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Amidst the Euphoria of Digitalization Public Services in Municipal Government

Raising Public Acceptance

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Abstract: Information and communication technology was used for two decades to elevate good governance practices under Indonesia's bureaucratic reform policy. With the fast-expanding use of the internet, all government organizations are being pushed to implement digital public services to eliminate rigid procedures. This study aims to reveal factors affecting public perception' and acceptance of digital public services using a qualitative approach with the Technology Acceptance Model as a basic framework. Data was collected from 13 public service applications in different areas, gathered through 13 municipal information and communication' officials, interviews with 38 conventional public service applicants, 282 digital services users, and the policies and regulations as secondary data, those analyzed by NVivo and visualized on a hierarchy chart. It is clear that while becoming digitized is an ambitious agenda, there are wide gaps among municipalities: geographical landscape, technology infrastructure, financial and human resources. On the public side, a majority remained stuck to conventional services, primarily due to non-technology factors: their comfort with traditional processes, the perceived complexity of the application, their digital literacy, experiences, and economic-societal barriers, all of which emerged as barriers to digital services acceptance. Injecting digital technology in the public sector is inevitable. However, it is necessary to build community digital readiness despite technology infrastructure and official capabilities, especially in peripheral local governments.

Keywords: Inclusive Public Services; Vulnerable Groups; Organization Capacity; Self-Efficacy

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1. Introduction

The digitalization of public service refers to the process of incorporating digital technologies and tools into delivering public services (Lindgren et al., 2019). The utilized technology and digital tools encompass various elements such as websites, social media platforms, cloud computing, sensors, artificial intelligence (AI), and interconnected electronic devices (Agostino et al., 2022). The digital transformation of public services enhances their automation and intelligence (Trischler & Trischler, 2022). Digitization encompasses more than just technology per se; it involves altering behavior and optimizing procedures. The fundamental aspect of digitizing public services lies in employing technology to enhance the caliber and availability of such services, boost efficiency and transparency, minimize expenses, and facilitate extensive access to information.

It also creates a platform for multiple stakeholders to engage directly, strengthens the bond between the government and the community, and enhances societal perception. Nevertheless, of utmost significance, the government's adoption of digital technology for public services represents a proactive approach to catering to the needs of citizens in the current digital age (Lindgren et al., 2019). Digitized is a fundamental obligation of the government as a service provider, aiming to consistently deliver exceptional services to the community and foster a greater sense of trust in governmental institutions. Generally, digital public services in developing nations play a crucial role in establishing effective governance, enhancing service provision, and fostering public participation. A study conducted between 2014 and 2016 involving 99 participants in public service innovation revealed that incorporating technology into public services was the most popular innovation chosen by local governments in Indonesia (Pratama, 2019).

The digitalization of public services and other government operations aligns with the implementation of Presidential Instruction No. 3 of 2003, which emphasizes communication and information technology in government administration to enhance efficiency, effectiveness, transparency, and accountability. Furthermore, the decision to digitize public services is reinforced by the fact that, as of January 2023, internet penetration reached 78.19% of the total population. Data from We Are Social (2023) indicates that approximately 77% of Indonesia's population are internet users, totaling around 212 million individuals. Access to the Internet reported that among million 276 million citizens in Indonesia, there are 353 million registered phone numbers in the system, which is 128% of the number of citizens. It shows that one person has more than one mobile phone. In terms of internet networks, data shows that 77% of Indonesians are already connected to worldwide access. Meanwhile, of 77% of internet users, only 60.4% used social media, and at least 167 million people spend an average of 7 hours and 42 minutes daily. Indonesian netizens actively contribute to the global virtual world, and it's quite interesting.

