Sustainable Social Development 2026, 4(6), 8924.
https://doi.org/10.23812/ssd8924

Article

Beyond technological mandates: Innovation capacity, bureaucratic resistance, and digital governance transformation in local communities

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CITATION

Ana A, Ana B, Ismail I, et al. Beyond technological mandates: Innovation capacity, bureaucratic resistance, and digital governance transformation in local communities. Sustainable Social Development. 2026; 4(6): 8924. https://doi.org/10.23812/ssd8924

ARTICLE INFO

Received: 8 July 2026
Revised: 16 September 2026
Accepted: 21 September 2026
Available online: 2 November 2026

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Abstract: Digital governance can improve public service delivery, but meaningful transformation requires more than adopting new technologies. This study examines how local government innovation capacity shapes organizational adaptation and public service change in Makassar City, Indonesia. Using an exploratory qualitative case-study design, the study draws on in-depth interviews, field observations, and document analysis across regional apparatus organizations. The findings show a persistent gap between digital policy ambitions and the institutional readiness required for implementation. Dedicated coordination units have strengthened data governance, yet fragmented information systems, uneven frontline digital competencies, hierarchical routines, and weak cross-agency integration continue to constrain reform. Frontline reluctance to use new systems is interpreted not as simple opposition to technology, but as an adaptive response to fragmented procedures, limited training, and increased administrative workload. The analysis shows that durable digital reform depends on adaptive leadership, cross-unit integration, workforce development, and institutional arrangements that can survive political and organizational change. To reduce the risk of widening the digital divide, local governments should shift from fragmented, project-based initiatives to inclusive institutional capabilities that align technology with service needs and public value.

Keywords: Digital governance; innovation capacity; bureaucratic adaptation; street-level bureaucracy; system integration

1. Introduction

The rapid development of information and communication technology has transformed public service delivery from predominantly manual procedures to increasingly digital systems [1,2]. This transition places local governments under growing pressure to provide more efficient, transparent, and responsive services to changing citizen expectations. In this context, digital governance is not simply a technical agenda. It also requires public organizations to reconfigure internal routines, improve coordination, and build the adaptive capacity needed to meet the demands of a digital society [2]. These challenges are especially visible at the local level, where government agencies' administrative capacity and the organizational conditions under which innovation is implemented profoundly shape digital reform.

Makassar City provides a useful case for examining these tensions because national digitization mandates intersect with rapid urbanization, decentralized administrative structures, and resource constraints. Its digital agenda has also been

linked to the Makassar Recover framework, which connected public health response, social protection, and digital coordination. This combination allows the case to illuminate how local governments manage digital reform under institutional pressure and socioeconomic vulnerability.

Despite strong policy commitment, implementation remains uneven. New applications and service platforms are not always matched by adequate digital competencies, organizational integration, or shared operational standards across regional apparatus organizations (OPDs) [1,3]. Earlier evidence from Makassar identifies recurring constraints, including insufficient infrastructure, uneven system quality, limited coordination, and employee reluctance to adopt new routines [4,5]. Consequently, digitization can add administrative work rather than consistently improve service delivery, weakening the public value expected from reform.

From a street-level bureaucracy perspective, this reluctance should not be treated as simple technophobia. Frontline employees often use discretion to maintain service continuity when systems are fragmented, workloads increase, or training is insufficient. Hierarchical administrative norms and local political cycles may reinforce these implementation pressures and disrupt program continuity before new practices become institutionalized.

A further gap concerns how internal administrative reform affects citizen-level outcomes, including trust, accessibility, and inclusion. This study therefore links institutional innovation capacity with organizational adaptation and considers how these processes may shape citizen-state relations, especially for groups at risk of exclusion from digital services.

Existing studies document many technological barriers to digital government, but they explain less why local governments facing similar reform pressures achieve different service outcomes. This article argues that the key issue is innovation capacity understood as an institutional capability to coordinate, adapt, and sustain change across planning, implementation, and evaluation. Digital reform is therefore treated as an organizational challenge requiring continuous learning, cross-agency coordination, and human resource development, rather than as an information-technology project alone [6,7].

An organizational adaptation lens further informs the article. Digital transformation in government is not reducible to technology adoption alone; it involves changes in bureaucratic mindsets, routines, and inter-unit relationships. Public organizations must therefore develop the ability to learn, adjust, and reorient themselves in response to technological and social change [8,9]. This perspective helps explain why the same digital tools may produce very different outcomes across agencies depending on leadership style, organizational culture, and the distribution of professional competencies.

Based on these considerations, this study asks how local government innovation capacity catalyzes human resource adaptation and public service change in Makassar City. By focusing on leadership, organizational culture, coordination, and digital competencies, the article aims to contribute both empirically and theoretically to debates on digital governance in local public administration, ensuring that service transformation truly aligns with public value.

