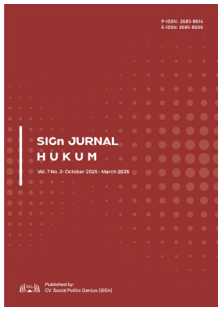

SIGn Jurnal Hukum

E-ISSN: 2685 – 8606 || P-ISSN: 2685 – 8614
https://jurnal.penerbitsign.com/index.php/sjh/article/view/v7n2-12

Vol. 7 No. 2: October 2025 - March 2026 Published Online: November 20, 2025

Article Title

Realizing Legal Certainty in Electronic Land Certificates: A Critical Reflection on Ontario's Legislative Model for Indonesia

Author(s)

Weyni Andilsim
Universitas Internasional Batam, Indonesia || 2251016.weyni@uib.edu

Winsherly Tan*
Universitas Internasional Batam, Indonesia || winsherly@uib.ac.id
**Corresponding Author*

Febri Jaya
Universitas Internasional Batam, Indonesia || febri.jaya@uib.ac.id

How to cite:

Andilsim, W., Tan, W., & Jaya, F. (2025). Realizing Legal Certainty in Electronic Land Certificates: A Critical Reflection on Ontario's Legislative Model for Indonesia. *SIGn Jurnal Hukum, 7*(2), 821-837. https://doi.org/10.37276/sjh.v7i2.520

ABSTRACT

The digital transformation of land administration in Indonesia, under the framework of Government Regulation Number 18 of 2021, marks a crucial step toward modernizing public services. However, a fundamental problem of legal certainty for land rights arises from its delegative model of authority, under which essential technical regulations are issued through the Regulation of Minister of ATR/KBPN Number 3 of 2023. This reliance on a ministerial-level regulation creates potential long-term juridical and operational vulnerabilities. This research aims to critically analyze the weaknesses of this delegative model and project strategic solutions, employing a normative legal research method with a functional comparative approach. The Province of Ontario, Canada, a global pioneer, was selected as the comparative jurisdiction. The analysis reveals that Indonesia's delegative model is exacerbated by practical challenges, including technological infrastructure gaps, a deficit in public trust, and uneven digital literacy. Conversely, Ontario's integrative legislative model—supported by a comprehensive ecosystem of regulations at the Act of Parliament level, a mature public-private partnership, and strict access governance—has been functionally proven to achieve superior levels of legal certainty and efficiency. It is concluded that to achieve complete legal certainty, Indonesia must elevate and consolidate its legal framework into a comprehensive Bill on Electronic Land Registration, which would serve as a solid foundation for building a holistic digital ecosystem of trust.

Keywords: Electronic Land Certificate; Land Registration; Legal Certainty; Polaris; Teraview.

INTRODUCTION

Digital transformation has become a global imperative, fundamentally reshaping various public service sectors, not least the crucial field of land administration. Across numerous jurisdictions, the shift from paper-based systems—historically vulnerable to inefficiencies, overlapping ownership disputes, and the practices of land mafias—toward electronic land registration systems that promise speed, transparency, and security has become a priority agenda (Maulana et al., 2024). This phenomenon is driven by the conviction that digitalization will not only modernize bureaucracy but also fortify the guarantee of legal certainty over land ownership rights (Permana et al., 2024). Such certainty is an essential pillar of a nation's social stability and economic growth, as clear property ownership provides the foundation for credit access, investment, and sustainable spatial planning (Syam & Muzakkir, 2022). This transition process, while promising, is fraught with complexities involving unique juridical, technological, and socio-cultural challenges in each country.

Indonesia, a nation with highly complex land dynamics and a long history of agrarian conflict, has proactively embraced this wave of transformation. The government's commitment to modernizing its land administration system is manifested through the introduction of electronic land certificates (e-certificates). Data from the Ministry of ATR/BPN indicates that as of June 30, 2025, a total of 4,907,313 e-certificates have been issued across 486 Land Offices in Indonesia, out of a national total of 124 million land parcels (Dwi et al., 2025). This step is not merely a technical innovation but a strategic policy founded on a robust legal framework, namely

Government Regulation Number 18 of 2021. Through Article 84 of this regulation, the state explicitly recognizes that the outputs of electronic land registration, including its electronic documents, constitute valid legal evidence. This provision serves as the juridical backbone, providing a significant foundation by elevating the legitimacy of e-certificates from mere policy discourse to a binding legal norm at the government regulatory level, which, in theory, should reduce legal doubt among the public and business actors.

Nevertheless, the existence of this overarching legal framework at the government regulation level has not automatically resolved all issues of legal certainty, particularly at the implementation stage. A deeper analysis of this regulatory structure reveals a crucial characteristic: an extensive delegation of authority for further regulation. Article 99 of Government Regulation Number 18 of 2021 explicitly mandates that any further provisions concerning the technical implementation of electronic land registration shall be set out in a Ministerial Regulation. This delegation was subsequently executed through the issuance of the Regulation of Minister of ATR/KBPN Number 3 of 2023. Such a delegation model, though common in the Indonesian legal system, effectively creates a legal structure in which critical technical substance—such as detailed media transfer procedures, dynamic cybersecurity standards, and biometric validation mechanisms—is governed by a legal product of a lower hierarchy. Consequently, these technical regulations are more susceptible to partial amendments that can create long-term regulatory uncertainty. This condition marks the starting point of the juridical problem this research will investigate.