Indonesia's journey towards electronic government adoption began in 2003. A significant policy shift during the reform era was the introduction of open government initiatives. Despite local governments' diverse limitations, President decrees were issued to establish an electronic government. Over the past two decades, the government of Indonesia has implemented ambitious programs to reform the government with the aid of ICT. Notably, progress has been made in the digital government at the central and municipal levels. Approximately five hundred local governments show a growing inclination to digitize public services in alignment with the national agenda. However, it's important to note that these local governments face unique challenges in their digitalization efforts (Suranto et al., 2022). The urgency of this transition became more

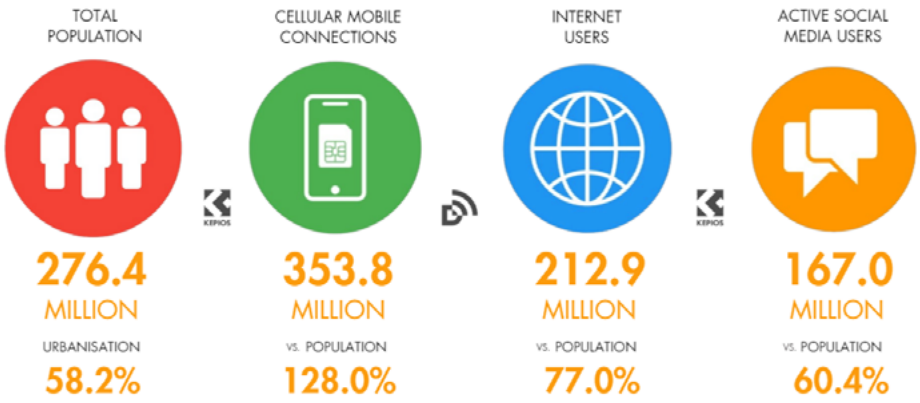

Figure 1. Indonesia Digital Overview

Source: *We are Social, 2023*

evident during the pandemic when community activities were severely restricted. Java Island leads the way as the most developed area, with other authorities also striving to transition public services from offline to online platforms.

Despite the wide discrepancy among local governments regarding financial, human resource, geographical landscape, and socio-economic conditions, The digitalization public services among local governments in Indonesia are characterized by the rise of thousands of applications employed across various sectors (Pratama, 2019). And despite the number of public service applications which reach 27 thousand, however, local people remain in conventional, face-to-face services rather than using their devices to get digital services (Deswara, 2019; Hasibah et al., 2022; Maulana & Siska, 2018; Nakhair, 2022; Retnowati et al., 2022; Soemantri et al., 2023; Zafirah et al., 2022). One paper labeled the euphoria around the digitizing agenda as a pseudo-digitized public service. Digitalization goes beyond merely changing manual displays to digital; most municipalities fail to ensure a seamless digital transformation of public services (Patriani et al., 2024).

Digital public services in Indonesia show an interesting phenomenon: With increasing internet coverage and high gadget ownership, Indonesians with the code +62 are active netizens. The buzzing Indonesian netizens show that most are familiar with gadgets, but why are there so few users when referring to digital public services? Moreover, why do people still depend on conventional public services? The previous research on Indonesia's digital progress over the past two decades is mixed. Indonesia has made great strides towards digitalization since 2003, but the progress in digitalizing public services at the local level has been less impressive. In late May 2024, the President of Indonesia stated clearly to stop developing new digital public services applications at the local level since the number of 27 thousand is too much and it was working in silo mode-low interoperability and waste Rp6.2 trillion or US$381.1 billion. The paper tries to explain the factors contributing to people's reluctance to employ these modern digital services.

The Technology Acceptance Model (TAM) explains the behavior of technology users based on the benefits of use, perceived ease of use, attitudes, and desires, as well as the relationship between user behavior and technology. The TAM explains the acceptance of information technology in detail, including specific factors that can influence users' decisions. The Technology Acceptance Model (TAM) is used to explain and predict user acceptance of a technology. According to Davis (1989) and Davis and Venkatesh (1996), by understanding these factors, TAM helps predict and explain user adoption of new technologies. At the same time, the Technology Acceptance

Model (TAM) explains the behavior of technology users based on the benefits of use, perceived ease of use, attitudes, desires, and the relationship between user behavior and technology. The TAM explains the acceptance of information technology in detail, including specific factors that can influence users' decisions.

