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# Digital-Based Public Service Innovations at the Jayapura City Population and Civil Registration Office

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**Abstract:** This study examines digital public service innovation at the Jayapura City Department of Population and Civil Registration (Disdukcapil), focusing on novelty, productivity, impact, sustainability, and implementation constraints. A descriptive qualitative approach involved six purposively selected informants: three government officials, two service users, and one community representative. Data were collected through interviews, observations, and documentation and analyzed through data reduction, display, and verification. The findings show that novelty is reflected in the PaceMace application, a rebranding and update of a digital service system operating since 2021, as well as online information channels and integrated population data management. Productivity improved, with daily document processing increasing from approximately 75 to 150. However, 200–400 applications were received daily, indicating a gap between processing capacity and service demand. Reported impacts included easier access to service information, fewer repeat visits, shorter queues, and fewer administrative errors. Sustainability was supported by officials' commitment to system maintenance, evaluation, and continuous development, although its long-term prospects remain uncertain. Implementation constraints included network disruptions, inadequate facilities, limited organizational capacity, and uneven digital literacy. The study concludes that sustainable and reliable digital public services require technological improvements, stronger institutional capacity, inclusive access, staff development, and regular evaluation at the local level.

## INTRODUCTION

Public service is a core government function in meeting citizens' basic needs and safeguarding their civil rights. Law No. 25 of 2009 mandates the provision of high-quality, transparent, and equitable public services. Population administration is particularly important in this regard, as documents such as electronic identity cards (e-KTP), family cards, and civil registration certificates are prerequisites for accessing various public services and government programs (Dailiati et al., 2018; Nabawi et al., 2026). Beyond its administrative function, population administration and civil registration constitute essential governance infrastructure that supports population identification, inter-agency coordination, and the integration of government services (Gatiningsih & Saputra, 2026). The quality of civil registration systems determines the reliability of population data and vital statistics for policy planning and evaluation. However, Indonesia's civil registration and vital statistics (CRVS) system continues to face reliability challenges, particularly in recording deaths and causes of death, highlighting the need to strengthen population administration to improve service quality and support accurate, inclusive, and sustainable data-driven governance (Musadad et al., 2023).

One approach to improving population administration services is digital transformation. Conventional services, often characterized by long queues, extended waiting times, and limited access in certain areas, have encouraged governments to develop technology-based services. However, digital transformation involves more than converting documents or procedures into electronic formats (digitization); it also encompasses changes in work processes, organizational culture, and the service outcomes expected by citizens (Mergel et al., 2019). These changes affect how, when, and where citizens interact with service providers and require new skills from both

parties (Lindgren et al., 2019). Accordingly, the success of digital innovation should be assessed in terms of the public value it generates, including improvements in service delivery and administration, as well as the social value experienced by citizens (Twizeyimana & Andersson, 2019).

In Indonesia, digitalization has the potential to improve the efficiency, accessibility, and quality of public services, although implementation outcomes remain uneven (Mustofa et al., 2025; Pratama et al., 2025). In population administration, digital service transformation in Medan City has reportedly contributed to improvements in service efficiency, accessibility, and transparency (Admar et al., 2024). However, these benefits are not automatically realized across all regions. The effectiveness of digital services depends on application readiness, human resource capacity, infrastructure availability, consistency in information updates, public outreach, and digital literacy (Sujendra & Zaenuddin, 2025; Yuniarsih et al., 2025). Furthermore, system fragmentation, limited interoperability, and rigid bureaucratic procedures can hinder the integration and utilization of digital services (Sihotang et al., 2023; Yulianto et al., 2026). Inadequate infrastructure, limited resources, and low digital literacy also remain challenges, particularly in areas with insufficient technological support and institutional capacity (Mustofa et al., 2025; Purnamasari et al., 2023). Beyond technical and institutional factors, service providers' responsiveness to community needs is essential to service quality (Zaenuddin et al., 2024).

