of Land Books (BT) and Measurement Letters (SU) as fundamental prerequisites for electronic certification remains relatively limited.

Research conducted by Alimuddin highlights the urgency of implementing electronic certificates to strengthen legal certainty in land administration and mitigate the risks of certificate forgery and land mafia practices. While the study underscores the importance of land system digitalization, its analysis remains primarily normative and does not address technical implementation.³ Similarly, research by Maslan identifies data readiness as a critical determinant of successful electronic certificate implementation but provides limited discussion regarding data verification mechanisms.⁴

Furthermore, research by Andari and Mujiburohman examines regulatory issues and the coexistence of analog and electronic systems. Their findings emphasize that data validation, electronic documentation, and information security are essential prerequisites for implementing electronic certificates, although operational-level verification processes remain underexplored.⁵ In addition, empirical research conducted by Huda and Wandebori demonstrates that limited human resources, technological infrastructure, and inadequate data integration continue to hinder the digital transformation of land administration.⁶

Recent studies by Salma Marjoni et al., Satryadin et al., Surya Darma, and Wulandari et al. have similarly identified several implementation barriers, including data inconsistencies, low levels of digital literacy, limited technological infrastructure, and inadequate preparedness for electronic data management. Nevertheless, these studies primarily focus on the broader implementation of electronic land policies and have not specifically examined the verification process of Land Books (BT) and Measurement

³ Nur Hidayani Alimuddin, "Implementasi Sertifikat Elektronik Sebagai Jaminan Kepastian Hukum Kepemilikan Hak Atas Tanah Di Indonesia," *Sasi* 27, no. 3 (2021): 335–45, <https://doi.org/10.47268/sasi.v27i3.509>.

⁴ Muhamad Maslan, "Prospek Sertipikat Tanah Elektronik Sebagai Upaya Perlindungan Hukum Bagi Pemegang Hak Atas Tanah Guna Terwujudnya E-Government Di Era 4.0," *Otentik's: Jurnal Hukum Kenotariatan* 5, no. 1 (2023): 103–30, <https://doi.org/10.35814/otentik.v5i1.4628>.

⁵ Dwi Wulan Titik Andari and Dian Aries Mujiburohman, "Aspek Hukum Layanan Sertifikat Tanah Elektronik," *Al-Adl: Jurnal Hukum* 15, no. 1 (2023): 154–70, <https://doi.org/10.31602/al-adl.v15i1.7367>.

⁶ Nurul Huda and Harimukti Wandebori, "Problematisasi Transformasi Sertifikasi Tanah Digital," *Marcapada: Jurnal Kebijakan Pertanahan* 1, no. 1 (2021): 17–28, <https://doi.org/10.31292/jm.v1i1.7>.

Letters (SU) as prerequisites for the issuance of Pre-Electronic Certificates (Pra-Sert-el).⁷

Accordingly, a research gap remains regarding the verification mechanisms of Land Books (BT) and Measurement Letters (SU) as indicators of readiness for Pra-Sert-el, particularly within priority land offices. This study offers a novel contribution through an in-depth analysis of Land Book verification using the SITATA system, the identification of historical land data validation issues, and the formulation of implementable solutions at the Langsa City Land Office by applying the policy implementation framework developed by George C. Edwards III.

Based on this background, the objectives of this study are as follows:

- 1) To analyze the implementation mechanism of Land Book (BT) verification in preparation for Pre-Electronic Certificates (Pra-Sert-el) at the Langsa City Land Office, based on the Ministerial Regulation of ATR/BPN Number 3 of 2023 and relevant technical guidelines.
- 2) To identify the technical, administrative, and institutional constraints encountered in the verification process of Land Books and Measurement Letters, particularly those related to historical data integration, document discrepancies, and the achievement of a 100 percent validation score within the SITATA application.