It is here that the dialectic between the legal reality (*das sein*) and the legal ideal (*das sollen*) emerges sharply. In terms of *das sein*, Indonesia has an operational electronic land system based on a Ministerial Regulation, albeit under the purview of a Government Regulation. The reality of its implementation reveals multifaceted challenges, from uneven digital infrastructure readiness and disparities in spatial data quality that risk creating a "flawed digital legacy," to socio-cultural resistance stemming from low digital literacy rooted in historical public trauma regarding land disputes (Tanner et al., 2023; Sukadi et al., 2024; Pranata & Tajuddin, 2025). On the other hand, the *das sollen*, or the aspired ideal, is a system that is not only technologically advanced but also supported by a complete, integrated, and unambiguous legal foundation, thereby capable of providing the highest guarantee of legal certainty, tangibly felt by the community.

To measure the extent of the gap between this reality and the ideal, a relevant benchmark is necessary. In this context, the electronic land registration system in the Province of Ontario, Canada, presents a highly relevant and time-tested comparative model. Since the late 1980s, Ontario has pioneered and refined its digital land registration systems (POLARIS and Teraview), which are not only technologically

mature but are also based on a comprehensive legal framework at the Act of Parliament level, such as the Land Registration Reform Act and the Electronic Commerce Act (Gainer, 2017). The Ontario model represents an ecosystem where law and technology are fully integrated within a single, highest layer of regulatory authority. The implications include the creation of a highly liquid property market, reduced litigation costs related to ownership disputes, and increased investor confidence—a significant contrast to the model of delegated authority implemented in Indonesia.

Previous studies in Indonesia have made important contributions to the examination of e-certificates. Several studies have focused on the juridical analysis of the legal force of the Minister of ATR/BPN Regulation (Aniscasary & Ramasari, 2022; Masri & Hirwansyah, 2023), while others have examined implementation challenges at the practitioner level, such as for Land Deed Officials (Hamzah & Mangarengi, 2023), including complex operational and procedural issues (Maulidiana et al., 2025), or the technical problems of supporting applications that are often suboptimal (Ardian & Wibowo, 2025). However, a significant analytical gap remains: no research has conducted a comparative study to evaluate the juridical implications of Indonesia's model of delegated authority (from a Government Regulation to a Ministerial Regulation) when juxtaposed with an integrated and comprehensive legislative model such as Ontario's. This gap defines the intellectual space for this research, moving from the question of "is it legally valid?" to "is it sufficiently robust?"

The novelty offered by this research lies in its critical and functional approach to comparative law. This study does not merely describe the two systems side-by-side; rather, it analytically compares how two different regulatory models—the delegative model (Indonesia) and the integrative model (Ontario)—function to achieve the same objective: realizing legal certainty. This functional approach allows us to look beyond the legal text and assess the outcomes and effectiveness of the respective frameworks in practice. The choice of Ontario as a comparative subject is based on its status as a global pioneer, with its system having been tested for over three decades. This extensive experience offers a wealth of empirical and judicial data on best practices, long-term challenges, and crucial lessons on system resilience in the face of economic cycles, technological disruptions, and new security threats (Gainer, 2017; Innocente, 2017).

Theoretically, this research seeks to enrich the literature on digital agrarian law by offering a sharper, more relevant international comparative perspective for a developing country undergoing legal reform. The theoretical framework is grounded in Rahardjo's (2008) concept of progressive law, which emphasizes that law must be responsive and capable of substantively meeting societal needs, rather than being fixated on formal legality. In this context, the delegation model in Indonesia can be

analyzed as a form of formal law that may fail to fully meet the public's need for absolute and unambiguous certainty. The analysis will examine the extent to which each regulatory model can achieve substantive justice and legal certainty as directly experienced by the public in the digital era.

Based on the foregoing, this research has two primary objectives. *First*, to comparatively analyze the functional advantages and disadvantages of e-certificate systems in Indonesia and Ontario, with a focus on the implications of their differing regulatory frameworks. *Second*, to identify and formulate strategic solutions in the form of legal lessons that Indonesia can adopt from Ontario's experience to strengthen the guarantee of legal certainty in its electronic land registration system. The practical benefit of this research is to provide policymakers, legislators, and the Ministry of ATR/BPN with evidence-based input. This input is intended to inform future drafting of a comprehensive Academic Draft for a Bill on Electronic Land Registration, ensuring that Indonesia's digital land reform proceeds on the strongest possible legal foundation.

METHOD

This study is anchored in the normative legal research method, an approach inherently focused on the text-based analysis of legal instruments to examine and interpret the norms, principles, and doctrines they contain (Qamar & Rezah, 2020; Tan, 2021). The selection of this method is based on the nature of the research problem, which is fundamentally a juridical issue concerning legal certainty in the application of e-certificates. The primary focus of this method is to thoroughly dissect the laws and regulations that underpin Indonesia's digital land registration system. The analysis is not confined to the Regulation of Minister of ATR/KBPN Number 3 of 2023 as the technical regulation, but also encompasses Government Regulation Number 18 of 2021 as the higher-level legal framework, as well as other fundamental statutes such as Law Number 5 of 1960.

