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Optimization of Government Administration Reform: SWOT Analysis of Electronic Land Certificate Implementation through Keyword Visualization Identification

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Abstract

This research explores the implementation of electronic certificates as a strategic step in government administration reform in Indonesia, particularly in the land sector. The implementation of electronic certificates aims to improve administrative efficiency, transparency and security through a digital technology approach in accordance with the principles of good governance. Using the SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis method, this study evaluates the potential and challenges in implementing this policy. The results show that electronic certificates can speed up administrative processes, save operational costs, and increase transparency through digital track records. However, significant challenges such as limited technological infrastructure, resistance to change, and human resource readiness require strategic solutions. With the right policies and planned risk mitigation, electronic certificates have great potential in realizing a more modern, efficient, and inclusive administrative system.

Introduction

Government administration reform through digital technology, especially e-government, is a necessity to improve efficiency, transparency, and accountability of public services. This digitization automates administrative processes, speeds up workflows, and reduces bureaucracy. Sergeeva & Denisov (2019) state that e-government strengthens openness, inclusiveness, public oversight, and builds a participatory society that supports democracy.

People who are used to fast and responsive digital services from the private sector now expect similar qualities from the public sector, including simple administrative processes, easily accessible information, and reliable public services. This is in line with the character of a digital society that is familiar with technology and has a high demand for information. The Ministry of Communication and Information noted that Indonesia's Digital Society Index increased from 37.80 points in 2022 to 43.34 points in 2024 (Kominfo, 2024), encouraging the government to improve public services through digitization.

Sofyani et al. (2020) shows that good information technology governance can improve service quality, accountability and transparency of government, especially at the local level, while meeting the demands of the community. In Indonesia, this has been realized through digital-based public service innovations, such as electronic bureaucratic governance, integrated data, and digital licensing systems (Sofyani et al., 2020).

One of the public service sectors that is undergoing administrative reform by utilizing digital technology is land administration. The transformation of land administration requires crucial steps in order to deal with various land-related problems, such as land disputes, overlapping ownership rights, and corruption over land use rights. The Consortium for Agrarian Reform

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(KPA) notes that Indonesia is in the highest position of six Asian countries experiencing agrarian conflicts, namely India, Cambodia, the Philippines, Bangladesh and Nepal. In 2023, as many as 241 agrarian conflicts had resulted in the seizure of 638,188 hectares of agricultural land, customary territories, and settlements (KPA, 2024).

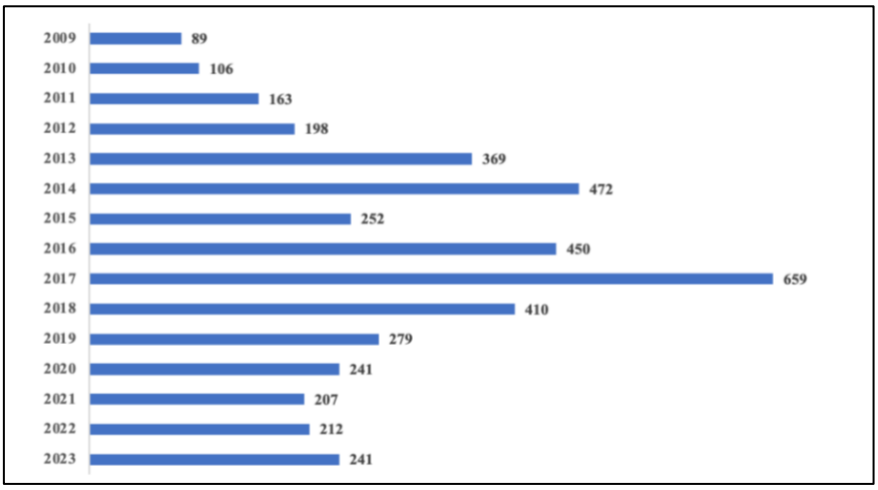

Figure 1. Number of Agrarian Conflicts in Indonesia 2009-2023

Source: Consortium for Agrarian Reform, 2024

The number of agrarian conflicts in Indonesia has fluctuated since 2009, with a peak in 2017 reaching 659 cases, dropping dramatically to 410 cases in 2018, but increasing again in 2023. This anomaly shows that the fundamental problems in land management have not been resolved, with only 8 percent of cases resolved, 48 percent are still in process, and 45 percent have not been handled (Tanahkita, 2024).

