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Towards Smart Bureaucracy: Digitalization and Resilience of Local Governance in Makassar City

Uddin B. Sore[1*], Muh.Syukri[2], Andi Akbar[3], Muhammad Isnan Rasyidi[4]
[1,2,3,4] *Universitas Bosowa, Indonesia*

b.sore@universitasbosowa.ac.id*

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Abstract

This research departs from the problem of not optimal implementation of bureaucratic digitalization in Makassar City. This study aims to analyze the dynamics of bureaucratic digitalization and the obstacles faced in building resilience of local governance in Makassar City. The method used is a qualitative approach through interviews, observations, and documentation studies that are analyzed with the help of NVivo 12 Plus software. This study shows that bureaucratic digitalization in Makassar City is not just a technological process, but a structural and cultural transformation that determines the resilience of local governance. Its success depends heavily on the ability to overcome obstacles such as low digital literacy of apparatus, weak coordination between OPDs, resistance to change, and limited digital infrastructure. Effective digitalization must be understood as a strategy to build an adaptive and innovative bureaucracy through strengthening SPBE, cross-sector collaboration, and community-oriented public service ethics. Thus, digital transformation plays an important role in creating a smart, resilient, competitive, and sustainable bureaucracy in the face of the dynamics of modern governance. Thus, the success of bureaucratic digitalization in Makassar City depends on the ability of local governments to build synergy between technology, human resources, and public service values to realize smart and sustainable governance. This study concludes that digitalization in Makassar City is a fundamental structural and cultural transformation that determines the resilience of local governance. An NVivo 12 Plus-based analysis identified four main obstacles to realizing a smart bureaucracy: low digital literacy among civil servants (35%), sectoral ego barriers (25%), work culture resistance (20%), and limited infrastructure (20%). As a theoretical contribution to local organizational resilience, this study recommends halting the "hyper-application" trend and urging a strategic transition toward system interoperability (shared-service model) and reforming the digital mindset of civil servants to prevent technological redundancy.

Keywords: Bureaucratic Digitalization, Governance, Institutional Resilience, Adaptive Capacity, Public Innovation

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INTRODUCTION

The development of digitalization in government has become an absolute necessity in driving bureaucratic efficiency, transparency, and responsiveness (Chung & Kim, 2019; Robles et al., 2022; Taufiqurokhman et al., 2024), including at the local government level such as in Makassar City (Hardi et al., 2025; D. Mustafa et al., 2020). However, the transformation toward a digital bureaucracy does not always run smoothly due to various challenges, such as infrastructure limitations, low digital literacy, resistance to change, and sub-optimal integration of information systems across regional government agencies (Baharuddin et al., 2022; Fisdian Adni et al., 2024; Hardi et al., 2025). This condition leads to weak governance resilience when confronting increasingly complex social, economic, and environmental dynamics. Therefore, understanding how digitalization affects local governance resilience in Makassar City is highly urgent—not only to

assess the effectiveness of ongoing bureaucratic reforms but also to formulate policy strategies capable of strengthening the adaptive and innovative capacity of the bureaucracy in the digital governance era.

Bureaucratic digitalization has become a primary focus of governance in various countries, aligned with the growing need for efficiency, transparency, and public participation (Weiss, 2025). Other studies indicate that digital government transformation demands not only the adoption of technology but also a shift in bureaucratic culture toward collaborative, open, and data-driven work patterns (Gregorio et al., 2025; Lui & de Avelino, 2025; Marienfeldt, 2024). In other instances, the concept of smart governance has expanded rapidly, with an emphasis on the integration of digital technology and responsive public decision-making that addresses community needs (Hossin et al., 2023; Sharma et al., 2025). Meanwhile, several studies assert that a resilient digital bureaucracy ecosystem can be achieved through integrated digitalization policies, investments in technological literacy, and the strengthening of cybersecurity infrastructure to maintain public trust in digital government services (Ibrahim et al., 2023; G. Mustafa et al., 2022; Wandaogo, 2022). In the context of developing countries, bureaucratic digitalization frequently faces structural and institutional barriers. One study highlights that e-government implementation in many Global South countries is often hindered by the digital divide, weak human resource capacity, and a lack of inter-agency coordination (Galushi & Malatji, 2022; Latchu & Singh, 2025). Additionally, other challenges emerge in the form of organizational resistance to innovation and a high dependency on conventional, hierarchical administrative approaches (Waller & Genius, 2015; Zhang & Kaur, 2024). Nevertheless, various studies also highlight the potential of digitalization in strengthening governance resilience, namely the bureaucracy's ability to adapt, recover, and innovate amid rapid and unpredictable environmental changes (Misuraca & Viscusi, 2020; Wu et al., 2022).

