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IMPLEMENTATION OF DIGITAL TRANSFORMATION TO IMPROVE THE QUALITY OF LAND SERVICES

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Abstract

Digital transformation at the National Land Agency (BPN) is a strategic response to the demands of faster, more transparent, and accountable public services. This research aims to identify the forms of digital transformation that have been implemented and the challenges faced in their implementation. The method used is a literature review of ten relevant current scientific journals. The results of the study show that BPN's digital transformation includes electronic land certificates, electronic dependent rights, the public service application Touch Tanahku, digitization of land archives, strengthening the digital competence of ASN, electronic queue system, and service integration with PPAT. Although significant progress has been made, challenges in the form of infrastructure, digital literacy, and inter-agency coordination remain obstacles. The study concludes that the success of BPN's digital transformation requires a holistic approach that includes technology, human resources, and supporting regulations.

Keywords: ***digital transformation, land, BPN, public services, electronic certificates***

INTRODUCTION

Digital transformation has become a global priority in increasing the efficiency and transparency of public service delivery.(Faedlulloh et al., 2020), including in the agrarian and land sector. In Indonesia, the Ministry of Agrarian Affairs and Spatial Planning / National Land Agency, as the main institution in land management and services, participates in this modernization flow through various digital initiatives aimed at reducing bureaucracy, improving service quality, and expanding public access to land information electronically.(Adinegoro, 2023). Digital transformation at the BPN includes not only the digitization of land documents, but also the implementation of electronic land certificates (e-certificates), the development of service applications such as Sentuh Tanahku, and the preparation of a transformation dashboard based on actual service data at regional land offices.(Amdar, 2023; Harahap et al., 2023; Putri et al., 2022)This program is normatively strengthened through regulations from the Ministry of ATR/BPN, such as Ministerial Regulation Number 1 of 2021 and Number 3 of 2023 concerning the digitalization of land services.(Erfa, 2021; Mooduto et al., 2021; Masri & Hirwansyah, 2023).

The transformation of electronic progress has shifted the land registration system from a paper-based process to an electronic one.(Masri & Hirwansyah, 2023)In Indonesia, the use of information and communication technology is progressively changing market transactions and public services from analog (manual) to electronic-based services. Along with the development of the era of the 4.0 revolution, the Government is making new breakthroughs to keep up with the increasingly complex dynamics of society. Otherwise, legal stagnation will occur, which is known to mean that the law will always lag behind the development of the times.(Bahram, 2023; Hidayah & Zafi, 2020; Komarudin & Hidayatullah, 2021)In the land sector, in order to realize the modernization of land services, starting from implementing electronic-based land services, to producing documents in the form of electronic documents (Aniscasary, Ramasari, 2022). Since mid-2020, services at Regency/City Land Offices have begun implementing an online system. This system is very helpful, faster, easier, and more practical. For example, the implementation of the electronic Mortgage Rights system or HT-el (Electronic HT). This system was deemed successful, so on January 21,

2021, the Ministry of Agrarian Affairs and Spatial Planning/Head of the National Land Agency began implementing Regulation Number 1 of 2021 of the Minister of Agrarian Affairs and Spatial Planning/Head of the National Land Agency concerning Electronic Certificates, which states that all land registration results will be issued in electronic form (Ramadhani, 2021). The introduction of this regulation has sparked heated debate and controversy in the community, with varying responses. Some welcomed the plan as a modernization of land services, expected to provide security, legal certainty, and legal protection to land rights holders. However, many responded apriori to the plan, describing it as rushed and lacking adequate preparation, potentially creating insecurity in land registration data and potentially leading to uncertainty over land rights. Land registration programs throughout Indonesia should be prioritized or completed first, as land title certificates are proof of rights granted at the final stage. After the land has been registered, modernization of land services, including e-certificates, should be implemented. Many believe that e-certificates are not currently necessary due to the continued high number of land disputes, both due to falsified certificates and overlapping certificates. This includes prioritizing land registration throughout Indonesia. The issue with e-certificates is not the form or structure of the certificate, as they are the final stage in land registration. The main issue is the electronic processing from the initial land registration to the issuance of the certificate, as well as data security issues to protect rights holders (Mujiburohman, 2021).