2. Literature review

2.1. Local government innovation capacity and political continuity

In the public administration literature, local government innovation capacity refers to public organizations' ability to initiate, manage, adapt, and sustain innovative practices to pursue public goals [7]. This capacity is not limited to idea generation; it is a profound institutional capability that must navigate the complexities of decentralized governance. It includes leadership commitment, workforce quality, organizational systems, regulatory support, and external collaboration. In the Indonesian context, this understanding aligns with the aspirations of Local Government Law No. 23 of 2014, which encourages innovation in public service delivery. Studies of organizational capacity also emphasize that local governments are more likely to succeed in digital reform when they have a clear innovation strategy, dedicated coordinating units, and leaders who can interpret environmental and technological change strategically [10–12]. However, to be truly effective, this capacity must be sufficiently institutionalized to withstand disruptions from episodic local political cycles and mayoral transitions, translating political mandates into sustained administrative practice.

2.2. Digital transformation, public value, and community outcomes

Digital transformation in public services should be understood as a systemic change in work processes, governance arrangements, and relations between the state and society, rather than as the simple introduction of digital tools [13]. It is multidimensional, involving managerial, social, and technological change. Local governments must therefore align technological infrastructure with institutional capabilities and citizen-facing service needs. Research on local government digitization in Indonesia suggests that digital innovation can improve transparency, accountability, and responsiveness, but implementation often remains constrained by infrastructural gaps, fragmented coordination, and bureaucratic resistance [1,13–15]. Crucially, if these structural constraints remain unresolved, digital transformation risks exacerbating the digital divide and marginalizing vulnerable groups. These findings indicate that digital transformation succeeds only when it is embedded in broader organizational reform that explicitly targets equitable community outcomes and public value.

2.3. Human resource adaptation through the lens of street-level bureaucracy

Human resource readiness is a decisive factor in the success of digital innovation in government. Adaptation to digital systems requires more than technical training; it also entails changes in work habits, professional attitudes, and bureaucratic culture. To fully understand this dynamic, view human resource adaptation through the lens of street-level bureaucracy. Frontline public servants play a decisive role in interpreting and implementing digital policies in everyday service interactions. Their discretionary practices matter most when digital systems are incomplete, fragmented, or lack adequate training and support. Under such conditions, frontline actors may simplify

procedures, bypass digital platforms, or revert to manual practices to maintain service continuity. Viewed through this theoretical lens, bureaucratic resistance is not merely inherent technophobia or opposition to change, but a rational adaptation to institutional constraints, unrealistic workloads, and localized policy asymmetry. Previous research shows that digitization can increase community satisfaction and improve apparatus performance, but these gains are meaningful only when accompanied by competence development, continuous learning, and cross-sector coordination [7,16,17]. Human resource adaptation is, therefore, central to understanding why some digital reforms become deeply institutionalized while others remain superficial pilot projects.

2.4. Analytical lens: The extended organizational adaptation framework

Building on the literature above, this study adopts an organizational adaptation perspective to analyze local-level digital governance. The central proposition, as conceptualized in **Figure 1**, is that local government innovation capacity does not directly translate into service improvement. Instead, it affects public service change through three interrelated adaptive mechanisms: (1) leadership that legitimizes reform and secures administrative continuity across electoral cycles, (2) organizational arrangements and culture that dismantle paternalistic rigidities to foster cross-unit integration, and (3) human resource adaptation—specifically the discretionary practices of frontline workers navigating new digital realities. This framework moves beyond descriptive accounts of digitization by examining the mediating institutional pathways that explain why digital reform advances in some settings yet stalls in others.

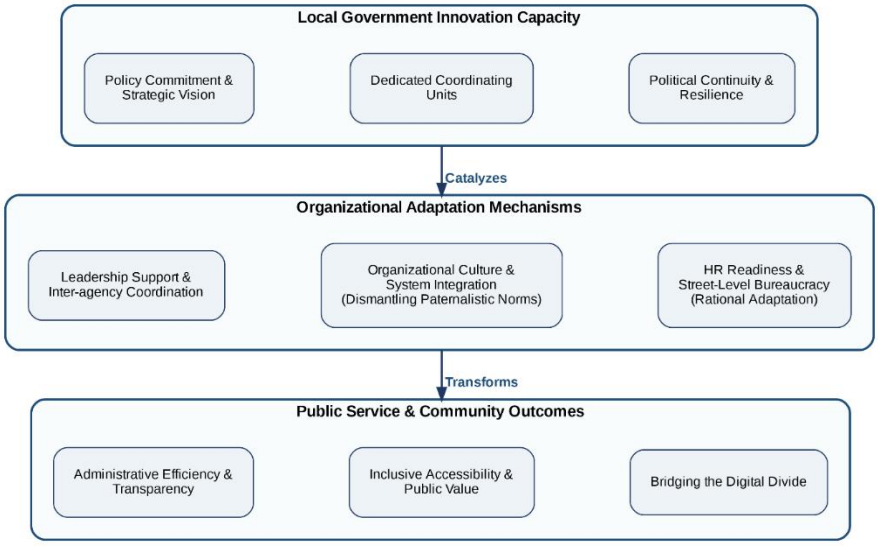


Figure 1. The extended organizational adaptation framework for local digital governance and community outcomes

3. Materials and methods

This study uses an exploratory qualitative case-study design to examine the structural and organizational tensions surrounding digital reform in the Makassar City government. The design is appropriate because the study seeks to explain how innovation capacity, organizational adaptation, and public service change are

experienced and enacted within a complex bureaucratic setting rather than to test predefined variables statistically [6,18,19]. The unit of analysis is the municipal administrative system involved in digital governance and service implementation.