In the Indonesian context, bureaucratic digitalization is an integral part of the governance reform agenda aimed at enhancing the effectiveness, transparency, and accountability of public services. Through various initiatives such as the Electronic-Based Government System (SPBE), e-government, and Smart City, the government seeks to drive digital transformation across all levels of the bureaucracy. However, its execution still faces several challenges, including regional disparities in digital infrastructure, low literacy and readiness of officials regarding new technologies, as well as weak coordination and interoperability among government information systems (Aldhi et al., 2025; Wahyu Sulistya et al., 2019; Wardani et al., 2025). For this reason, it is crucial to understand how digitalization functions not only as an administrative efficiency tool but also as an adaptive strategy to reinforce local governance resilience in Indonesia, particularly in regions currently transforming toward a smart bureaucracy like Makassar City. Although global research has extensively discussed digitalization and bureaucratic transformation, studies specifically highlighting the relationship between digitalization and local governance resilience in the Indonesian context—particularly Makassar City—remain limited. Most research in Indonesia tends to emphasize aspects of technology adoption and administrative efficiency, without linking them to the dimensions of governance resilience, which is the local bureaucracy's ability to adapt, endure, and innovate in the face of uncertainty. Therefore, this study offers novelty by examining digitalization not merely as a technological instrument, but as an adaptive strategy that reinforces the resilience of local government governance in Makassar City—a perspective that is still rarely addressed in public governance literature in Indonesia. This research is formulated around three main questions: (1) How are the dynamics of bureaucratic digitalization implemented in local government governance in Makassar City? (2) What factors act as barriers to building governance resilience through bureaucratic digitalization? (3) How does digitalization contribute to enhancing the adaptive and innovative capacity of the bureaucracy when facing the environmental dynamics of local government? Answering these three questions carries significant implications for strengthening governance at the regional level, particularly in designing digital transformation strategies oriented toward institutional resilience, enhancing civil servant competence, and developing a bureaucratic system that is responsive and resilient to social, economic, and technological changes.

METHOD

This study utilizes a qualitative approach to understand deeply the dynamics of bureaucratic digitalization and local governance resilience in Makassar City. This approach was selected because it allows researchers to explore the meanings, perceptions, and experiences of bureaucratic actors

