

Technology Based Public Service Innovation in The Digital Era: A Qualitative Study at The Ministry of Population and Family Development, East Jakarta, Dki Jakarta Province

Siti Nurhani¹, Ninik Sidik Handayani², Muhammadsaddam Hayeemasae³,
Yuli Noviawati⁴

Public Administration Study Program, Faculty of Administrative Sciences, Syekh
Yusuf Islamic University, Tangerang, Indonesia

¹2407010203@students.unis.ac.id, ²2407010199@students.unis.ac.id,

³2407010175@students.unis.ac.id, ⁴2407010219@students.unis.ac.id

Abstract

This study aims to evaluate the effectiveness of public service delivery in remote areas by focusing on the implementation of Minimum Service Standards (SPM) in Agats District, Asmat Regency, South Papua. As a region with challenging geographical characteristics and limited infrastructure, Agats District faces various obstacles in providing quality and equitable public services. This research employs a descriptive qualitative approach, utilizing data collection techniques such as interviews, observations, and document studies. The findings indicate that the implementation of SPM in Agats District has not been fully optimal. The main obstacles include a lack of personnel and inadequate staff competencies, limited facilities and infrastructure, and difficult inter-village accessibility. Nevertheless, there have been efforts by the local government to improve service quality, including staff training programs, locally-based service approaches, and cross-sectoral synergy. This study recommends the need for enhancing human resource capacity, improving basic infrastructure, and strengthening the commitment of local governments in fulfilling SPM in remote areas.

Keywords: Effectiveness, Public Service Delivery, Minimum Service Standards, Remote Areas.

1. Introduction

Public service is a fundamental pillar of public administration practice, aimed at achieving societal welfare through the provision of fair, transparent, and accountable services. Alongside technological advancements and social transformations, the paradigm of public service has shifted from a bureaucratic manual system to a digital, responsive, and participatory one. According to Gant & Smith (2023:102), digital transformation in public services not only functions as a tool for efficiency but also serves as a means of empowering the public to participate in administrative processes in a more open and decentralized manner. This indicates that technology-based public services have become an essential instrument in building public trust in government. In the Indonesian context, digital transformation in public service has become increasingly relevant, especially in the post-COVID-19 era, which compelled many government institutions to accelerate the adoption of digital technologies. One of the key institutions in this regard is the Ministry of Population and Family Development/BKKBN. As an agency responsible for managing strategic issues related to population and family affairs, the Ministry is expected to provide inclusive, adaptive, and technology-based services. In East Jakarta, the Ministry has begun developing various innovations, such as online information services, online family counseling platforms, and the integration of population data through cloud-based applications. Sofyani *et al.*, (2024) noted that the digitalization of public services at the local level

can enhance accountability and shorten bureaucratic chains, provided it is supported by responsive governance and transparent oversight systems.

However, such innovation processes do not always run smoothly. Significant challenges still color the implementation of technology in public services, particularly in terms of digital literacy, infrastructure readiness, and bureaucratic resistance. Firdaus & Saputra (2023) found that Indonesia's national average digital literacy score remains relatively low, at only 3.49 on a 5-point scale. This presents a serious barrier to optimizing digital services, especially for vulnerable groups such as the elderly and those with low educational attainment. Additionally, a rigid and hierarchically dominant bureaucratic culture often hampers comprehensive technology adoption. As noted by Lima Júnior *et al.*, (2024), innovation in the public sector is frequently obstructed by limited structural flexibility and a lack of visionary leadership. Given these dynamics, it is essential to explore more deeply how technology-based public service innovations are implemented, particularly in institutions such as the Ministry of Population and Family Development/BKKBN. This study aims to examine the forms of digital innovation applied, analyze the implementation processes, and identify the enabling and inhibiting factors in realizing adaptive public services in the digital era. Using a qualitative approach, this research is expected to contribute both conceptually and practically to the development of technology-based public service models that are not only efficient but also inclusive and sustainable within the context of Indonesian public administration.

2. Method

This study employs a qualitative approach using a case study method to explore in depth the implementation process of technology-based public service innovations within the Ministry of Population and Family Development/BKKBN. This approach was chosen for its ability to provide contextual understanding of the dynamics of digital services in public bureaucracy. As stated by Muttaqin & Nugroho (2025:06), qualitative studies with a case study design are highly effective in identifying the complex interactions among policy, service implementers, and beneficiaries, particularly in the context of digital local governance. The research was conducted at the East Jakarta office of the Ministry of Population and Family Development/BKKBN, located in the Province of DKI Jakarta, which is one of the work units actively developing digital service innovations. The research subjects consisted of two main groups: BKKBN officials involved directly in the planning and implementation of digital service innovations, and members of the public who have used or are currently using the technology-based services. The selection of these subjects aligns with the participatory approach in public service research, as emphasized by Agustina *et al.*, (2024:64), who noted that the perspectives of both service providers and users are crucial in gaining a comprehensive picture of the effectiveness of public service innovations.