Purposive sampling identified informants with direct responsibility for, or operational experience with, digital governance and public service implementation. Informants represented three organizational positions: Strategic officials in the Communication and Informatics Office (Diskominfo), mid-level actors in regional apparatus organizations (OPDs), and frontline personnel involved in sectoral data management and service delivery. This variation was intended to compare policy-level coordination with implementation conditions at the service interface.

Data collection combined focus group discussions (FGDs), field observations, and document analysis to support methodological triangulation. The study collected qualitative data through four face-to-face FGD sessions conducted between 27 February and 27 March 2025, in Makassar City, Indonesia, with each session lasting approximately 90 minutes. The researchers invited 30 individuals to participate; 25 agreed, for a participation rate of 83.3%. Using purposive sampling, the researchers selected participants based on their direct involvement in public policy formulation, digital government implementation, inter-agency coordination, or public service management. The participants represented three broad stakeholder categories: local governance, institutional coordination, and digital public service implementation. The FGD protocol addressed nine principal research indicators related to innovation capacity, leadership commitment, bureaucratic resistance, organizational adaptation, inter-agency coordination, system interoperability, data governance, regulatory and administrative constraints, digital public service transformation, and governance outcomes. These indicators provided a structured basis for exploring how institutional capabilities and bureaucratic constraints influence digital governance transformation in local government. **Table 1** presents their operational definitions and analytical dimensions. All FGD sessions were recorded and transcribed to establish the primary qualitative dataset. Field observations examined everyday administrative practices and the exercise of discretion, while the team reviewed policy and administrative documents on electronic government systems and data governance to identify formal institutional arrangements and reform priorities [20,21].

Table 1. Principal research indicators and operational definitions.

No.	Principal research indicator	Operational definition	Key analytical dimensions
1	Innovation Capacity	Institutional ability to initiate, develop, and implement administrative and digital innovations.	Innovation capability, resource mobilization, institutional learning
2	Leadership and Strategic Commitment	Leadership support for organizational innovation and digital governance transformation.	Strategic leadership, policy commitment, resource allocation
3	Bureaucratic Resistance and Organizational Adaptation	Institutional and behavioral responses to technological and administrative changes.	Resistance to change, bureaucratic inertia, organizational adaptation
4	Inter-Agency Coordination and Collaboration	Capacity of government institutions to coordinate activities and collaborate in digital transformation initiatives.	Institutional coordination, collaboration, information sharing
5	Digital System Integration and Interoperability	Ability of government information systems to support integrated administrative processes and data exchange.	System integration, interoperability, technological compatibility
6	Data Governance and Institutional Capacity	Institutional capability to manage, secure, and utilize government data effectively.	Data management, information security, institutional readiness

Table 1. (*Continued*).

No.	Principal research indicator	Operational definition	Key analytical dimensions
7	Regulatory and Administrative Barriers	Regulatory and bureaucratic constraints affecting digital innovation and organizational transformation.	Procedural rigidity, regulatory alignment, administrative complexity
8	Digital Public Service Transformation	Changes in public service processes and administrative practices resulting from digital innovation.	Service integration, process redesign, accessibility, responsiveness
9	Governance Outcomes and Public Value	Institutional and societal benefits associated with digital governance transformation.	Administrative efficiency, transparency, accountability, public value

The team analyzed the data using a deductive-inductive thematic procedure. In the first coding cycle, the team organized data around dimensions derived from the analytical framework: innovation capacity, human resource adaptation, organizational culture, and leadership dynamics. In the second cycle, inductive coding identified themes not fully specified in advance, including paternalistic administrative norms, policy asymmetry, and rational street-level adaptation. Investigators cross-checked coding decisions through triangulation and compared them across discussions, observations, and policy documents. We maintained an audit trail to document coding decisions and theme development, supporting dependability and confirmability [22].

We examined the qualitative data from the four FGD sessions through manual thematic coding involving five researchers. The analysis focused on identifying meaningful patterns across the discussion transcripts in relation to the nine principal research indicators and three stakeholder categories. The coding process involved examining participants' statements and organizing relevant information into analytical categories. Particular attention focused on digital government integration, institutional coordination, data governance, digital infrastructure, organizational capacity, and public service innovation. These analytical areas reflected the institutional challenges and governance priorities documented in the study. To ensure methodological transparency, researchers should compare coding interpretations with the original transcripts and refine coding definitions and thematic categories as needed. Any consensus-based decisions must be supported by the research team's actual analytical records. Thematic saturation was considered in relation to the emergence and recurrence of themes across the four FGD sessions. A systematic assessment would compare the codes identified in successive sessions and determine whether later discussions generated substantively new themes. A definitive claim of thematic saturation requires evidence from the session-by-session coding results rather than relying solely on the number of participants or discussion sessions.

4. Results

The findings of this study must be understood in relation to the distinctive context of the Makassar Recover framework. Unlike conventional "Smart City" initiatives that often remain purely technocratic, Makassar City represents a unique research gap in which digital governance was strategically integrated with crisis management, public health responses, and social resilience efforts. However, persistent structural fragmentation, uneven operational capacity, and significant policy asymmetry indicate that, while the framework provides a strong, unified policy direction, successful

implementation remains heavily dependent on cross-sector institutional readiness and on navigating deeply entrenched bureaucratic norms.