Agrarian conflicts continue to occur due to the increasing need for land for plantations, mining, infrastructure, and settlements, involving individuals, communities, companies, and government institutions. To address this, the government launched various programs such as agrarian reform and digital innovation, including the Ministry of ATR/BPN's *Touch My Land* application in 2019, which enables digital verification of the authenticity of land certificates to support land dispute resolution (Indonesia.go.id, 2019).

The government, through Law Number 11 of 2020 on Job Creation, opened a discourse on the issuance of electronic land certificates which is further regulated in the Minister of ATR/Head of BPN Regulations Number 1 of 2021 and Number 3 of 2023. Electronic land certificates include proof of land rights, ownership rights of apartment units, and deeds of transfer of rights, which are in the form of digital documents. This certificate uses a certified digital signature as a legally valid digital identity in electronic transactions, functioning to ensure data integrity and security through cryptography and authentication technology. According to Shakila & Rama (2023), electronic certificates authenticate identities and secure communications in government and commercial networks, with owner information verified by a trusted certification authority (Shakila & Rama, 2023).

Cryptography and authentication technologies in electronic certificates ensure the validity and integrity of digital documents on par with physical documents, utilizing encryption to provide unique signatures that enable secure and accurate identity verification. This prevents fraud, forgery, and ensures transactions can be legally accounted for. The implementation of electronic land certificates is a strategic step in administrative reform, creating a system that is

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more efficient, transparent, and free of abuse of authority, while accelerating administrative processes, saving time and costs, and increasing public satisfaction.

The implementation of electronic land certificates faces challenges such as digital infrastructure readiness, human resource skills, and target achievement strategies. Since its launch on December 4, 2023 until November 2024, 1,952,868 certificates have been issued by 486 electronic land offices (Laksono, 2024). Meanwhile, 3.5 million land parcels remain unregistered out of a total of 120 million registered parcels (Pessy, 2024). The achievement of nearly 2 million electronic certificates shows the potential for success if digital governance is well implemented. However, to achieve the full target, more efforts are needed to address land conflicts, accelerate land registration, and increase public enthusiasm for electronic certificates.

This research focuses on analyzing the strengths, weaknesses, opportunities, and challenges of implementing electronic land certificates, with the aim of formulating strategic steps to optimize their issuance as part of digital-based administrative reform. Practically, this research provides strategic recommendations for policy makers to improve the effectiveness of implementing electronic certificates in public administration. For academics, this research enriches the literature on the role of technology in public administration, particularly in digitalization and e-government. Meanwhile, for practitioners, this research offers insights into the implementation of technology to improve the efficiency and quality of public services according to modern standards.

Methods

This research maps opportunities for optimizing government administration reform in the land sector through SWOT analysis, a method introduced by Albert Humphrey in the 1960s to evaluate the strategic position of policies or technologies. In the context of public administration, SWOT analysis provides a comprehensive assessment of internal and external factors affecting the implementation of electronic land certificates as part of administrative reform (Karyono & Agustina, 2019; Kim & Han, 2015).

Given that the implementation of electronic land certificates is still at an early stage and has received various public responses, this study uses text data visualization through Wordcloud to identify SWOT aspects. Wordcloud, a visual representation of text data, depicts the frequency of keywords to map metadata in a particular domain (Ahuja & Shakeel, 2017).

Saliency, or salient issues, is an important element in public policy responsiveness theory, although it is rarely studied in depth. Twitter, as a high-accessibility platform, is often used to quickly and widely voice public opinion on policies (Bowen, 2020; Burstein, 2003; Creswell, 2018).