2. RESEARCH METHODOLOGY

This study employs an empirical legal research method using a qualitative-descriptive approach to analyze the mechanisms, challenges, and potential solutions associated with Land Book (BT) verification in preparation for Pre-Electronic Certificates (Pra-Sert-el) at the Langsa City Land Office. This approach was selected because the study not only examines law as a normative framework (law in books) but also investigates its implementation in practice (law in action), particularly in relation to the implementation of land digitalization policies under the Ministerial Regulation of the Ministry of Agrarian Affairs and Spatial Planning/National Land Agency (ATR/BPN) Number 3 of 2023 concerning the Issuance of Electronic Documents in Land Registration Activities. To comprehensively examine the issue, the study adopts statutory,

⁷ Salma Marjoni et al., "Pendaftaran Tanah Secara Elektronik Di Kantor Pertanahan Kota Padang," *Sibatik Journal: Jurnal Ilmiah Bidang Sosial, Ekonomi, Budaya, Teknologi, Dan Pendidikan* 4, no. 11 (2025): 4121–50, <https://doi.org/10.54443/sibatik.v4i11.3741>; Maulana Arba' Satryadin et al., "Implementasi Kebijakan Sertipikat Tanah Elektronik Dalam Konteks Transformasi Digital Di Kantor Pertanahan Kabupaten Bintan," *Matra Pembaruan* 9, no. 2 (2025): 107–21, <https://doi.org/10.21787/mp.9.2.2025.107-121>; Surya Darma, "Implementasi Pendaftaran Sertifikasi Hak Milik Tanah Melalui Program Elektronik Di Kantor Badan Pertanahan Nasional Kabupaten Kampar Berdasarkan Peraturan Menteri ATR/BPN Nomor 3 Tahun 2023 Tentang Sertifikat Elektronik," (Universitas Islam Negeri Sultan Syarif Kasim Riau, 2025), <https://repository.uin-suska.ac.id/93530/>; Ade Rini Wulandari et al., "Pelaksanaan Perubahan Sertipikat Tanah Fisik Menjadi Sertipikat Elektronik Pada Transaksi Jual Beli Di Kantor Badan Pertanahan Nasional Kabupaten Pelalawan," *Unes Journal of Suara Justisia* 9, no. 4 (2026): 645–55, <https://doi.org/10.31933/kb6b0011>.

conceptual, and case approaches to analyze the legal framework, the concept of land digitalization, and the implementation of Land Book verification at the Langsa City Land Office, which serves as a pilot project for electronic land services in Aceh Province.

The study utilizes both primary and secondary data sources. Primary data were collected through in-depth interviews with informants selected using a purposive sampling technique, including officials and technical personnel directly involved in the validation of Land Books and Measurement Letters. Secondary data were obtained through an extensive review of legislation, academic journals, scholarly books, and institutional documents issued by the Ministry of ATR/BPN. Data collection techniques included interviews, observations, and document analysis, while data validity was ensured through source and methodological triangulation. Data were analyzed using the interactive model developed by Matthew B. Miles, A. Michael Huberman, and Johnny Saldaña, involving the stages of data reduction, data display, and conclusion drawing. Furthermore, the policy implementation theory developed by George C. Edwards III was employed as an analytical framework to evaluate policy implementation based on four dimensions: communication, resources, disposition, and bureaucratic structure.

3. RESEARCH RESULT AND DISCUSSION

3.1. Analysis of the Land Book Verification (BT) Implementation Mechanism Toward Pre-Electronic Certificates at the Langsa City Land Office

The Land Book (BT) verification mechanism at the Langsa City Land Office is implemented through three principal stages: the preparation stage, the verification implementation stage, and the quality control stage. These stages constitute an integrated and interrelated process that determines the level of data readiness required for the issuance of electronic land documents.

The preparation stage serves as the foundational phase of Land Book verification, as it determines the readiness of human resources, infrastructure, and operational standards. Normatively, the 2024 Technical Work Procedures (Tata Cara Kerja—TCK) for Electronic Land Book Verification stipulate that, prior to verification, land offices are required to prepare human resources, supporting infrastructure, and administrative work mechanisms.