This section presents empirical findings from thematic analysis of discussions, observations, and document reviews. To clearly show how innovation capacity interacts with organizational dynamics and community outcomes in Makassar City, **Table 2** synthesizes the core findings and illustrative barriers and enablers. The subsequent subsections provide an in-depth discussion of each thematic dimension.

Table 2. Summary of key thematic findings on digital governance adaptation in Makassar City.

Analytical dimension	Key enablers / achievements	Persistent barriers / constraints
1. Innovation Capacity & Institutional Arrangements	Establishment of digital coordination hubs (Diskominfo). High regional SPBE scores.	Formal structures lack consolidated inter-agency routines—leaving them vulnerable to episodic local political cycles and mayoral transitions.
2. Leadership & Commitment	Leaders legitimize innovation and mobilize early participation.	Episodic momentum. Reform is treated as a short-term project rather than a long-term agenda, often hindered by paternalistic norms.
3. Human Resource Adaptation	Recruitment of digital operators and creative media professionals. Collaboration with universities.	Frontline units lack dedicated budgets and data guardians. Policy asymmetry creates stark differences in unit competence—rational street-level resistance to increased workloads.
4. Infrastructure & Integration	Synchronization efforts with national metadata (BPS) and cybersecurity awareness programs.	Fragmented independent applications (e.g., systemic disconnect between Civil Registry and Social Affairs databases). Lack of shared standards undermines efficiency.
5. Organizational Culture	Gradual shift towards evidence-based, data-driven accountability.	Conventional hierarchical rigidity. Digital tools are seen as added bureaucratic burdens rather than tools for reform.
6. Public Service & Community Outcomes	Implementation of the e-office (Srikandi), integration of emergency calls, and free Wi-Fi. Increased service speed.	Impact remains highly conditional. Lack of citizen-user feedback mechanisms exacerbates the digital divide, limiting political trust among marginalized groups.

4.1. Innovation capacity and institutional arrangements

Makassar City, as the capital of South Sulawesi and a major metropolitan center in eastern Indonesia, faces increasing pressure to modernize public administration while responding to rapid urbanization and expanding service demands [14,23]. In recent years, the city government has shown a clear commitment to digital transformation through developing an electronic-based government system (SPBE), improving the competencies of its apparatus, and integrating information systems across OPDs [5,19].

The findings indicate that Makassar's local government innovation capacity has developed through the establishment of digital work units and coordination systems within the Communication and Informatics Office. Diskominfo functions as a hub for data coordination and technology management, and it has collaborated with actors such as the Ministry of Communication and Informatics and the Central Statistics Agency (BPS) to strengthen sectoral data governance and public service digitalization [8]. However, the presence of coordinating units alone does not guarantee effective transformation. The main constraint is limited system integration across OPDs. Although Makassar has achieved a strong SPBE score in South Sulawesi, the city still faces fragmented applications, weak inter-unit synchronization, and incomplete data integration. In theoretical terms, this suggests that innovation capacity remains

partially institutionalized: formal structures exist, but the routines needed to connect them across agencies are not yet fully consolidated.

4.2. Leadership, organizational commitment, and political continuity

Leadership emerged as a critical enabler of digital reform. The data show that leaders play an important role in legitimizing innovation, mobilizing participation, and encouraging organizational learning. However, leadership support is not always consistent across agencies. In several instances, digital initiatives still depend heavily on program-specific momentum rather than on a stable commitment to organizational transformation [24].

This finding helps explain why some reforms remain episodic. When leaders treat digitization as a discrete project rather than a long-term institutional agenda, agencies may adopt applications formally without changing internal workflows or accountability mechanisms. The deeper issue, therefore, is not only whether leaders endorse innovation but whether they foster a culture that can dismantle deeply entrenched paternalistic administrative norms and make experimentation, coordination, and learning routine administrative practices. Local political cycles also strongly influence the sustainability of these initiatives. Leadership changes, including mayoral transitions, may shift priorities and disrupt ongoing digital programs, particularly when initiatives are not fully institutionalized. This suggests that innovation capacity must be embedded not only in leadership commitment but also in stable administrative structures to ensure continuity beyond individual political tenures.

4.3. Human resource adaptation and street-level bureaucracy

Human resource adaptation is one of the clearest bottlenecks in Makassar's digital transformation. The city requires civil servants (ASN) not only to operate digital systems but also to understand data governance, service integration, and evidence-based decision-making. Discussion data from Diskominfo show that the government has attempted to address this challenge by recruiting operators, engaging communication and creative media professionals, and collaborating with universities and students to support sectoral statistics programs. One respondent explained: "We have recruited 53 operators working in three shifts over 24 h. We have also involved 15 professionals in public relations and creative media, and we collaborate with four universities and 50 students in sectoral statistics programs."

