

Legal Effectiveness of Electronic Land Rights Transfer at Batam City Land Office

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Abstract

Land rights transfer in Indonesia has historically been hampered by bureaucratic inefficiency and lengthy processing times. In response, the Ministry of Agrarian Affairs and Spatial Planning/National Land Agency (ATR/BPN) has implemented an electronic land rights transfer system as part of broader e-government reform. This study evaluates the legal effectiveness of its implementation at the Batam City Land Office using an empirical legal research approach. Data were collected through in-depth interviews with Land Office officials, Land Deed Officials (PPAT), and service users, and analyzed through Soerjono Soekanto's five-factor theory of legal effectiveness. The findings show that the electronic system has significantly reduced processing time from 14–30 working days to a maximum of 5 working days and improved data transparency. However, full effectiveness has not been achieved, as three factors remain suboptimal: uneven staff digital capacity, Batam's distinctive dual-authority land tenure structure requiring BP Batam approval prior to ATR/BPN processing, and partial public resistance to electronic certificates. Regulatory harmonization and inter-institutional integration are recommended to address these constraints.

KEYWORDS

Digital Transformation, Electronic Land Rights Transfer, Land Administration, Legal Effectiveness.



Introduction

Land constitutes a fundamental natural resource under Indonesian agrarian law, controlled by the state and utilized for the greatest prosperity of the people as mandated by Article 33 paragraph (3) of the 1945 Constitution of the Republic of Indonesia.¹ The Basic Agrarian Law (Law Number 5 of 1960) further affirms that the state determines and regulates land allocation, use, and legal relations concerning land.² Land rights granted by the state including Ownership Rights (*Hak Milik*), Right to Build (*Hak Guna Bangunan*), Right to Cultivate (*Hak Guna Usaha*), and Right of Use (*Hak Pakai*) provide legal authority for individuals or legal entities to control and utilize land in accordance with statutory provisions.³ Legal certainty in land administration is realized through land registration, which results in the issuance of certificates containing physical and juridical data as proof of rights.⁴

To ensure legal certainty, Government Regulation Number 24 of 1997 concerning Land Registration requires that every transfer of land rights be recorded and registered at the Land Office.⁵ Registration serves as a mechanism to guarantee legal protection for rights holders and to maintain orderly land administration.⁶ However, conventional land services have long been criticized for bureaucratic complexity, lengthy processing times, and vulnerability to administrative inconsistencies.⁷ These challenges often create discrepancies between physical and juridical data, thereby potentially undermining legal certainty.

¹ Undang-Undang Dasar Negara Republik Indonesia Tahun 1945, Pasal 33 ayat (3).

² Undang-Undang Nomor 5 Tahun 1960 tentang Peraturan Dasar Pokok-Pokok Agraria (Lembaran Negara 1960 No. 104).

³ Ibid., Pasal 16–53.

⁴ Peraturan Pemerintah Nomor 24 Tahun 1997 tentang Pendaftaran Tanah (Lembaran Negara 1997 No. 59), Pasal 32.

⁵ Ibid.

⁶ Nur Hidayani Alimuddin, “Implementasi Sertifikat Elektronik Sebagai Jaminan Kepastian Hukum Kepemilikan Hak Atas Tanah di Indonesia,” *Sasi*, Vol. 27, No. 3 (2021): 335–345.

⁷ Adrian Sutedi, *Peralihan Hak atas Tanah dan Pendaftarannya* (Jakarta: Sinar Grafika, 2018).

In response to these administrative challenges and in line with broader e-government reform, the Ministry of Agrarian Affairs and Spatial Planning/National Land Agency (ATR/BPN) introduced digital transformation in land administration. The issuance of Ministerial Regulation of ATR/BPN Number 1 of 2021 concerning Electronic Certificates and Ministerial Regulation Number 3 of 2023 concerning Electronic Documents in Land Registration Activities marked a significant shift toward electronic-based land services.⁸ One significant innovation is the implementation of Electronic Land Rights Transfer (e-Transfer), which enables the process of transferring land rights through an integrated digital system, reducing reliance on physical documents and direct administrative procedures.

The implementation of electronic land services has been gradually adopted across various regions, including Batam City. As a strategic economic zone characterized by high investment activity and dynamic land transactions, Batam presents a relevant locus for evaluating the effectiveness of digital land services. Since late 2024, the Batam City Land Office has implemented electronic land rights transfer integrated with the Land Management System (LMS) of BP Batam and the “Sentuh Tanahku” application.⁹ The integration is expected to accelerate service delivery, minimize human error, and strengthen the reliability of digital documentation.

Nevertheless, normative regulation does not automatically guarantee effective implementation. Preliminary observations indicate several practical challenges, including discrepancies in data synchronization between institutional systems, limited public understanding of electronic procedures, and hesitancy among banking institutions to fully recognize

⁸ Peraturan Menteri Agraria dan Tata Ruang/Kepala Badan Pertanahan Nasional Nomor 1 Tahun 2021 tentang Sertipikat Elektronik; Peraturan Menteri ATR/BPN Nomor 3 Tahun 2023 tentang Penerbitan Dokumen Elektronik dalam Kegiatan Pendaftaran Tanah.

