GOVERNING DIGITAL PUBLIC SERVICES IN AN ARCHIPELAGIC CONTEXT: INSTITUTIONAL ADAPTATION, DIGITAL INCLUSION, AND PUBLIC VALUE IN MALUKU, INDONESIA

TATA KELOLA LAYANAN PUBLIK DIGITAL DALAM KONTEKS KEPULAUAN: ADAPTASI KELEMBAGAAN, INKLUSI DIGITAL, DAN NILAI PUBLIK DI MALUKU, INDONESIA

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Abstrak: Penelitian ini mengkaji bagaimana institusi publik beradaptasi terhadap transformasi layanan publik digital dalam konteks kepulauan dan bagaimana adaptasi tersebut membentuk inklusi digital serta penciptaan nilai publik di Maluku, Indonesia. Alih-alih memandang transformasi digital sebagai intervensi teknologi yang linear, penelitian ini memosisikan kekepulauan sebagai kondisi administratif yang ditandai oleh persebaran geografis, konektivitas yang tidak merata, infrastruktur yang beragam, dan jangkauan layanan yang terputus-putus. Penelitian menggunakan studi kasus jamak kualitatif yang melibatkan institusi publik yang bertanggung jawab atas tata kelola digital dan penyelenggaraan layanan di berbagai wilayah dengan kondisi teritorial yang berbeda di Maluku. Data diperoleh melalui wawancara semi-terstruktur dengan pembuat kebijakan, pelaksana layanan, birokrat garis depan, dan warga; observasi langsung terhadap praktik layanan; analisis dokumen; serta penelaahan terhadap sejumlah platform layanan digital. Hasil penelitian menunjukkan bahwa digitalisasi tidak menghapus ketimpangan teritorial, tetapi mengubah cara ketimpangan tersebut dimediasi melalui institusi administratif. Adaptasi kelembagaan muncul melalui penataan ulang rutinitas organisasi, koordinasi informal, pendampingan di garis depan, pengaturan layanan hibrida, dan kanal alternatif bagi warga yang menghadapi kendala teknologi atau geografis. Dengan demikian, inklusi digital tidak hanya dibentuk oleh konektivitas dan kemampuan individu, tetapi juga oleh kapasitas institusi untuk memberikan pendampingan yang bermakna ketika sistem digital tidak dapat diakses secara mandiri. Nilai publik bersifat tidak merata dan bersyarat: layanan digital menghasilkan kemudahan, daya tanggap, dan berkurangnya biaya administratif ketika pengaturan kelembagaan yang adaptif tersedia, tetapi memindahkan beban administratif kepada warga ketika pengaturan tersebut lemah. Penelitian ini menyumbangkan perspektif kepulauan dalam tata kelola layanan publik digital dengan mengonseptualisasikan fragmentasi geografis sebagai kondisi yang secara aktif membentuk adaptasi kelembagaan dan pengalaman warga. Penelitian ini merekomendasikan arsitektur layanan digital yang peka konteks, yang memadukan sistem teknologi, intermediasi garis depan, dan dukungan berbasis komunitas agar transformasi digital berkontribusi pada layanan publik yang lebih inklusif dan bermakna secara sosial.

Kata Kunci: *tata kelola kepulauan, inklusi digital, layanan publik digital, adaptasi kelembagaan, nilai publik*

Abstract: *This study examines how public institutions adapt to digital public service transformation in an archipelagic context and how such adaptation shapes digital inclusion and the creation of public value in Maluku, Indonesia. Rather than treating digital transformation as a linear technological intervention, the study positions archipelagicity as an administrative condition characterized by geographical dispersion, uneven connectivity, differentiated infrastructure, and discontinuous service reach. The research employed a qualitative multiple-case study involving public institutions responsible for digital governance and service delivery across contrasting territorial settings in Maluku. Data were generated through semi-structured interviews with policymakers, service implementers, frontline bureaucrats, and citizens; direct observation of service practices; document analysis; and examination of selected digital service platforms. The findings show that digitalization does not remove territorial inequality but reorganizes how it is mediated through administrative institutions. Institutional adaptation emerged through the reconfiguration of organizational routines, informal coordination, frontline assistance, hybrid service arrangements, and alternative channels for citizens facing technological or geographical constraints. Digital inclusion was consequently shaped not only by connectivity and individual capability but also by the capacity of institutions to provide meaningful assistance when digital systems could not be independently accessed. Public value was found to be uneven and conditional: digital services generated convenience, responsiveness, and reduced administrative costs where adaptive institutional arrangements were present, but shifted administrative*

burdens to citizens where such arrangements were weak. The study contributes an archipelagic perspective to digital public service governance by conceptualizing geographical fragmentation as a condition that actively shapes institutional adaptation and citizen experience. It recommends context-sensitive digital service architectures that integrate technological systems, frontline intermediation, and community-based support to ensure that digital transformation contributes to more inclusive and socially meaningful public services.

Keywords: *archipelagic governance, digital inclusion, digital public services, institutional adaptation, public value*

INTRODUCTION

Digital transformation has become a central trajectory of contemporary public administration. Governments increasingly rely on digital infrastructures, integrated platforms, automated procedures, and data-driven systems to redesign the relationship between administrative institutions and citizens. The underlying promise is compelling: public services can become faster, more accessible, transparent, responsive, and less dependent on physical proximity to government offices. Yet the expansion of digital government has also exposed a problem that is often obscured by technology-centered narratives. Digital availability does not necessarily translate into equal access, and the presence of an online service does not automatically mean that citizens can use it meaningfully. The transformation of public services therefore involves more than the introduction of new technologies. It requires governments to reconsider how institutions organize work, coordinate across organizational boundaries, assist citizens, and respond to inequalities that become visible when administrative interactions move into digital environments (Fernandez & Gonzalez, 2022; Haida & Rejjaoui, 2026; Mutiarin et al., 2024).