In this study, data was collected using Octoparse to extract 555 tweets related to "electronic land certificates" from Twitter, with no time limit, given that the program has only been running for almost a year. The data was then processed using Rapidminer's AI Studio to sort and integrate the data, resulting in three main keywords-certificate, land, electronic-and the top 50 keywords visualized to identify policy salience.

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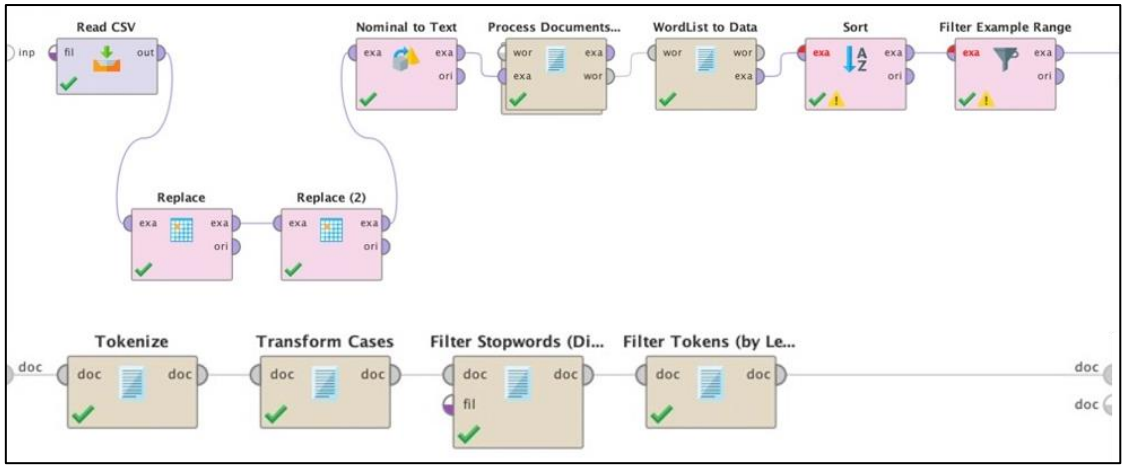

Figure 2. Social Media Text Data Identification Stage

The next stage after visualization of text data from social media was a SWOT analysis based on keywords from the wordcloud, combined with secondary data such as literature studies, reports, and news reports on electronic land certificates in the last five years to maintain relevance. The data was evaluated based on aspects of electronic certificate implementation in Indonesia, including security, efficiency, inclusion, and other findings from relevant literature. The SWOT analysis mapped strengths, weaknesses, opportunities and threats, with a broad scope to cover aspects that may not have been identified in the wordcloud, to support the future success of the electronic land certificate program.

Results and Discussion

Keyword Visualization of Electronic Land Certificate Program on Social Media Twitter

The keyword visualization of the electronic land certificate program shows the dominance of the name Agus Harimurti (129 words), Minister of Agriculture during the late administration of President Joko Widodo, who frequently appears in certificate handover and socialization activities. The word handover (89 words) is also prominent, describing implementation activities, along with the word webinar, which is related to socialization. The word use (19 words) highlights the community's interest in the use of electronic land certificates, both for asset transactions and as loan collateral, reflecting the challenges and opportunities in encouraging adoption of the program.

Figure 3. Keyword Electronic Land Certificate Implementation on Twitter

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The word land (64) appears as a crucial keyword where electronic land certificates are not just an issue of digital documents, but more broadly raises various issues related to land ownership. Some of the accompanying issues include discussions on the legal position of electronic land certificates, data, plans, mafia, services, and registration.

Implementation of electronic land certificates is already underway in 31 provinces, with Banyuwangi (31 words) and East Java standing out as key locations, following the widely-publicized issuance of 38,194 certificates by President Joko Widodo and Minister AHY in May 2024. The data visualization also features the role of institutions such as the Center for Law and Business Development (PPHBI) in the socialization of the program, as well as the critical stance of the Gerindra party in rejecting electronic certificates, reflecting the dynamics of support and challenges in implementation.