The TAM model has five constructs that can be explained: 1) Perceived Usefulness (PU) - regarding the extent of the user's beliefs on benefits or work productivity that can be increased using specific information systems or technology; 2) Perceived Ease of Use (PEU)- refers to the degree to which a person believes that using a particular system or technology will be effortless. It's one of the key factors influencing an individual's decision to adopt and use new technology; 3) Attitude Toward Using (ATU) refers to an individual's overall positive or negative evaluation of using a particular system or technology. It reflects how favorable or unfavorable a person feels about using the technology; 4) Behavioral intention to use (BI) - refers to a person's perceived likelihood or willingness to engage with a particular technology, service, or behavior; 5) Actual Use (AU) refers to an individual's real-world engagement and utilization of a particular system, technology, or behavior. It is the measurable outcome of whether and how often the technology is used, as opposed to intentions or attitudes toward its use.

2. Methods

The basic framework of acceptance of digitized public services at the local level was drawn from the TAM model by Davis, which proposed that effective digital public services are determined by the perceived usefulness (PU) and the perceived ease of use, which will lead to attitude toward using digital things. The Technology Acceptance Model (TAM) is commonly employed in quantitative research to measure users' acceptance and use of technology through structured surveys and statistical analysis. However, this paper applies TAM in a qualitative approach, which researchers believe will give deep, nuanced insights into user perceptions, attitudes, and behaviors that quantitative methods might not fully capture. Applying the Technology Acceptance Model (TAM) through a qualitative approach allows for a deeper and more nuanced exploration of user perceptions and attitudes toward technology that quantitative methods might overlook (Vogelsang et al., 2013). Some research shows a comprehensive result when using the qualitative approach for the TAM model (Alam & Saputro, 2022; Luo et al., 2019). The authors believe that social factors are essential for local communities in Indonesia, especially for the baby boomers and millennials, who are directly linked to public services. These generations respond differently to digital technology than Z (Agárdi & Alt, 2022; Chang & Chang, 2023; Dutot, 2014).

The data gathered in this paper were collected through in-depth interviews with two authorized officials in the Ministry of Home Affairs, 13 municipal information and communication' officials, interviews with 38 conventional public service applicants, 282 digital services users from Google form response, and the policies-regulations as secondary data. Both data, primary and secondary, were analyzed by NVivo 12 software. The NVivo app helps researchers accelerate and simplify organizing various data types for an organized classification. NVivo provides facilities for managing data from interviews and field observations and processing secondary data (Hilal & Alabri, 2013; Zamawe, 2015). The research framework by intended coding is based on the informant's answers rather than a theoretical concept from a particular expert. The coding process was designed to catch up as much as possible from those data. Child nodes were gathered through an inductive approach, which details how public digitization services in Indonesia were practiced. The approach is compatible with the NVivo nature, which assists researchers in developing thematic analysis during

data processing and boosting validity (Zamawe, 2015) . Data visualization uses a chart hierarchy to reveal factors influencing those dimensions.

2.1. Locus Study

The study locations were chosen purposively; civil registration services are digital in every municipal government. The locus selection is merely based on the representativeness of Indonesia Island. However, one of the limitations of this paper is that more research locations are needed if the number of municipalities in Indonesia is an important consideration. The names of the applications or other digital services are adjusted to local terms to make them more relatable to the community. The thirteen municipalities across eight provinces, including Java, Sumatra, Sulawesi, and Bali Island.