This issue is particularly important in geographically fragmented regions. In archipelagic territories, the distance between citizens and public institutions cannot be understood simply in terms of kilometers. Administrative access is shaped by the distribution of islands, transportation dependency, uneven telecommunications infrastructure, discontinuous connectivity, and variations in local government capacity. Digitalization may reduce certain forms of physical distance by enabling citizens to access services remotely, but it can simultaneously reproduce territorial inequalities when the infrastructure and institutional support necessary for meaningful digital access are unevenly distributed. A citizen living in a well-connected urban center may experience digital public services as a reduction in time, travel, and administrative complexity. For citizens living on smaller or more remote islands, however, the same digital system may require access to unstable networks, assistance from intermediaries, repeated travel to locations with better connectivity, or continued reliance on conventional service channels. The critical question, therefore, is not merely whether public services have been digitalized, but how digital transformation is governed when the territorial conditions under which services are delivered are profoundly uneven.

Maluku provides a theoretically relevant setting for examining this problem. As an archipelagic province in eastern Indonesia, Maluku faces a distinctive combination of geographical dispersion, unequal infrastructure, inter-island mobility constraints, and differentiated administrative reach. These conditions complicate the assumption that a standardized digital government architecture can generate uniform service experiences across territories. Indonesia has institutionalized digital government through the Electronic-Based Government System, or Sistem Pemerintahan Berbasis Elektronik, which seeks to strengthen the

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effectiveness, accountability, integration, and quality of public administration through digital technologies. At the provincial level, Maluku has established a formal governance framework for implementing electronic-based government, including arrangements concerning architecture, business processes, services, infrastructure, human resources, change management, and evaluation. However, the existence of formal digital governance arrangements does not resolve the practical question of how institutions translate these arrangements into accessible services across dispersed territorial settings. The difference between policy adoption and administrative adaptation becomes especially consequential where technological systems encounter uneven connectivity and heterogeneous citizen capabilities.

The broader literature on digital government has progressively moved beyond its earlier emphasis on technology adoption. Initial studies commonly associated e-government with administrative modernization, efficiency, information provision, and the electronic delivery of government services (Dicksan, 2026a; Quy, 2025; Ramadhan et al., 2023). Subsequent scholarship expanded this perspective by examining digital government as an institutional transformation involving organizational change, governance arrangements, collaboration, and changing relationships between governments and citizens (Indama, 2022; Pahdepie et al., 2026). Digital transformation in the public sector is now widely understood as a process that affects organizational structures, professional roles, decision-making, service processes, and institutional boundaries rather than a simple substitution of manual procedures with electronic applications (Setyawan, 2024; Syam et al., 2025). This shift has important implications for public administration research because the effectiveness of digital transformation increasingly depends on the capacity of public institutions to reorganize themselves around technological and social change.

Research on public sector digital transformation has consequently paid growing attention to organizational and institutional conditions. Kirana and Majid (2022) argue that digital transformation requires fundamental changes in organizational culture, processes, and public sector capabilities. Similarly, Dicksan (2026b) emphasizes that digital transformation is shaped by interactions between technological innovation and organizational structures, while Buhaichuk (2026) demonstrates that digital government performance cannot be separated from institutional arrangements and administrative capacity. These studies have contributed significantly to moving the literature away from technological determinism. Nevertheless, the concept of institutional capacity has often remained dominant, directing attention toward whether governments possess sufficient resources, skills, leadership, infrastructure, and organizational readiness. Such an approach is necessary but incomplete. Institutions operating under constrained conditions do not simply succeed or fail according to the amount of capacity they possess. They also develop practical responses when formal capacities are insufficient, including adjustments to routines, informal coordination, redistribution of responsibilities, alternative service channels, and direct assistance to citizens. These processes are better understood as institutional adaptation.

The distinction between capacity and adaptation is particularly relevant to public service delivery. Institutional capacity generally concerns the resources and competencies available to an organization, whereas adaptation concerns how institutions change their practices when established arrangements no longer adequately respond to emerging conditions. Digital transformation frequently creates precisely such conditions. New platforms alter workflows, require different forms of

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coordination, redistribute informational responsibilities, and create new points of interaction between citizens and frontline bureaucrats. Frontline officials may become intermediaries between citizens and digital systems rather than simply providers of conventional face-to-face services. They may assist users with registration, document submission, verification, or troubleshooting when citizens cannot independently complete digital transactions. Such practices demonstrate that the persistence of human intervention does not necessarily indicate a failure of digitalization. Under certain conditions, it represents an institutional mechanism for making digital services socially usable.

The growing literature on digital inclusion reinforces this argument. Digital exclusion is no longer understood solely as the absence of devices or internet connections. Access to digital public services is shaped by multiple layers of inequality involving connectivity, affordability, digital skills, information literacy, usability, trust, and the ability to navigate bureaucratic requirements embedded in digital systems (Corrales et al., 2026; Su, 2026). Citizens may possess smartphones and basic internet access while still being unable to complete government transactions independently. Public services often require users to interpret administrative terminology, upload specific documents, verify identities, follow sequential procedures, and respond to system-generated instructions. Consequently, the transition from offline to digital service delivery can transfer administrative responsibilities from government employees to citizens. Where such responsibilities exceed citizens' digital or bureaucratic capabilities, digitalization may produce a new form of exclusion rather than greater accessibility.

Recent research has increasingly demonstrated the importance of examining digital inclusion within public service ecosystems rather than treating it as an individual deficit. Shibambu (2023), through a systematic review of digital inclusion in public services, shows that inclusion is shaped by interacting conditions at macro, meso, and micro levels, including institutional arrangements and service environments. Likewise, Rahawarin and Sakir (2026) emphasize that infrastructural gaps, institutional barriers, and unequal digital capabilities continue to limit the inclusiveness of e-government adoption among marginalized communities. The issue is also spatial. A recent review of technology-driven public services shows that digital systems can widen rather than bridge inequalities when individual needs are disconnected from spatial and community conditions (Wiradanti et al., 2026). This observation is especially relevant to archipelagic regions, where spatial inequality is not confined to differences between urban and rural populations but is produced through the fragmentation of territory itself.