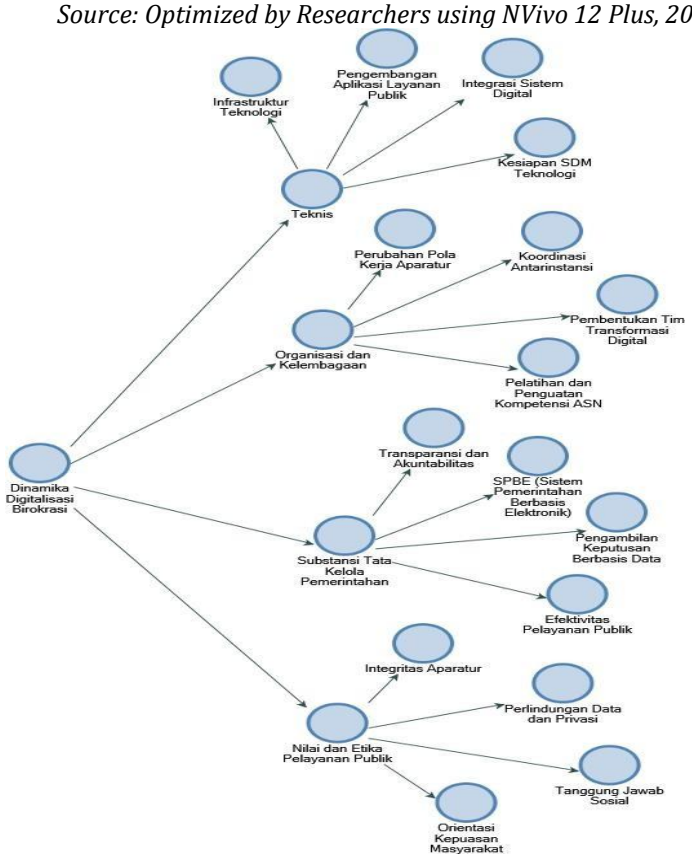
in executing digital transformation within the local government environment. Qualitative research also enables an exploration of the social and institutional contexts underlying digitalization implementation, thereby providing a comprehensive understanding of how processes, barriers, and bureaucratic adaptive strategies are formed on the ground. Data collection techniques were conducted through in-depth interviews, participant observation, and documentary studies. Interviews were carried out with key informants, including structural officials across various Regional Government Agencies (OPD), government information system managers, and civil servants directly involved in implementing digitalization programs. Observations were conducted to examine digital bureaucratic practices in daily governance activities, including the use of applications, online-based public service mechanisms, and communication patterns between departments. Meanwhile, the documentary study examined various official documents, such as SPBE policies, e-government implementation reports, OPD strategic plans, as well as government news and publications relevant to bureaucratic digitalization in Makassar City. The data gathered from interviews, observations, and documentation were transcribed verbatim to ensure the accuracy of the information. Subsequently, the data were analyzed using NVivo 12 Plus software, which facilitated the coding process, thematic clustering, and mapping of relationships between concepts. The analysis was executed through several stages: Data reduction: sorting and selecting relevant data. Data display: presenting the coding results in the form of themes and sub-themes. Conclusion drawing: deriving conclusions from patterns, relationships, and meanings emerging from the data. Through NVivo, the researchers could systematically visualize the linkages between bureaucratic digitalization and governance resilience, as well as identify supporting and inhibiting factors. To guarantee data validity, this study employed source triangulation techniques. Triangulation was achieved by comparing data from various informants, field observations, and official documents to ensure the consistency and validity of the obtained information. Furthermore, a member-checking process was conducted by asking several key informants to confirm temporary interpretations, ensuring that the research findings remain aligned with empirical realities on the ground. Through these systematic stages, the study is expected to yield credible findings that contribute both theoretically and practically to understanding the role of digitalization in the local governance resilience of Makassar City.

RESULT AND DISCUSSION

The Dynamics of Bureaucratic Digitalization in Local Government Governance in Makassar City

Figure 1. Dynamics of Bureaucratic Digitalization in Makassar City

Source: Optimized by Researchers using NVivo 12 Plus, 2025



Bureaucratic digitalization in Makassar City is part of the efforts to modernize local governance to enhance public service effectiveness and transparency. However, its success heavily relies on the synergy between technical, institutional, and ethical dimensions within public services. Bureaucratic digitalization in Makassar City is an integral part of the local government's efforts to achieve more effective, efficient, and transparent governance (Weiss, 2025; Chung & Kim, 2019). This transformation does not merely alter the way officials work, but thoroughly restructures the governance system so that it can adapt to information technology advancements (Gregorio et al., 2025; Marienfeldt, 2024). As one of the metropolitan cities in Eastern Indonesia, Makassar possesses major challenges and opportunities in implementing digital systems that support electronic-based public services (Hardi et al., 2025). Therefore, the dynamics of bureaucratic digitalization in this city can be understood through four main lenses: technical, institutional, governance substance, and public service values and ethics.