With respect to human resources, the Langsa City Land Office generally complies with the technical personnel qualifications established in the TCK. The position of team leader requires at least a bachelor's degree in a field relevant to information technology or management, while the secretary position requires a minimum diploma qualification. Meanwhile, validators and data entry personnel are required to possess at least a senior

high school diploma or its equivalent. This organizational structure reflects a differentiation of competencies tailored to the responsibilities assigned to each role.

Nevertheless, variations in educational qualifications present distinct challenges in the implementation of digital-based land data verification. Validators, many of whom possess only secondary-level educational backgrounds, continue to require capacity-building initiatives, particularly in understanding the complexity of legal and physical land data that must be integrated into electronic systems. In the context of digital transformation, technical competence becomes particularly significant, as even minor errors in data entry may affect the validity and reliability of the Electronic Land Book (BT-el).

Human resource readiness should therefore be assessed not solely in terms of personnel quantity but also based on the quality of digital competencies possessed by staff members. This finding is consistent with the study conducted by Nurul Huda and Harimukti Wandebori, which identified limited human resource capacity as a major obstacle to the implementation of digital land certification.⁸ However, the present study contributes a more specific dimension by demonstrating that competency-related challenges emerge not only at the broader policy implementation level but also significantly influence the technical stages of Land Book verification leading to Pra-Sert-el.

In addition to human resources, infrastructure readiness constitutes a critical component of the preparation stage. The Langsa City Land Office does not rely on specialized technological equipment; instead, it ensures that existing hardware, including computers, printers, and laptops, satisfies the minimum operational standards required to access the SITATA application and the ATR/BPN Application Portal. This condition reflects a pragmatic approach to policy implementation, whereby existing resources are optimized without requiring substantial investment in new equipment.

Nevertheless, several administrative records remained incomplete due to deadline pressures. Furthermore, the mechanism for borrowing Land Books was not implemented based on sub-district classifications, as recommended under ideal administrative practices, but rather on a village-by-village basis to accelerate the completion of work across the 66 villages of Langsa City. At the bureaucratic level, policy implementation is frequently shaped by administrative pragmatism aimed at meeting institutional performance targets. Although such implementation flexibility may improve work efficiency, it also carries the potential to undermine orderly land administration. From the perspective of policy implementation theory, this condition reflects an adaptive process between administrative norms and operational realities in the field.

⁸ Huda and Wandebori, "Problematika Transformasi Sertifikasi Tanah Digital."

The implementation stage constitutes the core component of the Land Book (BT) verification process for the issuance of Pre-Electronic Certificates (Pra-Sert-el). Normatively, Article 33 of the Ministerial Regulation of the Ministry of Agrarian Affairs and Spatial Planning/National Land Agency (ATR/BPN) Number 3 of 2023 stipulates that verification activities shall be conducted in stages through the conversion of analog records into electronic systems, both at the village level and within land data maintenance services. However, the regulation does not provide detailed technical procedures for verification. Consequently, implementation relies substantially on the 2024 Technical Work Procedures (Tata Cara Kerja—TCK) for Electronic Land Book Verification and Technical Guideline Number 3/Juknis-HR.02/III/2024.

The level of electronic data readiness achieved at the Langsa City Land Office can be categorized as relatively high. The validation rate for Land Books reached 91.8%, Measurement Letters 90.5%, Pre-Electronic Land Books (Pre-e-BT) 90.08%, and overall electronic readiness 93.64%. These achievements indicate that most land records have fulfilled the administrative requirements necessary for digitalization.

Nevertheless, the study identified an implementation paradox, as the achievement rate for “Electronic Service BT” remained at only 18.27%. This discrepancy demonstrates a significant gap between data readiness and the practical implementation of electronic services. Substantively, the findings suggest that data validity alone does not automatically ensure the effective operation of electronic land services.