To dissect these legal materials, this study adopts two primary, complementary approaches. *First*, the statute approach is used to systematically and hierarchically examine all regulations related to electronic land registration in Indonesia. This approach facilitates the identification of potential normative conflicts, legal vacuums, or delegations of authority that affect legal certainty (Disemadi, 2022). The *second*, which underpins this research, is the comparative approach. This approach does not merely juxtapose two legal systems but critically compares Indonesia's digital land law system with the well-established model in the Province of Ontario, Canada. This comparative analysis aims to identify functional differences and similarities and to draw strategic lessons from the experiences of another jurisdiction that has navigated the complexities of digital transformation in the land sector earlier (Gainer, 2017).

Consistent with the normative legal research method, the data sources used in this study are secondary in nature, obtained through library research. These sources are classified into three main categories (Sampara & Husen, 2016). *First*, primary legal materials, which consist of relevant laws and regulations in Indonesia (such as Law Number 5 of 1960, Government Regulation Number 18 of 2021, and the Regulation of Minister of ATR/KBPN Number 3 of 2023) and in Canada (such as the Land Titles Act and the Electronic Commerce Act). *Second*, secondary legal materials, including academic literature such as scholarly journals, books, dissertations, and research reports, discussing electronic land registration, data protection, and comparative law. *Third*, tertiary legal materials, such as legal dictionaries, encyclopedias, and online articles from credible sources, serve as supporting data to enrich conceptual understanding.

The data analysis technique employed in this research is a qualitative-comparative analysis applying a functional comparative model (Irwansyah, 2020). This model does not merely compare legal clauses article by article, but rather compares how each legal system performs the same function—namely, providing legal certainty—albeit with different instruments and regulatory structures. This analytical process proceeds through several systematic stages: (1) data selection and reduction, which involves choosing and sorting the legal data most relevant to the research focus; (2) data display, which involves organizing the selected data into thematic comparative matrices (e.g., regulation, technology, security); and (3) conclusion drawing, which involves synthesizing and interpreting the comparative findings to answer the research objectives in an argumentative and in-depth manner.

RESULTS AND DISCUSSION

A. The Juridical and Technological Dialectic of Electronic Land Certificate Systems: A Comparative Projection of Indonesia and Ontario

The comparative analysis of the e-certificate systems in Indonesia and the Province of Ontario, Canada, reveals a fundamental dialectic between the ambition for modernization and the reality of institutional maturity. Employing the functional comparative model outlined in the methodology, this comparison is not a mere technical feature-by-feature contest but rather focuses on how each legal system performs its essential function: realizing legal certainty for land rights in the digital age. Through an examination of three crucial dimensions—the regulatory framework, technological infrastructure, and security paradigm—a stark difference emerges in the foundation, implementation, and protective guarantees offered by the two jurisdictions. These differences ultimately have implications not only for technical aspects but also profoundly affect the level of

public trust and the overall effectiveness of the system, which serve as the primary barometers for the success of any public service reform.

The first and most fundamental dimension is the regulatory framework that underpins the validity of electronic documents. In Indonesia, the digital transformation of land administration now rests on a significantly stronger juridical foundation with the enactment of Government Regulation Number 18 of 2021. Article 84 of this regulation expressly states that the outputs of electronic land registration, including their electronic documents, constitute valid legal evidence and an extension of the evidence recognized in procedural law. This provision confers solid formal legitimacy at the government regulatory level, a crucial step toward reducing legal ambiguity. However, this strength at the framework level does not automatically guarantee certainty in implementation. A critical characteristic of Indonesia's legal framework is its delegative model of authority, as stipulated in Article 99 of the Government Regulation, which explicitly delegates further technical arrangements to a Ministerial Regulation. Consequently, the Regulation of Minister of ATR/KBPN Number 3 of 2023 serves as the primary framework for governing the most vital technical matters, including media transfer procedures, cybersecurity standards, and validation mechanisms. This delegative model, while bureaucratically efficient in enabling rapid technical adjustments, creates a functional vulnerability: the technical foundation of a crucial national system depends on a legal product that is hierarchically lower and more easily amended. The implication is a potential for long-term regulatory instability, where policy changes at the ministerial level can directly affect the procedures and security standards relied upon by millions of property owners and investors.

This situation in Indonesia presents a sharp contrast when functionally compared with the Province of Ontario. There, the electronic land registration system is supported not by a single regulation but by a layered, mature, and comprehensive legislative ecosystem at the Act of Parliament level. Its primary foundations are the Land Registration Reform Act and the Land Titles Act, which specifically amend and adapt land law for the digital era, rather than merely authorizing digitalization. The legal force of electronic documents is generally guaranteed by the Electronic Commerce Act, which ensures that digital transactions have the same legal standing as paper documents. This integrative legislative model, in which technical and juridical substance is regulated at the highest legal tier, provides a far superior level of legal certainty. This certainty is felt not only by the public but also by legal professionals and financial institutions that interact with the system, as its legal foundation is not easily altered and carries the highest authority (Gainer, 2017). As a result, legal risks arising from ambiguity or changes in technical regulations are significantly reduced, thereby building market confidence and fostering safer, more efficient property transactions.

