

Bureaucratic Innovation in Disaster Response: A Public Service Perspective

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Abstract: The urgency of this research lies in the increasing frequency and complexity of disasters in South Sulawesi, which demand that regional bureaucracies be able to innovate adaptively. This study aims to analyze the forms and characteristics of public service innovation, the factors influencing the bureaucracy's role in accelerating disaster response, and the challenges of its implementation. The method used is a qualitative approach involving in-depth interviews, field observations, and documentation to understand bureaucratic innovation practices in crises comprehensively. Data analysis was conducted using NVivo 12 Plus with systematic coding and source triangulation to ensure the credibility of the research findings. The main findings of the study indicate that public service innovations in disaster management in South Sulawesi emerged in the form of simplified procedures, the formation of cross-governmental organizations (OPD) teams, the use of digital technology, and strengthened collaboration with the community and non-governmental actors. These innovations have been shown to accelerate responses, improve service accuracy, and enhance the quality of public services for affected communities. However, the effectiveness of innovation is strongly influenced by institutional capacity, bureaucratic leadership, cross-sector coordination, and regulatory and resource support. The study also found that public service innovations tend to be reactive and temporary, requiring institutionalization and policy strengthening to ensure sustainability over the long-term disaster cycle.

1. Introduction

The increasing frequency and complexity of natural disasters in South Sulawesi, such as floods, landslides, and other hydrometeorological disasters (Aprianti et al., 2025; Sultan, Amir, Tenriliweng, Arya, & Hidayatullah, 2024; Yunus, Tenri, & Thaba, 2022), demand a rapid, adaptive, and coordinated response from local governments. In crisis conditions, public services are not only required to continue operating but also to transform through innovation so that the needs of affected communities can be met effectively (Campos & Gil, 2025; Kuhn et al., 2022; Robinson & Botzen, 2025). However, bureaucratic practices that tend to be procedural, hierarchical, and inflexible often hinder accelerated disaster response (Jan-nat et al., 2023; Phillips & Pue, 2023; Rudi, 2023). Therefore, the role of bureaucracy as a key actor in

designing and implementing public service innovation is a strategic issue that warrants in-depth study, especially in the context of accelerating disaster response in South Sulawesi.

Several studies have shown that public service innovation in crises has become a significant focus in public administration and disaster management studies (Kanokthet, 2018; Suharyanto, Batubara, Barus, & Junita, 2025). Other studies emphasize that innovation can emerge through simplified procedures, the use of digital technology, strengthened cross-sector collaboration, and the empowerment of local communities. In the context of disasters, public service innovation is understood as bureaucratic efforts to move beyond routine work patterns and adopt a more responsive approach to the dynamic needs of affected communities (Agbugba, Mehren, & Eze, 2025; Siriwardhana & Kulatunga, 2025). The literature also confirms that organizational capacity, bureaucratic leadership, and a culture of innovation significantly influence the successful implementation of these innovations (Lian & Shaw, 2025).

Furthermore, empirical studies of disaster response in various developing countries demonstrate that bureaucracy plays a strategic role as the primary coordinator between central and regional governments, the private sector, and civil society (Hati, 2025). However, most studies still focus on macro-policy aspects or institutional frameworks. At the same time, in-depth analysis of how regional bureaucracies initiate and manage public service innovation amidst crises remains relatively limited. In the Indonesian context, particularly in South Sulawesi, research linking public service innovation to accelerated disaster response is still rare, opening up relevant and contextual research opportunities.

The research gap in previous studies lies in the lack of in-depth analysis that directly connects the role of regional bureaucracy as an agent of innovation to the acceleration of disaster response through concrete practices of public service innovation at the local level. Most research still focuses on macro aspects such as policies, institutional frameworks, or general principles of crisis management, without exploring how these innovations occur, are initiated, managed, and adapted by the bureaucracy in dynamic crisis situations. Furthermore, studies that contextually highlight the experiences of specific regions, particularly in South Sulawesi, are still very limited, thus failing to provide a comprehensive empirical understanding of the interaction between bureaucratic capacity, innovation mechanisms, and the effectiveness of accelerating disaster management.

Based on the above description, the problem formulation in this study focuses on comprehensively understanding the dynamics of public service innovation in disaster crises. These include: (a) the forms, mechanisms, and characteristics of public service innovation developed by regional bureaucracies in responding to disaster crises; (b) the factors influencing the role of bureaucracy in accelerating disaster response through public service innovation; and (c) the challenges of public service innovation in terms of the effectiveness, speed, and quality of disaster management for affected communities in South Sulawesi.

To address these issues, the problem-solving approach used in this study is conceptual, integrating the perspectives of public service innovation, crisis management, and adaptive bureaucratic governance. This approach views the bureaucracy not merely as a policy implementer but as an innovation agent capable of learning, adapting, and collaborating in uncertain situations (Bremer, 2003; Turpin, 2018). This conceptual framework is used to analyze the relationships among bureaucratic capacity, public service innovation mechanisms, and disaster response acceleration, thereby providing a systematic and contextual understanding of practices in South Sulawesi.