The first dimension serving as the bedrock of the transformation process is the technical aspect. The Makassar City Government strives to reinforce its technology infrastructure as an initial step toward a digitally integrated bureaucracy (Wandaogo, 2022; Weiss, 2025). Expanding evenly distributed internet networks, procuring hardware and software, and developing public service applications are top priorities (Zhang & Kaur, 2024). Through various applications and online community reporting systems, the government endeavors to deliver rapid and efficient public services (Delly Mustafa et al., 2020; Taufik, 2023). However, the dynamics that emerge at this stage include infrastructure limitations in several areas and a digital literacy gap among officials, which impacts the comprehensive effectiveness of digital system implementations (Aldhi et al., 2025; Ibrahim et al., 2023).

Beyond infrastructure, developing and integrating digital systems is also a vital component of the technical aspect (Hardi et al., 2025). The government aims to connect various platforms so they can be integrated into a single data-driven governance ecosystem (Hossin et al., 2023). Although various applications have been developed, they are not yet fully synchronized (Sharma et al., 2025). Some systems still operate in isolation without cross-departmental connectivity, making real-time access to public information difficult (Hardi et al., 2025). The readiness of human resources to manage digital systems is another critical issue, as many officials lack adequate technical skills to operate new technologies (Aldhi et al., 2025). Hence, the technical aspect serves as the starting point that determines the sustainability of bureaucratic transformation in Makassar City.

Furthermore, the organizational and institutional aspects exhibit equally critical dynamics. Bureaucratic digitalization demands changes in the structure and organizational culture of local government. Officials who were previously accustomed to manual and hierarchical work methods must now adapt to a more open system based on cross-sector collaboration. The Makassar City Government responded by establishing a special digital transformation team responsible for guiding the change process within each agency. The creation of this structure indicates an awareness that digital transformation is not merely about technology, but about how the people within the organization manage that change.

At the institutional level, efforts to strengthen inter-agency coordination are a necessity. Each department and regional body holds a distinct role in the digital governance system; however, without effective coordination, the system will run partially and disruptively. Training and upgrading the competencies of civil servants (ASN) in information technology are being conducted gradually to ensure their readiness to face digitalization demands. Nonetheless, resistance to change remains a primary hurdle. Some officials struggle to abandon old, overly procedural work habits, necessitating continuous communication strategies and training so that this change can be fully embraced.

From the substantive standpoint of governance, digitalization brings tangible impacts toward enhancing public transparency and accountability. By implementing the Electronic-Based Government System (SPBE), the government attempts to provide openly accessible and rapid public services (Rakhmat, 2025). SPBE allows government data to be managed cohesively, facilitating evidence-based policy decisions. Additionally, digitalization contributes to increasing the effectiveness of public services since citizens can complete administrative tasks without needing to visit government offices in person (Arpandi & Affandi, 2024; Huda & Yunas, 2016). This strengthens the local government's image as an institution responsive to public needs.

However, the dynamics emerging within this substantive aspect cannot be separated from data security and system reliability concerns. Public information transparency that is too open can pose data leak risks if it is not accompanied by adequate security systems. The government must strike a balance between information openness and citizen privacy protection. Moreover, the effectiveness of digital policies requires robust regulatory support to ensure that SPBE implementation does not merely become an administrative formality, but genuinely transforms how the bureaucracy operates to deliver quality services.