⁹ “BPN Catat, 15.093 Sertifikat Tanah di Batam Beralih ke Elektronik,” *Metropolis Batampos*, November 2, 2024, <https://metropolis.batampos.co.id/bpn-catat-15-093-sertifikat-tanah-di-batam-beralih-ke-elektronik/>

electronic certificates as collateral instruments. These conditions reflect a potential gap between law in books and law in action, emphasizing the need for empirical assessment of policy effectiveness.

Previous studies on electronic land certificates in Indonesia have predominantly focused on normative legal analysis and regulatory interpretation.¹⁰ While such studies contribute to doctrinal clarity, limited research has examined the empirical effectiveness of electronic land rights transfer at the local implementation level. Consequently, there remains a research gap concerning whether digital transformation in land administration truly enhances efficiency, legal certainty, transparency, and public trust in practice.

From a global perspective, digitalization of land administration forms part of broader e-government reforms implemented in various jurisdictions to improve public service delivery and strengthen governance. International experiences demonstrate that while digital land systems may increase transparency and reduce administrative delay, their effectiveness depends heavily on institutional readiness, data integration, cybersecurity safeguards, and stakeholder trust. Therefore, assessing the effectiveness of electronic land rights transfer at the local level is essential to ensure that digital reform achieves its intended objectives.

Accordingly, this study aims to critically evaluate the effectiveness of the implementation of electronic land rights transfer at the Batam City Land Office within the broader framework of Indonesia's digital land administration reform. Beyond examining formal regulatory compliance, this research analyzes whether the electronic system has substantively enhanced administrative efficiency, data reliability, procedural transparency, and legal certainty in its practical operation. By identifying both institutional and technical constraints arising in its implementation, this study seeks to assess the extent to which digital transformation in land

¹⁰ Maria S.W. Sumardjono, *Tanah dalam Perspektif Hak Ekonomi, Sosial, dan Budaya* (Jakarta: Kompas, 2008).

administration reduces the disparity between normative legal provisions and empirical practice. Ultimately, the findings are expected to contribute to the advancement of empirical legal studies in land law and to inform policy improvements toward more accountable, transparent, and reliable digital public services.

Methods

This study employs an empirical legal research approach to examine the effectiveness of the implementation of electronic land rights transfer at the Batam City Land Office. Empirical legal research analyzes how law operates in society by examining the behavior of legal actors and the practical functioning of legal norms.¹¹ This approach moves beyond normative doctrinal analysis and focuses on law in action, enabling the assessment of whether regulatory provisions concerning electronic land services are effectively implemented in practice.¹²

The research was conducted at the Batam City Land Office to describe and analyze the level of effectiveness of electronic land rights transfer services. Batam City was selected purposively due to its rapid economic growth and significant development in the property sector, resulting in a relatively high volume of land transactions. As a strategic economic zone characterized by intensive investment activities and dynamic land dealings, Batam represents a relevant locus for evaluating the implementation of electronic land administration systems. Conducting the study in this location is expected to provide a representative overview of the effectiveness of electronic land rights transfer within a region experiencing substantial economic and administrative development.

Data were collected through qualitative techniques, namely in-depth

¹¹ Soerjono Soekanto, *Pengantar Penelitian Hukum* (Jakarta: UI Press, 2014).

¹² Lawrence M. Friedman, *The Legal System: A Social Science Perspective* (New York: Russell Sage Foundation, 1975).

interviews and document analysis. Interviews were conducted with officials of the Batam City Land Office, Land Deed Officials (PPAT), and members of the public who had directly engaged in the electronic transfer process. Informants were selected using purposive sampling based on their experience and relevance to the research objectives.¹³ Document analysis included statutory regulations, ministerial regulations, and institutional guidelines governing electronic land services.

The collected data were analyzed using qualitative descriptive analysis. The analytical framework for assessing effectiveness refers to the theory of legal effectiveness, which emphasizes that the functioning of law is influenced by legal substance, legal structure, and legal culture.¹⁴ In addition, the study considers factors affecting legal effectiveness, including regulatory clarity, institutional capacity, public awareness, and compliance behavior.¹⁵ Effectiveness indicators examined in this research include service processing time, procedural transparency, data accuracy and synchronization, accessibility of digital systems, and the degree of legal certainty generated. Through this framework, the study seeks to determine whether the implementation of electronic land rights transfer achieves its intended objectives and strengthens legal certainty within digital land administration.

Result and Discussion

1. Historical Development and Legal Basis of Electronic Land Services in Batam City

The implementation of electronic-based land services in Batam City emerged from a series of phased policy reforms that began in the late 2010s.

¹³ Soerjono Soekanto, *Pengantar Penelitian Hukum* (Jakarta: UI Press, 2014).

¹⁴ Ibid.