At the same time, adaptation remains uneven across agencies and administrative levels, resulting in severe policy asymmetry. While well-resourced departments rapidly digitize, frontline units at the OPD, district, and subdistrict levels still lack sufficient data guardians and often operate without dedicated budgets for statistical activities or digital training [12,25]. This asymmetry matters because those frontline units are central to everyday service delivery. When competence is uneven, data quality becomes inconsistent, and policy coordination becomes exponentially more difficult.

Another discussion with the Head of the Makassar Communication and Informatics Office highlighted the importance of evidence-based governance:

"Current policy must be data-based in decision-making; assumptions can no longer serve as indicators for decisions. This makes accountability to the public easier to build, and that is where the role of data guardians in each OPD becomes important."

However, translating this vision into reality requires confronting the realities of street-level bureaucracy. Bureaucratic resistance here is rarely rooted in inherent opposition to technology. Instead, it is a highly rational adaptation by frontline workers grappling with uncertainty, competence gaps, and unequal access to training. When staff do not fully understand new systems or lack the resources to operate them, simplifying procedures or reverting to manual practices becomes a rational survival mechanism to manage perceived risks and drastically increased workloads. This dynamic contributes to policy asymmetry, as hierarchical and paternalistic norms concentrate decision-making authority at higher levels, leaving frontline units operating with limited autonomy and capacity.

4.4. Infrastructure, system integration, and the Makassar recovery framework

Infrastructure and system integration remain major obstacles. Diskominfo has coordinated with BPS and national metadata initiatives to synchronize sectoral data and develop the Cinta Statistik program at the village level. Cybersecurity awareness programs directed at schools and neighborhood communities likewise show that digital governance is being framed as both a bureaucratic and social agenda.

Despite these efforts, a concrete manifestation of system fragmentation is the coexistence of independent applications across regional apparatus organizations. For example, population data managed by the Civil Registry Office is often incompatible with the social assistance databases used by the Social Affairs Office. This structural disconnect leads to critical inconsistencies in beneficiary identification for welfare programs. Similarly, while the Makassar Recover initiative ambitiously combined pandemic response with digital tools, many of these bespoke systems operate separately from routine administrative platforms, requiring repeated manual data entry.

The operational ecosystem is still profoundly fragmented. As one respondent noted, "Each agency's application is still independent, the data are not synchronized, and data guardians do not have the same competencies and standards. As a result, data become non-standardized, and services become slow, even though digitization should make service delivery easier and faster." This statement identifies a concrete mechanism linking infrastructure problems to service outcomes: System fragmentation directly undermines interoperability, standardization, and administrative efficiency. The findings therefore support earlier studies showing that infrastructural gaps and organizational fragmentation are central barriers to digital innovation in local government [26].

4.5. Organizational culture and bureaucratic resistance

Organizational culture also strongly shapes the trajectory of digital transformation. A conventional bureaucratic culture characterized by rigid hierarchy and paternalistic norms continues to constrain cross-sector collaboration. Some civil servants perceive digital systems as increasing workload rather than reducing it,

particularly when new procedures are introduced without sufficient explanation, training, or workflow redesign. One participant stated, "Sometimes we notice that the online system actually slows things down, because not everyone understands the flow and mechanism well."

This observation is analytically significant because it reveals that resistance often results from a mismatch between technological change and organizational learning. If work culture does not adapt alongside technology, street-level bureaucrats inevitably interpret digital tools as additional administrative burdens rather than instruments of reform [21,27]. Sustainable digital reform, therefore, depends on building an adaptive bureaucratic culture that can dismantle these rigid hierarchies and absorb change rather than merely complying with it on the surface.

4.6. Effects on public service delivery and community outcomes

Despite these constraints, the study also finds important positive effects of digital transformation in Makassar. Several innovations have been introduced, including the Srikandi application for digital correspondence among OPDs, emergency call-center services integrated with the Health Office, the use of CCTV infrastructure in collaboration with security institutions, and free public Wi-Fi to expand digital access. These initiatives show that the city has moved beyond pilot projects toward a broader portfolio of digital public-service interventions [15,28]. Discussion data likewise indicate that digitalization can improve efficiency and transparency. One respondent explained: "Online services cut time and reduce face-to-face interaction, making services faster and more transparent. Digitalization also reduces overly hierarchical bureaucracy and helps avoid practices outside formal regulation."

However, to provide a balanced analysis, the narrative must shift from an official-centric perspective to a citizen-user perspective. From a community standpoint, the benefits of digital transformation remain starkly uneven. While digitally literate populations experience improved service efficiency, marginalized groups—such as older adults, low-income households, and residents in peripheral urban areas—face significant barriers related to limited access, low digital literacy, and inadequate technological infrastructure.

This widening digital divide suggests that digital governance may unintentionally reproduce or exacerbate existing socioeconomic inequalities without inclusive strategies. Furthermore, the lack of robust citizen feedback mechanisms means that administrative transformations are not always aligned with genuine public value, thereby eroding political trust between the state and its most vulnerable citizens. Ultimately, these gains remain highly conditional. The impact of digital transformation depends largely on whether institutional innovation capacity translates into everyday organizational adaptation that genuinely prioritizes inclusive community outcomes.