Table 1. Locus Study

No.	Application Name	Locations	Type
1	The *Baruga*	South Sulawesi Province	Citizen Report
2	The *SEKEJAP*	Banda Aceh City, Aceh Province	Civil Registration
3	The *RABEG*	Serang city, West Java Province	Citizen Report
4	The *SAKEDAP*	Bandung regency, West Java Province	Civil Registration
5	The *JAKI*	Jakarta province	Super apps, Public services
6	The *Jari*	Kendari city, Southeast Sulawesi Province	Civil Registration
7	The *Sidumas*	Badung regency, Bali Province	Citizen Report
8	The *PAKTUWA*	Magetan regency, East Java Province	Civil Registration
9	The *Panaddol Mantap*	Lumajang regency, East Java Province	Civil Registration
10	The *Salaman*	Bandung City, West Java Province	Civil Registration
11	The *e-simpati*	Sumedang regency, West Java Province	Health services
12	The *Sipenduduk*	Pekanbaru city, Riau Province	Civil Registration
13	The *Sedudo*	Nganjuk regency, East Java Province	Civil Registration

Source: *Research, 2023*

2.2. Respondent Characteristics

Respondents generally represent Indonesian society; most are male, have a secondary level of education, and belong to the digital immigrant. 38 Respondents were selected accidentally for conventional applicant services, and 282 were selected randomly for digital services applicants.

Table 2. Respondent Characteristics

	Criteria	Number	%
Gender	Male	239	66
	Female	123	34
Age	<25	39	11
	26-40	275	76
	>= 41	48	13
Education	<=Highschool	286	79
	Diploma	57	16
	Graduate	19	5

Source: *Research, 2023*

3. Results and Discussion

Stimulated by multi-driven factors, digitalization of public service at the local level was implemented as a top-down and bottom-up form of new intergovernmental relations just when Indonesia was out of an authoritarian regime in the early 2000s, which is the initial stage of total reforms at national and local governments in

Indonesia. Digital public services are primarily founded upon national agendas that neither solve local 'problems' nor increase local administration's performance; rather, they are intermediate and formalized governance models of the new democratic Indonesian administration. Along with the intensification of local administration, the new construction of a bottom-up approach and massive national support are not automatically yielding remarkable results in establishing the digital public services conditions for the modern local administration based on local context. Discrepancies in physical, financial, political, societal, and governmental capacities were the impediment to most peripheral local governments to fully pervasive use of ICT in their service delivery (Hening & Kumara, 2019; Nadjib, 2020; Setiawan et al., 2022). How does municipal' communities accept digital public services? To illustrate the effectiveness of digital public service among local governments in Indonesia, the hierarchy chart from NVivo Analysis gives a portrayal on how it runs.