¹⁵ Soerjono Soekanto, *Faktor-Faktor yang Mempengaruhi Penegakan Hukum* (Jakarta: RajaGrafindo Persada, 2008).

The foundational step was the issuance of Ministerial Regulation of the Ministry of Agrarian Affairs and Spatial Planning/National Land Agency (ATR/BPN) Number 9 of 2019 on Electronically Integrated Mortgage Services (HT-el), which established the first electronic mechanism for land data maintenance and designated 42 land offices nationwide as pilot project locations. The Batam City Land Office was among those selected, commencing implementation in September 2019.¹⁶

A significant milestone followed in 2020. Ministerial Regulation ATR/BPN Number 5 of 2020 superseded the 2019 regulation and mandated full national implementation of HT-el across all land offices. For the Batam City Land Office, this meant the formal cessation of conventional mortgage services effective 8 July 2020—marking the first complete transition to electronic processing for a land service category in Batam, effectively eliminating counter-based physical interactions for that particular service.¹⁷ The scope of digitalization was substantially broadened in 2021 through Ministerial Regulation ATR/BPN Number 1 of 2021 on Electronic Certificates, which extended the electronic framework beyond mortgage services to encompass the entirety of land registration activities, including the issuance of certificates in electronic format.¹⁸

Ministerial Regulation ATR/BPN Number 3 of 2023 on Electronic Documents in Land Registration Activities subsequently provided more detailed technical provisions governing the Electronic Land Book (Buku Tanah Elektronik/BT-el) and Electronic Certificate (Sertipikat Elektronik/Sertipikat-el), and explicitly required that land rights

¹⁶ Peraturan Menteri Agraria dan Tata Ruang/Kepala Badan Pertanahan Nasional Nomor 9 Tahun 2019 tentang Pelayanan Hak Tanggungan Terintegrasi Secara Elektronik.

¹⁷ Peraturan Menteri ATR/BPN Nomor 5 Tahun 2020 tentang Pelayanan Hak Tanggungan Terintegrasi Secara Elektronik, Pasal 3. Peraturan ini mencabut Permen Nomor 9 Tahun 2019 dan mewajibkan implementasi penuh secara nasional di seluruh kantor pertanahan, termasuk Kantor Pertanahan Kota Batam.

¹⁸ Peraturan Menteri ATR/BPN Nomor 1 Tahun 2021 tentang Sertipikat Elektronik, Pasal 2.

transfers—including sale and purchase transactions—be processed exclusively through the electronic system.¹⁹

At the provincial level, the formal launch of electronic transfer services occurred on 9 July 2025, when the Regional Head of BPN Kepulauan Riau officially inaugurated the Electronic Transfer Service (Layanan Peralihan Elektronik) for the entire province at an event held in Batam City. All Land Offices within Kepulauan Riau Province, including Batam, were mandated to achieve full implementation. In a related development, BP Batam conducted a socialization program in February 2026 for the updated Land Management System (LMS) Online and the implementation of Electronic Signatures (Tanda Tangan Elektronik/TTE) in land management agreements, grounded in BP Batam Regulation Number 6 of 2025 on Land Management. This initiative marked a new phase of digital integration between BP Batam and the national land administration system—a gap that had previously constituted one of the most persistent structural barriers to service efficiency.²⁰

Table 1. Chronology of Legal Basis and Implementation of Electronic Land Services in Batam City

Year	Legal Basis / Policy	Implementation in Batam City
2019	Ministerial Regulation ATR/BPN No. 9 of 2019 on Electronic Mortgage Services (HT-el)	Batam City Land Office designated as one of 42 pilot project offices; HT-el implementation commenced September 2019
2020	Ministerial Regulation ATR/BPN No. 5 of 2020 (replacing No. 9/2019)	National mandatory implementation of HT-el; Batam City Land Office ceased conventional mortgage services effective 8 July 2020

¹⁹ Peraturan Menteri ATR/BPN Nomor 3 Tahun 2023 tentang Penerbitan Dokumen Elektronik dalam Kegiatan Pendaftaran Tanah, Pasal 4.

²⁰ BP Batam, “BP Batam Tingkatkan Layanan Pertanahan: Pembaruan Akun Online LMS dan Implementasi Tanda Tangan Elektronik,” [bpb Batam.go.id](https://bpb Batam.go.id/en/bp-batam-tingkatkan-layanan-pertanahan), 4 Februari 2026, <https://bpb Batam.go.id/en/bp-batam-tingkatkan-layanan-pertanahan>, diakses 25 Februari 2026. Perkembangan ini merupakan langkah penting menuju integrasi antarlembaga antara BP Batam dan sistem elektronik ATR/BPN, mengatasi hambatan struktural yang sudah lama ada dalam proses peralihan hak atas tanah di Batam.