Data for this study were collected using three primary techniques: in-depth interviews, participatory observation, and documentation. Interviews were conducted with key informants, including functional officer, implementing staff, and users of the digital services. This technique aimed to explore direct experiences and perceptions of the innovation implementation. In line with Fitriyanti's findings (2024:28), interviews in digital policy research allow for the exploration of structural barriers and individual adaptation to new technologies. Participatory observation was used to

directly observe the digital service processes at the BKKBN office, such as online information services, the use of the Family Information System Application (SIGA), and interactions between staff and the public. This method enabled the researcher to capture the service context firsthand, as explained by Nuryadin (2023), who noted that field observation provides real insights into the technical and cultural challenges of adopting technology in the public sector. Additionally, documentation was used to supplement the data, including digital service SOPs, service statistics reports, application screenshots, and official documents related to digital innovation. These documentary data were important for building triangulation and ensuring the consistency of information (Júnior *et al.*, 2024). The data analysis process employed thematic analysis, involving three stages: data reduction, thematic narrative presentation, and drawing conclusions based on identified patterns. During the reduction phase, the researcher selected relevant and significant information from interviews, observations, and documents. Next, the data were presented in the form of matrices and thematic narratives to identify inter-theme relationships. Finally, conclusions were drawn based on the connections among emerging themes and the research objectives. This technique is considered appropriate for studies on public service innovation as it captures the qualitative dimensions of social experience, policy, and technology in an integrated manner (Sofyani *et al.*, 2024:67). To ensure data validity, the study also applied source and method triangulation techniques to enhance the credibility and reliability of the field findings.

3. Result and Discussion

Forms of Technology-Based Public Service Innovation at the Ministry of Population and Family Development/BKKBN

The Ministry of Population and Family Development/National Population and Family Planning Board (BKKBN) in East Jakarta has demonstrated strong commitment to promoting digital transformation through the implementation of web-based and mobile application-based online information services. This system allows users to independently access family data and information services without having to visit the office in person, thereby minimizing wait times and reducing physical congestion at service offices. This innovation represents a real-world application of the *Digital Era Governance (DEG)* theory proposed by Dunleavy *et al.*, (2006), which emphasizes the importance of digitalization as a means to enhance the efficiency, effectiveness, and accessibility of public services. Within the *needs-based holism* paradigm, the digitalization of the Family Information System is designed to meet the specific needs of the public rather than merely following traditional administrative structures. This signifies a shift from institution-centered service delivery to a more humanistic and participatory approach. Empirical evidence supporting this innovation can be found in Afrilia *et al.*, (2024), who found that digital queue systems reduced wait times by up to 40% and significantly improved user satisfaction.

Another noteworthy innovation is the digital family counseling system, which enables citizens to access services via video calls, instant messaging, and other interactive features. This approach is especially helpful for people with physical limitations, time constraints, or those living far from service offices. This aligns with the concept of *co-creation governance*, wherein service provision involves active user participation in the design, implementation, and evaluation phases. Sururi & Hasanah (2022) noted that digital counseling services increase public engagement, improve the

responsiveness of service providers to social issues, and foster more open and solution-oriented relationships between government and citizens. Furthermore, BKKBN has implemented data integration across various services such as field control monitoring, family registration, family planning services, verification and validation of families at risk of stunting, and the *Electronic Marriage and Pregnancy Readiness Application*. This real-time synchronization supports *back-office integration*, a key principle in the DEG framework. Al-Muttaqin & Nugroho (2025) found that cross-system data integration can accelerate service processes by up to 50%, reduce administrative recording errors, and strengthen service accountability at the local level. The implementation of the Family Information System (SIGA) provides accurate and up-to-date *by name by address* data, which can serve as a foundation for effective and efficient government program planning. This becomes especially relevant during and after the pandemic, where mobility restrictions make online services essential. Additionally, this system helps staff balance workloads more effectively as several applications are now integrated, improving bureaucratic operational efficiency. The cumulative effect of online information services, digital counseling, and data integration has reduced physical crowding at offices, improved administrative efficiency, and expanded access for vulnerable groups such as the elderly, nursing mothers, informal workers, and residents of densely populated or remote areas. These innovations clearly demonstrate that digital transformation is not merely about adopting new technologies, but also a commitment to more inclusive, adaptive, and citizen-oriented public services.

