

Research Article

Digital Transformation of Land Services Through Management Information Systems: Case Study of BPN Asahan Regency

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Abstract: Digital transformation of public services is an important step towards efficient, transparent and accountable government institutions. This study recommends strengthening digital infrastructure and providing ongoing training for staff and the community to support the optimization of digital transformation of land services. The purpose of this study is to analyze the implementation of Management Information Systems in supporting the digital transformation of land services at the Land Office (BPN) of Asahan Regency. The study used a qualitative approach, combining case studies and analysis. The results show that various services such as Complete System Land Registration (PTSL), certificate checking, and electronic transfer of rights have been digitized, supported by innovations such as the Touch My Land application and digitization of land registration archives. This shift has accelerated service processes, increased transparency, and improved public satisfaction. However, challenges remain in terms of public digital literacy, technology infrastructure, data security, and so on. To maintain the sustainability of the transformation, Asahan District BPN implements a strategy of continuous system development, human resource training, and cross-sector collaboration.

Keywords: BPN, digital transformation, land services, management information system, technological innovation

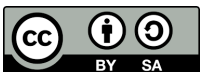
1. INTRODUCTION

Digital transformation is the integration of computer-based technology into products, processes, and strategies with the aim of improving the quality of public services in various sectors, including land. Digital transformation is proven to be able to improve the efficiency of public services (Kosassy et al., 2024). One example of the application of digital transformation in the land sector is the National Land Agency (BPN) of Asahan Regency, which has adopted technology through the Touch My Land application, Geospatial Information System (GIS), and digitization of land book archives.

Based on the results of interviews and observations, Asahan Regency as part of North Sumatra Province shows dynamic development in efforts to implement digital services. However, this process faces a number of problems, one of which is the low level of digital literacy in the community. Digital literacy in the community is one of the main challenges in implementing digital services (Suyadi, 2021). In addition, limited telecommunications infrastructure in remote areas is still an obstacle to equitable distribution of services. Another problem is concerns related to data security, especially in the use of electronic documents and electronic certificates that store people's personal data which is vulnerable to the threat of leakage or cyber attacks.

In order to improve service quality, Asahan District BPN has implemented several digital programs such as Complete Systematic Land Registration (PTSL), online land certificate

Received : March 16 2025;
Revised : March 29 2025;
Accepted : April 16, 2025;
Published : April 30, 2025;
Current . Ver .: April 30, 2025



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checking, electronic land rights transfer services (sale and purchase, grants, inheritance), as well as the use of GIS for land data integration and mapping. All of these efforts aim to improve data accuracy, service process efficiency, and provide convenience and legal certainty to the public in accessing land services online.

The digital transformation carried out by BPN Asahan Regency is not just a system modernization, but also a real effort to realize services that are transparent, responsible, and support services for public benefits.

2. LITERATURE REVIEW

Digital transformation is a form of strategy carried out by an organization in order to survive in the midst of threats and challenges due to changes caused by technological developments that are increasingly developing. Where in the era of sophisticated technology like today, all community activities are increasingly facilitated. The community is increasingly spoiled with various facilities provided by technological developments, such as one of the digital services provided by the Ministry of Agrarian Affairs and Spatial Planning / National Land Agency. In essence, the digital transformation carried out by an organization aims to utilize digital technology in order to increase productivity, reduce costs and innovate which is very important for future organizational success (Hess et al., 2016). In addition, digital transformation is closely related to digitization which can increase productivity, innovation in value creation, creation of new forms of interaction with customers (Matt et al., 2015).

Experts argue that land services should be based on the principles of transparency, accountability and community participation. Despite challenges such as complex bureaucracy, limited resources and land disputes, innovation through the application of information technology can improve the efficiency and quality of service delivery. Digital transformation of land service delivery, such as the use of geographic information systems and web-based applications, can speed up the process and facilitate access to land information for the community. Efforts to develop land services will thus not only support economic and social development, but will also increase public satisfaction and create a more conducive environment for investment and development. Overall, good and effective land services are critical to achieving the goals of sustainable development and community welfare.

Management information system A management information system (MIS) is a group or set of processes where data can be processed, analyzed, and displayed so that the data becomes useful for decisionmaking needs. This system is a very useful tool to support and control company operations. SIM serves to improve the efficiency and effectiveness of organizational operations. It provides benefits in the form of improved operational efficiency, decisionmaking support and enhanced communication. Undoubtedly, nowadays, SIM seems essential to all types of organizational activities. However, implementation also comes with challenges; some of which include organizational resistance to change, budget and resources, and data security. These systems are computer-based and can be excel sheets or more complex platforms. In addition, data can be accessed and processed internally and externally. Thus, the information system used is more efficient and productive. A management information

system is a set of processes by which data can be processed, analyzed, and displayed so that the data becomes useful for decision-making needs.