2021	Ministerial Regulation ATR/BPN No. 1 of 2021 on Electronic Certificates	Legal basis for electronic certificates established; infrastructure and data digitalization at Batam City Land Office commenced
2023	Ministerial Regulation ATR/BPN No. 3 of 2023 on Electronic Documents in Land Registration	Electronic Land Book (BT-el) and Electronic Certificate (Sertipikat-el) extended to rights transfer transactions; Batam City Land Office began implementing electronic transfer services
2025	Regional BPN Kepulauan Riau launched Electronic Transfer Services (9 July 2025)	Official launch of electronic transfer services across Kepulauan Riau Province at Batam; all Land Offices mandated for full implementation
2026	BP Batam Regulation No. 6 of 2025 on Land Management (implemented 2026)	BP Batam implemented Electronic Signatures (TTE) and updated LMS Online integrated with ATR/BPN system; socialization conducted February 2026

Source: Compiled from statutory regulations and field data (2026)

2. Comparison of Land Rights Transfer System Before and After Electronic Implementation

A concrete assessment of the effectiveness of electronic land rights transfer requires a direct comparison between pre-electronic and post-electronic service conditions. Prior to September 2019, the entire process was conducted through conventional, in-person procedures. Land Deed Officials (Pejabat Pembuat Akta Tanah/PPAT) were required to submit physical documents—including original deeds, land certificates, BPHTB and PPh tax payment receipts, and supporting attachments—directly to the Land Office counter. This face-to-face procedure not only consumed substantial time due to queuing, but also created structural vulnerabilities to informal charges and intermediary practices that undermined service integrity.²¹

²¹ Shinta Pangesti dan Prilly Priscilia Sahetapy, "Pendaftaran Hak Tanggungan Sebelum dan Setelah Berlakunya Peraturan Menteri Agraria/Kepala BPN Nomor 5 Tahun 2020," *Jurnal Tunas Agraria*, Vol. 6 No. 2, 2023, pp. 71–92.

The conventional system also lacked any real-time monitoring mechanism. Applicants and PPAT representatives had no means of tracking file status beyond manual follow-up inquiries, and processing time ranged from 14 to 30 working days depending on queue conditions and document completeness. In cases requiring corrections or supplementary documents, processing could extend well beyond this range.²²

The electronic system fundamentally transformed these procedures. Under the current system, PPAT uploads the Land Rights Transfer Deed (Akta Peralihan Hak Atas Tanah/APHAT) together with all scanned supporting documents through the ATR/BPN application, without requiring physical presence at the Land Office. Verification of juridical and physical data is conducted by Land Office officers online, and applicants may monitor file status in real time through the Sentuh Tanahku application. The service output is an Electronic Certificate (Sertipikat-el) equipped with an encrypted QR code verifiable at any time through the same application. The electronic signature system employed is certified under Government Regulation Number 71 of 2019 on the Implementation of Electronic Systems and Transactions, providing strong legal authentication. Service fee rates (PNBP) remain unchanged, as both systems continue to apply Government Regulation Number 128 of 2015 on Non-Tax State Revenue.²³

Table 2 below summarizes the key differences between the two systems across eight service dimensions:

Table 2. Comparison of Conventional and Electronic Land Rights Transfer Systems

No.	Aspect	Electronic System
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²²Kementerian ATR/BPN, *Laporan Akuntabilitas Kinerja Instansi Pemerintah (LAKIP) 2023*, Jakarta, Kementerian ATR/BPN, 2024, hlm. 45.

²³ Kementerian ATR/BPN, LAKIP 2023, hlm. 45. Lihat juga Raden Ayu Rani Mutiara Dewi dan Catherine Susantio, "Penggunaan Sertifikat Elektronik Untuk Meningkatkan Efisiensi Pendaftaran Tanah Dalam Upaya Pencegahan Mafia Tanah," *Jurnal Syntax Admiration*, Vol. 5 No. 9, 2024, hlm. 3388. Peraturan Pemerintah Nomor 71 Tahun 2019 tentang Penyelenggaraan Sistem dan Transaksi Elektronik, Pasal 2.

1	Submission Method	Documents uploaded digitally via ATR/BPN application system; no physical presence required
2	Required Documents	Scanned digital files uploaded through the system
3	Processing Time Standard	Maximum 5 working days for complete documents (previously 14–30 working days)
4	Party Interaction	PPAT–Land Office–Applicant through integrated digital platform
5	File Status Monitoring	Real-time tracking via Sentuh Tanahku application
6	Service Output	Electronic Certificate (Sertipikat-el) with encrypted QR Code
7	Forgery Risk	Minimal due to encryption and certified electronic signatures (TTE)
8	Service Fee (PNBP)	Unchanged; pursuant to Government Regulation No. 128 of 2015

Source: Compiled from field data and literature sources (2026)

These transformations were directly confirmed by PPAT practitioners operating in Batam City. Bapak Wahyu Hidayat, a PPAT with more than ten years of practice in Batam, described the practical shift during an interview conducted as part of this research:

"In general, the electronic system significantly accelerates the process. Previously, we could spend an entire day simply queuing to submit documents at the Land Office counter. Now it is sufficient to upload through the system from our own office. The challenge arises when the system experiences disruptions or server downtime—all work halts completely and clients become impatient. We also need to ensure that supporting documents from BP Batam are complete before

uploading, because any missing document can delay the entire process considerably."²⁴

Ibu Erlina, Section Head for Land Data Maintenance at the Batam City Land Office, added that the shift to electronic processing has had a positive impact on internal governance as well, noting that all incoming files are now automatically recorded within the system, enabling more accurate and transparent performance monitoring and evaluation of service delivery.