The findings reinforce the study conducted by Surya Darma, which argues that the implementation of electronic certificates remains partial due to continued reliance on conventional documentation systems.⁹ However, the present study offers a novel contribution by specifically demonstrating that, despite land records having achieved electronic-ready status, electronic services remain suboptimal because of limited operational integration.

This finding is likewise consistent with the study by Salma Marjoni et al., which identified discrepancies between data readiness and the implementation of electronic systems in Padang City.¹⁰ However, the Langsa City case demonstrates relatively more progressive outcomes, with data readiness exceeding 90%, although the implementation of electronic services continues to encounter operational constraints.

The transformation of digital land services requires not only administrative validation but also institutional preparedness, system interoperability, and procedural integration.¹¹ In other words, the success of digital transformation should not be

⁹ Surya Darma, “Implementasi Pendaftaran Sertifikasi Hak Milik Tanah Melalui Program Elektronik Di Kantor Badan Pertanahan Nasional Kabupaten Kampar Berdasarkan Peraturan Menteri ATR/BPN Nomor 3 Tahun 2023 Tentang Sertifikat Elektronik.”

¹⁰ Salma Marjoni et al., “Pendaftaran Tanah Secara Elektronik Di Kantor Pertanahan Kota Padang.”

¹¹ Rohan Bennett et al., “Hybrid Approaches for Smart Contracts in Land Administration: Lessons from Three Blockchain Proofs-of-Concept,” *Land* 10, no. 2 (2021): 220, <https://doi.org/10.3390/land10020220>; Fatemeh Jahani Chehrehbargh et al., “Current Challenges and Strategic Directions for Land Administration System

assessed solely through quantitative indicators of data readiness but also through the effectiveness of its practical application in public service delivery.

The final phase, namely the quality control stage, functions to ensure the accuracy and consistency of land data before it is formally validated within the electronic system. The findings reveal that quality control at the Langsa City Land Office was conducted by four internal personnel using a sampling approach covering 10% of the total verified Land Book documents.

Of the 26,233 verified Land Book records, approximately 2,600 documents were reviewed, with nearly 10% found to contain inconsistencies between electronic records and the corresponding physical Land Book data. Most discrepancies originated from data entry errors in the “Origin of Title” field. For example, records were incorrectly entered as “Conversion” or “First Registration,” whereas the appropriate classification should have been recorded as “Separation.”

These findings indicate that administrative inaccuracies at the initial verification stage remain substantial and may generate legal consequences in subsequent stages, particularly in land data maintenance and land title transfer procedures. Accordingly, corrective measures were undertaken through the reassignment of third-party personnel to revise the data and conduct revalidation using the SITATA application.

The findings of this study further support the research conducted by Maulana Arba’ Satryadin et al., which identified electronic data quality as a major challenge in the implementation of electronic certificates.¹² However, the present study provides a more detailed empirical contribution by revealing specific forms of data inaccuracies and the mechanisms adopted to correct them.

Although the 10% sampling approach was considered compliant with TCK guidelines and sufficiently representative of the 66 villages in Langsa City, this study identifies an important methodological limitation, namely that the remaining 90% of documents were presumed valid without additional examination. Such conditions create the potential risk of undetected hidden errors within the broader dataset.

The Land Book verification mechanism at the Langsa City Land Office has generally been implemented in accordance with Ministerial Regulation of ATR/BPN Number 3 of 2023 and the applicable technical guidelines. Nonetheless, implementation continues to face several challenges, including limitations in human resource competencies, inconsistencies in administrative practices, disparities between data readiness and electronic service implementation, and restricted quality control coverage. Therefore, strengthening human resource capacity, optimizing the integration of electronic services, and expanding quality control mechanisms constitute strategic

Modernisation in Indonesia,” *Journal of Spatial Science* 69, no. 4 (2024): 1097–129, <https://doi.org/10.1080/14498596.2024.2360531>.