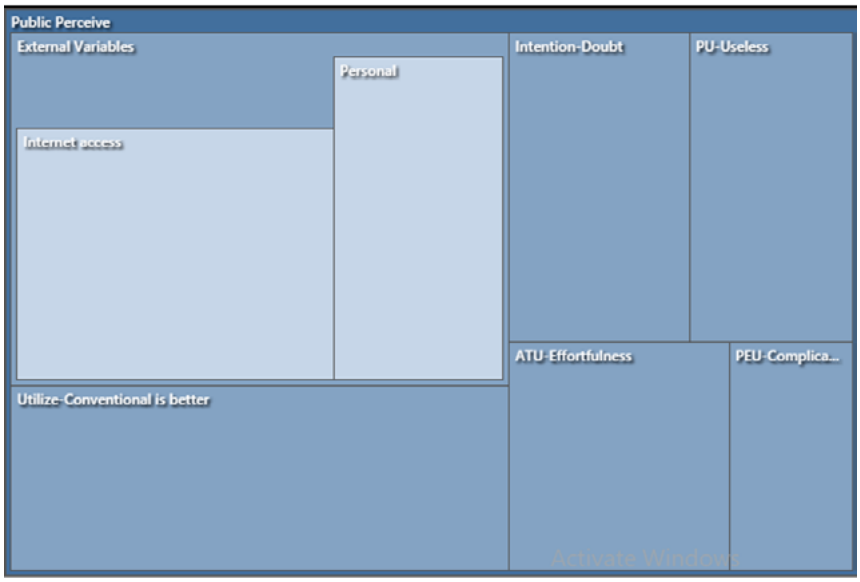

Figure 2. The Respondent response on Digital Public Services

Source: *Research, 2023*

The acceptance of digital public service innovation is built from the TAM literature framework, which covers External variables, Perceived usefulness, Perceived ease of use, Attitude toward using, Behavioral intention to use, and actual system use. Here is the presentation of the result in NVivo's hierarchy chart, where the terminology on the chart is drawn from people's perceptions of the six dimensions of TAM's theoretical concept. It reflected the public's perception of digital services that they faced. Here is the explanation

3.1. External Variables

Introduced by psychologist Albert Bandura, self-efficacy refers to an individual's belief in their ability to succeed in specific situations or accomplish a task. It is crucial in how people approach goals, tasks, and challenges. In the context of the technology acceptance model (TAM), self-efficacy refers to an individual's belief in their capability to use technology effectively (Alqudah et al., 2021). It is a psychological factor influencing how people perceive and interact with new technologies (Liao et al., 2018; Navarro et al., 2023). The results show that the characteristics of the respondents, education level, and age significantly impact low efficacy in digital things (Jimenez et al., 2020).

The acceptance of technology in peripheral areas also significantly influenced by technology infrastructure the availability of internet access and technology infrastructure. In regions where robust internet connectivity and technological support systems are lacking, the adoption of new technologies is inherently constrained. As the biggest archipelago country in the world with 16,772 islands spread in 1.9 million square kilometers, stretching 5,245 km from the eastern tip to the southern. Indonesia was characterized by the wide disparities among local governments (Refqi & Hidayat, 2019). During colonial, early independence in 1945, authoritarian-centralized system until the late of 1999, Java Island, one of the five biggest islands, where the capital city located, coming as prime development axis, all centered for economic-business-politics supremacy. Despite the fact that Indonesia economic boost remarkably during centralized and sustain for five decades, however the inequalities among Island, Provincial, municipalities are remain (Hill, 2021; Rinardi, 2020). It was determined that digital public services could be instituted effectively by identifying with local conditions, the most obvious is the IT infrastructure and internet access. Many local governments face challenges in terms of reliable and affordable internet connectivity, electricity supply, and technological infrastructure (Antoni et al., 2021).

Building IT infrastructure in Indonesia requires massive investment, the national government installed 3400 kilometers undersea fiber optic 2022, building internet connectivity through satellite, called Sky Toll for 3T areas (frontier, outermost and underdeveloped) in 2021. However, the internet penetration is still failing to reach every single corner of Indonesia; the highest, 83.64% in Java island, and the lowest is Molluca islands, at 68.35%. In addition to infrastructural limitations, personal barriers also play a crucial role in technology acceptance. While smartphone ownership in rural areas is rising, their usage tends to focus primarily on information, communication, and a status symbol rather than leveraging their advanced computing capabilities (Ariyatno, 2012; Dastiyana, 2018; Kogoya, 2015; Rizqi & Pradana, 2018).

3.2. Perceived Ease to Use

Most respondents from peripheral areas need help with digital procedures, facing significant challenges when these services replace traditional manual-conventional methods. These conventional methods are more familiar and do not require any technical skills. Applicants must bring the supporting documents, visit the office, and ask for the needed services. In such procedures, direct interaction between the applicant and the staff allows for immediate question-and-answer exchanges and direct feedback. These mechanisms of interaction and immediate feedback are absent in digital services. Digital services are new to the majority of respondents. This dissatisfaction primarily arises from a need for more familiarity with digital platforms and a shortage of digital literacy, which makes navigating new systems challenging and time-consuming. Compared to rural residents may find digital interfaces confusing and unintuitive (Syam et al., 2023), unlike their urban counterparts, who have exposure to and experience with technology. This gap in digital skills leads to inadequacy, deterring peripheral residents from accessing digital services. The terms *“hard to operate,” “difficulties in data uploading,” “confusing,” and “rigid”* are the most frequent words in the EoU dimension, which reflect low digital literacy among smartphone holders in particular areas. Shifting manually to digital systems requires technical support and training (Nugroho, 2017). Peripheral residents need more guidance in using new digital tools, as leaving them to navigate complex procedures independently can be challenging.