3. Analysis of Legal Effectiveness Based on Soerjono Soekanto's Theory

The assessment of effectiveness in this study is grounded in the legal effectiveness theory of Soerjono Soekanto, which posits that the functioning of law in society is determined by five interrelated factors: (1) the law itself; (2) law enforcement agents; (3) facilities and infrastructure supporting legal implementation; (4) the community; and (5) legal culture. These five factors operate as an interconnected system, and weakness in any single factor can undermine the effectiveness of the whole.²⁵

From the perspective of the legal factor, electronic land rights transfer in Batam City rests upon a comprehensive and hierarchically arranged normative foundation. Article 19 of Law Number 5 of 1960 on the Basic Agrarian Principles (UUPA) mandates the government to conduct land registration throughout Indonesia to guarantee legal certainty for rights holders.²⁶

This constitutional mandate is operationalized through Government Regulation Number 24 of 1997 on Land Registration, which establishes the

²⁴ Wawancara dengan Bapak Wahyu Hidayat, Pejabat Pembuat Akta Tanah (PPAT), Kota Batam, 30 Januari 2026.

²⁵ Soerjono Soekanto, *Efektivitas Hukum dan Penerapan Sanksi*, Bandung, CV. Ramadja Karya, 1988, hlm. 80.

²⁶ Undang-Undang Nomor 5 Tahun 1960 tentang Peraturan Dasar Pokok-Pokok Agraria (UUPA), Pasal 19.

procedural requirements for rights transfer through PPAT deeds, and is further supported by Ministerial Regulations Number 1 of 2021 and Number 3 of 2023, which provide full normative legitimacy for the electronic transfer system. The Electronic Certificate carries equal evidentiary force with conventional physical certificates, as affirmed by Law Number 11 of 2008 as amended by Law Number 1 of 2024 on Electronic Information and Transactions (ITE Law), which establishes that electronic documents created within official state systems possess the same legal standing as written physical documents.²⁷

Nevertheless, a normative gap persists between Ministerial Regulation Number 3 of 2023 and several provisions of Government Regulation Number 24 of 1997 that still reference physical documents and conventional procedures. This inconsistency creates interpretive uncertainty in practice and warrants prompt systematic regulatory harmonization to ensure coherent implementation across the entire land registration framework.²⁸

Regarding the factor of law implementation agents—understood in this context to encompass Land Office officials as service administrators and PPAT as authorized deed-making officers—the Batam City Land Office has implemented electronic services since the initial national pilot phase. Staff responsible for land data maintenance have undergone specialized training on the electronic system organized by the Ministry of ATR/BPN. The readiness and technical capacity of land administration personnel to manage digital data constitutes an indispensable prerequisite for successful transformation. However, regular personnel rotation (*mutasi*) at government agencies presents an ongoing risk of institutional knowledge

²⁷ Peraturan Pemerintah Nomor 24 Tahun 1997 tentang Pendaftaran Tanah (Lembaran Negara 1997 No. 59), Pasal 37; Peraturan Menteri ATR/BPN No. 1 Tahun 2021, Pasal 2; Peraturan Menteri ATR/BPN No. 3 Tahun 2023, Pasal 4. Undang-Undang Nomor 11 Tahun 2008 sebagaimana diubah dengan Undang-Undang Nomor 1 Tahun 2024 tentang Informasi dan Transaksi Elektronik (UU ITE) menegaskan bahwa dokumen elektronik yang dibuat dalam sistem resmi negara memiliki kekuatan pembuktian yang setara dengan dokumen fisik tertulis.

²⁸ Reza Andriansyah Putra dan Atik Winanti, "Urgensi Dan Kendala Dalam Penerbitan Dokumen Sertifikat Tanah Elektronik Pasca Peraturan Menteri ATR/BPN Nomor 3 Tahun 2023," *Jurnal USM Law Review*, Vol. 7 No. 2, 2024, pp. 840.

loss, as newly assigned officers may require additional time to attain operational proficiency in the electronic system.²⁹

From the perspective of facilities and infrastructure, Batam City's status as a designated free trade zone and industrial area provides a relatively favorable digital environment compared to more remote or rural regions. High internet penetration and a tech-oriented business community contribute to more conducive conditions for electronic service adoption. Nevertheless, incidental technical disruptions—including national server failures or unscheduled system maintenance by the Ministry of ATR/BPN—continue to create service interruptions that cannot be managed at the local level, as the electronic system operates on centralized infrastructure over which individual land offices have no control.