Existing studies of digital government in Indonesia have identified many of the practical barriers surrounding public sector digitalization. Research commonly points to infrastructure limitations, fragmented systems, uneven human resource capabilities, digital literacy gaps, regulatory challenges, and weak coordination among government agencies. These findings have been valuable in documenting the complexity of Indonesia's digital transformation agenda. A recent systematic review of digital public service policies in Indonesia similarly concludes that institutional coordination, technological readiness, human resource capacity, and infrastructure remain central determinants of implementation outcomes (Pratiwi & Aryani, 2026). At the local level, studies have shown that digital transformation can improve efficiency and transparency while simultaneously encountering organizational resistance, uneven competencies, and disparities in citizens' ability to access digital services.

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Yet much of this literature still approaches geographical conditions as contextual obstacles surrounding implementation rather than as forces that actively shape the governance of digital services.

This distinction matters because rurality and archipelagicity are not analytically interchangeable. Rural areas may experience limited infrastructure, lower population density, and resource constraints, but archipelagic administrations also confront discontinuous territorial connectivity, inter-island transportation dependency, fragmented administrative reach, and substantial variations in the practical accessibility of government institutions. A service model that functions effectively in a mainland district may not operate in the same way when citizens and administrative offices are separated by sea routes and uneven telecommunications networks. Archipelagicity, therefore, should not be reduced to a geographical description of the research site. It represents an administrative condition that affects how governments coordinate services, deploy infrastructure, organize frontline work, and maintain continuity of citizen access.

This territorial perspective also complicates conventional measures of digital government success. Governments frequently evaluate digital transformation through indicators such as the number of services available online, system integration, institutional maturity, or the efficiency of administrative processes. These indicators remain important, but they reveal little about whether citizens actually experience the intended benefits. The recent development of public value scholarship in digital government has challenged the assumption that technological implementation should itself be treated as evidence of success. Public value concerns the broader benefits generated through public action, including convenience, equity, trust, responsiveness, transparency, democratic participation, and institutional capability (Saputra et al., 2026; Uang & Susniwati, 2025). In digital government research, this perspective has become increasingly relevant because the value created by digital services may differ substantially across citizen groups.

Deni et al. (2020) demonstrate that citizens perceive public value through both individual benefits and wider social values associated with government capability, equity, and democratic society. Their findings are significant because they shift attention from institutional claims about digital efficiency toward citizens' experiences of value. Similarly, Putri and Kamaruddin (2026) find that the quality, use, and satisfaction associated with digital government services influence the extent to which citizens perceive convenience, flexibility, and process simplification as public value. These studies suggest that public value cannot simply be inferred from the existence of digital platforms. It must be demonstrated through the relationship between service design, citizen use, and actual outcomes. The growing emphasis on citizen perspectives also reveals a potential tension within user-centered digital government. Systems designed to increase convenience may nevertheless deepen inequalities if the burden of navigating digital procedures is shifted onto users with unequal capacities and resources (Bandjar et al., 2026).

The relationship between digital transformation and public value is therefore conditional rather than automatic. Digital technologies can reduce transaction costs, improve access to information, and simplify interactions with government, but these benefits depend on institutional arrangements that connect technological systems with citizens' actual circumstances. Research on public service chatbots, for example, shows that digital tools can improve access and provide public institutions with better insights into citizens' needs, while their effectiveness remains dependent on how technology is embedded within broader service provision arrangements (Ramadhanu et al., 2025).

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Similarly, Uang et al. (2025) argue that digital transformation requires explicit consideration of public values in policy design rather than assuming that technological innovation inherently generates socially desirable outcomes. These arguments are particularly important for developing regions, where the institutional and infrastructural conditions necessary for digital service delivery remain uneven.

The literature thus provides substantial knowledge about digital government adoption, organizational capacity, digital inclusion, service quality, and public value. What remains less adequately explained is the process through which public institutions respond when digital transformation unfolds across territorially fragmented environments and unequal conditions of access. Existing studies often examine institutional determinants, citizen adoption, or service outcomes separately. This separation obscures the mechanisms linking geographical conditions to organizational responses and, ultimately, to citizens' experiences of digital public services. In archipelagic settings, geographical fragmentation may not directly determine whether digitalization succeeds or fails; rather, its consequences are mediated through the ways institutions adapt service routines, coordinate across organizational and territorial boundaries, maintain alternative channels, and support citizens who cannot independently navigate digital systems.

This perspective makes it possible to move beyond the familiar conclusion that digitalization improves services but is constrained by infrastructure and digital literacy. Such a conclusion identifies obstacles without sufficiently explaining how public institutions govern those obstacles. The present study instead approaches digital transformation as a process in which territorial conditions generate pressures for institutional adaptation, institutional adaptation reshapes service delivery arrangements, and these arrangements influence the inclusion or exclusion of citizens and the public value ultimately produced. From this standpoint, hybrid services, frontline assistance, informal coordination, organizational learning, and alternative delivery channels are not peripheral implementation issues. They may constitute the institutional mechanisms through which digital government becomes workable under unequal territorial conditions.

Accordingly, this study examines how public institutions in Maluku adapt to the transformation of public service delivery in an archipelagic context and how such adaptation shapes digital inclusion and the creation of public value. It addresses three interconnected questions: how public institutions adapt organizational practices, routines, and coordination mechanisms to digital public service transformation; how geographical and institutional conditions shape citizens' experiences of inclusion and exclusion; and how institutional adaptation influences the extent to which digital public services generate meaningful public value. By placing institutional adaptation between territorial conditions and citizen outcomes, the study seeks to contribute a context-sensitive understanding of digital public service governance in which geography is treated not as a passive background variable but as an administrative condition that actively shapes the possibilities and limits of digital transformation.