3. RESEARCH METHODS

This research uses a descriptive qualitative approach with the aim of understanding and describing in depth the application of advanced transformation in public services in the land sector, especially at the Land Office (Kantah) of Asahan Regency. This approach was chosen because it is suitable for studying social phenomena holistically through collecting information in a natural context.

The sources of information in this research consist of preliminary and secondary information. Baseline information was obtained through direct interviews with Asahan Regency BPN employees involved in the service digitization process, as well as through direct observation of the implementation of computerized services in the office. Meanwhile, secondary information was collected through documentation studies, such as internal BPN reports, the official website of the Ministry of ATR/BPN, and relevant journals and scientific articles. Information collection techniques are carried out through:

In-depth interviews, using an open-ended question guide to gather information on perceptions, experiences, and barriers in the computerization transformation process.

Observation, to directly observe computerized land service activities, the system used, and interactions with the community.

Documentation, such as digitization policy, applications used (e.g. Touch My Land and GIS), and service performance information before and after digitization.

The information analysis technique uses Miles and Huberman's interactive demonstration, which includes three main stages:

- a) information reduction, which is the selection and simplification of information from
- b) the field;
- c) presentation of information in the form of narrative or thematic matrix; and
- d) iterative conclusions and verification to obtain substantial findings.

To maintain the validity of the information, researchers triangulated sources and techniques, comparing the results of interviews, observations, and documentation to ensure the consistency and accuracy of the information.

4. Comparison

The digital transformation implemented by the Asahan Regency Land Office (kantah) has had a positive impact on the efficiency of public services in the land sector. Some of the services that have been digitized include the Complete System Land Registration (PTSL), online checking of land certificates, electronic transfer of rights services, and the use of Geospatial Information Systems (GIS). This innovation is also supported by the use of the Touch My Land application and digitization of land book archives, so that the public can access services more easily and independently.

One indicator of the success of digital transformation is the acceleration of service completion. For example, electronic responsibility services that previously took a long time to process can now be completed within 7 days after the submission is confirmed. Digital document management also has a significant impact on productivity, with an increase in the average number of documents that officers can complete each day. This supports the view of Hess et al. (2016) that digital transformation can improve process speed, operational efficiency, and public satisfaction.

In 2024, the Asahan District Land Office plans to issue 5,500 land certificates through the PTSL program as part of efforts to accelerate digital land services. This achievement truly reflects the transition from a traditional work system to a more structured and measurable digital service model.

Despite this, challenges remain, particularly in terms of utilization of the Touch My Land application. Based on 2021 data, service digitization has reduced the number of guests coming directly to the office by 55%, but this also indicates that around 45% of the community still accesses services manually. This means that there are still people who do not know or are not accustomed to using the available digital services.

Human resources at Kantah Asahan Regency have shown readiness and adaptation to technological change, supported by continuous training and guidance. Employees have attended training related to the use of digital systems to ensure they can provide the best and optimal services to the community. This human resource readiness greatly affects the quality of service, and is one of the main factors for the success of digital transformation in government institutions (Laudon & Laudon, 2020).

From a public satisfaction perspective, the survey showed that public satisfaction increased significantly after the implementation of digitization. The public feels that the service is faster, more accurate and more transparent. Although the survey link was delivered through social media, this is still an early indicator that digital transformation is having a positive impact on public perception and experience in accessing land services.

Overall, the digital transformation of BPN in Asahan Regency has shown tangible results, although challenges such as uneven digital literacy and limited infrastructure still occur in some areas. Initiatives to expand digital access, integrate information systems, and optimize human resources must continue to be strengthened so that digital transformation can bring fair and sustainable benefits to all sectors of society.

Table 1 Impact of Digital Transformation on Asahan Regency BPN

Service Aspect	Before Digitalization	After Digitization
Mortgage processing time	2-3 weeks	Completed on the 7th day after submission
Notes management	Manual, piling up, and slow search	Digital, fast and efficient

Number of guests coming to the office	100% face-to-face service	Decreased by 55%, about 45% still come in person
PTSL target number 2024	-	5,500 land certificates
Access to land information	Must come in person	Can be through the Touch My Land application
Community Satisfaction	Not yet systematically measured	Improved (indicative from survey & feedback)
Reporting & evaluation system	Manuals, and physical documents	Digital monitoring system and online satisfaction survey

The Asahan Regency Land Office (kantah) launched the "Touch My Land" application to answer the demands of the rapid development of technology and information. The application is available for smartphones running Android and iOS operating systems and is equipped with various functions.

