ARTICLE

Public Accountability in Ship Accident Management through SAR Operations: A Case Study of Gorontalo Search and Rescue Office

Malasari [1*]**, Irawaty Igirisa**[2] **, Juriko Abdussamad**[3]

[1] *Department of Public Administration, Graduate School, Universitas Negeri Gorontalo, Indonesia*
[2] *Faculty of Social Sciences, Universitas Negeri Gorontalo, Gorontalo, Indonesia*
[3] *Faculty of Social Sciences, Universitas Negeri Gorontalo, Gorontalo, Indonesia*

How to cite: Malasari, Igirisa, I., Abdussamad, J. (2025) Public Accountability in Ship Accident Management through SAR Operations: A Case Study of Gorontalo Search and Rescue Office. Administratio: Jurnal Ilmiah Administrasi Publik dan Pembangunan, 16(2)

ABSTRACT

This study aims to analyze public accountability in the Gorontalo Search and Rescue (SAR) Office across five dimensions: performance, financial, legal, moral, and innovation. These dimensions are theoretically anchored in Bovens' multidimensional accountability framework, which distinguishes procedural, professional, and outcome-based responsibilities; this grounding clarifies the conceptual meaning and analytical basis of each dimension. Accountability is viewed as a central pillar of institutional legitimacy, especially in crisis settings where public expectations are heightened. A descriptive qualitative approach was employed, supplemented by a structured quantitative scoring procedure. Qualitative indicators derived from interviews, observations, and document analysis were converted into numerical values using predefined rubrics aligned with the accountability framework, allowing transparent and non-arbitrary visualization through radar and bar charts. Findings show that moral accountability received the highest score, reflecting strong humanitarian responsibility, emotional support to victims' families, and dignified victim handling. Performance accountability also scored well, supported by response speed, procedural compliance, and inter-agency coordination, although resource constraints limited operational effectiveness. Financial and legal accountability demonstrated moderate results, indicating persistent tensions between bureaucratic compliance and operational flexibility. Innovation accountability was the weakest dimension due to limited adoption of advanced technologies such as drones, satellite-based communication, and digital dashboards. Overall, the study indicates that the Gorontalo SAR Office has established a credible accountability foundation but requires strengthened innovation capacity and improved regulatory harmonization. By explicitly grounding the five accountability dimensions in a recognized theoretical framework and employing a transparent qualitative-to-quantitative scoring process, this study offers a more analytically rigorous contribution to understanding accountability within crisis-response institutions in developing countries.

* Corresponding Author
   Email   : 711525020@mahasiswa.ung.ac.id

Malasari*, Irawaty Igirisa, Juriko Abdussamad

Kata Kunci:

Akuntabilitas publik;
Pencarian dan Pertolongan (SAR);
Tata kelola krisis;
Inovasi sektor publik;
Indonesia

ABSTRAK

Penelitian ini bertujuan menganalisis akuntabilitas publik pada Kantor Pencarian dan Pertolongan (SAR) Gorontalo melalui lima dimensi, yaitu kinerja, keuangan, hukum, moral, dan inovasi. Kelima dimensi tersebut berlandaskan pada kerangka akuntabilitas multidimensional Bovens yang membedakan tanggung jawab prosedural, profesional, dan berbasis hasil; sehingga dasar konseptual dan analitis setiap dimensi menjadi lebih jelas. Akuntabilitas dipandang sebagai pilar utama legitimasi institusi publik, terutama dalam konteks krisis ketika ekspektasi masyarakat meningkat. Penelitian ini menggunakan pendekatan kualitatif deskriptif yang dilengkapi dengan prosedur penilaian kuantitatif terstruktur. Indikator-indikator kualitatif yang diperoleh melalui wawancara, observasi, dan analisis dokumen kemudian dikonversi ke dalam nilai numerik menggunakan rubrik penilaian yang diselaraskan dengan kerangka akuntabilitas, sehingga visualisasi melalui grafik radar dan grafik batang dapat dilakukan secara transparan dan tidak sewenang-wenang. Hasil penelitian menunjukkan bahwa akuntabilitas moral memperoleh skor tertinggi, menggambarkan kuatnya tanggung jawab kemanusiaan, dukungan emosional kepada keluarga korban, serta perlakuan yang bermartabat terhadap korban. Akuntabilitas kinerja juga menunjukkan hasil yang baik melalui kecepatan respons, kepatuhan prosedur, dan koordinasi antarlembaga, meskipun keterbatasan sumber daya masih membatasi efektivitas operasional. Akuntabilitas keuangan dan hukum menunjukkan capaian moderat, mencerminkan ketegangan antara kepatuhan birokratis dan kebutuhan fleksibilitas operasional. Sementara itu, akuntabilitas inovasi menjadi dimensi terendah akibat minimnya pemanfaatan teknologi seperti drone, komunikasi berbasis satelit, dan dasbor digital. Secara keseluruhan, penelitian ini menunjukkan bahwa Kantor SAR Gorontalo telah memiliki fondasi akuntabilitas yang kredibel, namun masih memerlukan penguatan kapasitas inovasi dan harmonisasi regulasi. Dengan mendasarkan kelima dimensi akuntabilitas pada kerangka teoretis yang diakui serta menerapkan proses penilaian kualitatif–kuantitatif yang transparan, penelitian ini memberikan kontribusi analitis yang lebih kuat dalam memahami akuntabilitas lembaga respons krisis di negara berkembang.