These findings indicate that evaluating digital innovation in population administration requires more than examining the availability of an application; it must also consider the benefits generated, institutional readiness, data governance quality, and providers' capacity to respond to citizens' needs. Against this background, the Department of Population and Civil Registration (Dinas Kependudukan dan Pencatatan Sipil, Disdukcapil) of Jayapura City provides a relevant setting for examining digital public service innovation. The agency has implemented the Population Administration Information System (Sistem Informasi Administrasi Kependudukan, SIAK) and developed the Pacedukcapil digital service since mid-2021. The service was subsequently updated and renamed PaceMace in early 2025. Jayapura City's diverse geographical and social characteristics, combined with disparities in technological access and digital literacy, present distinct challenges for digital service delivery. Nevertheless, further empirical investigation is needed to understand how this innovation operates, what benefits it generates, whether its implementation is sustainable, and what factors hinder its development.

This gap is important because the success of digital innovation needs to be assessed in relation to the institutional conditions and community characteristics of each region. This study adopts the concept of public service innovation as a new idea, product, or method, including the modification, adaptation, and further development of existing innovations to improve service delivery (Ramdani, 2018), consistent with the novelty criterion established in Ministerial Regulation of the Ministry of Administrative and Bureaucratic Reform No. 3 of 2018. To assess this innovation, the study uses four dimensions from the Public Service Innovation Perception Index Guidelines published by the National Institute of Public Administration (Lembaga Administrasi Negara): novelty, productivity, impact, and sustainability (Putri & Lanin, 2018; Ramdani, 2018). Based on this framework, the study aims to analyze digital public service innovation at the Department of Population and Civil Registration of Jayapura City and identify factors that hinder its implementation. The findings are expected to provide empirical evidence of the achievements and limitations of digital innovation, thereby informing efforts to develop more responsive and sustainable population administration services

## RESEARCH METHODS

### Research Design and Approach

This study employed a descriptive qualitative approach. The research question was formulated as a "how" question and required an understanding of the forms, processes, and experiences involved in implementing an innovation rather than hypothesis testing. A qualitative approach was appropriate for this purpose because it enabled the researcher to examine the meanings that participants attributed to a

phenomenon within its specific context (Creswell, 1998; Sugiyono, 2019). The unit of analysis was the implementation of digital population administration services within a single institution, namely the Jayapura City Department of Population and Civil Registration (*Dinas Kependudukan dan Pencatatan Sipil*, Disdukcapil).

**Research Site and Setting**

The study was conducted at Department of Population and Civil Registration of Jayapura City which is located in Entrop Urban Village, South Jayapura District on the second floor of Mayor's Office Building, Jalan Balai Kota No. 1. The institution has 56 state civil servants, consisting of 40 civil servants (PNS) and 16 government employees with employment agreements (PPPK). Education consists of 5 employees with master's degree (S-2), 30 employees with a bachelor's degree (S-1), 3 employees with a diploma (D-3), and 18 employees who have completed senior high school education (SLTA).

The supporting facilities of the digital services are 35 computers, four smart phones, two biometric recording devices, and two Anjungan Dukcapil Mandiri (ADM) machines. Internet connectivity is provided by ASTINet bandwidth capacity 5 Mbps and Indihome capacity of 50 Mbps. Besides the Population Administration Information System (Sistem Informasi Administrasi Kependudukan), the institution also released the Pacedukcapil application in mid-2021, which was renamed to PaceMace in early 2025.

**Informants**

Participants were selected through purposive sampling based on their direct involvement in the implementation of the innovation and their knowledge of population administration services (Palinkas et al., 2013). The study involved six informants from three groups: three Disdukcapil officials, two members of the public who had used the services, and one community representative or relevant stakeholder. The study did not claim to have achieved data saturation. The informants' roles, group classifications, and data collection techniques are presented in Table 1. The adequacy of the informants was assessed based on their relevance and capacity to provide information on the four analytical dimensions: novelty, productivity, impact, and sustainability. Accordingly, the findings are intended to provide an in-depth and context-specific qualitative understanding of the implementation of digital public service (Patton, 2015).