The community factor is critically shaped by Batam City's distinctive land tenure structure. The majority of land in Batam is held under Management Rights (Hak Pengelolaan/HPL) by the Batam Free Trade Zone and Free Port Authority (BP Batam), with individuals and legal entities generally holding only Building Use Rights (Hak Guna Bangunan/HGB) above the HPL. Consequently, no Ownership Rights (Hak Milik/SHM) certificates exist in Batam Island.³⁰

This structural condition requires that every land rights transfer must first obtain written approval from BP Batam as the HPL holder, pursuant to Article 100 paragraph (1) of BP Batam Regulation Number 11 of 2023 on the Administration of Land Management.³¹

²⁹ Kurnia Rheza Randy Adinegoro, "Tantangan Implementasi Sertipikat Tanah Elektronik di Kementerian ATR/BPN RI," *Jurnal Ilmu Kenotariatan*, Vol. 4 No. 2, 2023, hlm. 135.

³⁰ Peraturan BP Batam Nomor 11 Tahun 2023 tentang Penyelenggaraan Pengelolaan Lahan, Pasal 100 ayat (1). Lihat juga Djuhaendah Hasan, *Lembaga Jaminan Kebendaan Bagi Tanah dan Benda Lain Yang Melekat Pada Tanah*, Bandung, Citra Aditya Bakti, 2006, hlm. 27.

³¹ Peraturan BP Batam Nomor 11 Tahun 2023, Pasal 100 ayat (1). Persyaratan ini menciptakan proses dua jalur wajib untuk setiap peralihan hak di Batam: satu jalur melalui BP Batam untuk persetujuan HPL, dan jalur terpisah melalui sistem elektronik ATR/BPN untuk pendaftaran tanah. Kedua jalur tersebut saat ini belum terintegrasi, sehingga mengakibatkan pemrosesan secara berurutan dan bukan secara paralel.

This condition was confirmed by Ibu Erlina, Section Head for Land Data Maintenance at the Batam City Land Office, who stated:

"The transfer process in Batam is considerably more complex than in other regions. In addition to meeting the Land Office requirements, applicants must also ensure the completeness of approval documents from BP Batam. With the electronic system, the workflow is now better mapped and documented, but inter-institutional coordination still requires additional time that we cannot control from our end."³²

The legal culture factor reflects the extent to which community members have internalized and accepted the electronic system as a legitimate mode of land administration. In Batam City, as a cosmopolitan economic zone with relatively high technology accessibility, public receptivity has been comparatively favorable. A service user, Bapak Lastama, who completed an electronic land rights transfer in 2025, shared his experience:

"The process was much faster than I expected. I did not need to visit the BPN office repeatedly. The notary handled all documents online. Within approximately two weeks, the certificate was accessible through the Sentuh Tanahku application. What was initially confusing was the requirement for BP Batam documents. I had to obtain their approval before the ATR/BPN process could even begin, which I did not know about at first."³³

Research on the effectiveness of electronic land registration services confirms that digital systems reduce average processing time for rights transfer services by more than 30 percent compared to conventional

³² Wawancara dengan Ibu Erlina, Kepala Seksi Pemeliharaan Data Pertanahan, Kantor Pertanahan Kota Batam, 25 Januari 2026.

³³ Wawancara dengan Bapak Lastama, Pengguna Layanan Peralihan Hak Atas Tanah Elektronik, Kota Batam, 1 Februari 2026.

methods, a finding consistent with the efficiency gains recorded at the Batam City Land Office.³⁴

From an anti-corruption standpoint, the electronic system demonstrably strengthens land mafia prevention by eliminating face-to-face counter interactions, reducing the structural opportunities for informal payments, and increasing data transparency and ownership traceability. Automatic recording of all ownership changes significantly reduces the risk of duplicate certificate issuance, which has historically been a major source of land disputes in Indonesia.³⁵

Based on the foregoing analysis, it may be concluded that the implementation of electronic land rights transfer at the Batam City Land Office has achieved regulatory compliance and delivered measurable operational improvements. However, full effectiveness has not yet been attained, as three of Soekanto's five factors—law implementation agents, community, and legal culture—continue to face challenges requiring sustained policy attention and institutional intervention.

4. Obstacles and Solutions in Electronic Land Rights Transfer Implementation

The obstacles encountered in the implementation of electronic land rights transfer in Batam City are multidimensional in nature, encompassing technical, structural, human resource, and social-psychological dimensions. Addressing them requires a comprehensive, cross-sectoral approach.³⁶

³⁴ Putri Rani Margareth Sipahutar dan Besty Habeahan, "Efektivitas Digitalisasi Pendaftaran Tanah Pada Kantor Pertanahan," *Journal of Administrative and Social Science*, Vol. 7 No. 1, 2026, pp. 166–178.

