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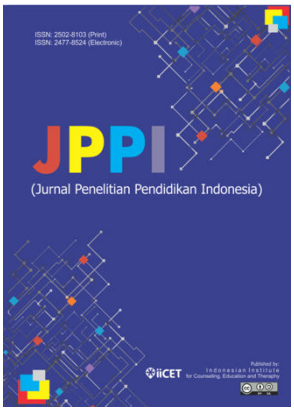

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Digitalizing employment services: infrastructure, competency, and cultural challenges of civil servants

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ABSTRACT

This study examines the challenges in the digitization of personnel services within the management system of the State Civil Apparatus in Keerom Regency. This study identifies several key barriers, including limited digital infrastructure, insufficient internet connectivity, a lack of technological devices, low competency among civil servants in utilizing information and communication technology, as well as cultural resistance to digital transformation. A descriptive qualitative approach is employed through the methods of field observation, in-depth interviews, and analysis of policy documents. The research findings indicate that the efforts for digitalization are not evenly distributed across all work units, as the digital system remains centralized in the main personnel unit, while the supporting units still rely on manual processes. Furthermore, the lack of standardized application processes and data results in low efficiency and accountability in services. This study presents strategic steps to address the identified issues, including the enhancement of infrastructure, the improvement of digital competencies among civil servants through ongoing training, and the encouragement of a workplace culture that embraces digital technology. The results of this study contribute to the development of a model for accelerating the digitalization of civil servants at the regional level to enhance the quality of public services that are responsive, integrated, and sustainable. The significance of this study lies in its localized focus on a 3T (frontier, outermost, underdeveloped) region, providing a nuanced understanding of digital transformation challenges often overlooked in centralized policy-making.

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Introduction

Digital transformation in the public sector has become an urgent necessity to enhance efficiency, accountability, and the quality of public services (Alvarenga et al., 2020; Oliveira & Rowe, 2018). As public demands for fast, accurate, and transparent services rise, the adoption of digital technology by government agencies has become a strategic action to address these challenges. In various countries,

including Indonesia, the digitization of the public sector is seen as a key catalyst for modern bureaucratic reforms that rely on data and technology. Strengthening information systems, automating service processes, and integrating between work units are the main pillars in achieving adaptive and competitive public services. In this context, the digitalization of human resources services is a crucial element in the efforts to achieve professional and merit-based governance (Nagel, 2025; Su et al., 2023).

However, as emphasized by Ciancarini et al. (2023), digital transformation within bureaucracy requires more than just the provision of technological infrastructure. It requires structural changes within the organization and deep reforms in the work culture. Without a shift in the mindset and the underlying values that guide the behavior of civil servants, digitalization may become nothing more than a formality or a short-term technology project. Therefore, the success of digital transformation in the public sector, particularly in human resource services, heavily relies on the synergy between strengthening ICT infrastructure, enhancing the skills of the digital workforce, and fostering a work culture that supports innovation and openness. This is increasingly relevant in areas such as Keerom Regency, which faces geographical challenges and limited infrastructure. Therefore, a contextual and appropriate digitization model is necessary.

However, the reality of implementing digitalization in many areas, especially in underdeveloped regions, continues to encounter significant challenges. Reveal that 35% of digitalization projects in the public sector in developing countries completely fail, and 50% only achieve partial success due to inadequate infrastructure and human resources readiness. The digital divide represents a significant obstacle, particularly in border regions such as Keerom Regency, where limited internet access, low digital literacy, and weak infrastructure persist (Gusman, 2024; Rolobessy et al., 2023).

The success of digitalizing public services largely depends on the digital competency readiness of civil servants (CSs). The study conducted by indicates that mastery of digital skills among civil servants is directly correlated with the successful attainment of Sustainable Development Goals (SDGs), particularly in the context of public service (Cordella & Tempini, 2015). If the personnel lack sufficient digital skills, then the advanced technology implemented will not be able to perform its functions effectively. In accordance with these findings, in their analysis of the DigComp 2. 2 framework, demonstrate a strong correlation between the level of digital competency among civil servants and work performance, particularly in the areas of information literacy, digital security, and online collaboration skills (Setyawan & Raharjo, 2023). This indicates that digital competency is no longer a supplement but rather a fundamental requirement for the success of digital bureaucracy.