5. Discussion

The combined evidence points to an institutionalization deficit rather than a simple shortage of digital initiatives. Makassar has accumulated political support, coordinating units, skilled personnel, platforms, and visible service innovations, but

has not yet converted these resources into stable, government-wide routines. This distinction is central to the analysis because public-sector digital transformation involves a change in coordination, authority, work organization, and state–citizen interaction, not merely the introduction of technology. The case therefore represents an incomplete movement from project-based digitization toward institutionalized digital governance.

This interpretation corresponds with research that conceptualizes digitally induced public-sector change as an interaction among technological systems, organizational structures, managerial practices, institutional rules, and professional capabilities [29]. It also helps explain why broadly similar modernization policies can yield different administrative outcomes: Strategic narratives may converge, whereas implementation is conditioned by local institutional configurations [30]. In Makassar, the decisive issue is not whether innovation exists, but whether it is embedded sufficiently to coordinate actors and endure beyond a particular program, crisis, or political term.

5.1. Institutionalization as the missing link

The results indicate that formal digital-government capacity and operational integration are distinct dimensions. Makassar has coordinating structures and visible digital initiatives, yet integration remains incomplete when agencies retain separate procedures, standards, and accountability arrangements. The empirical example is the disconnect between Civil Registry population data and Social Affairs beneficiary databases, which can require manual reconciliation and complicate welfare targeting. This finding cautions against treating maturity scores, or application counts, as sufficient indicators of transformation because such measures do not show whether data and decisions move reliably across organizational boundaries.

Digital capacity in a decentralized municipal administration is inherently relational. No single technical office controls all service mandates, datasets, personnel, and budgets. Accordingly, coordination cannot rely on technical expertise alone; it requires binding rules that define shared responsibilities and incentivize joint action. Indonesian evidence similarly indicates that interoperability depends on governance arrangements and coordinated strategy rather than on digitization policy in isolation [31]. The priority is therefore to institutionalize common decision rights, data obligations, and process ownership across OPDs.

5.2. Adaptive capacity, distributed leadership, and frontline discretion

Unequal organizational capacity helps explain the uneven translation of policy into practice. Diskominfo reported substantial investment at the center, including 53 operators working in shifts, 15 public-relations and creative-media professionals, collaboration with four universities, and the involvement of 50 students in sectoral statistics. At the same time, frontline units reported shortages of dedicated data guardians, training resources, and operational budgets. The result is a dual-speed administration: Well-resourced units can redesign processes and maintain data quality, whereas weaker units absorb new digital requirements without comparable support.

From a street-level bureaucracy perspective, parallel procedures and selective system use should not automatically be classified as opposition to reform. Frontline employees continually reconcile formal requirements with service continuity, resource constraints, and the risk of error. Digital systems relocate rather than eliminate discretion because officials still determine how to verify incomplete records, how to handle exceptions, and when citizens need offline assistance. Lipsky's account of coping under constraint [32] and subsequent research on the situational work of street-level managers [33] clarify why implementation depends on locally workable arrangements, not solely on senior-level endorsement.

The leadership implication is that continuity must be distributed. Political executives set direction and legitimize change, but middle managers and frontline supervisors determine whether new practices become administratively viable. Reform that remains person-centered is susceptible to electoral and organizational turnover. Reform becomes durable when responsibility is incorporated into professional roles, performance systems, budgets, standard operating procedures, and managerial authority at multiple levels.

The Makassar case also adds a distributional dimension. Unequal bureaucratic capability can translate into unequal citizen experience because communities served by weaker units encounter greater dependence on manual mediation and informal assistance. A Global South perspective is therefore necessary: Infrastructure, inequality, administrative informality, and differentiated encounters with the state are constitutive elements of digital implementation, not external background conditions [34].

5.3. Interoperability as an organizational and political problem

Interoperability is often framed as a technical requirement involving interfaces, identifiers, metadata, or architecture. The findings support a broader interpretation. Effective exchange also requires agreement over definitions, data ownership, correction authority, security responsibility, and accountability for service failure. A technically compatible interface cannot resolve disputes about which agency is authorized to validate a record or bear responsibility for an inaccurate decision.

For this reason, application proliferation can create digital accretion rather than transformation. New platforms are layered onto existing routines, leaving duplicate records, repeated verification, and manual reconciliation intact. The OECD's digital-government framework similarly treats digital public infrastructure as a combination of shared technical components and governance safeguards [35]. Makassar would therefore benefit more from an enterprise-wide architecture and service-process redesign than from additional stand-alone applications.

The crisis origin of several innovations adds a temporal dimension to this problem. Turbulent conditions can accelerate experimentation, bypass ordinary barriers, and demonstrate the value of rapid coordination [36]. They can also generate temporary teams and purpose-built systems that are not readily absorbed into normal administration. Post-crisis consolidation should consequently be recognized as a distinct policy phase in which emergency capabilities are evaluated, integrated, scaled,

or discontinued. Without that phase, successful crisis innovation may leave a fragmented institutional legacy.

5.4. Organizational learning and the meaning of resistance

The coexistence of digital and conventional procedures shows that technology adoption can occur without equivalent organizational learning. Empirical evidence supports this interpretation: One participant observed that an online system could slow work when staff did not understand its workflow and operating mechanism. Such experiences help explain why employees may perceive new systems as an additional administrative burden when tasks, authority, performance expectations, and error-handling procedures remain unchanged. Formal compliance can therefore coexist with limited behavioral change.