METHODS

This study employed a qualitative multiple-case study to examine how public institutions adapt to digital public service transformation under the geographically fragmented conditions of an archipelagic region. A qualitative approach was considered appropriate because the study sought to understand processes, institutional practices, interactions, and

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meanings that cannot be adequately captured through predetermined variables or standardized measurements. The central concern was not whether digitalization statistically improves public service performance, but how public institutions respond when standardized digital systems encounter unequal infrastructure, dispersed populations, and differentiated citizen capacities. This required attention to the practices through which actors interpret constraints, modify routines, coordinate responsibilities, and maintain service continuity. The multiple-case design was adopted to capture variation in digital service governance across different territorial and administrative settings while allowing the researcher to identify recurring patterns and context-specific differences (Creswell & Poth, 2018).

The research was conducted in Maluku Province, Indonesia, with cases selected from provincial, urban, and geographically dispersed local government settings. Maluku was chosen not merely because it represents an eastern Indonesian region with relatively uneven digital infrastructure, but because its archipelagic configuration provides an analytically relevant setting for examining the relationship between territorial fragmentation and public administration. The separation of communities and government institutions across islands creates differentiated conditions of connectivity, mobility, and administrative access. Examining contrasting service environments within the province enabled the study to explore how similar digital government policies may be translated into different institutional practices and citizen experiences.

A total of 36 informants were selected through purposive sampling, guided by their direct involvement in the governance, implementation, or use of digital public services. The participants included 10 policymakers and senior officials from agencies responsible for digital governance, planning, and public administration; 12 service implementers and frontline bureaucrats from selected public service agencies; and 14 citizens who had direct experience using, attempting to use, or encountering difficulties with digital public services. This composition was intended to avoid an exclusively government-centered interpretation of digital transformation. Policymakers provided information on institutional strategies and formal governance arrangements, frontline officials revealed how policies were translated into everyday service practices, and citizens offered evidence regarding actual accessibility, assistance, exclusion, and perceived public value. Informant recruitment continued until the data demonstrated sufficient information power and recurring patterns across participant groups.

Data were collected through semi-structured interviews, direct observation, document analysis, and examination of selected digital service platforms. Semi-structured interviews were used because they allowed the researcher to maintain a common analytical focus while remaining open to unexpected forms of institutional adaptation and citizen experience. Interviews explored organizational changes, coordination practices, technological constraints, service adjustments, and experiences of access or exclusion. Direct observation was conducted in selected service environments to examine how digital and face-to-face interactions were combined in practice, particularly when citizens required assistance to complete digital procedures. Documentary evidence, including regional regulations, digital government planning documents, service standard operating procedures, evaluation reports, and institutional publications, was analyzed to compare formal policy arrangements with actual implementation. Selected digital platforms were also examined to assess service procedures, accessibility, user guidance, and available assistance mechanisms.

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Data analysis followed an iterative thematic process involving initial coding, the development of second-order themes, and the identification of broader analytical dimensions concerning institutional adaptation, digital inclusion, and public value. Triangulation was conducted through the comparison of evidence across participant groups, data collection methods, and documentary sources. Divergent accounts were not treated as errors but as analytically meaningful differences between institutional intentions, frontline practices, and citizen experiences. Credibility was further strengthened through member reflection with selected informants and continuous comparison between emerging interpretations and the empirical evidence. This approach enabled the study to develop a process-oriented explanation of how archipelagic conditions shape institutional responses and, ultimately, the distribution of benefits and burdens associated with digital public service transformation.

RESULTS AND DISCUSSION

Archipelagicity as an Administrative Condition: Territorial Fragmentation and Uneven Digital Service Reach

The findings indicate that the challenges of digital public service delivery in Maluku cannot be adequately explained through conventional accounts of inadequate infrastructure or limited digital literacy. These factors matter, but they are embedded within a broader territorial condition in which public administration operates across geographically dispersed islands with unequal levels of connectivity, infrastructure, mobility, and institutional presence. Digital inequality is therefore not uniformly distributed across the province. Citizens encounter different versions of the digital state depending on where they live, the reliability of available networks, their proximity to service institutions, and the capacity of local agencies to provide assistance when digital systems cannot be accessed independently.

This territorial variation was particularly visible in the contrast between relatively connected urban settings and geographically dispersed service areas. In urban locations, digital platforms could reduce the need for repeated visits to government offices and facilitate faster access to information and administrative procedures. The experience was markedly different in areas where internet connectivity was unstable or where access to government institutions required substantial inter-island travel. One frontline official explained that the availability of an online system did not necessarily eliminate physical interaction because citizens often had to seek assistance when connections failed or when they could not complete the required procedures independently. As the informant, identified as R.S., observed, "the service may already be online, but when the network is unstable or citizens do not understand the process, they still come to us for help." This illustrates a central feature of digital public administration in an archipelagic environment: technological availability and practical accessibility are not equivalent.

The geographical fragmentation of Maluku also affected the organizational reach of public institutions. Government agencies could establish standardized digital procedures at provincial or municipal levels, yet the continuity of service depended on conditions beyond the formal architecture of the platform. In several cases, administrative coordination had to accommodate delayed communication, uneven access to digital infrastructure, and the absence of equally capable institutional support across locations. An official involved in digital governance, M.A., noted that policies and systems could be designed centrally, but "implementation is experienced differently from one island to another because the conditions are not the same." The finding

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suggests that territorial fragmentation enters the administrative process itself. It influences how institutions communicate, how quickly problems can be resolved, and how consistently service standards can be maintained.