Ingsih et al. (2024) emphasizes that training and enhancing the digital skills of civil servants must be prioritized as a form of strategic investment, rather than merely an addition to policy. This becomes increasingly relevant as digitalization is directed towards personnel services, which require high precision and integration across different work units. Unfortunately, many regions still rely on manual processes in personnel administration services due to limitations in skills and systems. The bureaucratic work culture also plays a role in determining the success of digital transformation. Deni et al. (2020) highlights that grassroots bureaucracy often retains traditional methods of operation, which tend to be resistant to innovation and change. This situation is worsened by the lack of transformational leadership that can encourage a shift in mindset and behavior among civil servants in facing the digital era.

Mushore & Kyobe (2019) emphasize that technological changes must be accompanied by changes in organizational culture. The success of digital transformation requires full support from management, along with ongoing training to foster digital literacy and a work ethic that adapts to change. In addition to skills and culture, the infrastructure aspect also serves as an essential foundation that is often overlooked. Research by Alvarenga et al. (2020), it was discovered that a digital system lacking strong knowledge management and effective data integration will fail to achieve transformation goals (Eisenmenger et al., 2020). This means that merely developing an application without proper infrastructure and system integration readiness will ultimately create new obstacles (Cahyarini & Samsara, 2021).

The situation in Indonesia in 2024 also indicates that the gap in digital infrastructure between advanced regions and underdeveloped areas remains quite significant (Latupeirissa et al., 2024). This

inequality does not only affect the public's access to digital public services, but it also hinders the optimization of the electronic-based government system (SPBE), which is expected to enhance the efficiency and transparency of bureaucracy (Barbour et al., 2023; Mustafa, K. K., & Deodatus, 2021). In the context of the 3T regions (frontier, underdeveloped, and outermost) such as Keerom Regency in Papua, the limited availability of internet connectivity, hardware, and technical support continues to pose significant challenges that hinder the digitization of personnel services. Therefore, the implementation of the SPBE in areas like these requires a policy approach that is affirmative and based on local needs. This includes the equitable provision of ICT infrastructure, training in digital competencies for civil servants, as well as budgetary support and regulations that promote digital innovation in peripheral regions. Without these steps, digitalization will merely exacerbate the gap in public services between urban areas and rural regions.

Thus, digital transformation strategies should be rooted in participatory planning that integrates local knowledge and conditions, rather than merely replicating centralized solutions. Considering these various aspects, this writing aims to analyze the challenges and strategies for implementing digitalization in employee services in the Keerom Regency through three primary approaches: infrastructure readiness, digital competence of civil servants, and bureaucratic work culture. This research utilizes a descriptive qualitative approach through field observation, in-depth interviews, and an examination of regional policy documentation. The anticipated benefits include the provision of empirical analysis grounded in the local context, practical policy recommendations, and the development of a digitalization model for human resources that is adaptive, inclusive, and sustainable. The novelty of this research is found in the integration of these three main elements into a single strategic model based on the locality of Papua, which has not been widely explored in either national or international literature to date.

Method

This study employs a descriptive qualitative approach to gain an in-depth understanding of the challenges and strategies for accelerating digital transformation in personnel management in Keerom Regency. This approach was chosen because it is appropriate for obtaining a contextual description of the experiences of civil servants, as recommended by Bradshaw et al. (2017) and Colorafi & Evans (2016) in a qualitative descriptive study in the field of health. The research population includes Civil Service Personnel (ASN) and structural officials in BKPSDM and OPD who are engaged in human resource services and digitalization initiatives in Keerom Regency. The sample is chosen through purposive sampling, which involves selecting informants who have relevant experience and hold strategic roles, in accordance with sampling techniques commonly utilized in implementation research.

