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The Role of Digital Leadership in Improving the Quality of Electronic Services: Case Study of the Land Office in Surakarta, Indonesia

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Abstract

This study analyzes the process of electronic services at the Surakarta City Land Office and the role of digital leadership in improving service quality. The research used a descriptive qualitative method with data obtained through in-depth interviews with 18 informants, observations, and document studies. Data triangulation is carried out to ensure the validity of the information. The results of the study show that electronic services, such as electronic mortgage (HT-El), elimination of Mortgage Rights/electronic roya (Roya-El), and electronic land registration certificate (SKPT-El) increase efficiency, transparency, and accuracy in the management of land services. Digitization is carried out gradually through the conversion of physical documents into electronic documents with encryption technology for data security. The electronic dashboard integrated with the Ministry of Agrarian Affairs and Spatial Planning/National Land Agency (ATR/BPN) allows for direct supervision, increasing accountability and accelerating services. The success of digitalization depends heavily on visionary digital leadership. The Head of Office not only acts as a decision-maker, but also as a driver of change, motivates employees, and builds external collaboration. This leadership creates a strong digital culture, strengthens relationships with stakeholders, and encourages a change in digital mindset. Innovations such as electronic certificates, Certificate Printing Platform, and the “Sentuh Tanahku” application improve the quality of electronic-based services, especially in the E-S-Qual and E-Recs-Qual dimensions, providing an efficient, transparent, and responsive experience for users.

Keywords: land services; digital leadership; digital transformation; electronic services; Surakarta City Land Office

Introduction

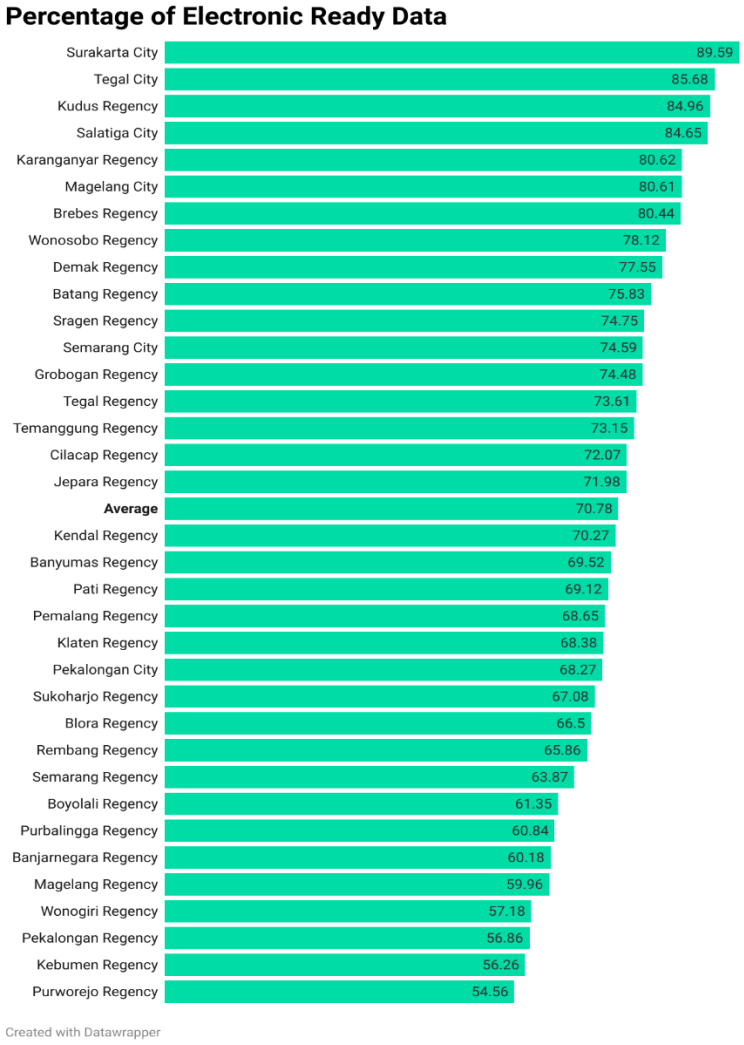
The digital era makes information technology a key element in optimizing efficiency and effectiveness in various sectors, including the public sector. One of the significant innovations is electronic services which are changing the way people access and manage land information. This service includes a variety of applications, ranging from land registration, property rights registration, to the provision of spatial information that can be accessed online.

The transformation towards electronic services not only requires a sophisticated technological infrastructure, but also requires qualified leadership to effectively direct and manage these changes. Digital leadership, which includes the ability to understand, adopt, and utilize digital technologies, is crucial in this context. Digital leaders must not only be tech-savvy but also have a strategic vision, change management skills, and the ability to inspire and empower their teams.

Leadership, including digital leadership, is an important issue which needs to be raised in research. The transformation of business processes from conventional to digital requires leadership skills that can adapt to new business processes (Chatterjee, et.al., 2023). This is evidenced by the increasing trend of research addressing digital leadership in recent years (Tigre, et.,al., 2024). Digital leadership is a proactive mental attitude in welcoming change and spearheading it. This innovative approach develops a culture of continuous learning and flexibility across the organization, as well as implementing the latest technological advancements (Chatterjee, et.al., 2023). This makes it possible to respond swiftly and effectively to changes in market dynamics, consumer preferences, and the threat of falling behind (Pandey, et.al., 2023).

The rapid development of information and communication technology (ICT) today opens great opportunities and opportunities for the government to innovate in carrying out its duties. One of the most important innovations is digital transformation. Digital transformation has become an important element in the modernization of public services, including land management. The Ministry of ATR/BPN introduced innovations, such as HT-El, Roya-El, and SKPT-El to improve efficiency, transparency, and accuracy of services. This effort is supported by national regulations, such as Presidential Regulation Number 95/2018 concerning Electronic-Based Government Systems and Regulation of the Minister of Agrarian Affairs and Spatial Planning/National Land Agency Number 3/2023 concerning the Issuance of Electronic Documents.