Building on the regulatory foundation, the second dimension is technological infrastructure and its on-the-ground implementation. Indonesia has developed various supporting software, including the "*Sentuh Tanahku*" application for public information access and the "*SiTata*" application for internal data validation processes by the National Land Agency (BPN) (Putri et al., 2022; Ardian & Wibowo, 2025; Mayreista et al., 2025). Conceptually, these applications are designed to enhance efficiency and transparency. However, empirical studies indicate a significant gap between their conceptual design and their actual implementation. For instance, operational challenges faced by Land Deed Officials during the media transfer process show that system and procedural readiness still require intensive adaptation, often causing friction and delays in service delivery (Maulidiana et al., 2025). Furthermore, more fundamental issues, such as limited internet infrastructure in rural areas and uneven spatial data quality, act as structural impediments that hinder the system's overall functional effectiveness (Sukadi et al., 2024; Pranata & Tajuddin, 2025). The consequence is the creation of a "partial digital service," where end-to-end processes still frequently require manual intervention, ultimately negating much of the promised efficiency gains.

Ontario's implementation experience offers a valuable lesson on the importance of a phased, well-planned transformation supported by strategic partnerships. The POLARIS and Teraview systems were not built overnight or through a single policy leap. This massive project began in the late 1980s through a public-private partnership between the Government of Ontario and Teranet, a private consortium. This partnership model enabled the government to accelerate technological development and overcome budget constraints. However, the data conversion from paper to digital took over a decade and faced numerous initial challenges (Gainer, 2017). The result is a highly integrated and reliable ecosystem where licensed legal professionals can conduct the entire property transaction cycle—from title searches and document submission to mortgage registration—online in minutes. This level of efficiency, which has become the daily operational standard in Ontario, remains an aspiration for the Indonesian system, demonstrating that technological maturity is not just about software but also about a long-term implementation strategy.

The third, no less crucial, dimension is the paradigm of security and personal data protection. Indonesia has demonstrated a strong commitment in this area. Article 44 section (1) of Regulation of Minister of ATR/KBPN Number 3 of 2023 explicitly places full responsibility on the Minister to safeguard the security of e-certificates. This commitment is realized through a series of technical security layers, such as the use of Electronic Signatures verified by a Certificate Authority, data encryption to protect information during transmission and storage, QR

codes verifiable only through an official application to prevent phishing, and the implementation of the ISO 27001:2013 information security management standard (Baisa & Probondaru, 2025; Primarini et al., 2025). The protection of certificate holders' personal data is also guaranteed by Law Number 27 of 2022. Functionally, this security architecture is designed to mitigate the risks of forgery and data manipulation prevalent in the era of analog certificates (Azhar & Dharsana, 2025; Muri et al., 2025), thereby building public trust in the integrity of digital documents (Oktavianto, 2025).

Nevertheless, a comparison with Ontario reveals that system security is not merely a technical matter but also one of governance and legal culture. In Ontario, system security is reinforced by a data protection framework including the Freedom of Information and Protection of Privacy Act (FIPPA) and, indirectly, the Personal Information Protection and Electronic Documents Act (PIPEDA) (Rosenstock, 2019). However, its added value lies in its extremely strict access governance—a risk-based approach that acknowledges threats often originate from within. Full access to the Teraview system is restricted to licensed lawyers and legal professionals who have undergone a rigorous verification process and are bound by a professional code of ethics. This governance functionally creates trusted "gatekeepers," where every transaction can be traced to a responsible professional, thereby reducing the risk of internal misuse. It is important to note, however, that even Ontario's system is not immune to threats. An in-depth study by Innocente (2017) revealed how institutional changes in the property transaction process inadvertently created new opportunities for title fraud. Moreover, research by Wiltshire (2021) has highlighted public perceptions in Canada of weaknesses in data privacy legislation more generally. This critical analysis demonstrates that no system is perfect, and every security architecture, no matter how advanced, will always face an evolving landscape of dynamic threats, demanding continuous auditing, updates, and regulatory adaptation.

B. Comparative Implications and Projections for Strategic Solutions for Indonesia

The comparative analysis detailed in the previous sub-chapter not only maps out technical and juridical differences but also implicitly uncovers the fundamental challenges at the root of the problems in Indonesia's e-certificate implementation. Before formulating solutions, synthesizing these challenges is essential to ensure that the resulting recommendations are strategic and address the core of the issue. Based on the dialectic between the Indonesian and Ontarian models, three intertwined clusters of primary challenges can be identified: hierarchical weaknesses in the regulatory framework, an acute gap between

technological design and infrastructural readiness, and a public trust deficit rooted in digital literacy and historical trauma. These three challenges collectively hinder the achievement of the primary goal of digital transformation, namely the realization of complete legal certainty—a condition where land rights are not only formally valid but can also be easily defended, securely transacted, and reliably used as economic collateral—which can ultimately be tangibly felt by the wider community.

The first and most fundamental challenge is the hierarchical weakness within the regulatory framework. Although Indonesia has a legal framework at the Government Regulation level, the model of delegating authority for crucial technical regulations to the Regulation of Minister of ATR/KBPN Number 3 of 2023 creates a juridical paradox. On the one hand, the state has conferred strong legitimacy. On the other hand, the system's operational foundation rests on a regulatory level that is susceptible to change and has lower legal authority. This finding expands upon the conclusions of Aniscasary and Ramasari (2022), who focused on the legal validity of the previous Regulation of Minister of ATR/KBPN Number 1 of 2021. The real issue is not the validity of the Ministerial Regulation itself, but rather the long-term implications of this delegative model for legal stability and predictability. The tangible consequence is the emergence of doubt among investors and financial institutions about the system's resilience to politically motivated policy changes, as well as the potential for varied judicial interpretations in complex disputes—an aspect in which Ontario's integrative legislative model has proven a major strength.