Table 1. Informant Profiles

| Code | Role | Group | Data Collection Technique |
|---|---|---|---|
| I-1 | Head of the Population Registration Services Division | Government official | Interview |
| I-2 | Disdukcapil service operator/employee | Government official | Interview |
| I-3 | Staff member of the Population Administration Information Management Division | Government official | Interview |
| I-4 | Member of the public who had used the services | Service user | Interview |
| I-5 | Member of the public who had used the services | Service user | Interview |
| I-6 | Community leader/relevant stakeholder | Community representative | |

Source: Research data; interviews were conducted from April 7 to 15, 2026.

**Data Collection Techniques**

Primary data were collected through interviews guided by questions covering the four dimensions of innovation. Observations were also conducted to examine field conditions and assess the consistency between interview findings and actual service delivery. Secondary data included institutional archives, reports, personnel records, and information on facilities and infrastructure. These data collection techniques were complemented by a literature review. As summarized in Table 2, the data collection procedures were organized according to the research objectives, techniques, instruments, sources, and stages of analysis.

Table 2. Data Collection and Analysis Techniques

| Objective | Technique | Instrument | Data Source | Analysis Stage |
|---|---|---|---|---|
| Explore experiences and assessments of the four dimensions of innovation | Interviews | Interview guide | Six informants | Data reduction, display, and verification |
| Observe service implementation and examine data consistency | Observation | Researcher as the instrument | Service delivery activities at Disdukcapil | Data reduction, display, and verification |
| Obtain supporting information on the institutional context | Documentation | Researcher as the instrument | Archives, reports, personnel records, and facility data | Data display and verification |

Source: Research data.

**Data Analysis Techniques**

The credibility of data was assessed using the criteria proposed. The trustworthiness was supported by credibility, transferability, dependability, and confirmability strategies, as shown in Table 3, and evidence from data collection processes, descriptions of the context, and traceable informant quotes.

Table 3. Strategies for Ensuring Data Trustworthiness

| Criterion | Strategy | Evidence of Implementation |
|---|---|---|
| Credibility | Combining multiple data collection techniques and sources | Observations, interviews, and documentation; informants representing government officials, service users, and community representatives |
| Transferability | Providing a contextual description | Institutional profile, facilities, internet connectivity, and application development chronology described in Section 3.2 |
| Dependability and confirmability | Maintaining traceability of quotations | Direct quotations were assigned informant codes and linked to the research focus |

Source: Research data.

## RESULTS AND DISCUSSION

The findings indicate that digital service innovation at Jayapura City Disdukcapil is reflected in four dimensions: novelty, productivity, impact, and sustainability. However, the benefits remain constrained by network reliability, organizational capacity, and users' technological understanding, which affect the implementation of innovation across all four dimensions. The following section examines the novelty dimension, focusing on the shift from manual services to digitally supported service systems.

**Novelty, from Manual Services to Digitally Supported Service Systems**

Novelty is an approach that is different from the service practices before. All informants reported that services have transitioned from face-to-face interaction and manual record keeping to services that can be partially delivered through digital systems. This change took the form of three things, namely the PaceMace application that can be accessed through the official Jayapura City Government website, information channels through social media and WhatsApp, and an integrated electronic population data system. Public officials stressed the changes in the mechanisms of service provision and data management, while service users stressed the ease of access to information.

> *"We live in a time when people don't need to come to the office every time they need some administrative services, because some services can now be obtained through digital systems and online communication,"* said I-1.

> *"Service novelty is evident in the use of applications and integrated population data systems,"* I-3 said.

> *"We don't always have to come in person just to ask about the requirements as we can get service information through social media or WhatsApp,"* said I-4 from the user perspective.

The most noticeable change to users should be related to information channels, rather than document applications themselves. This is explained by the nature of these channels: WhatsApp and social media are already widely used in everyday life, so the adoption barriers are relatively low, while the PaceMace application requires users to get to know and trust a new application. It is easy to see the relative advantage of information channels, and the complexity of information channels is low, in Rogers's (2003) language. Public officials say the results also suggest novelty works on multiple levels: at the front end, through channels and applications, and at the back end, through data integration. This is an important distinction, as digital maturity is not defined only by the availability of front-end online services but also by the integration of back-end processes (Scholta et al., 2019).