In terms of state-of-the-art and novelty, this study positions public service innovation as a key element in accelerating disaster response, rather than merely a complement to disaster management policies. Its novelty lies in its focus on analyzing the role of regional bureaucracy in initiating and managing

public service innovation amidst the crisis, within the empirical context of South Sulawesi. Furthermore, this study offers an integrative perspective on innovation, bureaucracy, and disaster response, a topic that has rarely been studied in depth in the Indonesian public administration literature.

2. Literature Review

Studies on bureaucracy and crisis management emphasize the adaptive capacity of public organizations in the face of uncertainty and high time pressure. This suggests that adaptable bureaucracies are characterized by structural flexibility, visionary leadership, and continuous organizational learning (Turpin, 2018). In disaster situations, bureaucracies are required not only to comply with procedures but also to make quick, innovative decisions without compromising public accountability. Various studies highlight that disaster response failures are often caused not by the absence of policies but by weak coordination and implementation capacity within regional bureaucracies (Barua, Adhikary, & Vij, 2025; Lee, Choi, & Chen, 2025).

Furthermore, collaboration and disaster governance emphasize that public service innovation rarely emerges in isolation but rather through interactions among various actors, such as local governments, non-governmental organizations, the private sector, and local communities (Ahmed, 2025; Duradoni et al., 2025; Praharaj, 2025). Collaborative governance and network governance approaches are widely used to explain how cross-sector synergy can accelerate disaster response and improve the quality of public services. In this context, the bureaucracy acts as a facilitator and orchestrator of collaboration, enabling the integration of resources, information, and capacities from various parties to address the needs of affected communities more comprehensively (Dougherty & Kapucu, 2025; Subiyakto, Pujiyono, Akhyary, & Poti, 2025).

On the other hand, several empirical studies in developing countries, including Indonesia, indicate structural challenges in implementing public service innovation amidst the crisis. These challenges include limited resources, regulatory rigidity, institutional fragmentation, and low utilization of information technology (Akhirianto, Ma'rufatin, Wardani, Kayadoe, & Kongko, 2025; Fuady, Kevin, Farrel, & Triaputri, 2025; Silalahi, Hamzah, Tri, & Hariyanti, 2025). Nevertheless, several studies also note the emergence of innovative practices at the local level that are context-specific and grounded in community needs (Kausar & Agustan, 2025). However, studies that specifically integrate the analysis of public service innovation, the role of regional bureaucracy, and disaster response acceleration within a coherent analytical framework remain relatively limited, thereby strengthening the relevance and contribution of this research.

The existing literature shows that although public service innovation, adaptive bureaucracy, and disaster response have been widely discussed separately, their integration within a single, contextual analytical framework remains underdeveloped. This research is positioned at the intersection of these three studies by emphasizing the strategic role of regional bureaucracy as the primary actor in public service innovation in crises. Taking the empirical context of South Sulawesi as a starting point, this study seeks to fill a gap in the literature by analyzing how public service innovation is designed, implemented, and utilized to accelerate disaster response. This is expected to enrich the body of public administration knowledge while providing a practical contribution to strengthening regional-level disaster management governance.

The comparison across studies reveals differing emphases in understanding the relationship between bureaucracy, innovation, and disaster response. Some studies within the crisis management

perspective highlight the importance of adaptive bureaucratic capacity, such as structural flexibility, visionary leadership, and organizational learning, as key determinants of rapid response effectiveness. However, other studies emphasize that failures in disaster response are more often attributable to weak coordination and limited implementation capacity, rather than merely a lack of adaptability. Meanwhile, the collaborative governance approach positions innovation as an outcome of interactions among multiple actors, thereby framing bureaucracy as a network facilitator rather than a single dominant actor. On the other hand, empirical findings from developing countries reveal a notable contradiction: although innovation and collaboration are theoretically promoted as solutions, their practical implementation is frequently constrained by limited resources, regulatory rigidity, and institutional fragmentation. This condition creates a tension between the demand for flexibility and the procedural nature of bureaucratic systems.

Within this context, this study positions itself at the intersection of these debates by integrating the perspectives of adaptive bureaucracy, public service innovation, and collaborative governance into a contextual analytical framework. Unlike previous studies that tend to adopt a partial approach, this research conceptualizes regional bureaucracy as both a strategic actor and a driver of innovation in crisis situations, rather than merely a policy implementer or a facilitator of collaboration. By focusing on the empirical context of South Sulawesi, this study further examines how innovation is practically initiated and implemented within existing structural constraints. Thus, it contributes to bridging the gap between theoretical assumptions regarding the importance of innovation and collaboration and the empirical realities of regional bureaucratic capacity in accelerating disaster response.