In order to carry out its duties and functions in the regions, the Ministry of ATR/BPN established a National Land Agency Regional Office at the provincial level and a Land Office at the district/city level. The Surakarta City Land Office, hereinafter referred to as the Surakarta City Office, is one of the vertical work units at the district/city level set by the Ministry of ATR/BPN as a pilot project for the implementation of electronic certificates this year (2024), the 2024 Surakarta City Indonesian Digital Society Index (IMDI) is included in cities/regencies in Central Java with a high-classified digital society status and above the Provincial and National IMDI, with a Surakarta City IMDI value of 49.32 (https://imdi.sdmdigital.id/home). This shows that people in Surakarta use or apply digital technology electronically in their daily activities and have good access to infrastructure and ecosystems, digital skills, empowerment, and employment (https://imdi.sdmdigital.id/tentang-kami/tentang-pilar). Efficient and high-quality electronic services are expected to provide easier and faster access to the community in taking care of land needs. The city of Surakarta has been designated as a complete city, and as a representation of the province of Central Java which has the level of readiness of electronic land data in the first rank, which is 89.59% (https://htel-statistik.atrbpn.go.id/SiapElektronik). The following is a list of the level of readiness of electronic land data in Central Java province to support electronic services:



Source: https://htel-statistik.atrbpn.go.id/SiapElektronik processed by researchers Dated 05/06/2024 at 21.00

Figure 1. Percentage of Electronic Ready Data for Land Offices in Central Java

Current conditions show that although digital transformation has been implemented, challenges remain. Data shows that the average readiness of electronic data in Central Java is 70.78%, with Purworejo recording the lowest readiness level of 54.56% (https://htel-statistik.atrbpn.go.id/SiapElektronik).

According to the results of the literature, there are several problems in land services, such as the difficulty in the process of making certificates because it is done manually, and the difficulty of the public in obtaining information about the operational standards of applicable procedures. (Sofyan, et.al., 2008) Other obstacles include complicated bureaucracy, non-transparent practices, and increasing reports of public complaints (Harahap, et.al., 2023; Pambudi & Hidayat, 2022). Modernization of public services is an effort of digital transformation in the implementation of land services. The transition to an electronic service system is expected to increase efficiency and facilitate public access to public services, as expressed by (Prasetya & Afif Mahfud, 2023), who stated that electronic services play a significant role in facilitating public access to public services. This is to realize

excellent service which meets the needs of the community in the modern era (Sagari & Mujiati, 2022). By adopting digital transformation, the Ministry of ATR/BPN can realize land management and services which are much more efficient, transparent, and accurate (Adinegoro, 2023). The change in services from conventional to digital is expected to improve the performance of the Ministry of ATR/BPN by providing fast, accurate, effective, and efficient services.

These challenges indicate a gap between technology implementation and institutional readiness, especially in terms of leadership and organizational culture. As an electronic-based service, it is expected to provide better responsiveness, increase transparency, and build public trust. Based on the theory of digital organizational transformation (Ford, et.al., 2021) and digital leadership (Chatterjee, et.al., 2023), the success of this transformation is highly dependent on the role of leaders who are able to direct change, empower teams, and create an adaptive culture of innovation. Leaders must also have skills in utilizing technology to meet the demands of modern society which is increasingly critical of public services. Previous studies have shown that countries, such as Estonia, have successfully adopted efficient e-government services, so that they can be used as a comparative model for Indonesia. For example, research by (Espinosa & Pino, 2024) highlights the role of e-government in driving economic transition and development in Estonia. In Surakarta, the implementation of electronic services, such as digital certificates, shows great potential to improve efficiency and accuracy, but this requires strengthening data-driven governance and policies. In addition, this step is also relevant to support the SPBE national roadmap, as mandated by Presidential Regulation Number 95/2018. This study aims to examine the actual condition of electronic services in the Surakarta City Land Office, analyze the role of digital leadership in supporting this transformation, and formulate strategies based on digital innovation to improve the quality of public services. The results of the research are expected to contribute to the development of land electronic service policies as well as the role of digital leadership to support service quality.

Methods, Data, and Analysis

This research uses a qualitative method. The qualitative method prioritizes research findings based on observations of phenomena occurring in the field. The qualitative method in this study is carried out through a descriptive research approach. This research aims to deeply understand the role of digital leadership in the context of improving the quality of electronic services at the Surakarta City Land Office. This research was carried out at the Surakarta City Land Office. Data sources in qualitative research can be in the form of primary data and secondary data. Primary data was obtained from the results of interviews with informants consisting of Heads of Offices, Heads of Related Sections, Functional Officials in charge of electronic services, Land Deed Making Officials (PPAT), representatives of Financial Services Institutions, electronic service users from the community, academics/practitioners in the field of land services, Chairman of the National Land College (STPN), and Head of Data and Information Management from the Land Data and Information Center, Spatial Planning and Sustainable Food Agricultural Land (Pusdatin). The selection of informants was carried out using purposive sampling (Sugiyono, 2022) technique, with inclusion criteria based on competencies and knowledge relevant to the research topic. Meanwhile, secondary data is sourced from literature, literature studies and information as well as reports from government documents available in print or digital form.

Results and Discussion

The Ministry of Agrarian Affairs and Spatial Planning/National Land Agency (ATR/BPN) has implemented electronic-based land services to increase efficiency, transparency, and accountability. This digitization includes services, such as Electronic Dependent Rights (HT-El), electronic roya (Roya-El), certificate checking, Land Registration Certificate (SKPT-El), and land value zone information (ZNT) services.