Diagnose resistance by its source. Normative resistance reflects disagreement with reform goals; capability-based resistance arises from limited competence or resources; process-based resistance emerges when workflow design is impractical; and risk-based resistance occurs when employees remain accountable for system failures they cannot control. Each condition requires a different managerial response. Training alone cannot correct contradictory procedures, just as technical improvement alone cannot resolve unclear authority. Sustainable change requires iterative learning, user involvement, protected experimentation, and removing redundant administrative requirements.

5.5. Conditional public value and political trust

The public value of digital government cannot be inferred from administrative efficiency alone. Existing literature identifies service quality, effectiveness, professionalism, trust, and broader social value as interdependent dimensions of e-government performance [37]. A service may reduce internal processing time while excluding citizens who lack connectivity, devices, confidence, language support, or accessible interfaces. Therefore, assess efficiency and inclusion simultaneously.

The limited visibility of non-users and failed transactions risks an official-centric evaluation. Deployment statistics and internal usage rates capture administrative activity but may overlook abandonment, repeated visits, dependence on intermediaries, and unresolved access barriers. Citizen feedback should consequently be treated as governance data rather than as a supplementary satisfaction measure. Completion rates, error rates, assisted-service demand, complaint resolution, geographic variation, accessibility compliance, and perceived procedural fairness provide a more credible basis for evaluating public value.

Political trust is shaped through concrete encounters with public services. Reliable and transparent procedures can reinforce confidence, whereas inconsistent records, inaccessible channels, and unclear remedies may be interpreted as unfairness or institutional indifference. The contribution of digitalization to trust thus depends less on technological sophistication than on whether citizens experience services as dependable, intelligible, and equitable.

5.6. Theoretical contribution: Institutionalized adaptive capacity

This study proposes institutionalized adaptive capacity as an explanatory concept for local digital reform. It refers to a government's ability to preserve common standards, accountability, and institutional continuity while enabling organizations and frontline actors to adjust implementation as technologies, crises, service conditions, and citizen needs change. The concept integrates strategic continuity, distributed managerial capability, interoperable governance, frontline competence, and citizen-centered evaluation.

The concept is distinct from several related ideas in public administration and organization studies. Organizational resilience primarily emphasizes continuity, recovery, and functioning under disruption; institutionalized adaptive capacity places greater emphasis on embedding learning and adjustment into ordinary administrative routines. Adaptive governance generally emphasizes flexible and collaborative governance arrangements across actors; the present concept focuses more specifically on how adaptability is anchored within municipal structures, professional roles, and frontline implementation. Dynamic capabilities emphasize the ability to sense, seize, and reconfigure organizational resources; institutionalized adaptive capacity adds public-sector requirements for accountability, shared standards, political continuity, and equitable service delivery. Institutional capacity can describe the stock of resources, authority, and administrative competence available to an organization; institutionalized adaptive capacity emphasizes how those resources are converted into durable but flexible routines.

This formulation addresses two tensions. Digital government requires standardization for data exchange, security, and accountability, yet service delivery also requires contextual adjustment. Political leaders can initiate reform, but overreliance on individual leaders makes it vulnerable to turnover. Institutionalized adaptive capacity therefore locates stability in shared rules, infrastructure, professional responsibilities, and cross-agency arrangements, while locating flexibility in authorized problem-solving, learning, and frontline discretion. The Makassar case further suggests that rapid crisis innovation and long-term institutionalization are separate processes: A city may innovate quickly without yet creating the routines needed to sustain and integrate those innovations.

5.7. Policy and managerial implications

The findings can be translated into an implementation roadmap, as outlined in **Table 3**, rather than treated as a list of isolated recommendations. The immediate priority is to establish a whole-of-government mandate covering data quality, interoperability, cybersecurity, process ownership, and service outcomes. This should be followed by formal data-stewardship roles, workforce development, and end-to-end service-process redesign before commissioning additional stand-alone applications.

Implementation should then shift toward enterprise-wide integration and inclusive service delivery. A shared architecture and application-review mechanism can reduce duplication, while assisted multi-channel services, community access

points, accessibility standards, and targeted digital-literacy support can help prevent modernization from transferring administrative costs to vulnerable citizens.

Table 3. Implementation roadmap for institutionalizing adaptive digital governance.

Phase and horizon	Objective	Core actions	Indicative outputs/metrics
1. Institutional alignment (0–6 months)	Create common authority and accountability	Issue a whole-of-government mandate; define data ownership, process ownership, interoperability, cybersecurity, and service accountability.	Governance mandate approved; data/process owners named; applications and data flows inventoried.
2. Capability and workflow redesign (6–12 months)	Align people, roles, and service processes	Formalize data-stewardship roles; set competency standards; allocate training and budgets; redesign priority service journeys and exception handling.	Job descriptions/SOPs updated; training coverage documented; workflows redesigned; parallel manual steps reduced.
3. Integration and inclusion (12–24 months)	Connect systems while protecting access	Apply shared enterprise architecture; review duplicate applications; prioritize interoperable data exchange; maintain assisted and multi-channel access.	Interoperability coverage increases; duplicate systems/manual entry decline; assisted access and accessibility measures documented.
4. Evaluation and continuity (ongoing)	Institutionalize learning and political durability	Use citizen feedback and service-performance data; monitor cross-agency coordination; sustain multi-year budgets and professional ownership.	Completion/error rates, complaints, and assisted-service use tracked; cross-agency performance reviewed; continuity embedded in plans and budgets.