3. Research Methods

The research method employed in this study is a qualitative approach with a descriptive-exploratory design to gain an in-depth understanding of the dynamics of public service innovation and the role of bureaucracy in accelerating disaster response. This approach was selected because it is capable of capturing the processes, contexts, and meanings underlying bureaucratic practices in crisis situations, which cannot be adequately explained through quantitative data. Data collection techniques include in-depth interviews to explore the perceptions, experiences, and strategies of bureaucratic actors; field observations to directly examine public service practices and disaster response coordination; and documentation studies to trace policies, procedures, and the track record of public service innovations implemented by local governments. Key informants were selected purposively based on their direct involvement in disaster management and public service delivery, including officials and staff from relevant Regional Apparatus Organizations such as the Regional Disaster Management Agency (BPBD), the Social Services Agency, the Health Service, and the Communication and Informatics Agency, as well as structural officials involved in decision-making at the regional level. The total number of informants was 20.

The collected data were analyzed using thematic coding supported by NVivo 12 Plus software. NVivo 12 Plus was chosen due to its ability to manage, organize, and systematically analyze qualitative data, thereby facilitating the identification of patterns and research themes in a more in-depth and structured manner. The initial stage of analysis involved data transcription, followed by transferring the data into NVivo and conducting coding to systematically identify key themes. The analytical process was carried out through stages of theme identification, category grouping, and the extraction of patterns and key findings relevant to the research focus. This approach enabled the researcher to organize the data systematically while capturing relationships among themes in depth. To ensure data validity, source

triangulation was conducted by comparing information obtained from interviews, observations, and documentation, thereby enhancing the credibility and validity of the research findings.

4. Results and Discussion

Forms and Characteristics of Public Service Innovation in Disaster Response

This subheading examines various forms of public service innovation developed by regional bureaucracies in response to the disaster crisis in South Sulawesi. The discussion focuses on the characteristics of these innovations, including procedural and institutional aspects, as well as the use of technology and collaboration. This analysis aims to understand how these innovations are designed and implemented in emergencies that demand speed and service accuracy.

Table 1. Forms and Characteristics of Public Service Innovation in Disaster Response

Main Node	Sub-Node	Description of Characteristics	Empirical Indicators in the Field
Procedural Innovation	Service simplification	Streamlining bureaucratic procedures and accelerating decision-making in emergency situations	Elimination of certain administrative requirements; one-stop disaster service
	Regulatory flexibility	Adjustment of public service regulations during emergency response periods	Use of official discretion; emergency circular letters; temporary policies
Institutional Innovation	Team formation: Rapid Response Team (RRT)	Establishment of cross-sectoral or cross-agency units for rapid disaster response	Integrated command posts; regional disaster task forces
	Cross-sector coordination	Strengthening cooperation among government agencies and external institutions	Rapid coordination meetings; clear division of roles among agencies
Technological Innovation	Service digitalization	Utilization of information technology to accelerate public service delivery	Disaster reporting applications; victim data dashboards
	Disaster information system	Data integration to support rapid decision-making	Digital risk maps; real-time disaster condition data
Collaborative Innovation	Community involvement	Engagement of local communities and volunteers in disaster-related public services	Village volunteers; community-based disaster preparedness groups
	Non-government partnerships	Collaboration with NGOs and the private sector	Joint logistics distribution; resource and capacity support
Innovation Characteristics	Responsiveness	Ability to respond quickly to community needs	Service response time; speed of aid distribution
	Adaptability	Ability to adjust services to changing crisis dynamics	Changes in service delivery patterns based on field conditions
	Contextuality	Alignment of innovations with local conditions in South Sulawesi	Integration of local wisdom and region-specific needs

Public service innovation in disaster response in South Sulawesi demonstrates a significant shift from conventional bureaucratic patterns to a more agile, flexible, and adaptive approach to crises. In a disaster context that demands speed and accuracy, local governments can no longer rely on traditional, often rigid procedures. Therefore, public service innovation becomes a strategic tool to ensure that the

basic needs of affected communities are met effectively while maintaining the continuity of government functions during emergencies. The first prominent form of innovation is procedural innovation, particularly through service simplification and regulatory flexibility. Bureaucratic steps were reduced by eliminating several administrative requirements deemed irrelevant in emergencies and by implementing a single-stop disaster service to expedite decision-making. Regulatory flexibility was also evident in the exercise of official discretion and the issuance of emergency circulars, enabling the implementation of temporary policies in line with field needs. These procedural innovations significantly reduced response times and administrative hurdles in disaster management.