SOSOK	SUBSTANSI/ISU	STAKEHOLDER	AKTIVITAS	JANGKAUAN	INSTANSI
Agusharimurti	Pertanahan	Masyarakat	Serahkan	Nasional	Badan
Menteri	Info	PPHBI	Menyerahkan	Kota	Pemerintah
Jokowi	Rencana	Warga	Penyerahan	Banyuwangi	Negara
Presiden	Berlaku	Gerindra	Webinar	Jawa	Kabupaten
Kepala	Hukum		Luncurkan	Timur	Tata
	Penggunaan		Peluncuran	Jakarta	Agraria
	Data		Terbitkan	Provinsi	Ruang
	Mafia		Kali		Kantor
	Program		Hasil		Istana
	Keamanan		Pendaftaran		Indonesia
	Layanan		Lipat		
	Sistem		Terapkan		

Figure 4. Keyword Implementation of Electronic Land Certificates on Twitter

Based on the results of the keyword analysis, several aspects were obtained that will be used to build a SWOT analysis of electronic land certificates, namely leadership, activities to achieve program targets, land governance, socialization coverage, use or utilization, and stakeholders. These various aspects in the next stage will be a reference for compiling a SWOT analysis.

Keyword Visualization of Electronic Land Certificate Program on Social Media Twitter

Electronic certificates serve as a guarantee of legality and security in digital transactions, making it easier to verify user identity electronically without requiring physical presence, saving time and resources. They also enable more controlled access management to critical government data, ensuring only authorized parties can access or modify certain documents. In public administration, electronic certificates increase efficiency by cutting down on lengthy bureaucratic processes through fast and secure digital verification. In addition, they offer additional protection against document forgery or alteration, protecting sensitive data and maintaining public trust. These advantages speed up administrative processes, making public services more responsive to people's needs (Castro & Lopes, 2023).

Electronic certificates support more structured and efficient management of digital documents by storing data in a centralized base, making it easier to track, search, and audit transactions. The system facilitates collaboration between institutions through secure data exchange, while increasing transparency in public services (Roy & Karforma, 2017). In land administration, which is governed by the Basic Agrarian Law No. 5 of 1960, electronic certificates can help address challenges such as uncertainty over land rights and conflicts between customary and state law, thereby supporting more effective land management for the benefit of the people.

Land management in Indonesia includes various rights such as property rights, business use rights, building use rights, and use rights, with the principle that land should have a social

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function. Programs such as the Complete Systematic Land Registration (PTSL) have sought to improve legal certainty, but resource constraints and legal complexities often slow down implementation and trigger conflicts of interest between government agencies, such as the Ministry of ATR/BPN and local governments (Hutagalung et al., 2022). Conflicts are further complicated in customary law-influenced areas, such as West Sumatra, where the nagari system governs communal land that often clashes with government regulations. This reflects legal pluralism that requires a comprehensive approach to balance traditional rights with the needs of modernization and economic development (Tegnan, 2015).

Legal uncertainty and administrative conflicts in land management in Indonesia are often caused by bureaucratic fragmentation, with agencies such as the Ministry of Environment and Forestry, Ministry of Agriculture, and local governments competing with each other in determining land use (Sahide & Giessen, 2015). To overcome these challenges, integrated and innovative approaches are needed, including digitization and the use of web-based data to support land registration at the village level, addressing local data and resource limitations. In addition, electronic certificates increase transparency by providing a clear digital audit trail, preventing corruption, strengthening accountability, and increasing public trust in government.

The adoption of electronic certificates in Indonesia is supported by policies such as the Electronic Information and Transaction Law (UU ITE), which provides the legal basis for administrative digitization. These certificates have the potential to address slow bureaucracy, low transparency, and unequal access to services. Successful implementation requires reliable infrastructure, including internet networks, hardware, and cybersecurity, particularly in remote areas, as well as improved digital skills of government officials through training and socialization. This research is expected to provide strategic insights and recommendations to support faster, more transparent and inclusive administrative reforms.