Supporting Factors for Digital Innovation Implementation

Leadership commitment is the primary driver behind the successful implementation of digital innovation at BKKBN. Visionary leadership that prioritizes digital transformation through supportive internal policies, dedicated funding, and promotion of an innovation culture provides strong legitimacy for bureaucratic change. Afrilia *et al.*, (2024) affirm that direct leadership involvement in shaping digital strategies serves as a long-term catalyst for effective online systems. Additionally, Amaliah & Sawitri (2023) found that transformational digital leadership in public institutions significantly enhances digitalization intensity and fosters a strong digital culture. Such leadership not only enacts change but inspires staff to become digital change agents in their workplaces. Moreover, support from the central and provincial governments through technical policy subsidies, provision of digital infrastructure, and regulatory support also serves as a vital enabler. Prayitno (2023) highlighted that such support accelerates digital service adoption across local institutions. Public demand for fast, flexible, and responsive services, especially during the pandemic, further strengthens community acceptance of digital services. A *citizen-centric services* approach ensures that digital innovations are developed based on actual public needs rather than as mere technological solutions. Public acceptance surveys show that user-focused innovations enhance trust and active participation in digital services. The synergy between leadership commitment, technical support, and public demand creates systemic momentum for digital bureaucratic transformation at BKKBN, making it a model for adaptive and citizen-oriented public innovation.

Challenges in Innovation Implementation

One of the most prominent challenges in BKKBN's digital public service transformation is low digital literacy, particularly among the elderly and individuals

with low education levels. According to Indama (2022), understanding the basics of technology use significantly influences citizens' perceptions, expectations, and trust in digital services. Many citizens feel anxious or uncertain about using digital applications due to a lack of knowledge or fear of making mistakes. This highlights the psychological and cultural aspects of digital readiness, where feelings of safety and comfort are key to adoption. Sururi & Hasanah (2022) emphasized that users with low digital literacy often face technical barriers, even when the systems function properly. Challenges such as unfamiliarity with user interfaces, difficulty understanding instructions, and reluctance to try new methods lead to underutilization of digital services. Hence, simply having an app is not enough; supportive programs, user-friendly education materials, and personal guidance are needed, particularly for the elderly and low-education populations.

Another major challenge is the digital infrastructure gap. Disparities between urban and peripheral areas, among districts, and even among villages reveal that inconsistent internet access and limited device availability hinder effective innovation. Studies by Afrilia *et al.*, (2024) and *Temjournal* (2023) consistently show that infrastructure inequality directly slows the spread of digital services. Residents in areas with poor infrastructure cannot fully benefit from services like Online Information, digital counseling, or integrated population databases. Moreover, internal resistance among civil servants also presents a structural challenge. Many staff members remain comfortable with manual routines or are reluctant to adopt digital systems. This aligns with the theory of *bureaucratic inertia*, which describes bureaucracy's tendency to maintain legacy practices despite the availability of better technology. *Temjournal* (2023) also found that closed bureaucratic cultures resistant to experimentation can hinder technological adoption even when policies and infrastructure are in place. In summary, digital innovation is not solely about advanced technology; it also requires community readiness, organizational culture transformation, and equitable infrastructure access. These challenges can be addressed through a comprehensive strategy involving community education, modernization of bureaucratic culture, and widespread digital access, ultimately enabling inclusive and sustainable digital public services.

Critical Analysis of the Innovation

According to recent literature on public service innovation, initiatives like BKKBN's Online Information Services and digital counseling are best categorized as *service innovations*. These focus on creating new methods of delivering services using information technology, without fundamentally altering the core bureaucratic structure. The adaptation of online services modifies the interaction process between users and services without major restructuring. However, as discussed in *Understanding Incremental and Transformative Innovations in Local Government* by Bovaird *et al.*, (2021:660), *transformational innovation* requires profound changes in the structure, values, and functions of public organizations. True transformation necessitates consistent policies, intensive human resource training, and sustainable monitoring and evaluation systems.