Furthermore, institutional innovation is a crucial element in strengthening local governments' response capacity. The establishment of a Rapid Response Team (TRC) and a regional disaster task force involving cross-regional government agencies (OPD) reflects efforts to institutionalize a structured rapid response. The presence of integrated command posts enables more effective operational coordination, while rapid cross-sector meetings and the division of roles between agencies help avoid overlapping authority. This institutional innovation demonstrates the adaptation of bureaucratic organizational structures to the demands of crises. The next form of innovation is technological innovation, realized through the digitalization of services and the development of disaster information systems. The use of disaster reporting applications, victim data dashboards, and real-time data-based information systems enables local governments to obtain a quick, accurate picture of conditions on the ground. Data integration into digital risk maps also supports more responsive and evidence-based decision-making.

The findings indicate that public service innovation in disaster response in South Sulawesi does not emerge by chance, but rather as a response to high situational pressures, uncertainty, and the limited capacity of conventional bureaucratic systems. In crisis conditions, the demands for speed, accuracy, and flexibility compel bureaucracies to simplify procedures, relax regulations, and develop more adaptive coordination mechanisms (Turpin, 2018). In other words, procedural and institutional innovations arise due to a "performance gap" between standard bureaucratic procedures and the dynamic needs in the field. This phenomenon reinforces arguments in public sector innovation theory that crises often act as primary catalysts for innovation, as they force organizations to move beyond routine practices and encourage policy experimentation and more responsive approaches (Bufali, Manfredi, Saporito, & Notarnicola, 2025; Haris, Tahir, Nurjaya, & Baharuddin, 2023).

From the perspective of adaptive governance, these findings suggest that regional bureaucracies are undergoing a transformation toward more flexible, collaborative, and learning-oriented governance models (Balaram & Dhananjay, 2025; Lira, Mazuca, Matlock, & Perez, 2025). The establishment of rapid response teams, the use of discretion, and the integration of digital technologies reflect the core characteristics of adaptive governance, namely the capacity to adjust structures, rules, and processes swiftly in response to environmental changes (Iskandar, Anas, Bahri, Menne, & Baharuddin, 2024; Karinda & Baharuddin, 2024). Furthermore, technological innovations such as victim data dashboards and disaster information systems demonstrate how knowledge and information serve as the primary basis for adaptive decision-making (Baharuddin, Qodir, & Loilatu, 2022; Fisdian Adni, Rusadi, & Baharuddin, 2024). At the same time, the involvement of non-governmental actors in collaborative innovation strengthens the relevance of collaborative governance theory, where the effectiveness of disaster response depends not only on internal bureaucratic capacity but also on the ability to orchestrate cross-sectoral networks (Mukhlis & Yulianto, 2025).

Conceptually, this study contributes by demonstrating that public service innovation in disaster contexts cannot be understood merely as the outcome of policy or technology, but rather as an adap-

tive process that integrates procedural, institutional, technological, and collaborative dimensions. These findings lead to the strengthening of the concept of adaptive public service innovation, defined as innovation emerging from the interaction between crisis pressures, bureaucratic capacity, and local dynamics. This concept emphasizes that the success of innovation is determined not only by its initial design but also by the ability of bureaucracy to continuously adapt, learn, and collaborate in rapidly changing environments (Callens, Wynen, Boon, & Verhoest, 2026). Accordingly, this study advances the literature on public sector innovation by positioning crisis contexts as a critical space for the evolution of more adaptive and context-sensitive bureaucratic practices.