In Mergel et al. (2019), the front office is different from the back office, which means that the digitizing of service channels through PaceMace, social media, and WhatsApp does not necessarily translate into full digital transformation. However, the integration of population data shows progress in internal processes. This finding is consistent with the studies of KNG in Surabaya (Sinta & Hertati, 2023) and digital public services in Semarang (Hasanah et al., 2025) which emphasize the need for system integration, organizational capacity and inter-agency coordination and the ongoing challenges of infrastructure, accessibility and online literacy. Other Indonesian studies also highlighted interoperability and preparedness of local governments (Rahmadani et al., 2025), and constraints related to infrastructure and online literacy (Purnamasari et al., 2025). Overall, the novelty of public services at the Jayapura City Population and Civil Registration Office is not only in the use of applications, social media, and WhatsApp, but also in the development of digital data management of the population.

**Productivity, Greater Daily Capacity and Faster Services**

Productivity improvements were reflected in officials' accounts of faster data entry and document retrieval when applicants submitted complete requirements, resulting in shorter processing times. These improvements are consistent with evidence that e-government can enhance service quality and citizen satisfaction, although such benefits depend on system quality and usability (Mulyana & Jamaludin, 2023; Thapaliya & Esichaikul, 2025). Institutional records indicate that Disdukcapil receives approximately 200–400 population administration applications daily, covering electronic identity cards (e-KTP), Child Identity Cards (KIA), Family Cards, certificates of moving, and birth and death certificates. However, the available records do not provide sufficiently detailed time-based comparisons to distinguish productivity changes

under the previous Pacedukcapil system from those following the introduction of PaceMace. Therefore, the reported improvements cannot be attributed exclusively to PaceMace.

> *"Documents of people are processed faster because the data are entered directly into the system,"* I-1 explained.

> *"Services are faster now and the number of people who can be served in a day has also increased,"* said I-2.

> *"Once the paperwork is done, it doesn't usually take very long to process,"* I-4 added.

The number of processed documents increased from around 75 to an average of 150 per day, which indicates an improvement in the capacity to process services. This should be put into perspective, in view of the daily number of incoming applications, which is in the order of 200 to 400. Such comparison indicates a possible mismatch between processing capacity and demand for service. So higher productivity doesn't necessarily mean you have no queues or no backlog of applications. A more detailed assessment would require more detailed data on application completion, including processing times for each type of document and the number of applications completed and still pending." So the comments of the informants regarding the speed of services provide information about their perceptions of the speed of services, but do not necessarily indicate that all public demand has been met.

The convenience is associated with electronic service quality (e-service quality) especially efficiency, responsiveness, and information quality (Taufiqurokhman et al., 2024; Pramuditha et al., 2024). Welch et al. (2005) also found that transaction, transparency and interactivity strategies influence satisfaction with e-government. Based on these results, Zahira & Rodiyah (2025) in the study of the Kios e-PAKLADI service in Pasuruan, showed that digital population administration services can minimize travel and time costs, but network disruptions and incomplete documentation still hinder service delivery. User satisfaction has also been associated with electronic service quality in digital population administration services (Pramuditha et al., 2024), immigration services (Ponco Aji et al., 2024), and passport issuance services (Putri & Lanin, 2018).

The results show the importance of convenience and speed of service and the need to overcome technical and administrative constraints. Therefore, the assessment of digital-based public service innovation at the Jayapura City Population and Civil Registration Office should not only consider perceived improvements in service speed, but also whether processing capacity is sufficient to meet public demand, and whether there are still technical and administrative barriers that hinder service delivery.

**Impact Easier Access to Information and Reduced Repeat Visits and Queues**

Impact is more precisely understood as the observable changes that follow the implementation of an innovation, including effects on service quality, efficiency, effectiveness, and citizen value; in public sector settings, these effects may be positive, limited, or unevenly reported across cases (Arundel et al., 2019; Figenschou et al., 2024). Informants reported three changes: improved access to information about requirements and procedures for services, fewer return visits due to incomplete documentation, and shorter queues and fewer administrative errors. These effects were felt by public officials in data management and by service users in their documents processing.