HT-El services are one of the main pillars of this transformation, allowing the process of registration, transfer, change of creditors, and removal of dependent rights to be carried out entirely electronically. This system provides speed (7 working days for the issuance of electronic certificates) to less than 7 days, even one day service if the file is correct and complete, transparency, and ease of real-time access. As explained by Mrs. SY below.

> *"The existence of HT-El is very helpful for us at the Bank in the credit process, no one feels complicated, it is very helpful with the existence of a system that supports fast work with a maximum of 7 days and even very can be less than that, a certificate of Dependent Rights will be issued"*.

The implementation of electronic certificate checking aims to minimize data conflicts between physical documents and electronic systems. Although data discrepancies are still found in some cases, this step is a significant effort to improve the quality of land data. As stated by Mr. ZU: *"Checking between the physical and the results is different... The land book is the compatibility between the land book and the system will be improved"*. Therefore, improving data quality is an important thing which must be implemented immediately.

SKPT-El and Roya electronic services also provide convenience and efficiency, reducing reliance on manual processes. In Roya electronic, the process of removing the right of dependency can be completed within one day after the document is declared complete. This is reinforced by Mr. YN's statement: *"Roya services after the existence of this electronic policy have become easy and fast... The HT is also electronic, so the data is valid"*.

The process of transferring land document media converts physical documents, such as land books and measurement letters, into digital format. These stages include document identification, data verification and validation, data block creation, and electronic document authentication using digital signatures. This media transfer supports the implementation of more secure, transparent, and integrated electronic certificates. As explained by Mrs. TE: *"The media transfer process involving validation and verification requires time and precision, especially in the final stage"*.

Based on data from https://htel-statistik.atrbpn.go.id/SiapElektronik until November 2024, the Surakarta City Land Office has completed the media transfer of 71.8% of electronic land books (BT-El) and 47.82% of electronic measurement letters (SU-El). This transformation represents a significant achievement in improving service efficiency and reducing the risk of losing physical documents. However, some obstacles still need attention. The limitation of human resources (HR), both in terms of number and skills, is the main challenge. In addition, resistance to digitalization changes among the community and Land Deed Making Officials (PPAT) hinders optimal implementation. The in-depth analysis also reveals that the gap between physical and electronic data in certificate checking services is still a crucial issue. This barrier requires a systematic approach through more intensive data validation and improved coordination between related parties. In addition, the process of scanning physical documents, which is considered time-

consuming and inefficient, is a significant challenge. A clearer division of duties is needed between the Land Office and PPAT to reduce the disproportionate workload on service users. As explained by Mrs. DI: *"It gets more complicated when told to scan ... It should be BPN who is the one who cares* about it".

Digital transformation has brought profound changes in the way organizations adapt to global dynamics, including in public service institutions such as the Surakarta City Land Office. These changes not only impact the technology used but also affect the leadership patterns needed for adaptation to run effectively. In the midst of these challenges, digital leadership has emerged as a key element which can ensure the success of organizations in transforming. Leaders are not only required to have a strategic vision, but are also expected to be able to integrate new technologies through a flexible and collaborative approach to improve the quality of service to the community.

One of the frameworks which is often used to understand this leadership dynamic is the Competing Values Framework (CVF) introduced by Quinn and Rohrbaugh (Quinn, 1988; Quinn & Rohrbaugh, 1981, in Weber, et.al., 2022). The framework divides leadership roles into four main quadrants: collaboration, innovation, control, and competition. In the context of digital transformation in the Surakarta City Land Office, these roles must not only be adopted but also expanded to be able to answer the complex challenges which arise, especially in improving transparency and service efficiency. For example, the role of digital innovators and pioneers is increasingly important to create solutions that are relevant to today's technological developments, enabling institutions to provide faster and more responsive land services.

Recent research shows that the role of leadership in digital transformation can no longer be viewed from traditional lenses (Weber, et.al., 2022). In the Surakarta City Land Office, additional roles within the CVF framework, such as digital pioneers, innovators, mentors, and network activists, are becoming increasingly relevant. Leaders in these agencies need to develop an adaptive mindset, be able to deal with uncertainty, and actively empower teams to achieve common goals. The combination of strategic vision, risk-taking, and the ability to build collaborative networks is at the core of effective digital leadership to support digital transformation in this era.

Digital Pioneer

The digital transformation at the Surakarta City Land Office has shown significant progress, especially through electronic service policies and electronic certificates. This strategic step aims to improve efficiency, accuracy, and transparency in land administration, while minimizing manual errors. As a pilot project in Central Java Province, the Surakarta Land Office has developed services such as electronic HT, ZNT, and archive digitization.

Below is the statement form the Head of Surakarta City Land Office which said that despite the challenges, the use of technology has improved accuracy and lowered errors.

> *"The manual system is difficult to use again, especially to pursue development. Digitalization is still in the development stage, so at the beginning of its implementation there are obstacles or obstacles. However, with the Computerization of Land (KKP), processes such as archiving already use an electronic system"*.

The success of this implementation is supported by the commitment of leaders as digital pioneers who play an important role in identifying opportunities, overcoming challenges, and ensuring the readiness of infrastructure and human resources.

Continuous training, such as initiated by the Ministry of ATR/BPN through the "Kamis Belajar Kamis Webinar" platform, as well as the learning by doing approach, is a key strategy, as stated by Mrs. TE: *"Technical training on applications is more effective in carrying out directly through daily work. Teaching each other and asking questions is something that I continue to encourage".* In addition, data security is a top priority in this electronic service. As explained, *"The security of personal data is the main focus. Our system is already secure and regulated by Pusdatin, but anticipation and improvement are still needed to maintain the reliability of the system"*.