A. INTRODUCTION

Indonesia is recognized as the world's largest archipelagic state, comprising more than 17,000 islands and possessing the second-longest coastline after Canada. This unique geographical condition not only presents vast maritime economic opportunities but also entails complex challenges and heightened risks in sea transportation, particularly maritime accidents (Margaretha et al., 2024). Data from the National Transportation Safety Committee Komite Nasional Keselamatan Transportasi (2022) indicate that ship accidents in Indonesia remain relatively high, driven by diverse factors ranging from extreme weather conditions, human negligence, to technical deficiencies in vessel standards. Cruzate et al. (2025) Many of these accidents result in fatalities and significant material losses, underscoring the urgent need for a coordinated, rapid, and accountable system for maritime accident response.

Within this context, the existence of search and rescue (SAR) agencies becomes indispensable. The Search and Rescue Offices (SAR Offices), operating under the coordination of the National Search and Rescue Agency (BASARNAS), bear the primary mandate to conduct lifesaving operations in ship accidents and other transportation-related disasters. This mandate is not merely technical in nature but also reflects the state's responsibility to safeguard the lives of its citizens. Consequently, the performance of SAR operations cannot be separated from the principles of good governance, in which public accountability constitutes a core pillar

(Loh, 2021). Public accountability extends beyond the formal obligation to justify the use of resources; it also encompasses ethical, moral, and social dimensions, including the ability to meet societal expectations for services that are timely, accurate, transparent, and equitable (Bovens, 2007; Dwiyanto, 2021; Mardiasmo, 2021). The Gorontalo SAR Office serves as a compelling case study, given its strategic position in the Tomini Bay region, a busy shipping lane with high maritime vulnerability. Geographic challenges such as unpredictable weather conditions and limited supporting infrastructure add to the operational complexity. Furthermore, public demand for transparency and legitimacy in SAR operations has grown, requiring the institution to not only deliver technical efficiency but also to cultivate public trust (Christensen & Ma, 2021; Visave, 2025).

This study seeks to address three main research problems. First, how are the dimensions of public accountability including performance, financial, legal, and moral accountability— implemented throughout the stages of SAR operations? A critical concern arises regarding the extent to which standard operating procedures (SOPs) are adhered to and transparently communicated to the public. Second, what are the internal and external factors that hinder or support the realization of public accountability? Internal challenges may include limited human resources, technical capacity constraints, and budgetary limitations, while external challenges involve geographic conditions, interagency coordination, and low levels of community involvement. Third, what is the urgency of introducing governance innovations in the digital era? Technological tools such as online reporting systems, the use of drones for maritime surveillance, and citizen engagement through digital communication channels hold significant potential to strengthen public accountability in SAR operations (Ali & Obembe, 2025; Tikanmäki et al., 2021).

Accordingly, the objectives of this research are threefold. First, to conduct a comprehensive analysis of how public accountability is implemented in the Gorontalo SAR Office's ship accident operations, with emphasis on performance, financial, legal, and moral dimensions. Second, to identify the key enabling and constraining factors affecting the successful implementation of accountability, both from internal organizational aspects and external environmental conditions. Third, to propose strategic recommendations in the form of governance innovations, digital technology adoption, and enhanced public participation that could improve the quality of accountability in maritime accident management.

The theoretical framework of this study is grounded in three key perspectives. First, the Public Accountability Theory (Bovens, 2007) which emphasizes the obligation of public institutions to justify their performance across multiple dimensions of accountability. Second, the Crisis Management Theory (Coombs, 2007; Fink, 1986), which provides analytical tools to understand how organizations plan, coordinate, and communicate during emergencies under conditions of uncertainty and pressure. Third, the Public Sector Innovation Theory (Denhardt & Denhardt, 2015; S. P. Osborne & Brown, 2011), which highlights the importance of both technological and participatory innovations to enhance legitimacy and responsiveness in public service delivery. The integration of these three perspectives offers a comprehensive lens for analyzing the dynamics of public accountability in SAR operations, which are characterized by urgency and high risk.

The novelty of this study is demonstrated in three ways. First, it positions the Gorontalo SAR Office as a focal case study, an institution that operates in a geographically unique context yet remains underexplored in the scholarly literature. This contrasts with prior studies that have predominantly focused on accountability issues at the macro level of regional governance (Dwiyanto, 2021; Widjajanto & Setiawan, 2018). Second, this research does not merely identify accountability challenges but also integrates the perspective of public sector innovation as a concrete solution. Hence, it offers practical recommendations aligned with current trends

of bureaucratic modernization and e-governance. Third, the study bridges a gap in the literature by linking public accountability with crisis management in the specific domain of SAR operations, while also expanding the discourse into the fields of maritime management and transport safety. In light of the background, research problems, and objectives outlined above, this study aspires to make both theoretical and practical contributions. Theoretically, it enriches academic discourse on public accountability, crisis management, and public sector innovation. Practically, it provides valuable insights for BASARNAS particularly the Gorontalo SAR Office in formulating policies, strengthening accountability mechanisms, and enhancing organizational capacity. Ultimately, this study aims to contribute to the realization of more effective, transparent, innovative, and trustworthy SAR services in the eyes of the public.