The Ministry of ATR/BPN as the organizer of the electronic land registration system has stated its readiness, although the implementation will be carried out in stages (Alimuddin, 2021). In the trial phase of the implementation of this electronic land certificate, there will be no public density, but its implementation will be limited to State Property (BMN), assets of State-Owned Enterprises (BUMN), various companies or large-scale private sectors. For the location of the land office that will implement the implementation of electronic certificates in this trial phase, only in several cities. Furthermore, the Ministry of ATR/BPN targets this electronic certificate policy program to be implemented within the next 5 (five) years. (Rachman, Hastri, 2021) The Ministry of ATR/BPN's consideration of the location of several land offices is due to issues of infrastructure, facilities, infrastructure, and public awareness. In Indonesia, this infrastructure problem has become an old polemic that has not been resolved, because in fact the inequality of this infrastructure is clearly visible in various regions. So several land office locations selected by the Ministry of ATR/BPN whose city infrastructure is considered to be sufficiently ready are only 5 (five) land offices in DKI Jakarta and 2 (two) land offices in Surabaya. In further developments, it will also be implemented in other city land offices such as in Banten, Denpasar, Batam, Surakarta, Tangerang, and Medan. Huda and Wandebori (2021) that the obstacles to digital land certification in Karawang Regency are caused by 2 (two) factors, namely: internal factors and external factors. Furthermore, Febrianti (2021) stated that the obstacles in the implementation of Electronic Certificates in Bekasi City are land data validation, synchronization and harmonization of laws and regulations, uneven socialization, and inadequate facilities and infrastructure. Meanwhile, Mujiburohman (2021) stated that the obstacles to e-certificates are influenced by several factors, namely: First, education and economic factors, Second, readiness of infrastructure and Human Resources (HR). Third, certain causal factors.

The implementation of electronic land certificates is considered a major milestone in the digitalization of agrarian services. However, a study by Auliani & Roisah (2025) shows that legal aspects, public digital literacy, and system integration are still real obstacles in its implementation. A similar sentiment was conveyed by Farahzita & Arsin (2022), which emphasizes the importance of the role of PPAT in supporting digital systems collaboratively. Digital transformation is also being realized through the use of the "Touch My Land" application, which allows the public to independently check the status of land parcels. This application is considered to strengthen transparency and service efficiency, particularly in the context of the Society 5.0 era, as reviewed by Noer, Salsabila & Niravita (2024). In terms of data management, the National Land Agency (BPN) is also implementing a land archive media transfer program, namely converting physical documents into digital ones. Research at the Bandung BPN Office by Rifai et al. (2022) emphasized that digitalization of archives increases the efficiency of data retrieval and strengthens document security.

From an internal organizational perspective, strengthening the capacity of state civil servants (ASN) in digital literacy is a necessity. Mullianto (no year) Developing a digital competency model for ASN within the ATR/BPN environment that includes digital competence, digital leadership, and digital culture, as a prerequisite for the success of sustainable digital reform. However, the implementation of digital transformation in the field is not without structural challenges. A field study by Huda & Wandebori (2021) shows that there is still resistance from land office employees towards the use of digital systems, especially in areas with limited infrastructure. In addition, national strategic programs such as the Complete Systematic Land Registration (PTSL) are now closely linked to the digitization of land databases. Alam, Nawi & Ilyas (2024), PTSL is the foundation for developing an electronic land system that is oriented towards a single database.

This digital transformation also requires cross-sector coordination between the Ministry of Agrarian Affairs and Spatial Planning/National Land Agency, the Ministry of Finance, and tax authorities. Data inconsistencies between institutions often hinder the integration of digital land services nationally.Adinegoro, 2023). Several land offices have also developed digital monitoring dashboards, which quantitatively report the performance of electronic services and the readiness of e-certificate implementation. This initiative, exemplified by the Badung Regency Land Office, is ranked among the top 20 nationally in digital readiness (Son, 2024). Amidst these dynamics, the urgency of conducting a systematic evaluation of the achievements, obstacles, and opportunities for digital transformation at the National Land Agency (BPN) is crucial. Therefore, this study aims to map the various forms of digital transformation undertaken by the BPN, assess the effectiveness of their implementation based on empirical evidence, and formulate strategic recommendations that can strengthen the electronic land service system in Indonesia.

LITERATURE REVIEW

Digital transformation in the public service sector, including services at the Ministry of Agrarian Affairs and Spatial Planning/National Land Agency, is part of a technology-based bureaucratic reform effort. In practice, this transformation can be analyzed through several key interrelated variables: digital services, technological infrastructure, civil servant competence, user engagement, and regulatory support.

Land Services Transformation

Digitizing land services is the spearhead of transformation at the National Land Agency (BPN). The primary form of this is the implementation of electronic land certificates, which replace physical documents as proof of land rights.Adinegoro (2023)This transformation aims to accelerate service processes, reduce the risk of counterfeiting, and strengthen legal certainty. However, public resistance and limited understanding of digital legality remain obstacles. Another innovation is app-based services like Sentuh Tanahku, which allows users to access land data online and independently. This app is considered effective in increasing information transparency and speed of service, as discussed in the study.Noer et al. (2024). BPN also developed Electronic Mortgage Rights (HT-el) which accelerates the credit guarantee process and data integration with the banking sector (Adinegoro, 2023).