This condition also complicates the assumption that digitalization necessarily reduces distance. Digital systems can reduce the physical distance between citizens and government offices only when the technological and institutional conditions required for remote interaction are present. Where these conditions are weak, citizens may simply encounter a different form of distance. Instead of travelling directly to a government office, they may need to travel to locations with stronger connectivity, rely on family members or intermediaries, or repeatedly switch between online and offline channels. A citizen informant, N.L., described this experience as one in which "the application is available, but availability is different from being able to use it when needed." Such accounts demonstrate that geographical distance is not eliminated by digitalization; rather, it is reconfigured through the interaction between territory, infrastructure, technology, and administrative support.

The findings resonate with scholarship that increasingly treats digital transformation as context-dependent rather than technologically deterministic. Saputra et al. (2026) argue that digital government evolves through processes of contextualization in which institutional and environmental conditions shape the meaning and operation of technological transformation. More recent research similarly emphasizes that digital public services must be understood in relation to organizational arrangements, social inequalities, and the specific contexts in which citizens encounter technology (Deni et al., 2020; Putri & Kamaruddin, 2026). In the case of Maluku, however, the territorial dimension requires greater analytical attention. The archipelagic setting is not simply an environmental backdrop within which digital government is implemented. It actively shapes organizational reach, service continuity, coordination capacity, and the practical conditions under which citizens can engage with public institutions.

The evidence therefore supports the interpretation of archipelagicity as an administrative condition. This concept refers to a territorial configuration in which geographical dispersion systematically affects the operation and experience of public administration. Its significance extends beyond unequal internet coverage. Archipelagicity influences whether institutions can maintain consistent service arrangements across territories, whether citizens can independently access digital systems, and whether administrative support remains available when technological processes fail. The same formal digital service can consequently generate different experiences across islands because the institutional and technological conditions surrounding its use are unevenly distributed.

Seen from this perspective, territorial inequality does not disappear when services become digital. It is mediated differently. Where institutional presence, connectivity, and user support are relatively strong, digitalization can reduce administrative distance and transaction costs. Where these conditions are weak, the burden of overcoming territorial and technological constraints may shift to citizens themselves. This finding provides the foundation for the subsequent analysis: the consequences of archipelagic fragmentation are not determined by geography alone but by how public institutions adapt their routines, coordination mechanisms, and service practices to the unequal conditions created by that geography.

Institutional Adaptation Beyond Formal Digitalization: Reconfiguring Routines and Administrative Practices

The uneven territorial conditions described above do not simply constrain digital public

service delivery; they also generate pressure for public institutions to modify how services are organized and sustained. The findings show that institutional responses in Maluku cannot be adequately understood through the conventional notion of institutional capacity alone. Capacity concerns whether an institution possesses the resources, competencies, infrastructure, and organizational arrangements required to perform its functions. Adaptation, by contrast, concerns what institutions actually do when those resources and formal arrangements prove insufficient for the conditions they encounter. In the cases examined, digital transformation was therefore not implemented as a straightforward translation of formal policy into standardized technological procedures. It involved continuous adjustments to organizational routines, responsibilities, coordination practices, and service channels.

One of the clearest forms of adaptation was the reconfiguration of everyday administrative routines. Digital platforms introduced new requirements for data entry, verification, communication, document management, and monitoring, but these requirements did not always correspond neatly with existing divisions of work. Frontline personnel consequently assumed tasks that extended beyond their formal administrative responsibilities, particularly when citizens encountered difficulties navigating digital procedures. An official identified as R.S. explained that the introduction of digital services "changed the way we work because the officer cannot only wait for the system; we also have to make sure the citizen can complete the process." This observation is significant because it shifts attention from the technical functionality of a platform to the organizational work required to make that platform operational in practice. Digital transformation, in this sense, created additional forms of administrative mediation rather than simply eliminating conventional bureaucratic tasks.

The same pattern appeared in inter-unit coordination. Formal digital systems may establish standardized workflows, but service continuity often depended on communication practices that were not fully encoded within the system itself. When technical problems, incomplete submissions, connectivity interruptions, or unclear procedures occurred, officials relied on direct communication through alternative channels to resolve cases. An informant from a local service institution, M.A., described this as a practical necessity: "If we rely only on the application, some cases will stop. We have to communicate directly with the other unit to find out what happened." Such practices indicate that informal coordination should not automatically be interpreted as an organizational deficiency. Under conditions where formal digital architectures do not adequately accommodate territorial and operational variation, informal coordination can function as an adaptive mechanism that protects service continuity.

This finding also reveals a subtle tension between standardization and contextual responsiveness. Digital government is often designed around the assumption that standardized procedures will reduce administrative discretion and variation. Standardization can indeed improve consistency, but excessive reliance on uniform procedures may become problematic when the conditions of service users and local institutions are highly differentiated. In Maluku, the same digital procedure may encounter different infrastructural conditions and different levels of user capability across islands. Officials therefore developed practical adjustments, including alternative communication channels, assisted submissions, temporary manual processing, and direct clarification of administrative requirements. These adjustments did not necessarily replace the formal digital

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system. Instead, they operated alongside it, allowing the institution to absorb disruptions that the formal system could not resolve on its own.

The evidence suggests that this form of adaptation is particularly important at the frontline of service delivery. Frontline bureaucrats occupy a position between formal institutional rules and the circumstances of individual citizens. Their work involves interpreting procedures, responding to unexpected problems, and deciding how to keep services moving when standardized arrangements encounter practical difficulties. This role is consistent with the broader literature on public sector digital transformation, which emphasizes that technological change alters organizational routines and professional roles rather than merely replacing manual processes (Poti et al., 2026). Digital transformation can therefore be understood as an organizational process in which institutions learn to accommodate new technologies while preserving the substantive objective of service delivery.