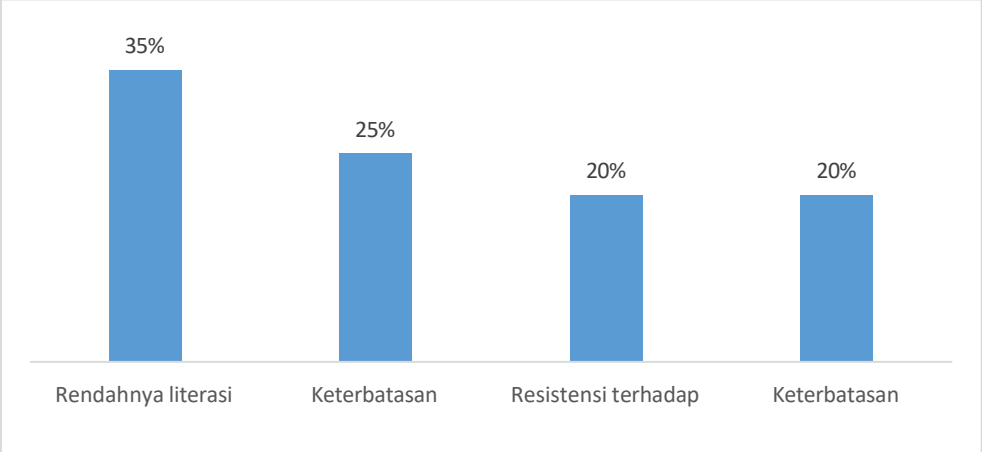
The final aspect, representing the deepest dimension of digital transformation, involves the values and ethics of public service. Digitalization is not just a technological process, but a paradigm and moral shift within the bureaucracy. Officials are required to maintain integrity in managing data and service systems to prevent the abuse of authority. Protecting community data and privacy is a moral responsibility that cannot be disregarded. Furthermore, the orientation of public services must pivot away from bureaucratic interests toward public satisfaction, embracing social responsibility as a core value in every administrative action.

Thus, the dynamics of bureaucratic digitalization in Makassar City reflect a holistic and multi-layered process of change. The success of this transformation depends not only on technological readiness, but also on the synergy between institutional strengthening, governance substance, and the internalizing of public service ethical values. Ultimately, bureaucratic digitalization aims to create a government that is responsive, transparent, and driven by integrity—one that is not only technologically modern but also morally and socially progressive.

Barriers to Building Governance Resilience

The process of bureaucratic digitalization in Makassar City should idealistically serve as a strategic step toward more adaptive, transparent, and efficient governance. In practice, however, the success of this transformation is dictated by the local government's capability to resolve various barriers encountered on the ground. The analysis demonstrates that four dominant factors impact the resilience of digital governance: low digital literacy among officials, limited coordination between regional government agencies (OPD), resistance to change, and digital infrastructure constraints. These four factors are interrelated and reflect multidimensional issues that must be addressed simultaneously to ensure the sustainability of technology-driven bureaucratic reform.

Figure 2. Barriers to Building Digital Governance Resilience in Makassar City



Source: Optimized by Researchers using NVivo 12 Plus, 2025

The most dominant factor is the low digital literacy of officials, which accounts for roughly 35% of the total barriers. The limited capability of officials to utilize digital devices and systems directly impacts the effective deployment of government applications. Many employees remain accustomed to manual procedures and do not fully understand how technology functions to support work efficiency. This condition creates a gap between the government's digitalization vision and the reality of its execution in the field. Digital literacy is not simply technical ability; it also encompasses an understanding of digital ethics, data security, and information management, which form the bedrock of modern bureaucracy. Without a balanced increase in literacy, digital innovations will merely serve as formal symbols devoid of substantive impact on public service.

The second significant barrier is limited coordination among OPDs, showing a dominance of 25%. Individual agencies within the Makassar City Government environment frequently develop

their own digital systems without cross-sector integration, resulting in data duplication and resource inefficiency. This fragmentation breaks the bureaucratic workflow and hinders data-driven decision-making processes. Weak coordination also reflects that collaborative governance, aligned with the whole-of-government approach in digital governance, has not yet fully materialized. Without system interoperability and robust institutional communication, bureaucratic digitalization will only reinforce administrative silos rather than accelerate public service.

The third factor, resistance to change, accounts for approximately 20% of the total barriers. This resistance stems from officials' fear of shifting workflows, anxiety over losing control, and the perception that digitalization exacerbates their workload. Some personnel still view new systems as introducing uncertainty and demanding difficult adaptations. This phenomenon can be explained through organizational change theory, where resistance often spikes when changes are not accompanied by effective communication, clear incentives, and employee involvement in the transformation process. As a result, digital innovation is not completely accepted as a necessity, but is instead regarded as an administrative obligation that must be forced through.

In addition to the human element, digital infrastructure limitations also represent an important barrier, contributing 20%. Unequal internet access across Makassar City prevents online systems from functioning optimally. Several government offices on the outskirts still face connectivity issues and hardware shortages, which ultimately slows down digital-based public services. Furthermore, the minimal budget allocated for maintaining and upgrading information technology systems causes digital applications to experience frequent technical glitches. An unstable digital infrastructure undermines user trust, both among officials and the general public.