The second challenge is the acute gap between technological design and the reality of infrastructural readiness. Conceptually, the digital ecosystem designed by the Ministry of ATR/BPN, including applications such as "*Sentuh Tanahku*" and "*SiTata*," aims to improve efficiency. In practice, however, the effectiveness of this technology is degraded by on-the-ground realities. Research by Ardian and Wibowo (2025) specifically highlights how the spatial data validation process at the Sleman Land Office is hampered by technical issues with the application, limited human resources, and the absence of a complete, high-quality base map. This condition is exacerbated by uneven digital infrastructure across the archipelago, as consistently reported in various regional case studies (Putri et al., 2022; Sukadi et al., 2024; Pranata & Tajuddin, 2025). As a result, the promise of a seamless and integrated digital service often collides with still-dominant manual processes. This phenomenon creates "operational friction," where the public or Land Deed Officials must perform physical verifications after initiating a process digitally, ultimately diminishing the innovation's added value and potentially introducing additional costs and time that should have been eliminated.

The third challenge, which is socio-cultural in nature, is a public trust deficit rooted in digital literacy and historical trauma. Digital transformation is not just about changing systems; it is also about changing the public's paradigm. In many parts of Indonesia, particularly in rural areas, a physical certificate is still considered the sole authentic and secure proof of ownership. Low digital literacy, compounded by a lack of massive and sustained public outreach, creates a perception that electronic documents are more vulnerable to hacking, manipulation, or even total loss due to system failure (Putri & Putri, 2024; Oktavianto, 2025). This concern is not baseless but is reinforced by the public's collective trauma with the rampant practices of land mafias, certificate forgery, and protracted ownership disputes (Ardiansyah et al., 2025). For many citizens, the physical certificate in their hands is the last real and tangible line of defense. The reluctance to relinquish this physical proof is a form of rational resistance born of historical experience and, therefore, cannot be overcome by technical arguments alone; it must be addressed through long-term institutional trust-building.

Facing these fundamental challenges, Ontario's experience over more than three decades offers a series of strategic lessons that can serve as a blueprint for refining Indonesia's system. These lessons are not about blind imitation but about adopting proven principles of good governance. The first strategic lesson is the urgency of elevating and integrating the legal framework. Ontario's success is inseparable from its legal foundation being enshrined in Acts of Parliament. For Indonesia, this means the most fundamental long-term solution is to consolidate the norms currently dispersed across Government Regulation Number 18 of 2021 and the Regulation of Minister of ATR/KBPN Number 3 of 2023 into a comprehensive Bill on Electronic Land Registration. A national law (*Undang-Undang*) would not only provide legal certainty at the highest level, equivalent to Law Number 5 of 1960 itself. Still, it would also compel cross-sectoral harmonization during the legislative process. It would ensure that crucial aspects—such as the standard for digital evidence before the Supreme Court, the jurisdiction for handling cybercrimes by the National Police and the National Cyber and Crypto Agency, and data protection standards by the Ministry of Communication and Digital Affairs—are regulated in an integrated, not piecemeal, fashion.

The second strategic lesson is the effectiveness of a public-private partnership model in accelerating technological development and ensuring operational sustainability. The infrastructure and technology gap in Indonesia is a classic problem often constrained by state budget limitations. The partnership model implemented by Ontario with Teranet demonstrates how the private sector can be engaged to provide investment, technical expertise, and long-term operational management (Gainer, 2017). The government can then focus on its role

as a regulator and policy guarantor, while a private partner, incentivized to innovate and maintain user satisfaction, takes responsibility for system development and maintenance. Exploring the potential for a transparent and accountable public-private partnership model could be one of the most pragmatic ways for Indonesia to overcome its infrastructure deficit and ensure the system remains relevant to future technological advancements.

The third, and perhaps most complex, strategic lesson is the importance of building a solid ecosystem of trust. Trust in Ontario's system was built not only through advanced technology but also through strict governance and solid cross-sectoral coordination. For instance, restricting system access to licensed legal professionals is a governance mechanism that ensures accountability. For Indonesia, this implies strengthening the role and capacity of Land Deed Officials as the primary "gatekeepers" of the digital ecosystem, alongside strict enforcement of a code of ethics and a transparent auditing system. Furthermore, coordination between the Ministry of ATR/BPN and other agencies, such as the National Cyber and Crypto Agency, must be strengthened, not only at the policy level but also at the operational level to handle security incidents (Wirawan et al., 2025). Concurrently, a massive, structured, and continuous public education program must become a national priority (Suryani & Saly, 2024). This education must go beyond tutorials on app usage; it must simply explain the underlying security architecture to slowly shift the public paradigm and build literacy and confidence in the security and advantages of e-certificates.