The findings further indicate that adaptation developed through experience rather than exclusively through formal planning. Officials learned from recurring network disruptions, incomplete digital submissions, citizen confusion, and coordination failures, gradually developing routines for responding to these situations. In this respect, institutional learning became embedded in everyday practice. One informant, A.H., described the process as gradual: "At first we followed the procedure as written, but after seeing the problems faced by citizens, we adjusted how we assisted them." Such adjustments are analytically important because they show that institutional change can emerge from repeated encounters with implementation problems. Adaptation is therefore not necessarily a discrete reform event; it may be an incremental process through which organizations revise practices in response to situated experience.

This pattern extends the understanding of digital government beyond technological determinism. Poti et al. (2026) argue that digital transformation involves changes in organizational structures, processes, and value-creation mechanisms, while Sakir (2025) emphasizes the importance of organizational culture and changing ways of working in public sector transformation. In the Maluku context, these organizational changes acquire an additional territorial dimension. Institutions are not adapting to technology in an abstract organizational environment; they are adapting to technology while simultaneously managing geographical fragmentation, uneven connectivity, and unequal citizen capabilities. The result is a form of adaptive institutional mediation, in which public institutions translate standardized digital systems into workable service arrangements under non-standard territorial conditions.

This concept is important because it places the institution between technology and citizen experience. The relationship is not simply standardized digital system to improved service. Rather, it follows a more contingent pathway: standardized digital architecture encounters territorial and social constraints; institutions interpret and mediate those constraints; administrative routines are adjusted; and citizens subsequently experience the service through these adapted arrangements. Institutional adaptation therefore determines, in part, whether technological limitations become barriers to service access or are absorbed through organizational responses. The finding also explains why similar digital platforms can produce substantially different experiences across locations without necessarily implying that the technology itself differs.

The practical implication is that digital transformation should not be evaluated solely through the presence of digital platforms or the formal maturity of institutional systems. Attention must also be given to the adaptive work performed by

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organizations and frontline personnel to sustain service continuity. In an archipelagic context, this adaptive work is not an incidental feature of implementation. It is part of the governance infrastructure through which digital public services become usable. The evidence consequently suggests that institutional adaptation should be treated as a substantive component of digital government capability: not merely the capacity to introduce technology, but the capacity to continuously reconcile standardized systems with territorial realities and citizens' differentiated needs. This finding provides the basis for examining the next dimension of the process, namely how such adaptation becomes expressed through hybrid and assisted forms of digital service delivery.

Hybrid and Assisted Digital Service Delivery: Frontline Bureaucracy as an Inclusion Mechanism

The findings indicate that digitalization has not eliminated face-to-face interaction in public service delivery in Maluku. Rather, digital platforms have become embedded within a broader service arrangement in which online systems, frontline assistance, informal communication, and alternative service channels operate alongside one another. Citizens may begin a procedure through a digital platform, encounter difficulties related to connectivity, unfamiliar procedures, document requirements, or system errors, and subsequently seek assistance from frontline officials. The process may then continue through direct interaction, telephone or messaging applications, or other administrative channels before returning to the digital system or being completed through an alternative procedure. Digital service delivery therefore emerges not as a fully online process, but as a hybrid institutional arrangement shaped by the practical conditions under which citizens encounter the digital state.

This pattern is particularly important because conventional narratives of digital transformation often associate progress with the replacement of physical interaction by automated or self-service platforms. Such an assumption is problematic in territorially fragmented environments where access to technology, digital capability, and administrative support varies considerably. The persistence of human assistance should not automatically be interpreted as evidence of incomplete transformation. Instead, it may represent an institutional response to the limitations of standardized digital systems. As Poti et al. (2026) and Sakir (2025) emphasize, digital transformation involves changes in organizational processes, roles, and capabilities rather than the simple introduction of technological platforms. In the Maluku context, this transformation appears to have generated new forms of frontline mediation through which formal digital procedures are translated into practices that citizens can actually navigate.

Frontline bureaucrats consequently occupy a role that extends beyond conventional service provision. They become digital intermediaries who explain procedures, assist citizens in entering information, clarify documentation requirements, troubleshoot technical problems, and redirect users toward alternative channels when digital procedures cannot be completed independently. One frontline informant, identified here as A.H., described the practical reality of this arrangement as involving continued assistance even when a service had formally been moved online. Such assistance illustrates an important institutional distinction between the availability of a digital service and the capacity of citizens to complete that service without support. The latter depends not only on individual digital skills but also on whether institutions provide mechanisms for overcoming difficulties encountered during the service process.

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This finding suggests that hybrid service delivery should be understood as more than a temporary compromise between traditional and digital administration. It represents a form of hybrid adaptive service delivery, in which institutions combine digital platforms with human assistance, alternative communication channels, and frontline discretion to maintain service accessibility under uneven territorial conditions. The arrangement reflects what Sakir (2025) identifies as the organizational dimension of digital transformation: technological change requires corresponding adjustments in institutional structures and practices. In this sense, frontline mediation is not external to digital transformation; it is part of how transformation becomes operationally meaningful.

The significance of this arrangement becomes clearer when viewed through the lens of inclusion. A strictly self-service model may appear efficient from an administrative perspective but can transfer the costs of digitalization to citizens who lack stable connectivity, procedural familiarity, or sufficient digital capability. Assisted service delivery partially absorbs these costs within the institution rather than leaving citizens to manage them alone. This does not mean that human assistance should permanently substitute for improvements in infrastructure or platform design. Rather, the evidence suggests that institutional assistance functions as a necessary inclusion mechanism while digital systems operate within unequal social and territorial environments. Digital transformation therefore becomes more inclusive when technological systems are accompanied by institutional capacity to mediate between standardized procedures and differentiated citizen circumstances.