The collective commitment of all levels of the Land Office ensures that this transformation not only runs smoothly but also strengthens public trust, as stated by Ms. TE: *"The main strategy is the commitment of the leadership that invites all ranks to be jointly responsible, with continuous monitoring and evaluation"*. The integration of the strategic vision of the Ministry of ATR/BPN with practical implementation at the Surakarta City Land Office makes it a successful digital transformation model. The digital pioneers in this institution have proven that technological adaptation not only improves efficiency but also creates real added value for society.

Innovator

Digital transformation at the Surakarta City Land Office shows the vital role of an innovator in creating significant added value in public services. Leaders at this institution not only design policies based on creativity and problem-solving, but also successfully overcome barriers to the implementation of electronic services and electronic certificates. One of the key innovations is the electronic certificate system which speeds up the administrative process, improves accuracy, and transparency of services. This innovation utilizes the "Sentuh Tanahku" application which allows applicants to print certificates independently using the Certificate Printing Platform. This system reduces queues, cuts administrative work, and makes it easier for people to access services. As Head of Surakarta City Land Office, Mrs. TE explained: *"Land rights certificates used to be sewn manually, now they are faster and safer with digitalization, supporting service efficiency"*.

The success of the implementation is also supported by a collaborative approach in dealing with technical constraints. When the system faces problems, such as instability, multichannel strategies are used, including IT Service Management (ITSM), communication via WhatsApp, telephone, and zoom meetings to solve problems effectively. This is as stated by Mrs. TE: *"If technical obstacles arise, we try not to disadvantage the community. Responsiveness is our top priority"*. In addition, the success of this digital transformation is inseparable from efforts to bridge generational diversity in the work environment. Millennials who are more adaptive to technology are empowered to carry out digital tasks, while senior employees are involved in strategic roles that match their competencies. This was expressed by Mrs. TE: *"The target of digitalization is the target of the office, not just an individual agenda. We make sure all employees contribute according to their abilities"*. The adaptive and innovative approach at the Surakarta City Land Office not only supports service efficiency but also creates an inclusive work environment. This strategy is a clear example of how innovation and adaptive leadership can drive successful digital transformation in the public sector.

Enabler

Digital leadership plays a strategic role in creating a responsive, adaptive, and innovative work environment amid the acceleration of digital transformation. At the

Surakarta City Land Office, leaders adopted team empowerment, flexibility, and collaboration-based approach to face technological challenges. In this context, the involvement of all team members is key, despite resistance to new technologies. One of the leaders, Mrs. TE, emphasized the importance of inclusivity and the learning process, *"The important thing is that everyone must be involved. Don't get it? Learn. Each position has an important role and is interrelated, so everyone must try to understand according to their capacity"*.

Leaders also support a culture of trial and error-based experimentation. Employees' fear of failure is overcome by providing training based on individual needs and building confidence. Mr. TR emphasized the importance of emotional support, *"Fear of technology often arises. We must teach patiently, without being afraid. With this approach, employees will slowly be able to adapt"*. A work culture which supports innovation is combined with intensive communication and a reward for success. This approach creates a resilient organization in the face of technical obstacles, as Mr. TR said, *"In the beginning, there were many problems with electronic services. We collaborated with Pusdatin, conducted intensive discussions to try various solutions. Official guidelines are not yet available, so we rely on improvisation"*. Overall, the success of digital transformation depends on an adaptive, supportive, and collaborative leadership style. This study provides valuable lessons that effective digital leadership not only drives innovation, but also strengthens collective capacity in the face of technological change.

Mentor

The success of digital transformation at the Surakarta City Land Office highlights the importance of the strategic role of leaders as mentors. Digital leadership in this office focuses not only on mastering technology, but also on building trust-based interpersonal relationships to support adaptation to change. This approach allows for the creation of a collaborative, proactive, and innovative work culture in the organizational environment. Leaders implement mentoring strategies through open communication, ongoing training, and mentoring tailored to individual needs. As explained by Mr. RS, *"From the beginning we have had assistance from the Pusdatin before the electronic service, we have had assistance, and it has been socialized or it can be said to be like an internal practice"*. This approach has proven to be effective in reducing resistance to change and increasing employee intrinsic motivation by meeting the need for autonomy, competence, and interpersonal relationships, in line with the theory of Self-Determination (Ryan & Deci, 2020).

In addition, internal and external collaboration is the key to the success of the transformation. Internally, the culture of learning together between employees creates a mutually supportive work pattern. Mr. RS added, *"From our own colleagues from fellow friends, usually we also learn or socialize together. Learning together means that what is done like this will be taught by Mbak Ut to other friends"*. On the external side, coordination with Land Deed Making Officials (PPAT) through communication groups such as WhatsApp "Halo Kepala Kantor" ensures the quick and coordinated resolution of technical obstacles. This has proven to be helpful in the input of electronic services, as explained by Mr. RS: *"PPAT has now started to input electronic certificates and we have finally informed so we have coordination, we have a group also with PPAT".*

Leaders also provide strategic direction through daily data-driven performance monitoring. Mrs. TE explained: *"Yes, the leader also has to monitor, right? Monitor the validation time first, yes, leading to the Complete City Regency, every day you have to make a report per person per day, the realization is how much per day can*

be seen there, it can be seen that if it is indeed not optimal like the others, I must reprimand why". This approach creates a continuous cycle of improvement that accelerates the achievement of digital transformation targets. In addition, leaders provide space for reflection and innovation for employees, creating a work environment which supports exploration without fear of failure.

Digital leadership at the Surakarta City Land Office proves that the success of digital transformation does not only depend on technology, but also on adaptive, mentoring-based, and empathetic leadership towards employees. By building trust, providing directional direction, and leveraging data-driven feedback, leaders succeed in creating an inclusive, innovative, and sustainable work environment. This model can be a strategic inspiration for other institutions looking to manage digital change successfully.