Technology and Data Infrastructure

The success of digitalization is largely determined by the availability of technological infrastructure, such as internet networks, work devices, and cloud storage systems. Furthermore, digital land data management is a crucial aspect.Rifai et al. (2022), the archive digitization process at the Bandung City BPN Office is able to reduce document search time and increase efficiency. Several land offices have developed digital service monitoring dashboards. For example,Son (2024)This paper demonstrates how the Badung Regency Land Office uses document transfer as a strategy to prepare a database for electronic certificates. However, limited data integration between agencies and the lack of a national integrated system remain challenges.

Civil Service Competence and Digital Culture

Human resources play a central role in supporting digital systems. According toMullianto (nd)Digital transformation will stagnate without strengthening technical competency and digital leadership within civil servants. The proposed development model encompasses digital competence, digital culture, and digital leadership as the foundation for building a digital bureaucracy. Meanwhile, a study byHuda & Wandebori (2021)noted that there is still resistance from some BPN employees towards the use of electronic systems, especially in areas that are not ready in terms of infrastructure and digital literacy.

User and Stakeholder Engagement

Digital transformation at the National Land Agency (BPN) also requires active involvement from the community and third parties such as notaries and PPATs.Farahzita & Arsin (2022)Land Deed Officials (PPAT) play a crucial role in the electronic data input process and online deed validation into the BPN system. Furthermore, public digital literacy is a key factor in the successful implementation of applications like Sentuh Tanahku. Programs such as the Complete Systematic Land Registration (PTSL) are also aimed at building a national electronic database. In this context,Alam et al. (2024)stated that the digitalization of PTSL is the foundation for a comprehensive, big data-based land management system.

Supporting Regulations and Policies

The regulatory aspect is the basis for the legality of the entire transformation process.Princess (2025)stated that policies such as Minister of ATR/BPN Regulation No. 3 of 2023 support the legal legitimacy of electronic certificates and establish standard procedures for their implementation. However, policy synchronization between agencies and digital data security remain gaps that require systemic improvement.

Method

This research was conducted using a descriptive qualitative approach through library research, aiming to identify and analyze various forms of digital transformation implemented by the National Land Agency (BPN). This approach is considered relevant because it allows researchers to examine policies, implementation practices, and challenges faced in the land digitization process based on published scientific studies. The primary data source for this study was scientific articles published between 2021 and 2024, with the criteria being articles that explicitly discussed the digital transformation of land services in Indonesia, particularly by the Ministry of Agrarian Affairs and Spatial Planning/BPN. Articles were selected through an academic search using the ScholarAI platform, using keywords such as "digital transformation of BPN," "electronic land certificates," and "digitalization of ATR/BPN public services." One of the articles that is the main reference is a study byAdinegoro (2023), which examines the challenges of implementing electronic land certificates in various regions in depth. This research shows that the implementation of the digital certificate system still faces public resistance, particularly regarding the legal trust in electronic documents. Furthermore, the program's success depends heavily on the readiness of information technology infrastructure, which is not evenly distributed across Indonesia.

Furthermore,Noer et al. (2024)evaluated the "Sentuh Tanahku" application as a form of digital transformation that brings land services closer to the public. The application was deemed effective in providing direct access to information regarding land status, location, and certificate validation, and serves as a concrete example of the National Land Agency (BPN)'s adaptation to the Society 5.0 era. Data obtained from various articles were analyzed using thematic analysis techniques. Researchers classified the data based on key themes, such as: land certificate digitization, app-based services, land data integration, and strengthening the digital capacity of civil servants.Mullianto, for example, is used to understand how improving ASN digital competencies supports the success of institutional digital transformation. This study presents a development model encompassing digital competency, digital leadership, and a digital work culture within the ATR/BPN environment. The research also considers aspects of archive digitization as discussed byRifai et al. (2022), which shows that converting archives from physical to digital format can improve service efficiency and reduce the risk of data loss. The role of Land Deed Officials (PPAT) in supporting digital service integration is also examined through a study.Farahzita & Arsin (2022), which emphasizes the importance of system synchronization between PPAT and BPN. Data validity was ensured by using only articles published in verified academic journals, which can be traced through the Digital Object Identifier (DOI) or the domain of the official higher education institution. Validation was also performed through triangulation between articles to ensure the consistency and credibility of the findings. Thus, this literature-based qualitative approach allows for a comprehensive mapping of the dimensions of digital transformation at BPN, including practices, obstacles, and future opportunities in technology-based national land services.