3.3. Perceive of Usefulness

Indonesia consists of 524 municipalities with diverse human development index, varying from 82.46 in the capital city, Jakarta, to 26.56 in Nduga Regency, Papua province. Digital innovations are often perceived as useless in many peripheral areas when residents need to see tangible benefits from these modern advancements. The child nodes from NVivo tell details on this phenomenon; the digitalization of public services is incompatible with local people's needs and priorities, with more emphasis on necessities such as food, water, healthcare, and education. In the case of civil registration services, the municipal government provides progressive conventional services such as providing mobile car services that approach residents' locations, door-to-door services for disabilities, pick-up and drop-off services for orphanages, nursing homes, and residents on scattered small islands where the internet is not accessible, issuing population identities for students aged 17 years by visiting schools, even civil registration services for prisoners, have proven to be highly effective. This conventional service innovation reaches far more vulnerable groups than digital services. The Salaman application for civil registration service is a good example. Bandung is the third largest city and the highest literacy index among municipalities in Indonesia. However, the Salaman users are 40% compared to the conventional service applicants. Even in developed areas, the majority prefers conventional, face-to-face services.

When the government introduces progressive conventional services, such as door-to-door or mobile car services, these initiatives can inadvertently reduce the adoption of digital services. Conventional services that offer high levels of convenience provide a tangible and immediate benefit that can be more appealing than digital platforms. These facts show the reluctance to use digital services due to municipalities' progressive conventional service innovation suitable for local conditions. The lack of consideration led to a lack of usability and relevance, causing residents to perceive that the innovation could be more appealing—the term "what for" is the most frequent word in the perceived usefulness dimension.

This trend indicates a disparity between the potential functionalities of smartphones and their actual usage patterns in these regions. The emphasis on essential functions such as calls, messaging, and social media, rather than more complex applications like e-commerce, online banking, or digital services, highlights a gap in digital literacy and skills. Additionally, this pattern underscores smartphones' cultural and social significance as markers of social status rather than as tools for digital empowerment and economic development. The low digital literacy restricts their ability to engage with and benefit from technological advancements. Digital literacy comes with other personal barriers, such as individuals' lack of the skills or knowledge to effectively use technology and cultural attitudes towards technology. This can influence the willingness to adopt new tools and practices and significantly impact the acceptance and integration of technology in these regions. Technology and non-techy barriers are a public perception for the external variables dimension.

3.4. Attitude Toward Using

Along with the intensification of local administration, the new construction of a bottom-up approach and massive national support only sometimes yield remarkable results in establishing the digital public services conditions for the modern local administration based on local context. Discrepancies in physical, financial, political, societal, and governmental capacities impeded most peripheral local governments from fully pervasive use of ICT in their service delivery (Hening & Kumara, 2019; Nadjib, 2020;

Setiawan et al., 2022). According to the respondents' characteristics, most of them are Gen X and Gen Millennials, who are classified as Digital immigrants who do not depend intensely on digital things compared to Generation Z, Digital natives who were born after 1997. Members of Generation X and Generation Millennials are considered digital immigrants because they acquainted themselves with mobile technology during their adulthood. Recent users have different attitudes toward digital (Agárdi & Alt, 2022; Chang & Chang, 2023). Digital ability among those generations is lower compared to Gen Z.

Ideally, digital innovation in public services aims to streamline processes and make them effortless for users. However, the public perception often starkly contrasts with this ideal expectation, as many find these innovations to be effortful and challenging. This discrepancy arises because users must learn new skills to operate these digital services effectively. Unlike traditional services, where processes are familiar and straightforward, digital platforms often require users to understand and navigate complex interfaces, remember passwords, and follow multiple steps for tasks that were once simple.