³⁵ Raden Ayu Rani Mutiara Dewi dan Catherine Susantio, "Penggunaan Sertifikat Elektronik Untuk Meningkatkan Efisiensi Pendaftaran Tanah Dalam Upaya Pencegahan Mafia Tanah," *Jurnal Syntax Admiration*, Vol. 5 No. 9, 2024, p. 3388.

³⁶ Reza Andriansyah Putra dan Atik Winanti, "Urgensi Dan Kendala Dalam Penerbitan Dokumen Sertifikat Tanah Elektronik Pasca Peraturan Menteri ATR/BPN Nomor 3 Tahun 2023," *Jurnal USM Law Review*, Vol. 7 No. 2, 2024, p. 843.

The most frequently reported technical obstacle is server or system instability within the ATR/BPN electronic platform. When system disruptions occur—whether due to technical failures or unscheduled maintenance—the entire submission and verification process is completely halted with no alternative processing mechanism. This differs fundamentally from the conventional system, in which partial disruptions could be managed through manual procedures. The dependency on centralized national infrastructure means that local Land Offices have no autonomous capacity to maintain continuity of service during system downtime.

A second technical constraint concerns the incomplete migration of conventional land registry data to the digital system. For transfer applications involving land parcels whose data has not yet been fully updated in the digital system, Land Office officers must conduct manual cross-verification with physical archives, adding considerable time to the process. Ibu Erlina confirmed:

"There are still older files whose spatial and juridical data have not been completely entered into the system. When an application concerns such a parcel, our officers must manually cross-check with the physical archive before proceeding. This takes considerable extra time and sometimes causes delays, especially when the physical archive is difficult to locate or has been filed in an inconsistent manner."³⁷

A related technical concern involves the security of digital data and the reliability of the electronic signature system. While the juridical protection offered by certified electronic signatures under Government Regulation Number 71 of 2019 on Electronic Systems and Transactions is legally robust,³⁸ the risk of data breaches and unauthorized use of electronic

³⁷ Wawancara dengan Ibu Erlina, Kepala Seksi Pemeliharaan Data Pertanahan, Kantor Pertanahan Kota Batam, 25 Januari 2026.

³⁸ Peraturan Pemerintah Nomor 71 Tahun 2019 tentang Penyelenggaraan Sistem dan Transaksi Elektronik, Pasal 2.

signatures remains a matter requiring continuous cybersecurity oversight and periodic system updates.³⁹

The most structurally distinctive obstacle in Batam City is the dual authority arrangement between the Land Office and BP Batam. Under Article 100 paragraph (1) of BP Batam Regulation Number 11 of 2023, every transfer of land rights over parcels situated above BP Batam's HPL must first receive written approval from BP Batam before any registration process can proceed at the Land Office.⁴⁰

In practice, applicants or their PPAT representatives must process the approval request through a separate administrative channel at BP Batam that is not yet integrated with the ATR/BPN electronic system. This creates a structural gap between two institutional systems one digital, one still largely manual that cannot be resolved through ATR/BPN digitalization alone. This arrangement is a legal consequence of the horizontal separation principle (*asas pemisahan horisontal*) in Indonesian agrarian law, which grants HPL holders comprehensive authority over land management within their HPL area, resulting in an administrative complexity entirely absent in most other regions of Indonesia.⁴¹

KPKNL Batam documented that in 2024, out of 838 land and building objects in Batam City submitted for rights transfer through auction, a significant number experienced processing delays attributable to incomplete documentation particularly missing BP Batam approval documents or objects subject to ongoing disputes or system-level blocking. Bapak Wahyu Hidayat elaborated on this constraint during his interview:

"The most time-consuming aspect of land rights transfer in Batam is not the processing at BPN but rather obtaining clearance from BP Batam. Clients frequently are not aware

³⁹ Sapardiyono dan Sukmo Pinuji, "Konsistensi Perlindungan Hukum Kepemilikan dan Hak Atas Tanah Melalui Sertifikat Tanah Elektronik," *Widya Bhumi*, Vol. 2 No. 1, 2022, pp. 54–64.

⁴⁰ Peraturan BP Batam Nomor 11 Tahun 2023, Pasal 100 ayat (1).

⁴¹ Djuhaendah Hasan, *Lembaga Jaminan Kebendaan Bagi Tanah dan Benda Lain Yang Melekat Pada Tanah*, Bandung, Citra Aditya Bakti, 2006, p. 27.

that they must first secure BP Batam's approval before the BPN process can commence. There have been cases where the BPN side was fully ready to process, but the BP Batam approval had not yet been issued, so everything had to wait indefinitely. The two systems are not connected in real time, which means we must manage them as entirely separate administrative tracks."⁴²

Human resource constraints represent the third obstacle dimension. The uneven distribution of digital technology skills across different levels of government, compounded by the destabilizing effects of regular personnel rotation and reassignment, presents ongoing challenges to sustaining institutional capacity.⁴³

Among the service-user community, limited digital literacy particularly among elderly residents and small-scale business operators means that many applicants remain entirely dependent on PPAT guidance and assistance. This dependency not only introduces the risk of additional unofficial costs but also limits the accessibility gains intended by the electronic system, as the benefits of digitalization are unevenly distributed across different community segments.⁴⁴

Social-psychological resistance constitutes the fourth obstacle category. A segment of the community continues to perceive physical certificates as more legally credible or "real" than electronic certificates, despite their equivalent juridical standing. This perception, if not addressed, can erode public trust in the electronic system and deter uptake. In reality, Electronic Certificates equipped with encrypted QR codes and certified electronic signatures offer substantially stronger anti-forgery protection than

⁴² Wawancara dengan Bapak Wahyu Hidayat, Pejabat Pembuat Akta Tanah (PPAT), Kota Batam, 1 Februari 2026.