> "*We can find out the requirements online before we go to the office",* I-4 said,

> "*So we don't have to keep coming back when some documents are missing. The impact is that you can reduce queues and you can do work more quickly,"* I-2 said.

"*You can get the data faster and also minimize administrative errors,"* said I-3.

The most perceived impact was related to fewer repeat visits. The underlying mechanism is that information on service requirement is available prior to users' visiting the office, such that users can anticipate missing documents. Differences in perspective across groups are noteworthy: public officials stressed the efficiency of data management, users pointed to easier access to information, and the community leader highlighted the need to not leave behind those who are not familiar with technology. The impact dimension is the availability of inclusive services. I-6 argues that inclusiveness is at stake especially as the benefits of innovation depend on users' ability to use technology (van Deursen & van Dijk, 2019). The digital divide issue is also addressed in a study of inclusive digital policy adoption in Pekanbaru City (Handrian & Novita, 2025) and in a study of population administration services in Merauke Regency, Papua, which formulated strategies to improve service accessibility, efficiency, and inclusiveness in remote areas (Simatauw & Malau, 2025).

Welch et al. (2005) also found that transparency in electronic services affects citizen satisfaction. Hence, the online availability of service requirements as the main perceived effect in Jayapura, has value beyond improvements in speed. Thus, the availability of online information regarding service requirements—as the primary impact observed at the Jayapura City Population and Civil Registration Office—has broader implications than merely improving service speed. This innovation has the potential to reduce information barriers and help the public understand and navigate service procedures more independently. However, these benefits must be accompanied by efforts to expand access and provide guidance to members of the public with limited digital skills so that digital-based public service innovations can deliver benefits in a more inclusive manner.

**Sustainable, Dedicated to Developing and Maintaining Services**

The sustainability of digital public service innovation involves not only the continued use of technology but also an organizational commitment to evaluating, maintaining, updating, and continuously improving service quality (Gil-Garcia & Flores-Zúñiga, 2020; Vimala et al., 2024). In this study, public officials demonstrated this commitment through service evaluations, staff guidance when systems are updated, system maintenance, and data updates.

> I-1 stated, "*Digital-based services will continue to be developed because they have become a necessity for the public today. We also continuously evaluate them so that the service system can function better.*"

> I-3 noted, "*The digital service system is continuously maintained and updated to ensure that services remain optimal.*"

> I-4 expressed the hope that "*digital services like these will remain available and continue to improve.*"

The dedication of public officials to conduct evaluations, provide guidance to staff, and operate the system is an organizational resource that sustains innovation. Mergel (2016) emphasized the significance of agile innovation management in government. In this study, the evaluations and system updates reported by public officials can be seen as efforts to maintain and further develop the innovation, although the evaluation mechanisms were not studied in detail. But the expectation of users that the system will not be disrupted often indicates that sustainability depends on the willingness to keep innovating, as well as on the reliability of services. Although the Jayapura City Population and Civil Registration Office (Disdukcapil) is reported to have internet bandwidth capacity of 5 Mbps and 50 Mbps, the difference in bandwidth capacity can affect users' access and experience. However, network performance was not directly measured in this study. Sustainability and resilience are related but distinct concepts. Sustainability is about service continuity, while resilience is about the capacity of a system to

resist disruption, recover and adapt (Bocchini et al., 2013; Marchese et al., 2018). Therefore, the maintenance of digital services should consider reliability, accessibility, and ease of use, which are also important aspects of digital government service delivery (Gorenc et al., 2026; Usas et al., 2026).