These four factors interact dynamically in shaping digital governance resilience. Low digital literacy slows down cross-agency coordination, while weak coordination exacerbates resistance to change. On the flip side, restricted infrastructure solidifies officials' negative perceptions regarding the efficacy of digital systems. The combination of these factors demonstrates that digital transformation is not purely a technological matter, but also a structural and cultural issue within the bureaucratic body. Local governments need to grasp that digitalization success cannot be achieved through technical avenues alone; it requires strategies for institutional capacity building and fostering an adaptive work culture.

From a public policy perspective, these barriers map a disconnect between policy design and implementation. The Makassar City Government possesses the regulations and commitment to strengthen the Electronic-Based Government System (SPBE), yet implementation remains bottlenecked by internal organizational factors. A more systematic monitoring and evaluation mechanism is required to ensure every OPD moves in the same direction. Moreover, upgrading the digital competence of civil servants must be backed by adequate budgetary support for infrastructure development and information security systems. This approach aligns with adaptive governance principles, which highlight the importance of public institutions' ability to learn, adapt, and respond to technological shifts continuously.

Accordingly, efforts to build digital governance resilience in Makassar City must be pursued through integrated, long-term strategies. Raising the digital literacy of officials must be the top priority, followed by strengthening institutional coordination and managing organizational change. The government must also position digital infrastructure investment as a strategic policy component, rather than a mere technical requirement. Only through this approach can bureaucratic digitalization serve as a transformative instrument that sharpens the adaptability, transparency, and accountability of governance in the digital era.

The Contribution of Digitalization to the Adaptive and Innovative Capacity of Local Bureaucracy

The issues identified in the bureaucratic digitalization process of Makassar City must be addressed immediately because they carry direct implications for the adaptive and innovative capacities of the local bureaucracy in confronting modern governance dynamics. Low digital literacy among officials, for instance, is not just a technical hitch; it mirrors a broader deficit in human resource readiness to support the digital transformation agenda. When a large portion of employees has not mastered basic technology, the utilization of electronic-based government systems (SPBE) falls short. Many public service applications designed to simplify bureaucracy are underutilized, with some existing merely as formalities to satisfy central administrative mandates. This condition demonstrates that improving digital literacy is not just a matter of technical training,

but involves shifting work paradigms toward a digital mindset that demands speed, transparency, and collaboration.

Furthermore, limited coordination among regional government agencies (OPD) acts as a structural barrier that disrupts digital policy integration at the local level. When each OPD develops its own information systems without clear interoperability standards, isolated "islands of data" emerge. Consequently, data-driven decision-making processes become inefficient, and potential cross-agency synergies are left unrealized. For example, the population administration system managed by the Civil Registry Department is disconnected from the social service system at the Social Affairs Department, rendering data verification for social aid recipients slow and prone to errors. In this context, bureaucratic digitalization should act as a vehicle to integrate cross-sector data so that public policies can be designed and implemented responsively and on an evidence-based footing.

Resistance to change also presents a cultural barrier that cannot be ignored. Many officials feel comfortable with conventional work patterns and tend to reject digital innovations because they perceive them as adding burdens or threatening their positions within the bureaucratic hierarchy. Fear of transparency also frequently surfaces, particularly within bureaucratic circles accustomed to closed systems. For instance, when e-office systems were introduced to replace manual administrative processes, a number of employees were reluctant to adapt out of concern that their activities would be more easily monitored and evaluated. Yet, this brand of resistance stifles efforts to build an adaptive and accountable bureaucracy. Therefore, the digitalization process must be accompanied by change management strategies geared toward forming an innovative work ethos.