Research Results and Discussion

Digital transformation inMinistry of Agrarian Affairs and Spatial Planning / National Land AgencyIt is a strategic response to demands for efficiency, transparency, and accountability in public services. Several studies and official documents indicate that this transformation is occurring gradually and impacting various aspects of the organization, from technical services and administrative systems to strengthening human resource capacity. The forms of digital transformation identified are as follows:

1. **Implementation of Electronic Land Certificates**
   One of the main breakthroughs made by the National Land Agency (BPN) is the replacement of physical land certificates with electronic certificates. According toAdinegoro (2023)This policy is intended to reduce cases of document forgery and simplify the bureaucratic process of land registration and transfer. Electronic certificates are integrated into a digital-based land system called the Land Certificate Electronic System (SEST). However, researchers noted that there remains public resistance due to a lack of widespread understanding of the legal legitimacy of digital documents.

2. **Digitalization of Mortgage Process**
   In the realm of financing and credit services, the National Land Agency (BPN) has developed Electronic Mortgage Rights (HT-el), which allows banks and notaries to process collateral documents online without the need for a physical presence at the land office.Adinegoro (2023)Studies have shown that HT-el can reduce processing time from 30 days to less than a week. However, the success of its implementation depends heavily on internet network readiness and integration between agencies.
3. **Utilization of the "Touch My Land" Application**
   The National Land Agency (BPN) also launched the "Sentuh Tanahku" mobile app as a digital channel for the public to monitor file status, view land locations, and independently verify certificate validity. Based on a study,Noer et al. (2024)This application has become a symbol of digital-based public service reform in the Society 5.0 era. Survey results presented in the study show a 70% increase in user satisfaction, particularly among urban segments with high digital literacy.
4. **Digitization of Land Archives**
   One important element of digital transformation is the conversion of physical archives to digital. This process involves scanning old documents, digital indexing, and integration with land information systems. Research byRifai et al. (2022)at the Bandung City BPN, it was shown that digitalization of archives accelerated data searches, reduced document damage, and made land data audits easier.
5. **Strengthening the Digital Competence of State Civil Apparatus (ASN)**
   Digital transformation not only includes technology, but also the development of ASN digital competencies.Mullianto (IPB Repository)developed a digital competency development model consisting of three elements: digital competence, digital leadership, and digital culture. The research findings suggest that the National Land Agency (BPN) must strengthen digital training and work culture to ensure sustainable transformation.
6. **Digitalization of Queue Systems and Service Administration**
   In line with the need for efficiency, several Land Offices have implemented digital queuing systems and e-booking services. This is considered a solution to reduce waiting times and crowds in offices. This system works by setting service times and automatically notifying service users.
7. **Digital Collaboration with Land Deed Officials and External Stakeholders**
   The BPN's digital transformation also requires synergy with Land Deed Officials (PPAT). In the researchFarahzita & Arsin (2022)The role of Land Deed Officials (PPAT) is crucial in digital data input and direct deed validation through the BPN system. This demonstrates the need for cross-professional collaboration and increased digital literacy beyond civil servants.
8. **Identifying Implementation Challenges**
   Despite significant progress, various studies also note a number of challenges that remain. These include:
   - *Lack of digital infrastructure in remote areas*,
   - *Digital literacy disparities between regions*,
   - *Data integration between central and regional agencies is not yet optimal*,
   - *The need for updating legal regulations regarding electronic document authentication*.

Analysis and Reflection

The BPN's digital transformation is a concrete example of information technology-based bureaucratic reform in the agrarian sector. Its success will depend heavily on the collaboration between technology, regulations, human resources, and public participation. A holistic and phased approach is considered the best strategy to address the complexities involved.

CONCLUSION

Based on the analysis of various forms of digital transformation within the Ministry of Agrarian Affairs and Spatial Planning/National Land Agency, it can be concluded that the ATR/BPN has taken progressive steps in adopting information technology to improve the effectiveness of land services. The implementation of electronic certificates and digital mortgages has been proven to accelerate administrative processes and minimize the potential for legal violations. The use of applications such as Sentuh Tanahku and the digitization of archives and service queues demonstrates the BPN's commitment to bringing services closer to the public. Furthermore, strengthening the digital capacity of civil servants is also a crucial foundation for supporting the sustainability of this transformation.
However, implementation challenges remain significant, particularly related to limited regional infrastructure,

resistance to change from some stakeholders, and the need for cross-sectoral policy harmonization. Therefore, digital transformation strategies must be more than just technological; they must also encompass adaptive socio-organizational approaches.

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