The results are also relevant to Simatauw & Malau (2025) research in Merauke Regency, eastern Indonesia, which highlighted the significance of improving digital infrastructure, enhancing the capabilities of public officials, and building collaboration between local government, society, and the private sector to maintain innovation in population administration services. Collaboration using an incentive-based approach also plays a role in improving digital infrastructure, thereby helping sustain public-sector initiatives (Firdaus et al., 2025). Besides infrastructure and collaboration, human resource development is also important. For example, Yuniantoro et al. (2026) found that all measured domains of digital competence increased significantly through team-based learning ($p < .001$), particularly communication, collaboration, and problem-solving. Overall, the study shows that Jayapura City Disdukcapil officials are committed to maintaining and developing digital public services, although this commitment alone does not establish their long-term sustainability. Sustaining innovation requires reliable services, stronger infrastructure, improved staff competencies, regular evaluations, and continuous service improvements based on user needs.

**Cross-Cutting Constraints, Networks, Capacity and Technology Comprehension**

Constraints were identified by all three groups of informants and across all four dimensions. The first constraint was Network disruption and slow system performance as reported by users. The second was uneven technological understanding, raised by the community leader and, in the researcher's analysis, including challenges potentially faced by older adults. Third was the need to improve staff capacity and technological facilities. Data analysis further indicated that service processes reverted to manual procedures when the system was disrupted.

> *"Still, sometimes there are network problems, or the system is slow,"* I-5 said.

> I-6 said: "*We still need to improve so that people who do not yet understand technology can also continue to receive good services. We still need to improve staff capacity and technological facilities.*"

These constraints are summarized in Table 4, as cross-cutting factors affecting the implementation of innovation of all four dimensions, rather than being part of a single dimension. The transition of the digital divide from physical access to the ability to use technology (van Deursen & van Dijk, 2019) might be a reason why network disruptions and low technological literacy still pose problems despite the existence of digital services. In Merauke Regency, research also emphasizes the importance of digital infrastructure and staff competencies (Simatauw & Malau, 2025). From the regulatory perspective, Article 4 of Law No. 25 of 2009 provides special facilities and treatment for vulnerable groups. This, therefore, is part of the principle of providing face-to-face services as an alternative to a breakdown of the system, and not just a technical back-up.

Table 4. Summary of Research Findings by Theme

| Theme | Subtheme | Description | quotation | Answer to the research question |
|---|---|---|---|---|
| Novelty | Service mechanisms; information channels; data systems | Some services have shifted from manual procedures to digital systems. | "Some services can now be accessed through digital systems and online | Innovation is reflected in changes to service mechanisms, information |

| | | | | |
|---|---|---|---|---|
| | | | communication" (I-1). | provision, and data management. |
| Productivity | Speed; daily capacity | Processing has become faster, with output increasing from approximately 75 to an average of 150 documents per day. | "The number of people who can be served in a day has also increased" (I-2). | Innovation improves service speed and processing capacity. |
| Impact | Information access; queues; accuracy | Repeat visits and queues have decreased. | "We no longer have to keep coming back when some documents are missing" (I-4). | Innovation provides perceived benefits for both public officials and service users. |
| Sustainability | Evaluation; maintenance; user expectations | There is a commitment to developing services. | "We also continuously evaluate them" (I-1). | Innovation is supported by a commitment to ongoing development. |
| Cross-cutting constraints | Networks; technological understanding; capacity | Constraints affect all four dimensions. | "Network problems or the system runs slowly" (I-5). | Innovation implementation remains dependent on infrastructure and users' technological understanding. |

*Source: Interview, observation, and documentation data, processed by the researchers.*

## Practical and Policy Implications

The innovation of digital services at Jayapura City Disdukcapil is reflected in four dimensions, namely novelty in the form of service digitalization, productivity in the form of faster processes and increased capacity, impact in the form of easier access to information and fewer repeat visits, and sustainability in the form of system maintenance and development. But all four dimensions are still affected by network disruptions, supporting facilities and users' technological understanding. The findings point to implementation constraints as cross-cutting factors and challenge the pro-innovation bias of Rogers (2003) by showing that novelty does not automatically result in inclusive benefits. Furthermore, the distinction between the front and back office (Scholta et al., 2019) further explains the difference in perspective between public officials who focus on internal system changes and citizens who focus on ease of access. Therefore, the assessment of innovation should consider organizational readiness, access and benefits perceived by users.