Data was collected using three triangulation techniques: (1) Conduct in-depth semi-structured interviews with key informants to gain insights into the challenges and strategies of digitalization; (2) Direct observation of the workflow and use of digital infrastructure in the central service unit and remote areas; and (3) Documentation study through the analysis of SPBE policy documents, protocols, statistical data, and digital strategies of local governments. The study will take place over a period of six months (from July to December 2024), covering locations from the central government to the border areas of Keerom, in order to gain insights into the differences in challenges and the implementation of digitalization.

Interview data were transcribed literally and analyzed using thematic analysis as described by (Braun & Clarke, 2019). The process begins with data familiarization, initial coding, grouping into themes, and finalizing themes through triangulation techniques to ensure the consistency of findings. The analysis is supported by NVivo software, which includes hierarchical node mapping and matrix coding, commonly used in studies of digital transformation in bureaucracies (Kabudi et al., 2021; Omol, 2023). To ensure the credibility and reliability of the research (Lim, 2024; Vázquez-Cano et al., 2022), several techniques are implemented: (1) Data source triangulation (interviews, observations, documentation); (2) Member checking on the interview summary by the informant; (3) Engage in discussions with fellow academics to review and evaluate each other's work; and (4) Reflexive journaling by the researcher to record biases and reflections throughout the field process.

This study assumes that the participants provide information based on their professional experiences. However, there are limitations such as restricted access to certain remote areas and changes in digital policies during the course of the research. Consequently, the findings are regarded as a snapshot of the digitalization situation during that period (Palinkas et al., 2015). The methodology designed can be replicated in other areas with similar geographical and social characteristics. Enhancing transparency in the description of research steps allows other researchers to replicate, adapt, or expand this study according to local contexts (Kallio et. al., 2016; South & America, 2025). The methodology is designed to be replicable and adaptable to similar geographical and bureaucratic contexts, offering a robust framework for future digital transformation studies in remote regions.

Results and Discussions

Field findings indicate that the information and communication technology (ICT) infrastructure in Keerom Regency remains highly limited and unevenly distributed. Some districts lack access to the internet entirely, while other administrative areas depend solely on a limited local area network (LAN) that is restricted to central offices. This disparity creates significant obstacles in the implementation of digital systems, such as the ASN Information System (SIASN), which is intended to serve all work units. When the hardware, network, and support systems are not fully available, digital transformation remains merely theoretical and is not implemented in day-to-day personnel service practices.

This situation aligns with the findings of the study conducted by (Sulistyowati et al., 2020), which identifies that the 3T areas (frontier, underdeveloped, and outermost) in Indonesia frequently lag behind in the digitalization of government processes due to a lack of basic infrastructure. The absence of a network and ICT devices not only hinders the service delivery process but also raises the risk of administrative errors and decreases accountability in employee data. Even when the system has been established on a national level, its implementation in areas such as Keerom cannot proceed due to the lack of necessary technical prerequisites (Warsono et al., 2023). This confirms that digitalization involves not only software but also the readiness of the physical environment and its technology.

Further to this, Fitriani et al. (2024) emphasizes that the success of digital transformation in the public sector is significantly influenced by reforms in bureaucratic structures and changes in organizational culture. In In Keerom, the bureaucratic structure continues to be manual, and the mindset of the officials has not adapted to technology, which worsens the infrastructure challenges. When internet access is unreliable and work devices are inadequate, civil servants tend to revert to manual administrative processes as they are perceived to be quicker and more secure. This indicates that the development of digital infrastructure must occur simultaneously with improvements in management systems and the enhancement of digital literacy at the institutional level.

The discussion will always connect to the introduction by way of the research questions or hypotheses you posed and the literature you reviewed, but it does not simply repeat or rearrange the introduction; the discussion should always explain how your study has moved the reader's understanding of the research problem forward from where you left them at the end of the introduction.