Strengths

Data visualization of the electronic land certificate program shows the dominance of Agus Harimurti (129 words), Minister of ATR/BPN at the end of President Joko Widodo's administration, who often appears with the President in certificate handover and socialization activities. Their leadership was a key factor in the success of the program, which managed to issue 2 million certificates in one year, through policy direction, resource mobilization, and encouragement of active participation from government and community elements. The program also highlighted the importance of public understanding of the transformation of the land system through electronic certificates, which simplifies administration, reduces bureaucracy, and increases transparency. Good understanding can reduce community concerns regarding legal land ownership, while socialization continues to be a strength in optimizing land reform.

Operational Efficiency

Digitalization through electronic certificates has great potential in improving the efficiency of government administration, including accelerating public services and internal communication (Izzah & Sugandha, 2021). According to the Secretary General of the Ministry of ATR/BPN, Suyus Windayana, electronic certificates simplify the process of printing land certificates, from measurement to manual signatures, into a faster and more structured one-sheet digital document. Document verification can now be done in seconds, reducing the time and workload of administrative staff, while allowing them to focus on other strategic tasks. This automation also speeds up data processing, which previously took days to just a few hours, making digitization an important step in land administration reform (Media Indonesia, 2024).

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Cost Savings and Paper Reduction

According to Sapardiyono & Pinuji (2022), the implementation of e-government in Indonesia, including the digitization of land certificates, provides significant cost savings through reduced reliance on physical documents. This digitization reduces the use of paper, printing, and distribution of documents, thus saving operational budgets and the need for physical storage space that is often a constraint in traditional administration. In addition to cost efficiency, the initiative also supports environmental sustainability by reducing paper waste, making it a strategic step in modernizing government administration (Sapardiyono & Pinuji, 2022).

Document Security and Validity

Document security is a key advantage of electronic certificates, which strengthens validity and reduces the risk of forgery (Rizkiana & Handoko, 2022). ATR/BPN Minister Hadi Tjahjanto emphasized that electronic land certificates eliminate the risk of fake certificates, duplication, and damage from natural disasters (Rizkiana & Handoko, 2023). With digital signature technology, electronic certificates guarantee document authenticity, enable real-time verification, and minimize manipulation, making them a secure solution for the management of sensitive data in legal and financial administration.

Increased Transparency and Accountability

Transparency and accountability are important aspects of public administration reform. Electronic certificates enable the recording of a digital footprint of any activity involving electronic documents. With this track record, every action can be traced and verified, making it easier to audit and enforce accountability. In a study conducted by Karmanis (2022), revealed that in the implementation of e-government, electronic-based systems allow recording digital traces that increase transparency, as described in the study of citizen-centric-based administrative reform. This process also prevents corrupt practices and data manipulation because all activities are documented transparently (Karmanis, 2022).

Facilitate Interagency Collaboration

Astuti et al. (2021), in research on SPBE (Electronic Based Government System) shows that data integration between institutions through digital platforms facilitates collaboration across institutions, increasing the efficiency of public services. Data integration and collaboration between government agencies are made easier by the use of electronic certificates. A unified digital authentication system allows various departments or agencies to share data securely and efficiently. This not only speeds up the public service process but also creates a more integrated work ecosystem. For example, population data that was previously only owned by one institution can now be accessed by other departments that need it for administrative purposes, such as taxation, health, and population (Astuti et al., 2021).

Weaknesses

Data is a crucial element in electronic land titles, which must be accurate, accountable and securely managed. The security and reliability of the data management system is a major concern, as the integrity of the system depends on how data is collected, processed and stored. If managed well, data can be a strength of the system, but if not, a potential weakness. An explanation of the encryption system and security protocols implemented by the government, as well as protection measures against digital threats such as hacking, are essential in socialization to strengthen public trust in electronic land certificates.