There are several basic features in the touch my land application that help the public obtain defense information such as notifications, land parcel location search, document information, certificate information, and service information. In addition, this application helps speed up the land service process and reduce queues at the land office. To access this information, users must first have an account.

Account verification can be done at the Defense Office (Kantah) located at Jalan Wr. Supratman No.6, Lestari, Dist. East Kisaran City, Asahan Regency. or at the nearest regional office and ATR/BPN. For users who do not have or have never registered for a Touch My Land account, the steps that need to be taken are:

1. Fill out the registration form at the land office
2. Log in to the touch my land app to start the registration process.
3. On the application home page, select the "New Account Registration" menu.
4. Enter your username, email, password and confirm the password for the "Touch My Land" app. Please remember your username, email address and password when registering.
5. Submit the registration form,
6. After filling out all the forms, submit the registration form, click the Submit button, and a message will appear indicating that the account registration was successful.
7. Fill in your username, preferably one that is easy to remember.
8. Fill in a valid email address in the Email field and make sure you can open the email, as notifications will be sent to the registered email address. After registering, you will need

to activate your account. This activation can be done by checking your email inbox. Open the email titled Activation of my land touch Account and click on the 'this' link to activate your land touch account.

Once activated, log in using the username and password you created. You can also try out the features available on the touch my land app. Once your land is processed, use the ATR/BPN app until the certificate is issued. Your land will then be automatically registered in touchku and you can also check the size of your land by entering the right type, NIB, land size, document number and certificate number. Some of the basic features that can be utilized are as follows:

A. File Info: Displays information on file management progress list, detailed file information, and specific file information. To view file information ie:

1. Opening the touch my land app
2. Open file search service
3. Enter your city's defense office region, file number, and year.

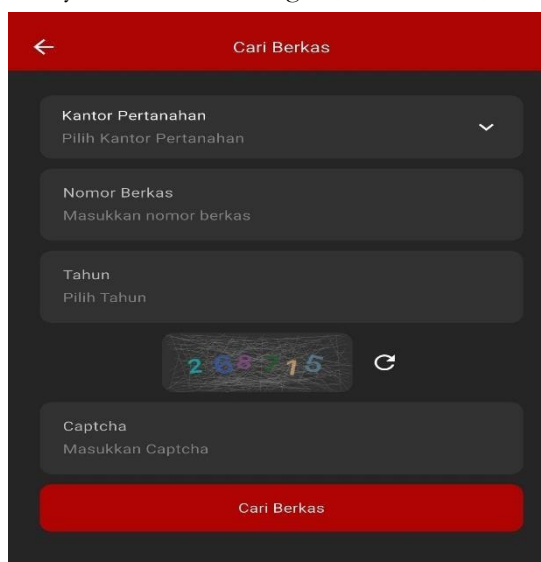


Figure 1 file check

B. Certificate info: displays certificates and can find out the list of certificate members and certificate details.

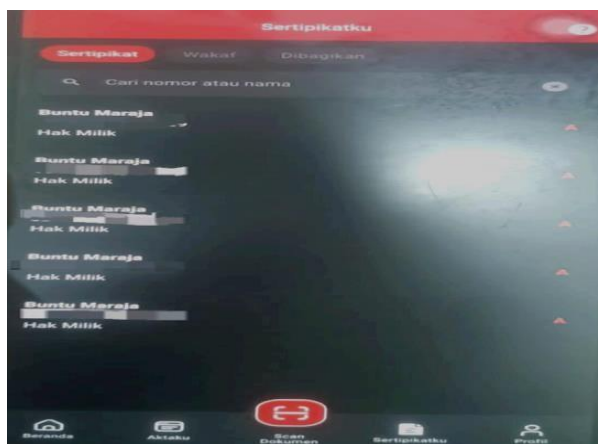


Figure 2 certificate services

If the physical certificate is not available in the ownership list, users can report the missing certificate information. In addition, it is also possible to find out the list of collateral for the certificate.

The certificate will be visible in the application when it has completed the procedures on the official ATR / BPN website such as issuing certificates. If it has been completed then the results will be visible in the touch my land application, if not then the land / plot will not be visible in the application.

C. Plotting a land parcel is to plot a parcel, the user must enter the certificate number to be plotted. Next, the user must draw the land parcel on the map according to its shape and location.