Digital infrastructure constraints compound these issues, especially in areas where internet access remains uneven. While several sub-districts in the city center enjoy high-speed internet, many urban village offices and public service units on the periphery still grapple with connection difficulties. This breeds disparities in digital system implementation and hampers public services at the grassroots level. For example, online-based public complaint applications fail to run optimally because not all devices can access the central server. In this scenario, upgrading digital infrastructure becomes a prerequisite to ensure that all administrative tiers can participate equally in the bureaucratic digitalization ecosystem.

Overcoming these barriers contributes directly to expanding the adaptive capacity of the local bureaucracy. As the digital literacy of officials rises and inter-OPD coordination strengthens, the bureaucracy gains the agility to align swiftly with shifting policy landscapes and public expectations. This adaptability is critical during crises, such as the COVID-19 pandemic, where the bureaucracy is pushed to sustain public services without face-to-face interaction. The Makassar City Government, for instance, can solidify online service systems like electronic licensing, virtual public consultations, and real-time data management to enable faster and more targeted policymaking.

Beyond adaptability, bureaucratic digitalization plays an essential role in fostering the innovative capacity of local governments. Deploying digital technology allows the bureaucracy to develop creative, data-driven, and analytical solutions, such as mapping citizen needs through data dashboards, monitoring city cleanliness with IoT sensors, or using public service chatbots. Such innovations can only thrive if foundational barriers—specifically low digital literacy and resistance to change—are broken down. Thus, the success of digitalization is measured not by the sheer number of applications created, but by the extent to which that technology improves how the bureaucracy functions and enhances the quality of service provided to the public.

Furthermore, improving digital coordination among OPDs can strengthen collaborative governance mechanisms at the local level. With an integrated data system, local governments can collaborate seamlessly with the private sector, academia, and civil society to design public policies rooted in accurate information. For example, integrating data between the Regional Disaster Management Agency and the Health Department can be used to map disease distribution patterns during crises like COVID-19 and design community-based interventions rapidly (Alfatih & Rachmawati, 2022; Rachmawati et al., 2021). This is a concrete manifestation of a bureaucracy that is not only adaptive to change but also innovative in generating new public value through cross-sector collaboration. Deconstructing the barriers to bureaucratic digitalization effectively lays the groundwork for sustainable governance transformation. High digital literacy will yield tech-smart officials, robust inter-OPD coordination will spawn an integrated governance system, an innovative work culture will solidify organizational adaptation, and adequate digital infrastructure will ensure

equal public service access. All these elements converge to shape an adaptive and innovative local bureaucracy—a vital prerequisite for resilient governance in the digital era.

CONCLUSION

The findings of this study demonstrate that bureaucratic digitalization in Makassar City is not merely a technological process, but a structural and cultural transformation that dictates the future trajectory of local governance resilience. The analysis reveals that the success of digital reform heavily relies on the local government's capability to manage internal barriers, such as low digital literacy among officials, weak inter-OPD coordination, resistance to change, and digital infrastructure limitations. These factors intertwine to form a bureaucratic ecosystem that is not yet fully primed to handle data- and technology-driven governance demands. When officials' digital literacy is low, online service systems become ineffective; when institutional coordination is weak, data interoperability remains out of reach; and when resistance to change runs deep, innovation fails to develop organically. Therefore, digital governance resilience in Makassar City is fundamentally determined by the bureaucracy's capacity to learn, adapt, and realign itself with technological shifts without diluting the core essence of community-oriented public service.. Moving toward a smart bureaucracy means positioning digitalization not just as a modernization tool, but as a core strategy for forging an adaptive, collaborative, and value-oriented government. This study underscores that effective digitalization will give rise to a local bureaucracy equipped with the adaptive capacity to weather crises, alongside the innovative capacity to craft data-driven solutions for public needs. The Makassar City Government, by optimizing SPBE and reinforcing cross-sector coordination, holds a prime opportunity to build a smart governance ecosystem that champions information transparency, system integration, and public participation in decision-making processes. However, transitioning successfully toward a "smart bureaucracy" can only be realized if digital transformation is accompanied by the reinforcement of public service ethics, human resource capacity building, and inclusive institutional consolidation. Ultimately, digitalization is not just about changing how the bureaucracy operates, but about constructing a resilient governance framework capable of meeting future challenges sustainably.

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