Networker

The role of leaders as network activists at the Surakarta City Land Office is an important foundation in supporting digital transformation. By building strategic relationships across disciplines, both internally and externally, leaders create a collaborative ecosystem that enables efficient consultation and solutions to operational challenges. As conveyed by TE in the following statement.

> *"What is clear is that we are also called an institution, especially vertical, we can't work alone. We must actively establish cooperation, build good communication, especially with the Regional Government as the owner of the region. Alhamdulillah, it has been running smoothly, especially with programs such as local government asset certification and slum planning. This cooperation supports each other, even the needs of our infrastructure facilities are also supported by the Regional Government"*.

Leaders not only connect related parties but also initiate wider collaboration, for example with Land Deed Making Officials (PPAT). Active communication such as through WhatsApp groups ensures that problems can be solved quickly. This cross-functional approach is supported by a more horizontal organizational structure, as TE expressed: *"It's important, it's impossible for one section to work alone. Everything has been locked with the applicable SOPs, so it must be completed in one section to be able to continue to another section"*.

This internal collaboration is combined with structured SOPs to integrate workflows efficiently. Each section is interdependent, and SOPs ensure accountability and reduce potential errors. This structure allows the Land Office to maintain smooth operations during the complexity of digital services. In addition, the involvement of leaders in building external networks is a key element of success. Collaboration with local governments, for example, allows the implementation of certification programs such as Complete Systematic Land Registration (PTSL) and slum structuring to run well. TE explained: *"This cooperation provides real reciprocity. BPN is seen as good because it supports the Regional Government's programs, while needs such as archive buildings and other infrastructure facilities are also supported by the Regional Government".*

Through this approach, leaders at the Surakarta City Land Office show that the success of digital transformation does not only depend on technology, but also on information integration, cross-functional coordination, and strategic collaboration with stakeholders. This model provides valuable lessons for other organizations facing similar challenges in the digital age.

Manager

Digital transformation in public services, especially in the land sector, requires significant managerial adaptation. This case study at the Surakarta City Land Office examines how leadership and the implementation of Key Performance Indicators (KPIs) play a role in the success of the digital transformation of land services. As a manager, the leader at the Surakarta City Land Office plays a crucial role in ensuring that the team remains focused on the strategic goals of digitalization, by being oriented towards measurable results through the KPI (Decree of the Minister of ATR/BPN No. 1166/SK-HK.02.01/IX/2021). This KPI serves as a guideline in the formulation of performance plans and program evaluations, ensuring alignment with the strategic targets of the Ministry of ATR/BPN (2020-2024).

In the context of digitalization, KPIs support efficiency and accountability. Electronic systems speed up the process and increase transparency. In line with the digital transformation framework (Philip, et.al., 2023), the success of transformation depends on the organization's adaptation to technological changes and the management of internal resistance. Leaders act as facilitators through training, communication, and mentoring. KPIs in electronic land services guarantee the effectiveness and efficiency of digital systems, such as electronic land registration and geospatial infrastructure, to provide legal guarantees, information disclosure, and ease of access. The KPI also measures the success of implementation, including time and cost efficiency, as well as increased land registration and validation. This effort supports fair, productive, and equitable land governance, in line with the Electronic-Based Government System (SPBE).

Efficiency is the core of digitalization at the Land Office. Leaders simplify workflows and leverage technology. The implementation of electronic services brings significant changes. Before the transformation, manual service took up to seven days. The electronic system introduces additional validation, which initially adds to the turnaround time. The Head of the Land Office, Mrs. TE, explained, *"It's more efficient... electronic certificates all must stop by the SP... This is an additional work that takes time..."*. In the first three months, the monitoring dashboard showed a red status due to system adjustments and technical constraints. To overcome this, a temporary policy of "non-PNBP media transfer" was implemented, although it was later prohibited by the Secretary General's circular. This emphasizes the importance of local policy flexibility in the national regulatory corridor.

The leader's commitment can be seen from the direct registration of all applications for transparency and accountability. Strict monitoring is in place to minimize delays. The obstacles faced, such as evolving systems and technical errors, demonstrate the need for an adaptive approach. A real example is the implementation of electronic systems for the registration and maintenance of land rights, which accelerates data access and verification. Mrs. TE explained, *"Yes, for sure it's monev... can be seen from the dashboard as well... We have a group to make sure this service is running..."*. The Land Office implements a digital monev with an electronic dashboard for real-time information. Performance data showed a significant decline in October-December, although the number of files remained high. This indicates seasonal factors or an increase in workload. Internal communication through discussion groups supports information management. Success is measured by the lack of delays, complaints, and complaints, as well as community satisfaction. The Land Office actively monitors public perception through social media.

Digital Mentee

Digital transformation in the public sector demands an adaptive and innovative leadership approach. This case study at the Surakarta City Land Office examines the role of leaders as digital mentees in the implementation of digital transformation of land services. The concept of digital mentees describes leaders who actively seek input and learn from employees, especially related to digital issues and skills. This approach reflects dynamic collaboration and two-way information exchange. Mrs. TM stated, *"Yes, we also often have forum sharing sessions, updates on what is new in the system... anyway, exchanging information just ... That way, it's good for us to work, assisted by Artificial Intelligence (AI)"*.

This interaction facilitates leader learning and supports the concept of reverse mentoring (Chaudhuri et al., 2022), where leaders learn from employees who are more tech-savvy. This accelerates mastery of new technologies and creates an innovative work environment. Employee input is also used to improve work strategies and understand technical problems. Mrs. TM added as follows.

> *"If the people here are good, help and support each other, so if for example there is a boss who is wrong or does not understand, just tell each other... All can be taught and talked about well... For example, if someone doesn't understand digital, even if they are seniors, we can't even keep quiet. Taught slowly..."*.

In line with the view (Sisilianingsih, et.al., 2023), the success of digital transformation requires effective adaptation through cross-level collaboration of organizations. The exchange of information in the Land Office creates an inclusive learning environment, where all parties contribute. This approach is relevant to optimize electronic-based services. Leaders as digital mentees show how learning-based leadership drives the success of digital transformation.