The analysis of this research's findings indicates that the low adoption rate of the Electronic-Based Government System (SPBE) among the State Civil Apparatus (ASN) in Keerom Regency can be explained using the Technology Acceptance Model (TAM) developed by Davis (2019) and Venkatesh et al. (2023). Please provide the text that you would like me to rephrase. Two main constructs in this model–Perceived Usefulness (PU) and Perceived Ease of Use (PEOU)–serve as key indicators in assessing users' attitudes towards new technology. In In Keerom, ASN expresses uncertainty regarding the utility of digital systems, particularly because they do not observe any significant improvements in productivity or work efficiency. On the other hand, the system is perceived as more complex, unstable, and often obstructs the smooth execution of routine tasks due to internet disruptions or errors on digital platforms.

This finding is supported by the study conducted by (Warsono et al., 2023), a study in Semarang found that the implementation of the SPBE system will only be effective if civil servants perceive the system as user-friendly and genuinely beneficial for their work. The perception of ease and benefits

serves as a crucial link between voluntary technology usage and successful institutional outcomes in digital transformation. When civil servants in Keerom find the digital system more troublesome than the manual method, they tend to adopt a passive attitude or may even resist the active use of the system. This emphasizes that digital transformation should not be enforced in a top-down manner without readiness assessment and localized adjustment of systems.

This situation also highlights the significance of a change management approach in facilitating the adoption of public technology. Implementing technology without sufficient training, intensive guidance, and ongoing technical support will merely lead to institutional resistance. Therefore, the implementation of SPBE in remote areas such as Keerom requires more than just the technical provision of digital systems. It also necessitates a change communication strategy that focuses on enhancing the digital literacy of government employees, demonstrating the direct benefits of the system, and developing a work system that gradually integrates technology based on user readiness.

Most Civil Servants (ASN) in Keerom Regency do not possess sufficient basic digital skills, such as data processing, information security management, and online collaboration abilities. The lack of skills leads to a slow and even interrupted process of digitizing the employee service system. This finding aligns with the research conducted by Costa & Broietti (2021), which emphasizes that the low digital capacity within public bureaucracies is one of the main obstacles to digital transformation in the public sector of developing countries. Similarly, the findings of (Alpen et al., 2022; Doaa & Amer, 2021) underscore the importance of human resource (HR) readiness as a fundamental requirement for the implementation of electronic-based government systems (SPBE), particularly in the context of Indonesia.

The weaknesses of this competency do not exist in isolation; rather, they are reinforced by a conservative bureaucratic culture. The work culture in Keerom displays a tendency for 'manual mimicry,' where employees revert to a paper-based system when the digital system encounters technical issues or seems excessively complicated. This phenomenon is not merely a functional response, but it reflects a mental structure that is resistant to accepting technological uncertainty. In the theory by Manazir (2023), societies with high uncertainty avoidance tend to avoid new situations that are filled with uncertainty, which includes the use of digital systems that are not fully understood or mastered. Thus, promoting digital transformation also requires cultural adaptation and psychological readiness, not just technical skills.

In analyzing the findings of this study, several recurring patterns emerged from the qualitative data collected through in-depth interviews, direct observations, and document analysis. These sources consistently highlighted major obstacles in the digitalization of employment services in Keerom Regency. To ensure the credibility and depth of these findings, triangulation was applied by comparing and cross-checking data from the three aforementioned sources. Through thematic analysis, the study identified three dominant themes: (1) limitations of digital infrastructure, (2) low levels of digital competence among civil servants, and (3) fragmentation and lack of integration across government service systems. These themes reflect the core challenges faced by local governments in remote regions attempting to implement digital transformation effectively.

Table 1. Table of Main Findings

Theme	Source of Data	Summary of Findings
Infrastructure Limitations	Interview, Observation	Unstable internet, lack of devices in remote areas
Digital Competence	Interview, Document Review	Civil servants lack training and digital literacy
Systemic Fragmentation	Observation, Policy Documents	Disconnected applications and siloed bureaucratic units

The use of thematic analysis in this study is aligned with that perspective, revealing consistent patterns in how digital transformation is perceived and experienced by stakeholders in rural and underdeveloped areas. To summarize the core findings more clearly, the triangulated themes emerging from the various data sources are presented in the table 1.