Ultimately, the most important lesson from Ontario is not its static, perfect system, but its commitment to continuously adapting its legal framework to new threats and challenges. Amendments to the Electronic Commerce Act to address the threat of deepfake-based property fraud is a clear testament to this principle of adaptability. It shows that legal reform is not a finished project but an ongoing evolutionary process. For Indonesia, this means that the Regulation of Minister of ATR/KBPN Number 3 of 2023 and even Government Regulation Number 18 of 2021 should not be seen as the final destination. Instead, they should be viewed as the initial foundation for a long journey to build a digital land system that is not only technologically advanced but also resilient, adaptive, and capable of delivering complete legal certainty to all the people of Indonesia.

CONCLUSIONS AND SUGGESTIONS

Based on the results and discussion, it can be concluded that the implementation of e-certificates in Indonesia and the Province of Ontario, Canada, represents two models of digital land transformation with fundamentally different levels of institutional maturity and legal certainty. Indonesia, despite having a juridical foundation at the

Government Regulation level through Government Regulation Number 18 of 2021, functionally still relies on a model that delegates authority for technical regulations to the Regulation of Minister of ATR/KBPN Number 3 of 2023. This delegative model, while flexible, inherently creates vulnerability at the implementation level, where long-term legal stability and predictability are not yet fully guaranteed. This structural weakness is exacerbated by factual challenges, including regional gaps in technological infrastructure and a public trust deficit rooted in low digital literacy and historical trauma related to land disputes.

Conversely, Ontario's system—supported by a comprehensive ecosystem of regulations at the Act of Parliament level, a mature public-private partnership, and strict access governance—has effectively achieved superior levels of legal certainty, efficiency, and public trust. The success of Ontario lies not only in its technological sophistication but in the maturity of its integrative legal framework and its commitment to continuously adapting to new threats. Therefore, this Research affirms that to achieve complete legal certainty, the adoption of digital technology must be balanced by strengthening the juridical foundation at the highest level and by developing a holistic ecosystem of trust—an objective that, for Indonesia, remains a strategic task.

Stemming from these conclusions, several constructive strategic suggestions are proposed. *First*, the Government and the House of Representatives are recommended to prioritize drafting a Bill on Electronic Land Registration. This bill is essential to consolidate and elevate the norms currently dispersed across Government Regulation Number 18 of 2021 and the Regulation of Minister of ATR/KBPN Number 3 of 2023 into a single legal product with the highest authority. This step will not only provide maximum legal certainty. However, it will also compel fundamental cross-sectoral policy harmonization between the Ministry of ATR/BPN, the Supreme Court, the National Police, the Ministry of Communication and Digital Affairs, and the National Cyber and Crypto Agency from the very start of the legislative process.

Second, the Ministry of ATR/BPN is advised to conduct an in-depth study of the potential application of a transparent and accountable Public-Private Partnership model to accelerate infrastructure development and the operational sustainability of the electronic system. Learning from Ontario's partnership model with Teranet, which involves the private sector with technical expertise and innovation incentives, could be a pragmatic solution to overcome state budget constraints and ensure the system remains adaptable to technological advancements. *Third*, a structured, massive, and sustainable national program for land-related digital education and literacy must be designed and implemented. This program must transcend mere technical tutorials on application use and build public understanding and trust in the security architecture and the functional advantages of the e-certificate, which are absolute prerequisites for the successful social adoption of this innovation.

REFERENCES

Aniscasary, S., & Ramasari, R. D. (2022). Tinjauan Yuridis Kekuatan Hukum Sertifikat Tanah Elektronik Berdasarkan Peraturan Menteri Agraria dan Tata Ruang Nomor 1 Tahun 2021. *Jurnal Hukum dan Etika Kesehatan, 2*(1), 1-14. https://doi.org/10.30649/jhek.v2i1.38

Ardian, M., & Wibowo, H. Y. (2025). Evaluasi Proses Validasi Data Spasial pada Layanan Elektronik di Kantor Pertanahan Kabupaten Sleman. *JGISE: Journal of Geospatial Information Science and Engineering, 8*(1), 37-44. https://doi.org/10.22146/jgise.102069

Ardiansyah, A., Akbar, M. G. G., & Abas, M. (2025). Evidentiary Strength of Land Ownership Certificates: An Analysis of Judicial Considerations in Supreme Court Decision Number 3762 K/Pdt/2022. *SIGn Jurnal Hukum, 7*(1), 471-487. https://doi.org/10.37276/sjh.v7i1.463

Azhar, N. N., & Dharsana, I. M. P. (2025). Efektivitas Penggunaan Sertipikat Elektronik dalam Mencegah Pemalsuan Dokumen Tanah. *Jurnal Ilmu Hukum, Humaniora dan Politik, 5*(2), 1080-1088. https://doi.org/10.38035/jihhp.v5i2.3323

Baisa, N., & Probondaru, I. P. (2025). Transformasi Data pada Sertipikat Tanah: Analisis Perbandingan antara Sertipikat Elektronik dan Analog. *Reformasi Hukum Trisakti, 7*(3), 1330-1340. Retrieved from https://e-journal.trisakti.ac.id/index.php/refor/article/view/22964

Disemadi, H. S. (2022). Lenses of Legal Research: A Descriptive Essay on Legal Research Methodologies. *Journal of Judicial Review, 24*(2), 289-304. https://doi.org/10.37253/jjr.v24i2.7280