The role of digital leadership varies at each level of the organization (National, Regional, and Regency/city levels). Mr. AG explained as follows.

> *"Actually, the seven roles will all be needed according to our place... The center is the one who sets the vision... Then the center will socialize it to the Regional Office... The Center hopes that the Regional Office will serve as a mentor... then the new Center sent its orders to the land office... It's the lens that does that... He learned from his men... Monitored by the Regional Office... So, from the seven, if it is broken down, there must be someone who rests on each office"*.

At the Land Office, leadership focuses on policy execution and technology adoption. Close collaboration between organizational levels is essential to achieving digital transformation goals. This study highlights the importance of leadership as a digital mentee in the context of digital transformation of public services. Openness to learning from employees and building effective collaboration is the key to successful technology implementation.

Discussion related to electronic services, using theory, there are two models used to assess the quality of electronic services: (Parasuraman, et.al., 2005), E-S-Qual and E-Recs-Qual. The E-S-Qual model emphasizes the technical aspects of electronic services through four dimensions: Efficiency (speed and smoothness of transactions), System Availability (system reliability), Fulfillment (fulfillment of service promises), and Privacy (security of user data). The focus of this model is on the operational quality of the system. Meanwhile, E-Recs-Qual measures the dimensions of human interaction in

electronic services through Responsiveness, Compensation, and Contact. This model highlights the importance of social and personal aspects in creating a satisfying service experience.

Based on the implementation of this model in the electronic service of the Surakarta City Land Office, it was found that the combination of technical quality evaluation and human interaction can increase user satisfaction as well as service effectiveness. This study emphasizes that the quality of public sector electronic services depends not only on technical reliability, but also on the quality of interaction between users and service providers. These findings show the need to develop these two aspects to improve the quality of electronic-based public services.

Efficiency

Efficiency is a crucial benchmark in evaluating the success of the digital transformation of public services, including in the land sector. This case study at the Surakarta City Land Office analyzes the efficiency level of electronic services and the challenges of their implementation. Although electronic services offer easy access for users who are familiar with technology, the limitations of interactive guides are an obstacle for new users. Automated transactions such as checking electronic certificates, SKPT-El, HT-El, and Roya-El generally run quickly. However, manual verification by staff often slows down the process, demonstrating the need for better integration between manual and digital procedures. Mrs. MY explained, *"If you are online, everything is fast... If the distress lies in the officer who is there with the staff... Where did the file go, I don't know... Actually, it's okay to stay down there for a long time"*.

A similar complaint was also submitted by Mr. AD regarding the difference in correction between staff and superiors, which had an impact on the length of the process. *"Sometimes that's what happens, the question of correction is sometimes between one collector and another collector with the leader, sometimes it is different... so that it will be long..."*. Repeated data input by users is also identified as inefficiency, which prolongs the completion time and increases the potential for errors. Additionally, while the technology infrastructure is generally reliable, performance constraints arise during periods of peak usage, indicating the need for increased server capacity or the adoption of cloud technologies. This analysis is aligned with the efficiency principles in the Es-Qual framework, which emphasizes ease of access, speed of service, and minimal input load. Recommendations for efficiency improvement include the development of adaptive navigation features (e.g., AI-based guidance), process simplification through data integration, and investments in digital infrastructure (e.g., increased server capacity and cloud technologies). The study shows that although electronic services at the Surakarta City Land Office have contributed to improved accessibility, further optimization is needed to achieve maximum efficiency and provide superior user experience. Challenges include the integration of manual and digital systems, standardization of verification procedures, reduction of data input repetition, and infrastructure capacity building.

Fulfillment

It is the ability of the system to fulfill service promises related to accuracy, timeliness, and availability of documents. It is one of the important dimensions in the evaluation of electronic services. Case study at the Surakarta City Land Office. Users are generally satisfied with the speed of automated (online) services, such as checking electronic certificates, HT-El, Roya-El, and SKPT-El. Mr. AD and ZU said, *"... If HT and its derivatives that are already electronic are already very smooth, mas... The SOP is also electronic like this*

according to the schedule, so there is certainty...”.

However, an obstacle arises in the service with manual validation, which causes delays. The electronic system is considered quite accurate, although some data discrepancies occur due to initial input errors. Mr. RI explained, *“... If I have to check it, I have to check the data, don’t let it overlap... Now it is still a half-and-a-half hodgepodge, has it not been entered in the pusdatin or the initial input data is wrong...”*. The main challenge is related to the integration of electronic systems with manual processes. The informant emphasized the importance of preventing data duplication. Although electronic systems are expected to reduce this problem, input errors and suboptimal data integration are still constraints.

Electronic service systems generally show good ability in fulfilling service promises under normal conditions. However, system or internet network disruptions have an impact on service availability. This shows that consistency in fulfilling service promises is still a challenge. These results reinforce the relevance of the fulfillment dimension in the Es-Qual framework, which emphasizes accuracy and consistency. To overcome this obstacle, the Land Office can develop a more capable and integrated system, including improving infrastructure and resources.

System Availability

It is the ability to provide stable, accessible, and minimal disruption services which is a crucial factor in electronic services. A case study at the Surakarta City Land Office analyzes this aspect. The system generally functions well under normal operating conditions. However, sudden system maintenance without notice hampers work. This indicates the need for technological capacity building and pre-maintenance notifications, ideally outside of business hours. The accessibility of the service has been designed for a variety of devices, but some users with low-spec devices report compatibility issues. System security, despite having implemented encryption and authentication, still needs to be improved as cyber threats evolve. Mr. AD said, *“Yes, I hope this electronic system... Besides the provider, it must really be able to run smoothly... also the speed of all employees of BPN... If the cellphone is full of memory* kentang*, it’s difficult to be* lola*...”*.