The data displayed in the table reinforce the need for a multi-dimensional strategy to accelerate digital transformation in the public sector, especially in 3T (frontier, outermost, and least developed) regions such as Keerom. Each theme not only represents a technical or human resource issue but also reflects broader systemic and cultural dynamics that must be addressed holistically.

These themes reflect the core challenges faced by local governments in remote regions attempting to implement digital transformation effectively. To further strengthen these findings, triangulated data from in-depth interviews and field observations were compiled. The quotes below represent typical expressions from various civil servants interviewed across multiple districts. Each quote has been anonymized using informant codes to ensure confidentiality:

"In our district, we have no internet at all. If we need to use the system, we must travel to the regency office". (Informant Code: INT-01, 12 June 2024)

"There is only one computer in our office, and it often breaks down. Sometimes we have to write everything manually before entering it into the system". (Informant Code: INT-02, 14 June 2024)

"Senior staff usually don t know how to access the SIASN. They often ask interns or younger staff for help" . (Informant Code: INT-03, 17 June 2024)

"We ve never received any formal training on the digital system. That s why we get confused when the interface changes. (Informant Code: INT-04, 18 June 2024)

"Each unit still stores employee data separately. Some use Excel, some do it manually. There s no uniform format. (Informant Code: INT-05, 20 June 2024)

"Our system is not connected directly to BKPSDM. We have to send files by email or WhatsApp, and sometimes the data gets lost or is never updated. (Informant Code: INT-06, 21 June 2024)

These patterns were further validated through documentation and observational analysis, which are summarized in the table 2.

Table 2. Field Observation Summary

Source of Data	Type of Information	Date Observed	Main Finding
Interview (INT-01)	System access issues in border districts	12 June 2024	No internet access in remote areas such as Waris District
Interview (INT-03)	Digital skills gap among senior civil servants	17 June 2024	Senior staff rely on junior staff to operate the system
Direct Observation	Infrastructure and equipment conditions	14 20 June 2024	Many offices only have one shared computer
Internal SKPD Documents	Data storage and formatting practices	19 June 2024	Use of inconsistent formats; manual data recording remains
Field Documentation Photo	Physical evidence of damaged computers and cables	18 June 2024	Infrastructure not capable of supporting SPBE operations

The evidence summarized in the table above underscores the critical and multidimensional nature of the digitalization challenges faced in Keerom Regency. These are not isolated technical problems, but rather interlinked issues involving infrastructure gaps, limited human capacity, and fragmented bureaucratic systems. Therefore, addressing these challenges requires a comprehensive approach one that combines technological investment with institutional reform, targeted training, and inclusive system design tailored to the realities of 3T regions.

Farnham & Horton (2016) emphasizes that resistance to technology in public settings can only be reduced through changes in values, norms, and the work structure that facilitate adaptation. In the context of Keerom, this change should commence with ongoing investments in enhancing the digital literacy of civil servants, the strengthening of reward systems for digital innovations, and the implementation of an organizational culture that emphasizes learning and the courage to try new

things. Without intervention concerning cultural dimensions, technology remains merely an untouched tool, rather than evolving into a transformative instrument for efficient and responsive public service. Therefore, the strategy for digital reform must include both technical training and a simultaneous reform of bureaucratic culture.

One of the main obstacles to speeding up digitalization in the personnel services of Keerom Regency is the lack of integration of the personnel system across various work units. Each regional work unit (SKPD) tends to maintain its own database and recording system that is not directly connected to the central system at BKPSDM. This phenomenon is referred to as a data silo, which is a situation where information is stored separately among different units, lacking sufficient mechanisms for sharing or integration. Djatmiko et al. (2025), it was noted that failures in such integration represent a systemic issue in numerous public institutions, which ultimately undermines the primary objectives of digital transformation namely, efficiency and connectivity among service processes.