The lack of dissemination and training from authorized government agencies as a provider exacerbates this issue. In many cases, people need help to guide users through the transition from manual to digital systems. Without proper training or accessible help centers, individuals are left to navigate these new technologies independently, which can be particularly daunting for those who are not tech-savvy (Agustini, 2023). The perception of effortfulness is heightened when users encounter technical difficulties, such as website downtimes, application errors, type and size documents, or device compatibility. The expectation of digital efficiency has faded away, making accessing public services time-consuming.

3.5. Behavioral Intention to Use

When the question reaches their intention to use digital public services, they mostly answer doubts and need to give more confidence. The respondent doubts their intention to use innovations in digital public services; it signifies a hesitation rooted in several prior dimension concerns. The majority of respondents are overwhelmed by the perceived complexity of the new services, fearing that they need more skills to navigate and utilize these digital tools efficiently. This uncertainty can be exacerbated by the failure to get into the application, "delayed response," "need assistance," or encountering technical issues, they do not know how to resolve. New technology needs new knowledge and competencies, influencing digital immigrants reluctant to participate in digital public services (Kirana & Majid, 2022).

3.6. Actual System Use

The final step of the Technology Acceptance Model (TAM) focuses on whether the public, as end users, will integrate new digital public services into their daily lives. Despite the potential benefits of these innovations, most respondents still prefer traditional, manual-conventional procedures. This preference relates to the prior dimensions of TAM. Familiarity and comfort with established methods play a significant role. Manual-conventional procedures are often well-understood and straightforward, having been used for years or even decades. Users know what to expect, how to navigate these processes, and whom to contact for assistance, reducing the uncertainty and stress of new systems. The respondents perceive manual processes as more reliable because they involve direct human interaction, which can provide immediate feedback and resolution of issues. This face-to-face communication fosters a sense of security and

personal connection that digital services often lack. Digital problems such as system downtimes, error applications, and delayed responses discourage respondents from adopting digital solutions. This skepticism is reinforced when previous experiences with modern innovations have failed to deliver promised benefits, fostering a sense of distrust and disinterest.

Another significant factor is the perceived complexity and need for digital literacy. Even if digital services are designed to be user-friendly, individuals with limited experience or confidence in using technology may find them intimidating and challenging. The absence of adequate support and training exacerbates this issue, leaving users feeling isolated and frustrated when encountering difficulties (Nugroho, 2017; Syam et al., 2023). In contrast, manual-conventional procedures do not require advanced technical skills, making them more accessible to a broader range of people. Furthermore, the tangible, physical nature of manual processes can be reassuring. The respondent was more confident with a physically stamped document than an electronic signature. This physical document is essential in contexts where formal proof is required, such as a birth certificate, identity card, or marriage certificate. The preference for manual conventional procedures over new digital public services is driven by familiarity, trust, perceived reliability, and the simplicity of traditional methods. Low interoperability among different digital applications also has significant impact on inefficiency and redundancy, drains limited local budget, and citizen's frustration.

4. Conclusion

The digitalization of public service expanded total reform administration in Indonesia and the grass-roots accountability reach and distribution throughout five hundred local governments within the country. Concrete facts were provided about the complexity of how the local political atmosphere, local administration capacity, digital literacy, and the natural-geographic landscape for the national agenda can be counterproductive as they expect local people to get easy and friendly services and avoid waste and mistakes in implementation. However, the vast discrepancies among local governments prove that the sub-national scale represents a particularly salient scale to increase the national public service delivery reform agenda. Based on those hindrances, it is essential to constantly expand the service awareness of digital services among local governments and to be on the lookout for any possibility of empowering local governments' capacity. Much work remains to be undertaken out of digital technology things, and local people as users have to be considered; digital literacy capacities must come first and determine whether and how digital things are implemented in peripheral local governments.

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