Despite the involvement of a number of government agencies at the central and regional levels, there is still a lack of broader involvement from related sectors, especially those at the village

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or sub-district level. Broader involvement of government agencies at this level is essential for the land certification program to run more effectively, reach more layers of society, and minimize potential obstacles in the field.

Limited Technology Infrastructure

Limited technological infrastructure, especially in remote areas, is a major challenge in the implementation of electronic certificates. Malahayati & Syamsuar (2022) point out that poor network connectivity and lack of adequate infrastructure often hamper management information systems, including electronic certificates (Malahayati & Syamsuar, 2022). In areas without high-speed internet access or stable electricity, implementing these technologies is difficult, creating a digital divide between urban and rural areas. This disparity slows down administrative reform, exacerbated by the lack of supporting hardware and software in many areas.

HR Readiness (Human Resources)

The readiness of human resources (HR) is a significant challenge in the implementation of electronic certificate technology. Ricardianto et al. (2020) noted that the lack of technical training and digital skills of government employees, who are still accustomed to traditional administrative methods, hinders technology adoption in the public sector. This emphasizes the importance of intensive training to ensure all parties understand and are able to operate the new system effectively. However, widespread training requires substantial time and resources, adding to the burden of the implementation process.

Initial Implementation Cost

Although electronic certificates offer long-term cost savings, the initial implementation cost is a significant challenge. Research by Setiawan et al. (2021) noted that the procurement of infrastructure, software, hardware, as well as training requires a large investment. For local governments with limited budgets, allocating funds for this project is an obstacle, coupled with the need for ongoing maintenance costs and technology upgrades to ensure system sustainability.

Resistance to Change

Resistance to change from government employees who are accustomed to manual systems is a psychological and cultural barrier to the adoption of electronic certificates. Abraham et al. (2018) note that employees are often apprehensive of new technologies due to lack of skills or reluctance to abandon old methods that are considered comfortable and safe. These barriers slow down the process of administrative digitization and require approaches that encourage adaptation, including effective training and socialization.

Interoperability Issues

Marginingsih's research (2023) shows that differences in technology standards between institutions are a major obstacle in cross-platform data integration. The integration of electronic certificates with existing systems is often constrained by different technologies, non-uniform standards, and diverse protocols. This mismatch complicates interoperability between systems, requires time-consuming and costly technological adjustments, and slows down efforts to create an integrated administrative ecosystem.

Opportunities

Information on electronic land certificates should be transparent, easily accessible and supported by socialization that provides a clear understanding of the benefits, procedures and

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how to use them. Implementation plans, from pilots to full implementation, need to be well communicated, including government strategies to overcome technical and administrative obstacles. Regulatory clarity, legal guarantees for data validity, and law enforcement against data falsification or manipulation are important elements to strengthen public trust. The electronic certificate management system, including software and digital infrastructure, must be understood by the public through effective socialization that makes them feel comfortable and safe. Collaboration with stakeholders such as the Indonesian Business Law Development Center (PPHBI) through webinars is a strategic opportunity to expand education and information dissemination.

Improving Public Trust

Electronic certificates have great potential in increasing public trust in government administration. The study of Setiawan et al. (2021) shows that administrative digitization, such as e-courts, increases public trust by reducing opportunities for document manipulation and speeding up processes. Greater transparency allows the public to see a clear track record, while secure and verified digital documents increase accountability. Thus, e-certificates strengthen the government's commitment to serve with integrity and professionalism, strengthening the relationship between the government and the people.

Government Support for Digital Transformation

Great opportunities arise from government policies that encourage digitalization in various sectors, including public administration. This support can be seen from national programs such as "Digital Indonesia 2025" which prioritizes technological transformation to improve the efficiency and effectiveness of public services. Incentives, regulations, and funding from the central government for digitalization pave the way for government agencies to adopt electronic certificates more easily. Karmanis (2022), in his research sees that encouragement from the government also helps overcome bureaucratic obstacles that may arise in the implementation process.