Heeks *et al.*, (2025:8–12), in *Digital Innovation Strategies in the Public Sector*, identify four types of digital innovation strategies: enhancement-oriented, anticipatory, adaptive, and persistent. They argue that sustainable innovation must be embedded into organizational policies and culture not just seen as temporary tech

fixes. Afrilia et al. (2024) further noted that sustained digital public innovation is heavily influenced by continued investment in human resource development, infrastructure strengthening, and the creation of innovation-supportive structures. This aligns with the *Digital Era Governance* (DEG) framework, which advocates for three core pillars: back-office integration, process digitalization, and needs-based holism. While BKKBN has started integrating various applications (field monitoring, family data collection, family planning, stunting risk validation, and pre-marriage/pregnancy readiness apps), further expansion in HR training and policy evaluation is needed. Without systematic evaluation and cross-unit feedback loops, digital transformation remains at the level of service innovation not organizational and cultural change. To reach true transformational innovation, BKKBN must strengthen evaluation systems, build consolidated data structures, and introduce incentive policies for innovative personnel. If these elements are consistently implemented, digital transformation can evolve beyond service improvement into a transformation of bureaucratic culture making it more adaptive, responsive, and participatory, in line with modern governance values.

Discussion

The forms of innovation implemented by the Ministry of Population and Family Development/BKKBN align with the *Digital Era Governance* (DEG) concept developed by Dunleavy *et al.*, (2006). This concept emphasizes the importance of digitalization, service integration, and efficiency improvement through the use of information technology in public services. In practice, innovations like the Online Information System and digital family counseling exemplify the *needs-based holism* principle a user-centric approach focusing on real needs rather than rigid administrative procedures. This approach allows public services to become more flexible, adaptive, and responsive to social dynamics, while also expanding opportunities for citizens to access services in a dignified and equitable manner. The effectiveness of digital innovations in the public sector depends not only on the availability of technology, but also on data integration and leadership quality. Thamrin *et al.*, (2024) stated that public service digitalization significantly increases transparency and accountability and can accelerate services by up to 40% if supported by integrated data systems and strong leadership.

In the Indonesian context, Prayitno (2023) stressed the importance of synergy between central government policies and local technological readiness for effective digital transformation. Leadership commitment plays a crucial role in shaping strategic direction. When leadership has a progressive digital vision, structural changes, human resource capacity building, and infrastructure development can be better planned and executed. In addition to leadership, other supporting factors such as infrastructure availability, reliable information systems, and technological capacity are also vital. El-Massah & Moehieldin *et al.*, (2024) noted common challenges in digital public service transformation: infrastructure access inequality, system interoperability issues, and limited qualified personnel in information technology. Thus, digital transformation must be accompanied by strengthening support infrastructure, continuous civil servant training, and the development of user-friendly, data-driven digital systems. Kim *et al.*, (2024) added that integrated digital platforms can change bureaucratic work patterns and enhance government-citizen relationships, provided they are designed participatively and inclusively. Cross-sector

collaboration and inter-agency integration are key to building digital service systems that are not only efficient but also equitable.

Despite these positive trends, challenges such as change resistance and low digital literacy remain serious obstacles. Based on *Bureaucratic Inertia* theory, bureaucracies tend to maintain established systems despite the availability of more efficient and adaptive digital solutions. Sururi & Hasanah (2022) noted that low digital literacy, particularly among bureaucrats and marginalized groups, is a key factor in the failure of digitalization efforts in strategic sectors like family, social, and health services. Overcoming these obstacles requires a comprehensive transformation strategy involving cultural change, cross-sector integration, and digital capacity enhancement at both internal and external levels. With strong commitment and a sustainable approach, digital innovation at BKKBN can not only accelerate services but also mark a milestone in building participatory, transparent, and citizen-oriented governance.

4. Conclusion

Conclusion

This study demonstrates that the Ministry of Population and Family Development/BKKBN has implemented various technology-based public service innovations in response to the demands of the digital era and society's need for fast, efficient, and transparent services. Innovations such as Online Information Services, digital counseling, and population data integration represent tangible transformations within the public service bureaucracy. Although these innovations have positively impacted service quality, several challenges remain such as low digital literacy among the public, limited access to technological infrastructure, and bureaucratic resistance to change. The success of these innovations is largely determined by leadership commitment, the readiness of human resources, and the support of adaptive systems and policies.

Recommendations

To enhance accessibility and the quality of digital public services, the government should implement widespread education and outreach programs to raise public awareness on how to use digital services. This is essential for improving digital literacy so that all segments of society can benefit equally. In addition, regular training and capacity-building initiatives for civil servants particularly those within BKKBN at both central and provincial levels should be conducted to help them adapt to technological developments and deliver optimal services through digital systems. Strengthening technological infrastructure is also a crucial supporting factor that must not be overlooked. Local and central governments must collaborate to ensure the availability of adequate internet networks and hardware across all service units. Furthermore, innovation in public services should be regularly monitored and evaluated to maintain effectiveness and efficiency, and to ensure that services remain relevant to the evolving needs of the community.

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