The effects of this fragmented system are very clear. The process of validating employee data has become slow due to the need for manual confirmation from various units, which frequently utilize different formats and reporting standards. This situation not only slows down administrative services, such as promotions, transfers, and payroll, but also leads to the duplication of work due to the lack of connection between systems. When data from one unit cannot be accessed or verified by another unit, staff are compelled to re-enter information or conduct repeated confirmations adding to their workload and increasing the risk of errors. At this point, the objective of the SPBE to establish services that are efficient, accountable, and real-time is not being fulfilled.

Furthermore, the poor quality of digital infrastructure in many areas of Keerom exacerbates this integration issue. The limitations of internet connectivity and hardware in certain districts hinder access to the central system, resulting in delays in data updates and synchronization. Fox (2016) in their research emphasize that in developing countries, infrastructure is a key factor in the successful implementation of e-government. Without adequate connectivity and technological support, efforts to integrate systems will merely remain an unfulfilled ideal. Therefore, investing in infrastructure and designing interoperable information systems is essential for creating a robust digital government ecosystem.

This study formulates a model for accelerating the digitalization of public servant management, which consists of five main pillars: inclusive infrastructure, enhancement of human resource capacity, cultural transformation of bureaucracy, system interoperability, and consistent policy support. This model emerged from the urgent need to develop a digitalization strategy that aligns with the unique characteristics of the 3T region, such as Keerom. Unlike the conventional bureaucratic approach, this model emphasizes the development of a digital foundation that is adaptive, collaborative, and contextual. The conceptual inspiration of New Public Management Holmes et al. (2019) and Prakasa et al. (2023) is evident in its focus on efficient and responsive public service, whereas the Smart City Governance approach (Guttentag, 2018) promotes the use of technology to enhance participation, integration, and improved data governance.

In the context of underdeveloped areas such as Keerom, the adoption of technology cannot be implemented uniformly as it is in major cities. Therefore, the Digital Public Infrastructure (DPI) approach emerges as a strategic alternative. DPI not only offers technology solutions such as digital identity and electronic authentication, but it also ensures that previously separate systems can work together smoothly. This is highly relevant to the "data silo" challenges faced in Keerom. With DPI, ASN data, employment services, and administrative processes can be integrated into a single, secure digital ecosystem that connects in real time, thereby facilitating access for ASN in remote areas through simple and standardized channels. This model not only enhances accessibility for remote employees but also ensures transparency and responsiveness in service delivery.

The effectiveness of the DPI-based model has been demonstrated in various developing countries. The Arsad (2023) indicates that the implementation of DPI promotes digital inclusion, accelerates public services, and significantly reduces the operational costs of bureaucracy. This model has been demonstrated to effectively bridge the digital divide, particularly in areas with limited infrastructure and human resources. By adopting this approach in a contextual and gradual manner, Keerom has the

opportunity to develop a digital staffing system that is not only efficient and transparent but also inclusive for all civil servants, including those located in the most remote areas.

So far, the top-down approach has been the primary choice for implementing digitalization in the public sector in Indonesia, including in the 3T areas like Keerom Regency. This approach is considered effective because it can lead policy decisions swiftly and uniformly. However, a recent study by Aryatama et al. (2024) indicates that participatory and collaborative strategies are, in fact, more effective in promoting the sustainability of systems and enhancing the satisfaction of end users, namely the civil servants themselves. In In Keerom, the direct involvement of State Civil Apparatus (ASN) in planning and adjusting digital systems according to their work context can reduce cultural resistance and foster a sense of ownership over the implemented systems.

In addition, the bureaucratic culture in Keerom is still largely hierarchical and resistant to change, which is a common barrier found in many sub-national digital initiatives in Indonesia (Aminah & Saksono, 2021; Haedar, 2023). Field experiences from Central Maluku and Riau indicate that civil servant readiness and cultural resistance are crucial factors that can delay or derail digital initiatives in rural governance contexts (Prihatin et al., 2023). To overcome such barriers, successful models emphasize visionary leadership, infrastructure planning, and the cultivation of a digital organizational culture (Susilowati et al., 2023).