Rapid Technology Development

Technological developments such as cloud computing and blockchain offer innovative solutions to support electronic certificates. Cloud computing enables centralized and efficient document management, while blockchain enhances security with additional encryption and ensures document authenticity. Technologies such as artificial intelligence (AI) can also be used to monitor and optimize the use of electronic certificates in real-time. According to Noor (2020), blockchain and cloud computing are great opportunities to improve the security, efficiency, and integrity of digital documents. With system updates that keep up with technological developments, the government can ensure the electronic certificate system meets the needs of the times.

Ease of Public Service

Astuti et al. (2021) show that electronic-based services facilitate public access to administrative services and increase satisfaction. Electronic certificates revolutionize public services by speeding up administrative processes, such as business licenses and civil registration documents, which can now be completed online in minutes. This convenience reduces the workload of government agencies while increasing public satisfaction, making a better user experience an indicator of the success of digital-based bureaucratic reforms.

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Collaboration Opportunities with Private Sector

The government has a great opportunity to partner with the private sector in the development and implementation of electronic certificates. According to Izzah & Sughanda (2021), technologies such as electronic signatures open up opportunities for collaboration with technology provider companies, cloud services, and digital certification bodies to improve government service capabilities. This collaboration not only accelerates implementation but also ensures the best use of technology and opens access to innovations and best practices that have been tested in other sectors, supporting system efficiency and sustainability.

Threats

The electronic land certificate program faces major challenges, such as the land mafia that often hinders the legalization of land rights. A transparent and integrated digital system can reduce the practice of data manipulation and certificate forgery, thus reducing the space for land mafia. However, opposition from certain parties, such as Gerindra Party, poses a serious threat to the success of this program, as it can affect public opinion, policy, and the effectiveness of implementation in the field. As important actors in policy formation, political parties' rejection could trigger doubts and distrust among the public. In addition, the rollout, which is still focused in one region, such as Banyuwangi, highlights the lack of equitable socialization, especially in remote areas. If communities outside of these areas feel under-engaged, participation may decline, threatening the sustainability of the program without broader and sustained socialization efforts.

Cyber Security Risks

Islami's research (2018) shows that cyberattacks such as hacking, malware, and ransomware are a major challenge for digital security in Indonesia. In the implementation of electronic certificates, cybersecurity risks can damage system integrity and reduce public trust if data is exploited by irresponsible parties. To prevent this, the development of electronic certificates must be supported by a robust cybersecurity strategy, including data encryption, firewalls, and early threat detection systems, to protect data and maintain public trust in the government.

Reliance on Digital Infrastructure

Electronic certificates are completely dependent on a stable and reliable digital infrastructure. System disruptions, such as power outages, server crashes, or internet network failures, can hamper administrative operations using this technology. Dewantara & Sugiantoro (2021), reveal that this high dependency is a challenge, especially in areas that do not yet have adequate infrastructure. These disruptions not only hamper public services but can also undermine public trust if the system is deemed incapable of operating consistently (Dewantara & Sugiantoro, 2021).

Inequality in Access to Technology

Inequality of access to technology is a serious threat to the implementation of electronic certificates. Sapardiyono & Pinuji (2022), in their research, show that there is an imbalance in access to technology between developed and remote areas, which slows down the implementation of digital technology, including electronic certificates, throughout Indonesia. Urban areas tend to have better access to technology compared to rural or remote areas. This difference can create gaps in implementation, with less developed areas falling behind in administrative reforms. It also has the potential to deepen inequities in access to public services, which should become more inclusive with digitization.

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Regulatory and Policy Uncertainty

Regulatory immaturity and policy overlap are often barriers to the implementation of electronic certificates, causing unclear distribution of authority and regulatory conflicts at the central and local levels. This fuels confusion in implementation and hinders widespread adoption of the technology, especially if policy changes are made too frequently without clear guidance. Regulatory clarity is key to ensuring consistent operational guidance and preventing inter-agency discrepancies in the use of electronic certificates.