Build political and managerial continuity into each phase through multi-year planning, stable budget commitments, regulatory instruments, professional ownership, and performance monitoring. The objective is not to increase the number of digital projects, but to convert the existing innovation portfolio into a coherent municipal capability that can be maintained across leadership changes.

5.8. Study limitations and future research

This study has several limitations. First, it is a single-case qualitative study centered on Makassar City, so the findings should not be interpreted as statistically generalizable to all municipalities. The case supports analytical generalization about mechanisms of institutionalization, adaptation, and service implementation, but the strength and form of those mechanisms may differ in other administrative, political, and socioeconomic settings. Second, official perspectives are more strongly represented than citizen perspectives, limiting the ability to assess how non-users, marginalized groups, and service intermediaries experience digital reform. Third, the study explains organizational mechanisms but does not establish the causal effect of individual digital interventions on service performance or political trust. Finally, the case reflects a period shaped by the institutional legacy of crisis-driven innovation, and later political or organizational consolidation may alter the observed arrangements.

Future research should test the proposed framework across different municipalities and national contexts. Comparative case studies could examine whether institutionalized adaptive capacity operates similarly in cities with different levels of fiscal capacity, administrative decentralization, political continuity, and digital maturity. Cross-country comparisons would be particularly useful for distinguishing mechanisms specific to Indonesia from those that may travel across governance systems. Longitudinal designs could assess whether coordination routines, data-governance arrangements, and frontline adaptations persist across leadership

transitions. Mixed-method research should also include citizens, frontline workers, intermediaries, and digitally excluded groups more systematically and connect qualitative mechanisms with administrative indicators such as processing time, completion rates, system downtime, data duplication, complaints, assisted-service use, accessibility, and geographic inequality.

6. Conclusion

This study shows that local government innovation capacity can enable digital reform, but its effects depend on human resource readiness, organizational culture, leadership continuity, and system integration. In Makassar, the central challenge is not the absence of digital initiatives but the incomplete conversion of projects, expertise, and coordinating structures into stable government-wide routines. Digital governance should therefore be understood as an institutional process that reorganizes work, builds competencies, coordinates agencies, and aligns technology with public service goals.

The study's theoretical contribution is the concept of institutionalized adaptive capacity: The ability to combine administrative continuity and common standards with authorized learning and adaptation across organizations and frontline settings. This perspective also reframes employee reluctance as a phenomenon that may arise from capability gaps, impractical workflows, risk exposure, or resource constraints rather than from opposition to technology alone. The concept helps explain why similar digital mandates can produce different implementation outcomes across local governments.

For public administration, the findings highlight the importance of distributing reform responsibility beyond political executives. Middle managers, frontline supervisors, data stewards, and cross-agency governance arrangements determine whether new practices become durable. Leadership matters most when it creates rules, budgets, professional roles, and coordination mechanisms that can survive changes in individual officeholders.

For policymakers, the priority is to move from fragmented, application-centered projects toward a staged program of institutional alignment, workforce and workflow redesign, system integration, inclusive access, and continuous evaluation. Data stewardship, shared technological standards, citizen feedback, and cross-agency performance measures should be embedded in ordinary administrative practice rather than treated as temporary project requirements.

Digital reform will generate public value only when efficiency, accessibility, accountability, and inclusion improve together. Institutional adaptation must therefore be assessed not only through technology deployment or maturity scores, but also through service reliability and different citizen groups' ability to use them. Building institutionalized adaptive capacity offers a practical and theoretical pathway for sustaining digital innovation while keeping community needs and equitable service delivery at the center of reform.

Author contributions: Conceptualization, AA, BS, II, and KW; methodology, AA, BS, II, and MS; software, AA; validation, KW; formal analysis, AA, MS, and LS; investigation, AA; resources, AA and KW; data curation, AA; writing—original draft

preparation, AA, BS, II, MS, LS, and KW; writing—review and editing, BS, II, MS, LS, and KW; visualization, KW; supervision, BS and KW; project administration, KW; funding acquisition, AA and KW. All authors have read and agreed to the published version of the manuscript.

Funding: This study was supported by Universitas Bosowa, Indonesia, and the Association of Legal & Political Studies, Thailand, grant number: 194/1.02/DIRPM-UNIBOS/VII/2026.

Ethical approval: This study was reviewed and approved by ALPS-IRB (approval number: ALPS-IRB-2025-10-0002).

Informed consent statement: Informed consent was obtained from all subjects involved in the study.

Declaration of generative AI and AI-Assisted technologies in the writing process: During the preparation of this manuscript, the authors, as non-native English speakers, used AI-assisted tools (Gemini and Grammarly) solely for language editing to improve readability and grammar. The authors have reviewed and revised all content and take full responsibility for the accuracy and integrity of this work.

Conflict of interest: The authors declare no conflict of interest.

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