¹² Satryadin et al., “Implementasi Kebijakan Sertipikat Tanah Elektronik Dalam Konteks Transformasi Digital Di Kantor Pertanahan Kabupaten Bintan.”

imperatives for ensuring the successful transformation toward accurate and reliable Pre-Electronic Certificates (Pra-Sert-el).

3.2. Technical, Administrative, and Institutional Obstacles in Land Book and Measurement Letter Verification Toward Pre-Electronic Certification at the Langsa City Land Office

Based on findings derived from in-depth interviews with the Head of the Langsa City Land Office, the Head of the Land Rights Determination and Registration Section, verification officers, and archival personnel, this study identifies several obstacles in the verification process of Land Books (BT) and Measurement Letters (SU). These obstacles may be broadly classified into two categories: internal and external factors. Internal factors encompass administrative issues, limited human resource capacity, inconsistencies in historical land data, and deficiencies in land archive management. In contrast, external factors are associated with disruptions in technological systems, limitations in digital infrastructure, and regulatory constraints in accommodating the dynamic realities of field-level implementation.

1) Obstacles in Historical Data Integration and Land Document Inconsistencies

One of the most significant challenges in Land Book verification at the Langsa City Land Office concerns the integration of historical land data, particularly records originating from older Land Books and Measurement Letters issued between 1970 and 1999, many of which have not yet been fully incorporated into the ATR/BPN Application Portal. This condition creates a substantial discrepancy between physical land documents and digital databases, thereby necessitating more complex and time-consuming manual verification procedures.

In practice, verification personnel frequently encounter inconsistencies between information contained in physical Land Books and the corresponding electronic records stored within the system. These discrepancies include incomplete landowner information, missing records regarding place and date of birth, inconsistencies in land parcel status, and variations in the nomenclature of land title origins. Furthermore, instances were identified in which Land Books had been classified as inactive or closed (dead records), while the corresponding measurement documents remained active within the system, thereby generating inconsistencies between Land Books and Measurement Letters.

Achieving a 100% validation score in the SITATA application is therefore not merely an administrative matter of data entry but is also contingent upon the historical quality and completeness of land documentation. The older the land records, the greater the complexity of verification due to changes in legal nomenclature, physical

deterioration of archival materials, and the incomplete integration of historical data into electronic systems.

These findings reinforce the research conducted by Maslan, which identifies inadequate land data quality as a principal factor contributing to the slow implementation of electronic certificates in Indonesia.¹³ Nevertheless, the present study offers a novel contribution by more specifically identifying the types of historical data-related problems that emerge during the Land Book verification stage leading to Pra-Sert-el. The findings demonstrate that the challenges of land digitalization are not exclusively technological in nature but are also deeply rooted in the legacy of conventional land administration systems that remain insufficiently documented.

This condition further illustrates the phenomenon of path dependency in land administration reform, whereby the success of digital transformation is significantly influenced by the quality of historical administrative governance.¹⁴ In other words, even advanced electronic systems remain constrained when the underlying analog database, which functions as the primary source of information, has not undergone comprehensive validation.

2) Administrative Obstacles in Achieving a 100% Validation Score in the SITATA Application

In addition to challenges related to historical data integration, this study finds that administrative obstacles constitute a substantial barrier to achieving a 100% validation score within the SITATA application. Based on interviews with verification officers, several recurring administrative errors were identified, including incomplete or blank data fields, inaccuracies concerning the origin of land rights, incomplete identity information of rights holders, and inconsistencies in the information of signing officials.

These conditions often prevented land records from being immediately declared valid, despite the substantive existence and legal certainty of the land rights being evident. In certain cases, verification officers were required to reopen previously completed validations to correct administrative inaccuracies, subject to approval from the Head of the Land Office or other authorized officials. Such corrective procedures necessitated formal justification documents supported by evidentiary records as a mechanism of administrative accountability.