Dwi, A., Rachman, M. F., Wicaksono, P., & Mardianti, D. L. (2025, August 16). *Hal Ihwal Lebih Gamblang Soal Sertifikat Tanah Elektronik*. Tempo. Retrieved September 9, 2025, from https://www.tempo.co/ekonomi/hal-ihwal-lebih-gamblang-soal-sertifikat-tanah-elektronik--2059708

Gainer, M. (2017). *Breaking New Ground: Pioneering Electronic Land Registration in Ontario, 1987-2010*. Innovations for Successful Societies, Princeton University. https://successfulsocieties.princeton.edu/publications/breaking-new-ground-pioneering-electronic-land-registration-ontario

Government Regulation of the Republic of Indonesia Number 18 of 2021 on Management Rights, Land Rights, Condominium Unit, and Land Registration (State Gazette of the Republic of Indonesia of 2021 Number 28, Supplement to the State Gazette of the Republic of Indonesia Number 6630). https://peraturan.go.id/id/pp-no-18-tahun-2021

Hamzah, Y. A., & Mangarengi, A. A. (2023). The Authority of PPAT in Making AJB Related to Heritage Land Owned by a Minor. *SIGn Jurnal Hukum, 4*(2), 364-375. https://doi.org/10.37276/sjh.v4i2.253

Innocente, N. (2017). *The Perfect Storm: Institutional and Organizational Antecedents of Title Fraud in Ontario* [Doctoral Dissertation, University of Toronto]. UToronto Libraries. http://hdl.handle.net/1807/77467

Irwansyah. (2020). *Penelitian Hukum: Pilihan Metode & Praktik Penulisan Artikel*. Mirra Buana Media.

Law of the Republic of Indonesia Number 5 of 1960 on Basic Provisions of Agrarian Principles (State Gazette of the Republic of Indonesia of 1960 Number 104, Supplement to the State Gazette of the Republic of Indonesia Number 2043). https://www.dpr.go.id/dokumen/jdih/undang-undang/detail/1361

Law of the Republic of Indonesia Number 22 of 2022 on the Correctional System (State Gazette of the Republic of Indonesia of 2022 Number 165, Supplement to the State Gazette of the Republic of Indonesia Number 6811). https://www.dpr.go.id/dokumen/jdih/undang-undang/detail/1810

Masri, E., & Hirwansyah, H. (2023). Kebijakan Penerbitan Sertipikat Elektronik Pada Sistem Pendaftaran Tanah di Indonesia untuk Mewujudkan Kepastian Hukum. *Krtha Bhayangkara, 17*(1), 157-174. Retrieved from https://ejurnal.ubharajaya.ac.id/index.php/krtha/article/view/827

Maulana, H. S., Nugraha, N. R. A., Arinda, R. M. A., Fikri, M. A. H., & Wahanisa, R. (2024). Urgensi Sertifikat Elektronik dengan Pemantauan Berbasis AI untuk Efisiensi Pendaftaran Tanah dan Mitigasi Mafia Tanah di Indonesia. *Journal Customary Law, 2*(1), 1-9. https://doi.org/10.47134/jcl.v2i1.3304

Maulidiana, A. R., Deni, F., & Wijaya, E. (2025). Implementation of the Media Conversion of Land Certificates to E-certificates by the Land Deed Making Official in South Tangerang City in Support of Agrarian Reform. *SIGn Jurnal Hukum, 7*(1), 112-132. https://doi.org/10.37276/sjh.v7i1.424

Mayreista, D., Nurwahyuliningsih, E., Dewi, I. M., & Azwar, R. (2025). Perlindungan Hukum terhadap Hak Atas Tanah melalui Aplikasi SENTUH TANAHKU di Kecamatan Kalidoni Kota Palembang. *Innovative: Journal of Social Science Research, 5*(3), 5675-5687. Retrieved from https://j-innovative.org/index.php/Innovative/article/view/19586

Muri, D. P. D., Wibawanti, E. S., & Safitri, M. I. (2025). Sertipikat Elektronik sebagai Jaminan Perlindungan Hak Atas Tanah dalam Pelaksanaan Pendaftaran Tanah. *Jurnal Usm Law Review, 8*(2), 1126-1147. https://doi.org/10.26623/julr.v8i2.12136

Oktavianto, R. (2025). *Optimalisasi Pelayanan Pertanahan Melalui Adopsi Sertifikat Tanah Elektronik* [Master Thesis, Universitas Islam Sultan Agung Semarang]. Repository Unissula. https://repository.unissula.ac.id/39943

Ontario Statute Law: Electronic Commerce Act, 2000 (S.O. 2000, c. 17). https://www.ontario.ca/laws/statute/00e17

Ontario Statute Law: Freedom of Information and Protection of Privacy Act (R.S.O. 1990, c. F.31). https://www.ontario.ca/laws/statute/90f31

Ontario Statute Law: Land Registration Reform Act (R.S.O. 1990, c. L.4). https://www.ontario.ca/laws/statute/90l04

Ontario Statute Law: Land Titles Act (R.S.O. 1990, c. L.5). https://www.ontario.ca/laws/statute/90l05

Permana, B. A., Halim, A., & Uraidi, A. (2024). Kekuatan Hukum Pembuktian Sertifikat Elektronik dalam Perkara Perdata Menurut Peraturan Mentri ATR/Kepala BPN No 3 Tahun 2023 tentang Penerbitan Sertifikat Elektronik dalam Kegiatan Pendaftaran Tanah. *Jurnal Ilmiah AKSES, 2*(1), 61-75. Retrieved from https://www.unars.ac.id/ojs/index.php/akses/article/view/4453