Rapid Technology Change

The rapid development of technology makes the current system at risk of becoming obsolete in a short time. Noor (2020) emphasizes the importance of periodic system updates to maintain the relevance and effectiveness of electronic certificates. If the government fails to adjust to technological changes, the efficiency of the system may decline, increase long-term costs, and reduce competitiveness against the private sector or other countries that are more advanced in digitalization. Adaptation to new technologies is key to ensuring the sustainability and excellence of electronic certificate systems.

Optimizing Land Administration Reform

According to Li (2017), administrative reform in government aims to overcome the challenges of overly rigid bureaucracy and introduce more efficient managerial approaches. For example, the concept of New Public Management (NPM) replaces traditional bureaucratic mechanisms with a market approach that focuses on efficiency and results, proposing the application of digital technology and management principles of private companies in the public sector.

Other public administration theories, such as Digital Era Governance (DEG), emphasize the importance of integrating digital technology in administrative processes to accelerate public services, increase transparency, and reduce bureaucratic hierarchies. In Rohayatin et al. research (2023), digitalization encourages administrative reform by developing e-Government or Smart City concepts that combine ICT to improve public services and create a more decentralized structure.

According to Nasuhi et al. (2022), this method is often applied to provide strategic guidance for the bureaucracy in the context of government reform. For example, in Indonesia, the SWOT approach is used to analyze the strengths and weaknesses of the bureaucracy in an effort to achieve a healthy and developed government. This analysis identifies the strengths of public services and how weaknesses can be turned into opportunities and threats minimized, ultimately improving the quality of bureaucratic services that are more transparent and accountable.

Furthermore, in Siska & Komla's (2020) research, SWOT is also applied in the strategy development of government organizations in several developing countries, taking into account aspects of human, financial, and material resources. In this context, SWOT analysis helps to formulate a development strategy based on a thorough understanding of internal and external conditions, which is crucial in supporting bureaucratic reform in local government.

SWOT analysis provides a systematic approach to identifying and managing critical factors in public administration reform, helping to design policies that are adaptive and responsive to challenges. In the electronic land certificate program, SWOT analysis serves as an evaluation tool and optimization strategy setting, supporting the gradual transition from manual systems to digital documents. This transformation aims to overcome bureaucratic rigidity, making it faster, more efficient, and aligned with digital technology as part of public services.

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Conclusion

The implementation of electronic land certificates reached around 2 million issuances within one year of the launch, with word visualizations on social media showing six key attributes: figure, substance, stakeholder, activity, reach, and agency. The dominance of the word "agusharimurti," the Minister of ATR/BPN, reflects the central leadership role in the program. The SWOT analysis shows the strengths of electronic land certificates include operational efficiency, cost savings, environmental friendliness, document security, transparency, accountability, and ease of inter-agency collaboration. With infrastructure support and a focus on land issues, the program strengthens administrative reforms, particularly in the Ministry of ATR/BPN, to achieve optimal implementation.

The implementation of electronic land certificates faces weaknesses such as limited technological infrastructure, human resource readiness, data accuracy, large initial implementation costs, and interoperability issues between systems. However, great opportunities arise from high public and media interest, which can be leveraged through information dissemination, cross-sectoral discussions, collaboration with regional apparatus down to the village level, and legal strengthening in digitization. Major threats include the land mafia, political resistance, reliance on digital infrastructure, inequality in access to technology, cybersecurity risks, and regulatory uncertainty, which require serious attention to ensure the success and sustainability of land administration reform.

The results of the SWOT analysis in this study can be a recommendation for the Ministry of ATR/BPN to optimize the achievement of electronic land certificate implementation. More in-depth research related to weighting and prioritization can be carried out as a step in preparing a land administration reform strategy by utilizing digitalization.

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