The target of achieving 100% validation, as stipulated in Technical Guideline Number 3/JUKNIS-HR.02/III/2024, proves difficult to attain in practice, particularly

¹³ Maslan, "Prospek Sertipikat Tanah Elektronik Sebagai Upaya Perlindungan Hukum Bagi Pemegang Hak Atas Tanah Guna Terwujudnya E-Government Di Era 4.0."

¹⁴ Evangelia Balla et al., "Too Much, Too Soon? The Changes in Greece's Land Administration Organizations during the Economic Crisis Period 2009 to 2018," *Land* 11, no. 9 (2022): 1564, <https://doi.org/10.3390/land11091564>; Fenna Imara Hoefsloot and Catherine Gateri, "Contestation, Negotiation, and Experimentation: The Liminality of Land Administration Platforms in Kenya," *Environment and Planning D: Society and Space* 42, nos. 5–6 (2024): 645–63, <https://doi.org/10.1177/02637758241254943>.

when historical land records contain numerous data anomalies. In this context, verification personnel frequently encounter a practical dilemma between meeting institutional validation targets and maintaining administrative accuracy. This finding reflects a broader challenge in public-sector digital transformation, in which performance targets may at times conflict with the imperative to ensure data precision and legal reliability.

These findings are consistent with the study conducted by Salma Marjoni et al., which identified inconsistencies between physical and electronic records as a major obstacle to the implementation of electronic land registration in Padang City.¹⁵ However, the present study demonstrates that, at the Langsa City Land Office, administrative constraints tend to be more micro-operational in nature, particularly those directly associated with the validation process within the SITATA application.

Although a 100% validation standard in electronic systems is essential for ensuring legal certainty in land administration, its implementation requires a degree of administrative flexibility to accommodate the limitations and imperfections of historical land documentation. In the absence of affirmative policy measures addressing legacy data, the digitization process risks stagnation due to excessively rigid administrative standards that are difficult to fulfill empirically.

3) Institutional Constraints and Organizational Adaptation

Institutional factors constitute a critical determinant of the effectiveness of Land Book and Measurement Letter verification. Institutional constraints emerge in the form of limited inter-unit coordination, dependence on specific personnel, and the suboptimal allocation of administrative responsibilities during the verification process.

One administrative issue identified in this study concerns the temporary borrowing of Land Book documents by other organizational units or interested parties during the verification process. This circumstance is not explicitly regulated under the 2024 Technical Work Procedures (*Tata Cara Kerja*—TCK) for Electronic Land Book Verification, thereby requiring officers to exercise administrative discretion in adjusting workflow arrangements.

In practice, the Langsa City Land Office has adopted various adaptive strategies, including the rescheduling of verification activities, cross-unit coordination, and the optimization of available personnel to achieve completion targets. These measures indicate a relatively strong degree of bureaucratic adaptability in responding to implementation challenges.

This finding expands upon the research conducted by Maulana Arba' Satryadin et al., which suggests that top-down policy implementation approaches frequently fail to

¹⁵ Salma Marjoni et al., "Pendaftaran Tanah Secara Elektronik Di Kantor Pertanahan Kota Padang."

account for data availability and operational realities in the field.¹⁶ The present study demonstrates that, at the operational level, land administration bureaucracies have in fact developed various forms of administrative improvisation to maintain policy continuity and implementation effectiveness.

When analyzed through the policy implementation framework developed by George C. Edwards III¹⁷, these institutional constraints primarily relate to the dimensions of resources and bureaucratic structure. From a resource perspective, limitations in personnel availability and technical competencies hinder the acceleration of verification activities. Meanwhile, from the perspective of bureaucratic structure, the absence of detailed regulations governing scenarios involving administrative constraints compels officers to rely on discretionary measures at the local level.