The interview expressed hope for an electronic system to speed up the land process. Successful implementation depends on the infrastructure and readiness of human resources, especially technical skills. The inequality of competence between employees and other professionals shows the need to increase human resource capacity through training. Mr. AD added, *“... because BPN is the spearhead of the solution, yes, everything must be able to... If the process is like earlier, the inheritance is not clear, BPN should not have consulted the center for 3 months, what is the problem and all centers must solve it as soon as possible...”*. Data consistency is also a challenge. Digitization must ensure that data is consistent with actual conditions. The inconsistency of data quality between Land Offices affects national integration. The implementation of a single source of truth is expected to create a more structured and efficient system.

To overcome this obstacle, the Land Office needs to consider a more flexible infrastructure, such as cloud technology, to ensure service availability when demand is high. Improving system security and optimizing interfaces is also important. These results support the Es-Qual framework that emphasizes system reliability and stability. With the implementation of this strategy, the Land Office can provide more consistent services and meet the expectations of the community.

Privacy

Privacy is a crucial element in building trust in electronic services. A case study at the Surakarta City Land Office analyzes this aspect. The system has implemented security measures such as data encryption and multi-layer authentication. Mr. MU explained as follows.

> *"Digital leadership at the Ministry of ATR/BPN ensures that there are clear policies regarding personal data protection and privacy... Implementing role-based access to restrict who can access certain data... The application of data encryption to ensure that personal and sensitive data is protected..."*.

The Ministry of ATR/BPN prioritizes the protection of personal data in accordance with the personal data protection (PDP) Law. Data access is restricted to authorities with legitimate purposes, through role-based access and data encryption. In addition, firewalls, IDS, antivirus, and SIEM are used to protect IT infrastructure.

While most users feel their information is safe, some concerns have arisen regarding the potential for unauthorized access. Mr. AD highlighted the risk of data leakage if the certificate owner leaks the password, *"... If now the certificate voter leaks the password of his account, it can be someone else's print..."*. He also emphasized the importance of strict identity verification, especially through notaries, to prevent abuse. The threat of hacking is also a concern, which requires a layered security system and more secure identity verification, such as fingerprints.

To strengthen privacy, the Land Office can adopt more advanced security technologies, such as artificial intelligence-based systems, and simplify authentication without compromising security standards. Mr. MU explained the use of technologies such as Big Data, AI, ML, Blockchain, and Cybersecurity Technology to improve effectiveness, accuracy, and data protection. Educating the public about data management and privacy policies is also important. This principle aligns with the Es-Qual framework, which emphasizes a sense of security and trust.

Responsiveness

It is the ability of the system to meet user needs quickly and on time. This is an important indicator in electronic services. Automated services generally run well, but technical constraints often slow down problem resolution. Mr. AD explained that although there are various help channels, direct communication to the office is preferred to avoid misunderstandings, *"... Because that's an important stage, yes, he didn't misunderstand... If you go to the office, the officer also serves well, clearly and understands what it means..."*.

While the solutions provided are generally appropriate, additional processes sometimes extend the turnaround time. The lack of proactive communication is also a challenge. Mr. RS explained that although there is an internal ITSM service for communication with Pusdatin, the response is often slow, *"... If it is by ITSM, maybe if there are complaints throughout Indonesia, many of the responses may be a bit long, but if it is by person, it may be a bit different"*. He also highlighted the difference in understanding between new and experienced officers, as well as the importance of leadership intervention to accelerate problem solving.

To improve responsiveness, the Land Office can consider artificial intelligence-based technology for simple problem-solving automation, expand the capacity of customer support teams, implement proactive notifications, and develop automated monitoring technology. This is in line with the Es-Qual framework which

emphasizes the speed and relevance of responses.

Compensation

Compensation is an important aspect in maintaining the satisfaction of electronic service users, especially when service failures occur. Although compensation procedures are available, such as service life extensions or file returns, users complain of slow processes, especially in the case of manual verification. Mrs. MY said, *"There should be like this, there is no such thing, why doesn't it seem like there is, I don't even think there is... The important thing is that the SOP time for the work to be completed quickly. It's enough"* indicating the lack of information that users receive regarding compensation. Some users feel that the compensation provided is not enough to compensate for the loss of time and cost, especially due to significant delays. The lack of transparency of compensation policies is also a problem.

Surakarta City Land Office provides compensation in the form of mugs and goodie bags, as stated by Mrs. TE, *"Actually, we also prepare compensation for mugs and goodie bags. when our services are more than the Standard Operating Procedure, we will hand them over"*. However, the effectiveness of compensation needs to be improved by automating the verification and compensation process, as well as increasing the transparency of information related to compensation rights and procedures. The form of compensation also needs to be relevant to the type of loss experienced by the user.

These findings are in line with the Es-Qual principle which emphasizes fast, fair and transparent reparations. With these measures, the Land Office can increase user trust and support the smooth digital transformation.

Contact

The aspect of ease and quality of communication between users and service providers is very important in electronic services. Although there are various communication channels available (email, online help center, social media), some users have difficulty finding clear contact information. Mr. LW said, *"Oh, I have a hard time using the internet... usually I just go straight to the office. It's also better when going to the office. Obviously that's our problem..."*, indicating a preference for face-to-face interaction. Mr. RS mentioned various complaint channels on social media, including WhatsApp "Halo Kepala Kantor", Instagram, Facebook, X, and YouTube, *"... On social media, land office here seems to have a few problematic comments, usually in DMs or directly to land office"*.