Pranata, A., & Tajuddin, T. (2025). Problematika Implementasi E-Sertifikat Pertanahan di Kalimantan Timur. *Journal of Law and Nation, 4*(1), 247-248. Retrieved from https://joln.my.id/index.php/joln/article/view/205

Primarini, N. L., Rahmalia, W. N., Prihastuti, D. I., Gunawan, M. S., & Nurhaqi, A. (2025). Legal Protection for the Security of Personal Data of Electronic Land Certificate Holders. *Jurnal Legisci, 2*(4), 296-306. https://doi.org/10.62885/legisci.v2i4.619

Putri, A. I. E., & Putri, N. (2024). Concepts and Challenges in Digitalizing the Land Management System in Indonesia. *Notaire, 7*(1), 47-70. https://doi.org/10.20473/ntr.v7i1.54648

Putri, Y. A., Putera, R. E., & Rahayu, W. K. (2022). Inovasi Pelayanan Informasi melalui Aplikasi Sentuh Tanahku pada Kantor Pertanahan Kota Administrasi Jakarta Utara. *Journal of Social and Policy Issues, 2*(2), 86-94. https://doi.org/10.58835/jspi.v2i2.45

Qamar, N., & Rezah, F. S. (2020). *Metode Penelitian Hukum: Doktrinal dan Non-Doktrinal*. CV. Social Politic Genius (SIGn).

Rahardjo, S. (2008). *Membedah Hukum Progresif*. Kompas.

Regulation of Minister of Agrarian Affairs and Spatial Planning/Head of the National Land Agency of the Republic of Indonesia Number 1 of 2021 on Electronic Certificate (Bulletin Gazette of the Republic of Indonesia of 2021 Number 12). https://jdih.atrbpn.go.id/peraturan/detail/934/peraturan-menteri-agraria-dan-tata-ruang-kepala-badan-pertanahan-nasional-nomor-1-tahun-2021

Regulation of Minister of Agrarian Affairs and Spatial Planning/Head of the National Land Agency of the Republic of Indonesia Number 3 of 2023 on the Issuance of Electronic Documents in Land Registration Activities (Bulletin Gazette of the Republic of Indonesia of 2023 Number 461). https://jdih.atrbpn.go.id/peraturan/detail/1123/peraturan-menteri-agraria-dan-tata-ruang-kepala-badan-pertanahan-nasional-nomor-3-tahun-2023

Rosenstock, M. (2019). Is There a 'Right to be Forgotten' in Canada's Personal Information Protection and Electronic Documents Act (PIPEDA)? *Canadian Journal of Law and Technology, 14*(1), 131-155. Retrieved from https://digitalcommons.schulichlaw.dal.ca/cjlt/vol14/iss1/6

Sampara, S., & Husen, L. O. (2016). *Metode Penelitian Hukum*. Kretakupa Print.

Statute of Canada: Personal Information Protection and Electronic Documents Act (S.C. 2000, c. 5). https://laws.justice.gc.ca/eng/acts/P-8.6

Sukadi, I., Harry, M., Setyobudi, T., Sinal, M., & As-Suvi, A. Q. (2024). Legal Politics Electronic Land Certificate in Indonesia. *Jurnal Usm Law Review, 7*(3), 1323-1338. https://doi.org/10.26623/julr.v7i3.9625

Suryani, S. D., & Saly, J. N. (2024). Application of Electronic Land Certificates in the Indonesian Land System. *INJURITY: Journal of Interdisciplinary Studies, 3*(1), 1-8. https://doi.org/10.58631/injurity.v3i1.157

Syam, M. R. A., & Muzakkir, A. K. (2022). Status and Position of the SHM of Condominium Units after a Fire: Makassar Mall Shopping Center. *SIGn Jurnal Hukum, 4*(2), 202-220. https://doi.org/10.37276/sjh.v4i2.218

Tan, D. (2021). Metode Penelitian Hukum: Mengupas dan Mengulas Metodologi dalam Menyelenggarakan Penelitian Hukum. *Nusantara: Jurnal Ilmu Pengetahuan Sosial, 8*(8), 2463-2478. Retrieved from https://jurnal.um-tapsel.ac.id/index.php/nusantara/article/view/5601

Tanner, J., Salmon, H., & Pattinasarany, Y. (2023). Pertanggungjawaban Hukum Badan Pertanahan Nasional Terhadap Keberadaan Sertifikat Ganda. *CAPITAN: Constitutional Law & Administrative Law Review, 1*(1), 23-32. https://doi.org/10.47268/capitan.v1i1.9905

Wiltshire, C. E. (2021). *Rise of the Canadian Network Society: Data Privacy and Security of Canadian Residents* [Master Thesis, Universities of Applied Sciences]. Open Repository. https://www.theseus.fi/handle/10024/499359

Wirawan, A., Susanto, M., Pranata, M., Yustira, V., Tangriawan, P., Natalia, S. A., & Felicia, F. (2025). Analisis Politik Hukum Pertanahan Terhadap Perlindungan Data Sertifikat Elektronik. *Jurnal Minuta, 7*(2), 85-95. https://doi.org/10.24123/minuta.v7i2.7052