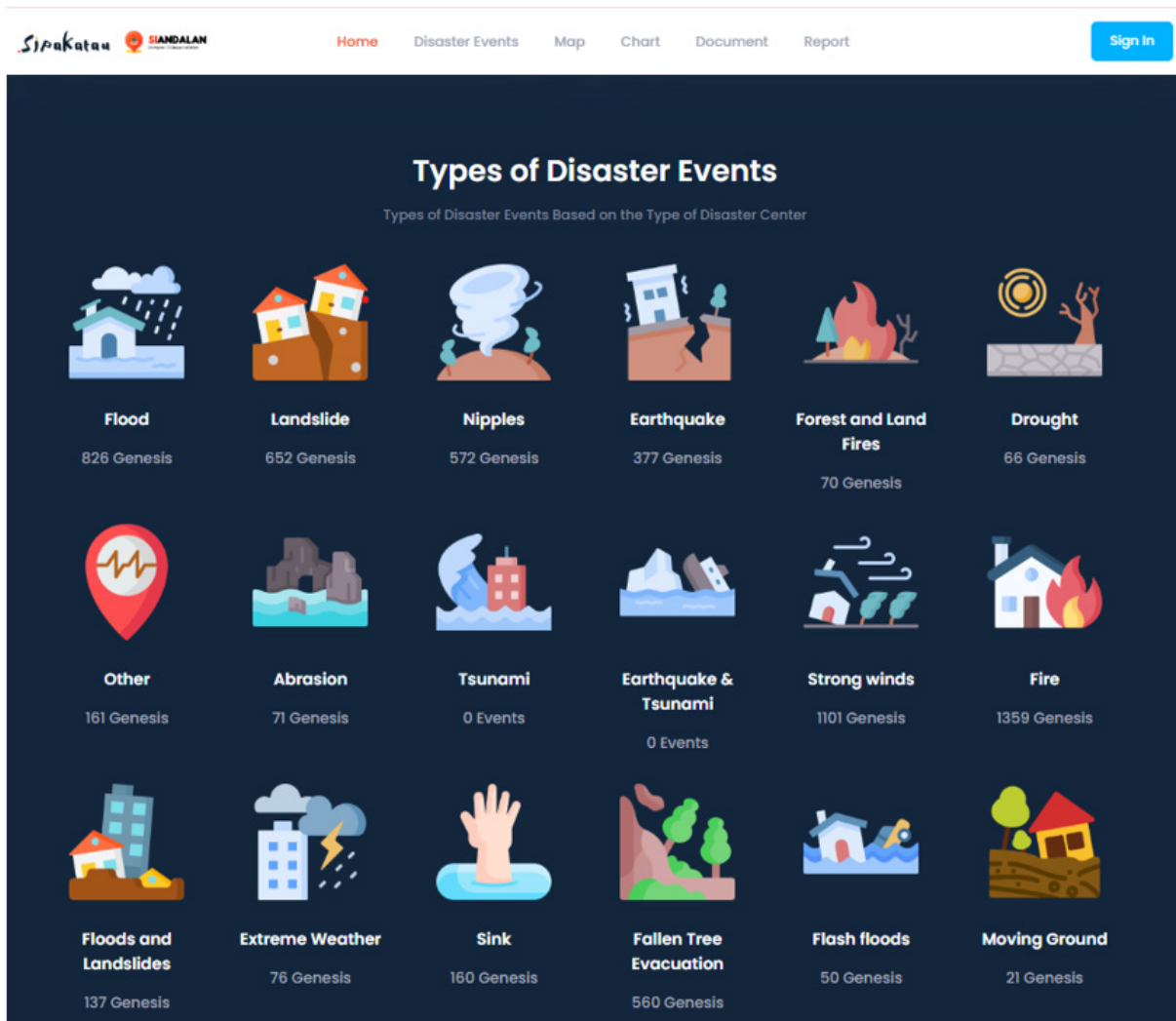


Figure 1. South Sulawesi Province Disaster Data Analysis and Reporting System (Si-Andalan)

Source: Web dashboards siandalan.sulselprov.go.id, 2025Si-Andalan (Disaster Data Analysis and Reporting System) of South Sulawesi Province is a concrete representation of technological innovation in disaster response, particularly through the digitization of services and the development of a disaster information system (Nara, Arif, Susanti, & Nurdin, 2025). This application serves as a platform for updating on the latest disaster events across various districts/cities in South Sulawesi, including information on disaster types, affected areas, the number of victims, and field emergency needs. Through a digital

reporting mechanism, disaster event data can be collected, structured, and integrated more quickly, thereby accelerating the flow of information from the local level to the provincial government for decision-making.

The use of Si-Andalan also demonstrates how a victim data dashboard and a real-time data-based information system enhance local governments' capacity to respond to disasters in a more responsive, evidence-based manner. The system's up-to-date information enables the government to continuously monitor the dynamics of disaster events and adjust response priorities as conditions on the ground evolve. Thus, technological innovation through Si-Andalan serves not only as a tool for documenting events but also as a strategic instrument to support rapid decision-making, cross-agency coordination, and the effectiveness of public services in disaster management in South Sulawesi.

Furthermore, collaborative innovation has become a distinctive feature of disaster response in South Sulawesi. Community involvement through village volunteers and disaster preparedness communities demonstrates that the government does not solely run public services; it also does so through the active participation of citizens. Furthermore, partnerships with non-governmental organizations and the private sector expand resource capacity, particularly in logistics, distribution, and equipment support. This collaborative pattern strengthens the reach of public services and builds social solidarity in crises.

The emergence of Si-Andalan as a technological innovation in disaster response is inseparable from the urgent need for speed, accuracy, and information integration in the midst of dynamic crisis conditions. Prior to the existence of an integrated system, disaster data management tended to be fragmented, slow, and unsynchronized across agencies, thereby hindering timely decision-making. Therefore, the digitalization embodied in Si-Andalan emerged as a solution to the limitations of coordination and information capacity within conventional bureaucratic systems. From the perspective of public sector innovation theory, crisis conditions such as disasters function as triggers that accelerate the adoption of technology and encourage organizations to undertake innovative leaps in order to bridge the gap between field needs and existing system capabilities (Arunagiri & Udayaadithya, 2022).