4) External Constraints: System Infrastructure and Technological Disruptions

In addition to internal constraints, this study identifies several external barriers, including disruptions to application servers, unstable internet connectivity, and limitations within the ATR/BPN Portal system, all of which significantly affect verification effectiveness. Technological disruptions frequently delayed the land data validation process within the SITATA application, and in some instances, officers were required to repeat data entry procedures due to system failures.

These constraints are largely beyond the direct control of the Langsa City Land Office, limiting the institution to mitigation measures such as adjusting working hours and utilizing alternative network connections. Moreover, existing regulatory frameworks have yet to provide adequate technical-operational guidance for addressing digital infrastructure disruptions.

The findings of this study reinforce the research conducted by Surya Dharma, which identified inadequate digital infrastructure as a major impediment to the implementation of electronic certificates in regional contexts.¹⁸ However, the present study offers a more specific empirical contribution by demonstrating that technological constraints affect not only final service delivery but also the administrative verification process at the initial stages of digital transformation.

The obstacles encountered in the verification of Land Books and Measurement Letters at the Langsa City Land Office are multidimensional, encompassing technical, administrative, and institutional aspects. Although the Langsa City Land Office has demonstrated organizational adaptability through internal administrative policies and

¹⁶ Satryadin et al., "Implementasi Kebijakan Sertipikat Tanah Elektronik Dalam Konteks Transformasi Digital Di Kantor Pertanahan Kabupaten Bintan."

¹⁷ George C. Edwards, *Implementing Public Policy* (Congressional Quarterly Press, 1980).

¹⁸ Surya Dharma, "Implementasi Pendaftaran Sertifikasi Hak Milik Tanah Melalui Program Elektronik Di Kantor Badan Pertanahan Nasional Kabupaten Kampar Berdasarkan Peraturan Menteri ATR/BPN Nomor 3 Tahun 2023 Tentang Sertifikat Elektronik."

bureaucratic coordination, a substantial gap remains between normative regulatory provisions and field-level implementation realities. Accordingly, more responsive regulatory frameworks, improvements in the quality of historical land data, enhanced human resource capacity, and strengthened digital infrastructure are required to effectively support the achievement of comprehensive land data validation.

4. CONCLUSION

This study aims to analyze the implementation mechanism of Land Book (BT) verification in preparation for Pre-Electronic Certificates (Pra-Sert-el) at the Langsa City Land Office based on the Ministerial Regulation of the Ministry of Agrarian Affairs and Spatial Planning/National Land Agency (ATR/BPN) Number 3 of 2023 and its corresponding technical implementation guidelines. In addition, the study seeks to identify the various technical, administrative, and institutional challenges encountered in the verification process of Land Books (BT) and Measurement Letters (SU).

The findings indicate that the verification mechanism has been implemented through three principal stages: preparation, verification implementation, and quality control. These stages are generally consistent with the 2024 Technical Work Procedures (Tata Cara Kerja—TCK) for Electronic Land Book Verification. Nevertheless, implementation in practice continues to encounter several significant challenges, particularly those related to the integration of historical land data, inconsistencies between physical and digital records, limited human resource capacity, and difficulties in achieving a 100% validation score within the SITATA application due to data anomalies and disruptions in technological systems.

This study confirms that the successful transformation toward electronic land certification is determined not solely by compliance with regulatory frameworks but also by the quality of historical land data, institutional preparedness, and the availability of adequate digital infrastructure. The significance of this research lies in its contribution to advancing scholarly discussions on the implementation of land digitalization while simultaneously providing practical recommendations for enhancing the effectiveness of Land Book verification in support of electronic certification.

However, this study is limited to a single case study location and, therefore, does not fully represent conditions across Indonesia. Accordingly, more adaptive policy frameworks that respond to empirical implementation constraints, enhanced system interoperability, strengthened human resource capacity, and broader comparative studies across multiple land offices are required to develop a more effective and sustainable verification implementation model.

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