⁴³ Kurnia Rheza Randy Adinegoro, "Tantangan Implementasi Sertipikat Tanah Elektronik di Kementerian ATR/BPN RI," *Jurnal Ilmu Kenotariatan*, Vol. 4 No. 2, 2023, p. 135.

⁴⁴ Wawancara dengan Ibu Sari Wulandari, Pengguna Layanan Pertanahan Elektronik, Kota Batam, 1 Februari 2026.

conventional paper certificates a point that needs to be more effectively communicated through targeted public education.⁴⁵

Based on the analysis of these obstacles, several solutions are recommended. First, the Ministry of ATR/BPN should urgently strengthen server infrastructure capacity and implement automatic backup systems capable of maintaining service continuity during primary system disruptions, while simultaneously accelerating the comprehensive digitalization of all remaining conventional land data archives. Second, a formal institutional integration between the ATR/BPN electronic system and BP Batam's LMS Online must be established through a binding Memorandum of Understanding or Joint Regulation, enabling real-time interconnection between the two administrative channels so that BP Batam's approval process is embedded within the ATR/BPN electronic workflow rather than operating as a separate track.⁴⁶

Third, the Batam City Land Office should establish a structured and continuous IT training program for all staff, incorporating a formal knowledge transfer mechanism activated during every personnel rotation to prevent the erosion of institutional technical capacity. Fourth, a joint public socialization program between the Batam City Land Office and BP Batam is needed to specifically explain Batam's unique procedural requirements including the BP Batam approval obligation to the broader community and PPAT through kelurahan level outreach sessions, social media campaigns, and the establishment of digital assistance desks at the Land Office to support applicants with limited digital literacy.

Conclusion

⁴⁵ Raden Ayu Rani Mutiara Dewi dan Catherine Susantio, "Penggunaan Sertifikat Elektronik Untuk Meningkatkan Efisiensi Pendaftaran Tanah Dalam Upaya Pencegahan Mafia Tanah," *Jurnal Syntax Admiration*, Vol. 5 No. 9, 2024, p. 3388.

⁴⁶ Exaudia S., Wahyuni, dan Nurasa A., "Implementasi Pelayanan Hak Tanggungan Terintegrasi Secara Elektronik di Kantor Pertanahan Kota Batam," *Marcapada: Jurnal Kebijakan Pertanahan*, Vol. 1 No. 1, 2021, p. 58.

The electronic land rights transfer system at the Batam City Land Office has achieved regulatory compliance and delivered measurable efficiency gains, most notably the reduction of service completion time from 14–30 working days under the conventional system to a maximum of 5 working days under the electronic system.

Applying Soerjono Soekanto's five-factor theory of legal effectiveness, the legal factor and the facilities factor are adequately fulfilled: a comprehensive and hierarchically arranged normative framework has been established, and Batam City's digital infrastructure is relatively supportive. However, three factors remain suboptimal. The law implementation agents factor is constrained by uneven digital capacity among Land Office staff and the disruptive effects of personnel rotation. The community factor is complicated by Batam City's structurally distinctive land tenure arrangement, whereby every rights transfer requires prior written approval from BP Batam as the HPL holder—creating an administrative bottleneck that operates entirely outside the ATR/BPN electronic system and cannot be resolved through digitalization alone. The legal culture factor is affected by partial public resistance to electronic certificates and a remaining dependency on conventional physical documents as perceived symbols of legal ownership.

These findings point to three institutional preconditions that must be fulfilled to achieve full effectiveness. First, the formal integration of BP Batam's LMS Online with the ATR/BPN electronic system through a binding Memorandum of Understanding is essential to eliminate the dual administrative track that currently constrains service efficiency in Batam. Second, regulatory harmonization between Ministerial Regulation Number 3 of 2023 and Government Regulation Number 24 of 1997 must be prioritized to close existing normative gaps and ensure interpretive consistency in practice. Third, a sustained joint socialization program addressing Batam's unique procedural requirements is necessary to build public trust, reduce dependence on intermediaries, and strengthen the legitimacy of electronic certificates as legally equivalent and technically superior instruments of land ownership. Without these institutional preconditions, the electronic land rights

transfer system in Batam will continue to fall short of its transformative potential in ensuring legal certainty, service efficiency, and accountability in land administration.

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