This participatory approach also facilitates the development of more adaptable strategies, particularly in the context of infrastructure development and training for civil servants. The local government should create a digital infrastructure map that takes into account the accessibility of services in remote districts. Additionally, it should provide digital training that is not generic but tailored to local needs and the diverse skill levels of civil servants. In addition, institutional incentives such as recognition of performance, awards, and financial incentives may be granted to work units that successfully implement digital transformation effectively. Thus, this approach not only addresses resistance but also promotes positive competition among working units.

The research conducted by Sulmiah (2024) in the city of Makassar indicates that the primary challenges to the implementation of digitization in the local government sector are not solely based on infrastructure issues, but also on the competence gap among civil servants and the insufficient support from regulations. This finding is applicable to the context of Keerom, which is facing similar challenges. However, Sulmiah indicated that affirmative strategies such as the allocation of special budgets for enhancing the capacities of civil servants in underdeveloped regions and the formulation of regulations that support flexible technology implementation could be a key to the solution. Therefore, the success of digital transformation in Keerom greatly relies on the government's ability to adopt a more dialogical approach that is focused on the local context and structurally sustainable (Abdolhosseinzadeh et al., 2023; Suharto et al., 2018).

Although the findings of this study offer a detailed overview of the challenges and strategies for accelerating the digitalization of public service in Keerom Regency, the research approach employed remains cross-sectional and is limited to certain areas. The limitations of this scope require that the generalization of findings be approached with caution, particularly considering the complexity of the very diverse context of the 3T area. Therefore, to gain a deeper and more comprehensive understanding, further studies should ideally adopt a mixed-method approach or a quantitative model that allows for measuring the intensity of the impact of various key variables, such as ICT infrastructure, digital competencies of civil servants, and organizational culture, on the speed and quality of services. With this more robust approach, it becomes possible to develop practical predictive models and to create intervention strategies that are more precise and measurable according to the specific needs of the region.

Conclusions

This study concludes that the acceleration of digitalization in the management of Civil Servants (ASN) in Keerom Regency still encounters various structural and cultural challenges. The disparity in ICT infrastructure, the low level of digital skills among civil servants, and the cultural resistance to technological change are the main obstacles to the implementation of the Electronic-Based

Government System (SPBE). Furthermore, the absence of integration of the personnel information system across different work units has resulted in data fragmentation (data silos) and the duplication of administrative tasks, leading to suboptimal effectiveness in public services. These challenges reflect a combination of technical limitations and human factors, where resistance to change and skill gaps compound the difficulties in implementing centralized digital systems.

This finding highlights the significance of a holistic and contextual approach in designing strategies for accelerating digitalization. The five pillars presented in this research namely inclusive infrastructure, enhancement of human resources, transformation of bureaucratic culture, system interoperability, and policy support can serve as a practical strategic framework, particularly for remote and underdeveloped areas such as Keerom. A participatory approach, the use of Digital Public Infrastructure (DPI), and performance-based incentives also serve as important elements in ensuring the sustainability and overall success of digital transformation. The involvement of civil servants in digital planning stages fosters ownership and contextual relevance, which are essential for ensuring acceptance and long-term use of digital systems.

The local government of Keerom Regency is recommended to promptly conduct a comprehensive mapping of the digital infrastructure condition and the competencies of human resources among civil servants across all work units. Efforts to provide digital training based on local needs should be prioritized, involving civil servants actively in the system design to foster a sense of ownership and enhance an adaptive culture. On the other hand, the central government's affirmative policy whether in the form of budget support, flexible regulations, or the provision of DPI technology needs to be enhanced to ensure digital inclusivity in underdeveloped areas. It is also crucial for the government to institutionalize reward systems that support innovation, such as digital leadership awards and funding for pilot initiatives in rural units.

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