When examined through the lens of adaptive governance, Si-Andalan reflects a transformation of bureaucracy toward a more adaptive, data-driven, and responsive governance system. The system's ability to provide real-time data enables more flexible and evidence-based decision-making, which constitutes a core characteristic of adaptive governance (Arunagiri & Udayaadithya, 2022). Furthermore, the integration of data across regions and sectors strengthens the dimension of collaborative governance, where information serves as the primary medium for connecting various actors, including government institutions, communities, and non-governmental partners. In this sense, technological innovation functions not merely as a technical tool, but as a new institutional infrastructure that shapes more open and interconnected patterns of coordination and decision-making.

Conceptually, these findings reinforce the notion that public service innovation in disaster contexts is multidimensional and ecosystem-based, integrating technology, collaboration, and the adaptive capacity of bureaucracy. This study contributes by advancing the concept of digital adaptive governance, defined as a governance model that places digital information systems at the core of enhancing responsiveness, coordination, and the effectiveness of public services in crisis situations. This concept emphasizes that the success of innovation depends not only on the presence of technology, but also on the extent to which it is integrated with institutional processes and collaborative practices (Wang, Medaglia, & Zheng, 2018). Thus, innovations such as Si-Andalan represent not only administrative modernization, but also a fundamental transformation in how bureaucracy operates and adapts in responding to disasters.

Factors Influencing the Role of Bureaucracy in Accelerating Disaster Response

This section discusses the factors influencing regional bureaucracies' ability to accelerate disaster response through public service innovation. Emphasis is placed on institutional capacity, leadership, cross-sector coordination, and regulatory and resource support. This discussion is crucial for identifying factors that support and inhibit bureaucratic innovation in crises.

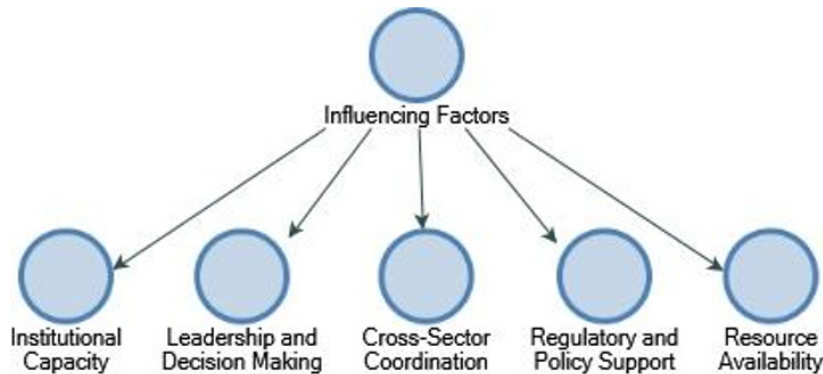


Figure 2. Factors Influencing the Role of Bureaucracy in Accelerating Disaster Response
Source: Processed by researchers with Nvivo 12 Plus, 2025

Public service innovation amid the disaster crisis in South Sulawesi cannot be separated from the strategic role of the regional bureaucracy as a key actor in planning, decision-making, and implementing emergency responses (Dassir, Paembonan, Arsyad, Sadapotto, & Nadira, 2021). In a crisis, demands on the bureaucracy extend beyond carrying out routine procedures to include adaptability, innovation, and swift action to protect affected communities. Therefore, factors influencing bureaucratic capacity are crucial for the successful acceleration of the disaster response (Lee & Chen, 2025; Robinson & Botzen, 2025; Sukowati & Nelwan, 2019).

First, institutional capacity is a key foundation for accelerating disaster response. An adaptive organizational structure, clear task division, and flexible work procedures enable the bureaucracy to move quickly without being hampered by layers of bureaucracy (Oda et al., 2025). In South Sulawesi, officials' capacity to understand disaster management and emergency public services is crucial to ensuring services continue to operate even during a crisis.

Second, leadership and decision-making are crucial in uncertain disaster situations (Yu, Wang, & Yu, 2026). Responsive and visionary bureaucratic leaders can make timely policy decisions, ensuring that rigid administrative procedures do not hamper strategic decisions. This type of leadership also fosters innovation in public services, such as streamlining aid procedures and utilizing digital technology to distribute disaster information.

Third, cross-sector coordination is a key factor in accelerating disaster response. Synergy between regional government agencies, vertical institutions, the Indonesian National Armed Forces (TNI) and the Indonesian National Police (Polri), the private sector, and the community enables faster and more effective resource mobilization. Without proper coordination, disaster response can suffer from overlapping authority, delayed responses, and inefficiencies in aid distribution.

Fourth, regulatory and policy support significantly impacts the bureaucracy's room for innovation. Regulations that provide flexibility, clarity of authority, and legal protection for officials enable the bureaucracy to act quickly and creatively without fear of violating regulations (Sukowati & Nelwan, 2019).

In the context of South Sulawesi, adaptive policies to emergency conditions are a crucial instrument for accelerating response and improving the quality of public services during disasters.