The emerging argument is consequently not that Maluku requires less digitalization, but that it requires a different understanding of what successful digitalization entails. A digitally mature public service system may not be the one that minimizes human interaction at all costs, but one capable of determining when automation is appropriate and when human intermediation remains necessary. This positions frontline bureaucracy as an integral component of digital governance and provides a bridge to the subsequent question of digital inclusion: whether citizens merely possess access to digital platforms or are institutionally supported to complete public services through them.

Digital Inclusion as Institutional Support: From Individual Access to Meaningful Service Capability

The preceding findings show that the practical meaning of digitalization cannot be separated from the institutional arrangements surrounding citizens' use of digital services. If hybrid service delivery represents the institutional response to territorial and technological constraints, digital inclusion represents the point at which those responses become consequential for citizens. The evidence indicates that access to a smartphone, an internet connection, or a government application is insufficient to establish that citizens are meaningfully included in digital public services. What matters is whether citizens can move through the administrative process, understand what is required of them, respond to procedural demands, and ultimately complete the service they seek. This distinction is important because digitalization can formally expand access while simultaneously relocating administrative responsibilities from public institutions to citizens. Recent research similarly shows that digital inclusion in public services extends beyond technological access to include skills, knowledge, institutional arrangements, and the capacity to derive meaningful benefits from digital systems.

The experiences of citizens in Maluku illustrate this distinction particularly clearly. Several forms of difficulty identified in the study were not necessarily associated with the absence of devices or connectivity. Instead, citizens

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encountered problems in interpreting administrative requirements, preparing and uploading documents, completing verification procedures, responding to system-generated errors, and determining what to do when an application did not proceed as expected. These difficulties are analytically different from simply being "digitally illiterate." They emerge at the intersection between individual capability and the procedural complexity of public administration. A citizen may understand how to operate a smartphone but still be unable to interpret a bureaucratic instruction or determine which document satisfies a particular administrative requirement. In this sense, digital capability is partly relational: it depends on how understandable the service architecture is and on whether institutions provide mechanisms through which users can resolve uncertainty. This finding is consistent with recent scholarship arguing that digital inclusion should be examined within the wider public service ecosystem rather than reduced to an individual deficit.

The interviews further indicate that institutional support often determines whether an initial difficulty becomes exclusion. Frontline officials did not merely provide technical assistance; they interpreted administrative requirements, explained procedures, checked documents, helped users navigate applications, and redirected citizens when a particular digital pathway could not be completed. The role of the institution was therefore not exhausted by making a platform available. It extended to creating the conditions under which citizens could successfully use that platform. This observation is particularly important in an archipelagic setting because the consequences of procedural difficulty are amplified by distance. A citizen who cannot complete an online application may not simply make another visit to a nearby government office. The alternative may involve seeking assistance from another person, travelling to a location with better connectivity, or repeatedly moving between online and offline channels. Institutional assistance can therefore reduce not only digital difficulty but also the territorial and administrative costs attached to that difficulty.

The evidence supports a distinction between three empirically observable conditions of digital inclusion. The first consists of citizens who can navigate the digital service independently and complete the required process; these citizens experience what can be described as meaningful inclusion. The second consists of citizens who can obtain the service but require assistance from frontline officials, family members, or other intermediaries; these are assisted digital users. The third consists of citizens who formally have access to the digital system but cannot complete the administrative process without substantial intervention or an alternative service channel; these are digitally constrained citizens. This distinction should not be interpreted as a rigid classification of citizens, because the same individual may move between categories depending on the complexity of the service, connectivity conditions, or the availability of institutional assistance. Its analytical value lies instead in demonstrating that digital inclusion is better understood as a continuum of service capability than as a binary condition of access.

This interpretation also complicates the assumption that self-service necessarily represents the highest stage of digital government maturity. A platform may be technologically sophisticated and formally accessible while remaining administratively difficult to navigate. Conversely, a system that incorporates human assistance may appear less technologically autonomous but generate a more inclusive service experience. Research on street-level intermediation has similarly demonstrated the paradoxical character of digital inclusion: digitalization may simplify service access for some users while

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reproducing administrative burdens for those who cannot independently navigate digital procedures. The Maluku evidence adds a territorial dimension to this argument. Where connectivity and institutional reach are uneven, frontline assistance does not merely compensate for individual skill deficits; it mediates the unequal conditions under which citizens encounter the digital state.

The concept of meaningful digital inclusion emerging from the findings can therefore be formulated as the intersection of access, capability, institutional support, and service completion. Access answers whether citizens can reach the digital system. Capability concerns whether they can understand and navigate it. Institutional support determines whether difficulties can be resolved without transferring the entire burden to the citizen. Service completion provides the substantive test of whether inclusion has actually occurred. This final dimension is critical because a citizen who successfully opens an application but fails to obtain the intended administrative service has experienced technological access without meaningful administrative inclusion. Recent scholarship likewise cautions against evaluating digital inclusion primarily through infrastructure and usage indicators, noting a persistent gap between what digital inclusion measures capture and how inclusion is actually experienced in public services.

The implication for Maluku is that institutional support should not be treated as an auxiliary component added after digital systems have been designed. It is part of the infrastructure of inclusion itself. The findings suggest that institutions become more inclusive when they recognize points at which citizens are likely to encounter procedural, technological, or territorial barriers and deliberately retain mechanisms for assistance. Such mechanisms include frontline guidance, alternative communication channels, clarification of administrative requirements, and the possibility of moving between digital and face-to-face modes when necessary. This does not imply that governments should preserve inefficient manual procedures indefinitely. Rather, it suggests that digital transformation should be judged by whether it reduces the overall burden of obtaining public services, rather than by how successfully it eliminates human interaction. In the archipelagic context examined here, meaningful digital inclusion is therefore not produced by technology alone. It emerges when technological systems, citizen capabilities, and institutional support are organized together so that geographical and administrative inequalities do not determine who is ultimately able to complete a public service process.