In addition to accessibility, the quality of interaction is also important. Mrs. NI said, *"Yes, actually the officer at the counter is already good, but sometimes it seems like a miscommunication with the technical officer... It should be made more communicative between the counter and the technical"*, highlighting the need for better internal coordination. Contact information and land service platforms are available on various channels, including links and images provided (https://linktr.ee/kantahkotasurakarta). The number of channels aims to facilitate access, but it needs to be managed with an adaptive and informative communication strategy. To improve the contact aspect, the Land Office needs to improve the accessibility of contact information, improve the speed and quality of responses, and improve internal coordination between officers. Effective use and management of social media is also crucial.

This study aims to analyze the effect of the combined application of the E-S-Qual and E-Recs-Qual models on service effectiveness and user experience in electronic services at the Surakarta City

Land Office. As affirmed, the E-S-Qual model, which measures the technical dimension of electronic service quality, along with the E-Recs-Qual which assesses the human interaction dimension, contributes significantly to the public's perception of services. The results show that the adoption of the two models has had a positive impact. From the technical aspect, there have been significant improvements, especially in the speed of access and stability of the system, which speeds up the processing of applications. The implementation of the electronic system has succeeded in cutting the service completion time from seven days to three working days or even less. The dimension of human interaction also plays an important role. Users feel more satisfied with the active involvement of officers who provide explanations and answer questions. Clear and direct communication between officers and users increases a sense of appreciation. This is in line with the findings (Hammoud et al., 2018) that state that better service quality correlates with higher customer satisfaction. However, several challenges still need to be overcome, including improving the skills of officers in handling the complexity of digital systems and updating the system to be more user-friendly with diverse levels of digital literacy. In line with technological developments, the Surakarta City Land Office must continue to improve these two dimensions of service quality to meet the expectations of the ever-growing community.

The quarterly public satisfaction and anti-corruption behavior survey through the Case Survey Management System (CSMS) application (https://csms.atrbpn.go.id/ly/ghDP1Tea) measures nine satisfaction variables (requirements, procedures, rates/costs, completion time, service products, responses, ethics, facilities and infrastructure, as well as consultations and complaints) and five variables of anti-corruption behavior (discrimination, fraud, gratuities, pungli, and brokers). Survey data for the 1st, 2nd, and 3rd quarters of 2024 show excellent results overall, with fluctuations in the value of each service element. In TW 1, some elements with higher values are facilities and infrastructure (January), response (February), and procedures and facilities and infrastructure (March). In TW 2, elements of requirements and ethics (June) as well as facilities and infrastructure and consultation and complaints (May) stood out. In TW 3, some services also showed higher values in the September period. Despite fluctuations in the number of respondents in each quarter, the overall value index remained in the good category. The integration of E-S-Qual and E-Recs-Qual has a positive impact on the quality of services at the Surakarta City Land Office. Continuous evaluation and improvement, both in terms of technical and user interaction, is essential to achieve optimal and sustainable services, as well as support digital transformation in the public sector.

Conclusion and Recommendation

The implementation of the electronic service system at the Surakarta City Land Office has resulted in a significant positive impact on the efficiency, transparency, and accuracy of land services. Online services such as HT-El, Roya Elektronik, and SKPT-El facilitate the accessibility of services for the public without physical presence. This system also minimizes human error and improves data protection through encryption. Digitization is carried out in stages through the transfer of physical document media to electronic (BT-El and SU-El) to ensure system and data readiness. Real-time monitoring of service processes through dashboards connected to the Ministry of ATR/BPN increases accountability and transparency. However, challenges such as infrastructure limitations, data validation, and people's digital literacy still need to be overcome. The implementation of internal Standard

Operating Procedures (SOP) and the leadership role of the Head of Office in policy formulation, staff training, and external collaboration play an important role in overcoming these obstacles.

Digital leadership at the Surakarta City Land Office plays a crucial role in the transformation of electronic services. As a digital pioneer, the Head of Office directs strategic policies, including the acceleration of document media transfer to support electronic certificates and Certificate Printing Platform, which has an impact on improving E-S-Qual (efficiency, system availability, and data protection). As an innovator, creative solutions such as the integration of the "Sentuh Tanahku" application and the priority service "Lantasari" improve transparency, accuracy, and responsiveness (E-Recs-Qual). In managerial roles, the use of digital-based key performance indicators (KPIs) and electronic dashboards facilitates monitoring, accountability, and target achievement. As mentors, support and training are provided to staff for the adaptation of new technologies. As an enabler, collaboration and a supportive work environment are ensured. As a networker, strategic partnerships are built with various parties, including local governments, to expand the range of services and data integration. As a digital mentee, leadership is open to input related to technology, including artificial intelligence (AI). The integration of the seven digital leadership roles in the E-S-Qual and E-Recs-Qual dimensions results in user-oriented electronic services. Although challenges such as technical issues and declining transition performance are emerging, data-driven strategies, staff competency improvement, and collaborative leadership are key to the sustainability of digital transformation. Based on these conclusions, the researcher gave the following suggestions:

1. Electronic service systems need to be optimized through interface improvements, integration of manual and digital procedures, and improvements in technological infrastructure. The development of additional features, such as interactive guides, can improve user satisfaction.
2. A culture of innovation needs to be fostered through the development of ideas, discussions, and appreciation for staff contributions. Collaboration with stakeholders (local governments, PPAT, financial institutions) needs to be strengthened for synergy that supports the sustainability of electronic services.
3. Socialization and digital literacy programs need to be intensified through various media (online seminars, workshops, social media campaigns) to increase public understanding of electronic services and their benefits.
4. Human resource capacity development in the Land Office needs to be prioritized through training that includes technology mastery, change management, and data analysis. Systematic and continuous training with e-learning methods and hands-on practice is recommended.
5. The Land Office, through Pusdatin, needs to strengthen its data security system with cutting-edge encryption, periodic security audits, and systematic risk management. Improvements to digital dashboard-based monitoring systems and relevant KPI integration are needed for fast and efficient decision-making.

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