By tapping the save plot menu, the data will be saved on the server. The Land Office will then verify the data. If your plot has been verified, the data will appear on the plot.

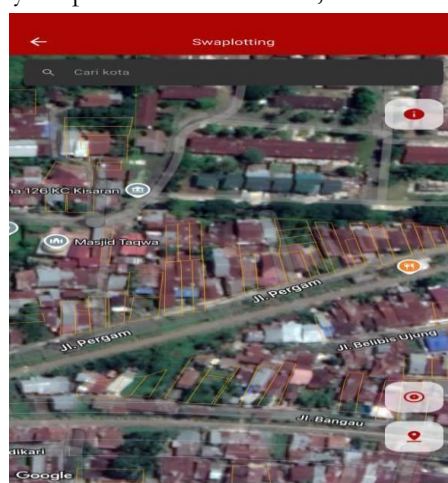


Figure 3 swaplotting

D. Land parcel location: To find out the location of the land parcel, the user selects the land office region, then enters the title type and title number of the certificate. By tapping the process button, the location of the land parcel will be shown on an interactive map.

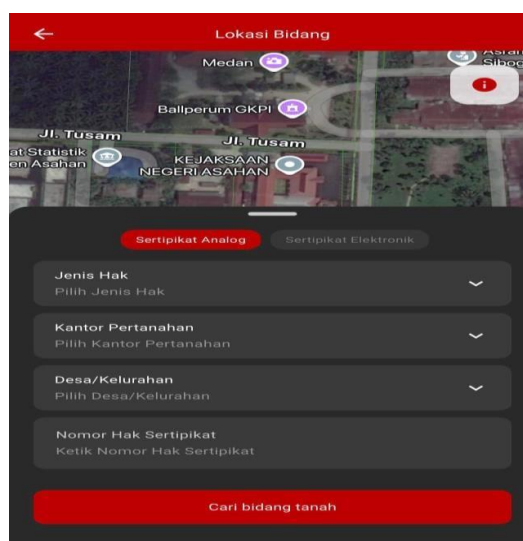


Figure 4 search field

- E. Service info:** To make it easier for users to find out information on requirements, fees, completion period, and simulation of land certificate processing fees.

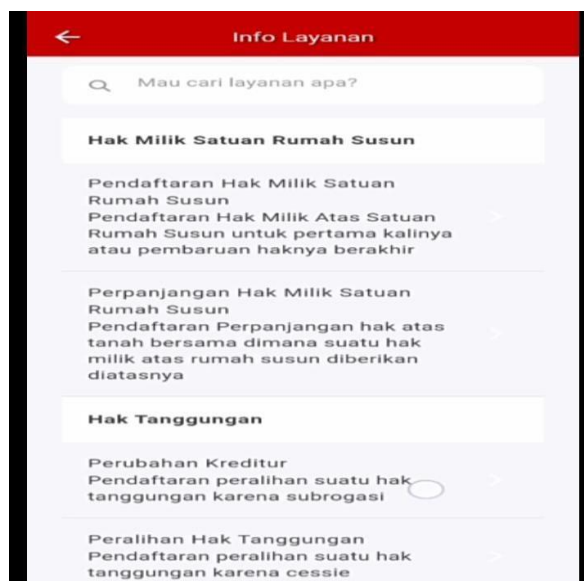


Figure 5 service info

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5. CONCLUSIONS

Based on the results of the research and discussion on the digital transformation of land services through management information systems at the BPN of Asahan District, we can conclude that the implementation of management information systems contributes significantly to the efficiency, and transparency of land services. Digital conversion is carried out through electronic services such as online certificate, PTSL service, Tanahku tactile application and electronic conversion, which have been proven to speed up the service process and increase public satisfaction. The study shows that while digital conversion brings many advantages, its implementation always faces obstacles such as low digital knowledge of the community, limited technological infrastructure in certain areas, as well as data security challenges. For this reason, long-term efforts are needed to improve human resource capabilities, development of reliable technological systems and great socialization for the public so that the digitization of land services can operate optimally and sustainably. The meaning of this research emphasizes the importance of adaptive political support, horizontal cooperation and active participation of the public in the digitalization of public services to approach modern, transparent and accountable land management.

6. ACKNOWLEDGEMENTS

The authors would like to thank everyone who has supported this research. More specifically, the authors have expressed their valuation at the National Land Agency of Asahan Regency (BPN) for assistance and cooperation in providing the necessary data and information during the research process. The authors are also grateful to supervisors and col-

leagues for providing constructions, criticisms and proposals in preparing this article. Hopefully the results of this research will contribute to knowledge development and practicing the best public services in the future.

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