Conditional Public Value: When Digital Transformation Reduces or Redistributes Administrative Burdens

The preceding findings indicate that the value of digital transformation cannot be assessed simply by asking whether public services have been transferred to digital platforms. The more consequential question is what this transformation does to the conditions under which citizens obtain public services. In the Maluku cases, digitalization can generate tangible benefits, including reduced travel, shorter waiting time, easier access to information, faster administrative transactions, greater responsiveness, and less dependence on physical presence at government offices. Yet these benefits are not distributed automatically across citizens or territories. The qualitative multiple-case design shows that the effects of digitalization are mediated by the interaction between territorial conditions, institutional adaptation, and citizens' capacity to navigate service procedures. This is consistent with the study's analytical orientation, which examines not whether digitalization statistically improves performance, but how institutions respond to uneven infrastructure and differentiated citizen capacities.

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From the citizens' perspective, therefore, public value emerges when digital infrastructure is translated into an administratively usable service. A digital platform may theoretically eliminate the need to travel to an office, but that benefit becomes meaningful only when citizens can access the system, understand the procedure, submit the required information, respond to verification, and complete the transaction. The earlier findings on hybrid service delivery are important here. Citizens may begin online, encounter connectivity problems, unfamiliar procedures, documentation requirements, or system errors, and then depend on frontline officials, telephone communication, messaging applications, or alternative administrative channels. The implication is significant: convenience is not an inherent property of digital technology but an outcome of how technology is institutionally embedded in the service process. This argument corresponds with Sakir (2025), who shows that citizens perceive value from digital government through concrete individual benefits as well as broader values such as equity and government capability.

The findings also reveal the less visible side of digital transformation. When institutional support is weak, digitalization can relocate administrative work rather than eliminate it. Citizens may be required to interpret procedures independently, locate reliable connectivity, prepare and upload documents, correct errors, monitor application status, and determine what to do when the system does not function as expected. In an archipelagic setting, these tasks may become more demanding because connectivity and physical access are already uneven. The consequence is that a service can become formally digital while remaining practically burdensome. This distinction is crucial because administrative burden is experienced through the effort required to understand, comply with, and navigate government processes, not simply through the physical presence of paperwork or government offices. Recent research similarly shows that digitalization may reduce burdens for some users while reproducing or intensifying them for citizens with weaker digital capabilities.

The role of frontline institutions consequently becomes central to the distribution of public value. The evidence shows that frontline officials do not merely implement a predetermined digital procedure; they mediate between standardized systems and differentiated citizen circumstances by explaining requirements, assisting data entry, resolving problems, and redirecting citizens when digital procedures cannot be completed independently. Such mediation can prevent technological difficulties from becoming exclusion. At the same time, it should not be romanticized as a permanent solution. If citizens must repeatedly rely on officials to complete supposedly self-service procedures, the institutional arrangement is absorbing costs that the digital system has failed to resolve. This is precisely where the notion of digital inclusion becomes connected to public value: inclusion depends not only on whether citizens can enter a digital system, but on whether the institutional environment enables them to successfully obtain the service.

The evidence therefore supports a conception of public value as conditional rather than automatic. Where reliable digital infrastructure is combined with adaptive institutions, meaningful inclusion, and accessible assistance, digital transformation can reduce transaction costs and generate public value. Where these conditions are weak, the same transformation can redistribute administrative burdens toward citizens, particularly those living in territorially disadvantaged settings or possessing fewer resources for navigating digital procedures. This interpretation also resonates with recent scholarship showing that online and offline services remain interdependent and that digital

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transformation can reproduce spatial and social inequalities when service design is disconnected from users' actual circumstances.

The central contribution of the findings can therefore be expressed as follows: digital transformation creates public value not through technological availability alone, but through the institutional capacity to prevent digital systems from transferring unresolved administrative burdens to citizens. Public value is produced when digital infrastructure, institutional adaptation, and meaningful inclusion work together; conversely, weak institutional adaptation and unequal access transform the expected benefits of digitalization into additional work, uncertainty, and costs for citizens. This moves the analysis beyond the conventional assumption that successful digital government is equivalent to more services being available online. Instead, successful transformation should be judged by whether digitalization actually changes the distribution of administrative effort in ways that make public services more accessible, responsive, and equitable. The implication is particularly important for archipelagic governance, where the effectiveness of digital government ultimately depends on institutions' capacity to mediate, rather than ignore, the territorial and social inequalities through which citizens encounter the digital state.

CONCLUSION

This study concludes that governing digital public services in an archipelagic context is fundamentally a process of institutional adaptation rather than a matter of technological adoption alone. In Maluku, geographical fragmentation, uneven connectivity, and differentiated service conditions shape how public institutions reorganize routines, coordination, frontline roles, and service channels to sustain service continuity. Such adaptation is consequential because digital inclusion depends not only on citizens' access to devices, connectivity, or digital platforms, but also on whether institutions provide the assistance and alternative arrangements necessary for citizens to complete public service processes. The study therefore identifies meaningful inclusion as an institutional as well as individual capability: citizens are more likely to benefit from digital services when technological systems are accompanied by forms of frontline mediation that respond to territorial and practical constraints. These conditions also determine whether digital transformation produces public value. Where institutional adaptation and support are present, digital services can reduce travel, time, and transaction costs and improve the accessibility and responsiveness of government; where they are weak, the administrative work that digitalization is expected to reduce can instead be transferred to citizens. The study's contribution lies in positioning archipelagicity as an administrative condition that actively shapes the relationship between digital transformation and citizen experience, rather than treating geography merely as a contextual constraint. From this perspective, the effectiveness of digital public service governance should be assessed not by the extent to which services are placed online, but by the institutional capacity to make those services meaningfully accessible and to prevent digital transformation from reproducing territorial inequality through the redistribution of administrative burdens.

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