Fifth, resource availability is a determining factor in the sustainability of public service innovation in crises. Adequate budget support, the use of information technology, the availability of accurate data, and ready-to-use facilities and infrastructure enable the bureaucracy to accelerate its response effectively (Fahlevi, Indriani, & Oktari, 2019; Heo, Kim, & Heo, 2020; Heo, Park, & Heo, 2018). Without sufficient resource support, bureaucratic innovation risks being temporary and unable to optimally address the needs of affected communities.

Although these various factors are normatively viewed as capable of strengthening the role of bureaucracy in accelerating disaster response, their implementation at the regional level still faces several limitations. Institutional capacity and adaptive leadership are often unevenly distributed across regional government agencies, leading public service innovations to rely on specific leadership figures rather than being systemically institutionalized. Furthermore, cross-sector coordination in practice is often reactive and temporary, emerging strongly during the emergency phase but weakening during the recovery phase, potentially undermining the sustainability of disaster innovation.

On the other hand, regulatory support and resource availability have not fully aligned with the demands of rapid crisis response. The existing policy framework still leaves room for interpretation, so officials in the field tend to be cautious in exercising discretion. Limited budgets, technology, and integrated data also pose structural obstacles to accelerating bureaucratic responses. Therefore, public service innovation in disaster management in South Sulawesi requires continuous institutional strengthening, policy consistency, and greater strategic investment in resources to ensure effectiveness not only in emergencies but also in long-term resilience.

Efforts to address these limitations need to begin with systemic, sustainable institutional capacity-building. This can be achieved by standardizing disaster response mechanisms across regional government agencies, strengthening civil servants' competencies through disaster training and public service innovation, and institutionalizing best practices to avoid reliance on specific leadership figures. Furthermore, establishing a permanent cross-sectoral coordination system, supported by an integrated data and information platform, is key to ensuring continued synergy, not only during the emergency phase but also during the mitigation and recovery phases.

In terms of policy and resources, reformulating disaster regulations is needed to provide clear discretionary space, legal protection, and budget flexibility during crises (Fahlevi et al., 2019; Heo et al., 2020). Local governments also need to allocate strategic investments in digital technology, early warning systems, and infrastructure supporting emergency public services (El Amraoui, Mastere, Nel-Sanders, & El Hazzeti, 2026; Teku & Tariku, 2026). With consistent policy support and adequate resources, local bureaucracies can more freely innovate and accelerate effective disaster responses, while simultaneously building adaptive, long-term, resilient disaster governance.

The findings of this study reinforce the perspective of bureaucratic innovation in disaster response by demonstrating that bureaucratic innovation in disaster management is not merely the result of individual initiatives, but rather a product of systemic interactions among institutional capacity, leadership, cross-sectoral coordination, regulatory support, and resource availability (Marchetti, Newnham, & Robinson, 2025). Within this framework, bureaucracy is understood as a public service actor that must be capable of transforming its structures, procedures, and work practices in an adaptive manner to respond promptly and effectively to the needs of affected communities (Sarjito & Sutawidjaya, 2024). However, the findings also reveal a gap between the potential for innovation and the realities of implementation,

where limited capacity, fragmented coordination, and regulatory rigidity hinder the institutionalization of innovation. Therefore, this study emphasizes that bureaucratic innovation in disaster response will only be effective if supported by a governance ecosystem that enables organizational learning, policy flexibility, and the sustainable integration of resources within a public service framework oriented toward community needs.

Challenges of Public Service Innovation in Disaster Management in South Sulawesi

Public service innovation is a crucial tool for improving the effectiveness, speed, and quality of disaster management in South Sulawesi, a disaster-prone region. However, in practice, these innovations still face structural, institutional, and social challenges that impact the performance of the regional bureaucracy. These challenges determine the extent to which innovations can optimally and sustainably address the emergency needs of affected communities.

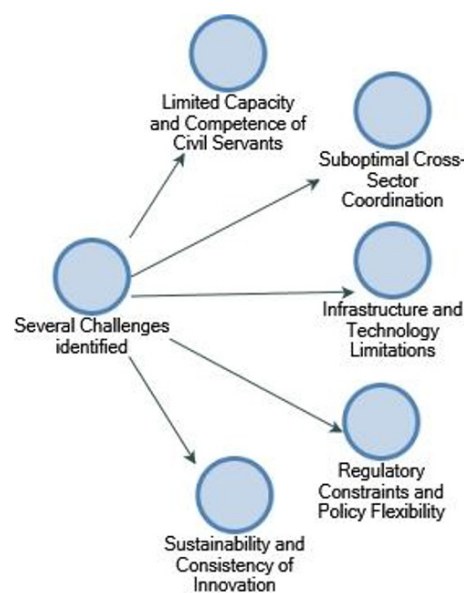


Figure 3. Challenges of Public Service Innovation in Disaster Management in South Sulawesi
Source: Processed by researchers with Nvivo 12 Plus, 2025

Limited capacity and competency among local government officials are fundamental challenges that directly affect the effectiveness of public service innovation in disaster management. In practice, not all regional officials have an adequate understanding of disaster management, technology, or emergency-based public service approaches. This competency gap often means innovations operate optimally only in certain areas or rely on individuals with greater experience and capacity, leading to slow, uneven responses in the early stages of a disaster.