Practical and policy implications include increasing use of online information channels, monitoring processing times by document type, providing assistance and outreach to those with limited technological skills, and keeping face-to-face services as an alternative. The Jayapura City Government needs to improve the stability of the network and supporting facilities, document the routine evaluation of digital services, and conduct public satisfaction surveys to support the public perception in this study. These recommendations have been in accordance with Law No. 25 of 2009 on Public Services, especially Article 4 on the principles of service, such as, timely, fast, and nondiscriminatory treatment, and Article 23 on the information system of public services.

President Regulation No. 95 of 2018 concerning Electronic-Based Government System (SPBE) is also relevant to infrastructure improvements and digital evaluation, while public satisfaction surveys can be referred to Ministerial Regulation of Administrative and Bureaucratic Reform No. 14 of 2017. Further reference to innovation in public service is Ministerial Regulation No. 30 of 2014. Table 5 summarizes the study's contributions and implications across theoretical, practical, and policy dimensions, with each implication linked to its relevant regulatory basis and target stakeholder.

Table 5. Research Contributions and Implications

| Type | Description | Regulatory Basis/Reference | Target Stakeholders |
|---|---|---|---|
| Theoretical | Positions implementation constraints as cross-cutting conditions in the application of the four-dimensional innovation framework. | Four-dimensional innovation framework; Ministerial Regulation No. 30 of 2014 | Public administration researchers |
| Practical | Expands the use of online information channels and monitors service processing times by document type. | Law No. 25 of 2009, Article 4 on timeliness and speed and Article 23 on public service information systems | Jayapura City Disdukcapil |
| Practical | Provides assistance and outreach for groups with limited technological skills while maintaining face-to-face services as an alternative. | Law No. 25 of 2009, Article 4 on attention to vulnerable groups and nondiscriminatory services | Disdukcapil and service personnel |
| Policy | Strengthens network stability and supporting facilities and documents evaluations of digital services. | Presidential Regulation No. 95 of 2018 on SPBE | Jayapura City Government |
| Policy | Conducts public satisfaction surveys to complement the perceptions identified in this study. | Ministerial Regulation No. 14 of 2017 | Disdukcapil and Jayapura City Government |

Source: Developed from the research findings.

Overall, as detailed in Table 5, this study demonstrates that the success of digital service innovation should be assessed not only in terms of system changes and efficiency gains but also through equitable access, citizens' ability to use technology, and sustained organizational support. Its main contribution is to show that infrastructure, capacity, and digital literacy constraints operate across all four dimensions—novelty, productivity, impact, and sustainability. Accordingly, the development of digital services at Jayapura City Disdukcapil should integrate efficiency improvements, system maintenance, user assistance, and regular evaluation to ensure that innovation benefits are more inclusive and sustainable.

## CONCLUSSION

This paper describes the implementation of digital public service innovation at the Jayapura City Population and Civil Registration Office (Disdukcapil) through four important findings. In terms of novelty, certain services have migrated from face-to-face to digital systems via the PaceMace application, social media and WhatsApp channels, and an integrated data system. In terms of productivity, services are faster and the daily processing capacity has gone up from around 75 to an average of 150 documents. Impact: fewer re-visits and queues. Information is more available. On the subject of sustainability, the system is developed and maintained.

The main argument of the article is that network connectivity, capacity and technological literacy constraints affect all four dimensions and therefore should be understood as cross-cutting conditions. In theory, these findings allow extending the interpretation of the four-dimensional framework by incorporating these enabling conditions into the analysis. In practical terms they point out that increased processing capacity does not necessarily close the gap between service capacity and the daily volume of applications.

Recommendations for action include the need to strengthen network stability and support facilities; provide outreach and assistance for groups with limited digital proficiency while maintaining face-to-face services as an alternative; and monitor processing times by document type. Limitations of the study include a small number of informants, no informants from peripheral areas, and no direct measure of user satisfaction. Future research could include a larger number of service users, including those from peripheral areas, and could use more detailed data on service processing times.

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