The issue of apparatus capacity becomes even more complex when demands for cross-sectoral coordination arise. Public service innovation demands strong collaboration between regional apparatuses, vertical institutions, the Indonesian National Armed Forces (TNI), the Indonesian National Police (Polri), volunteers, and the non-governmental sector. However, the reality is that sectoral egos and fragmented administrative work patterns still dominate coordination. As a result, decision-making is often delayed, aid distribution is unsynchronized, and the effectiveness of innovations designed to accelerate response is diminished.

Infrastructure and technological limitations also pose serious challenges in South Sulawesi's remote, island geography. Digital-based innovations, such as disaster information systems or online services, have not yet fully reached all affected areas. This creates a service gap between areas with adequate access to technology and those still relying on conventional methods, resulting in uneven response speed and quality during disasters.

In addition to technical factors, regulatory constraints and policy flexibility also limit the scope for bureaucratic innovation. A rigid, procedural regulatory framework makes officials in the field cautious about exercising discretion, even when emergencies demand swift, adaptive decisions. In this context, public service innovation is often caught in a dilemma between administrative compliance and the urgent needs of affected communities, ultimately reducing the effectiveness of disaster response.

These regulatory challenges are also closely related to the sustainability of public service innovation. Many innovations emerge as spontaneous responses to crises, but are not accompanied by long-term institutional and policy strengthening. As a result, innovations are temporary and cease when the emergency phase ends, without becoming part of a permanent public service system ready for reuse in the next disaster.

In terms of service quality, this situation has resulted in inconsistent service delivery to affected communities. During one phase, services may be fast and responsive, but during the recovery phase, they weaken due to resource constraints and a lack of institutional support. This demonstrates that public service innovation is not yet fully oriented towards the full disaster cycle, from mitigation and emergency response to recovery.

Overall, these challenges indicate that public service innovation in disaster management in South Sulawesi remains more reactive than transformative, without strengthening the capacity of the apparatus, adaptive regulatory reform, infrastructure investment, and the systemic institutionalization of innovation. Without these, innovation risks becoming an unsustainable, short-term solution. Therefore, a paradigm shift is needed, from innovation as a short-term response to an integral part of effective, rapid regional disaster governance, oriented toward quality public services for affected communities (Ahmed, 2025; Kausar & Agustan, 2025).

These findings indicate that the challenges of public service innovation in disaster management are not merely technical in nature, but reflect deeper structural issues related to the adaptive capacity of bureaucracy and the sustainability of governance. Limitations in competency, fragmented coordination, regulatory rigidity, and infrastructure disparities suggest that emerging innovations remain largely reactive and are not yet integrated into a stable institutional system. From a theoretical perspective, this condition reveals the presence of an "implementation gap," in which demands for flexibility and responsiveness are not matched by the overall readiness of the bureaucratic system (Adom, Malivhadza, & Simatele, 2025). Therefore, comprehensive institutional transformation is required to ensure that innovation does not merely emerge as a temporary response, but becomes an integral part of an adaptive and sustainable disaster governance system.

5. Conclusion

The findings of this study indicate that public service innovation plays a significant role in enhancing the effectiveness, speed, and quality of disaster response in South Sulawesi through procedural simplification, the establishment of cross-sectoral teams, the utilization of digital technology, and the strengthening of collaboration among various actors. These innovations have been shown to accelerate

decision-making, improve the accuracy of aid distribution, and make services more responsive to the needs of affected communities, thereby reaffirming the strategic role of bureaucracy as a key driver in crisis management. However, their implementation continues to face structural challenges, including limited bureaucratic capacity, weak coordination, inadequate infrastructure, regulatory rigidity, and the lack of sustainable institutionalization, which results in innovations that tend to be reactive.

This study recommends strengthening bureaucratic capacity in a systemic manner through the enhancement of officials' competencies, the standardization of disaster response mechanisms, and the institutionalization of sustainable innovation practices. In addition, local governments need to undertake more adaptive policy reforms by providing clear discretionary space and legal protection for decision-makers in crisis situations. Such efforts should be supported by adequate resource investment, particularly in technological infrastructure, disaster information systems, and flexible funding mechanisms. Furthermore, public service innovation should be integrated across the entire disaster cycle, from mitigation and emergency response to recovery, so that it functions not only as a short-term response but also as a foundation for resilient and sustainable regional disaster governance.

6. References

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