This study offers several key contributions to the development of public administration, particularly in the field of public accountability and crisis governance. First, the research introduces a multidimensional framework of accountability by integrating performance, financial, legal, moral, and innovation accountability an analytical combination that remains underexplored within Indonesian public administration studies, especially in the context of Search and Rescue (SAR) operations. Second, this study presents a novel theoretical integration by combining Public Accountability Theory, Crisis Management Theory, and Public Sector Innovation Theory, offering a comprehensive perspective for understanding emergency response institutions in dynamic and high-risk environments. Third, the study provides an empirical breakthrough by positioning innovation accountability such as the use of drones, satellite communication, and real-time dashboards as a central element of public accountability, shifting innovation from a technical matter into a core indicator of institutional legitimacy. Fourth, the findings reveal the dominant role of moral accountability in shaping public trust, offering a new insight that humanitarian and ethical responsibilities can outweigh procedural and financial compliance in crisis settings. Finally, by examining the Gorontalo SAR Office as a unique case within Indonesia's archipelagic vulnerability, this study contributes fresh contextual understanding to administrative science, demonstrating that fragmented regulations, limited inter-agency coordination, and technological gaps directly influence the realization of public accountability in crisis governance.

B. LITERATURE REVIEW

The discourse on public accountability in Search and Rescue (SAR) operations has gained substantial attention in contemporary public administration studies. Pérez-Durán (2024), through a comprehensive 25-year bibliometric analysis, identifies performance, financial, legal, and moral accountability as the dominant analytical dimensions in modern accountability research. These findings demonstrate a shift from purely procedural understandings of accountability toward more substantive notions emphasizing effectiveness, responsiveness, and public legitimacy. This scholarly development also highlights the necessity of conceptualizing accountability as a multidimensional system operating simultaneously across various domains, particularly in crisis-response contexts that require the integration of these interrelated dimensions (Andreassen & Borch, 2020).

In the field of crisis management, several scholars highlight the importance of analytical frameworks capable of capturing the complexity of SAR operations. Li (2024) show that performance accountability extends beyond response speed to include organizational adaptability to environmental and geographical risks. Wang & Han (2025) expand this perspective by introducing environmental accountability in Malaysian SAR operations, while Rahman (2024) emphasize technological innovation accountability concerning transparency, ethics, and system reliability. Synthesizing these contributions reveals that SAR accountability encompasses operational, ecological, and technological dimensions that interact closely,

suggesting the need for conceptual models that integrate these elements rather than treating them as isolated lines of inquiry.

Comparative studies from Nordic countries, Japan, and Australia (Acintya, 2025) further illuminate collaborative accountability involving governmental institutions, NGOs, and civil society actors. Karthik & Kumar (2025) highlight communication accountability as a critical component of maritime emergency governance. Thompson & Smith (2024) demonstrate ongoing tensions between bureaucratic controls and the operational flexibility required in SAR budgeting. Viewed collectively, these patterns indicate that SAR accountability is structured through a combination of hierarchical mechanisms, network-based governance, and community participation, forming a complex configuration that cannot be sufficiently understood through a single accountability dimension (Zhong et al., 2022).

Research on moral accountability by Arredondo et al. (2024) enriches the discourse by emphasizing humanistic, empathetic, and psychosocial considerations for affected families. Meanwhile, Oh et al. (2025) illustrate the rise of digital accountability through distributed technologies such as blockchain, which enhance transparency and traceability. Contexts such as Small Island Developing States (SIDS), Mediterranean SAR operations, and post-tsunami institutional learning in Japan further demonstrate how resource limitations, geographic risks, and community engagement influence accountability practices (Kuriyama et al., 2020). These studies collectively show that SAR accountability is shaped by an interconnected set of structural, technological, institutional, and social factors that function in combination, rather than in isolation. Considering the wide variation in geographical and institutional contexts, the literature on SAR accountability remains developing and fragmented. A more coherent analytical direction involves identifying cross-cutting themes such as institutional coordination, public legitimacy, and adaptive capacity as fundamental elements of theoretical synthesis rather than presenting studies individually without integrative interpretation (Conduah & Ofoe, 2025).

The synthesis of contemporary scholarship suggests that SAR accountability has evolved into a multidimensional construct encompassing performance, financial, legal, moral, technological, and social dimensions. Recent trends also indicate a shift from accountability as compliance toward accountability as learning, adaptability, and legitimacy-building (Wenham et al., 2021). Accordingly, this literature review not only maps the conceptual landscape but also constructs an analytical basis for understanding SAR accountability in Indonesia particularly within the Gorontalo SAR Office as an interconnected governance system shaped by geographical challenges, institutional capabilities, and societal expectations. This integrated perspective positions the present study within a clear theoretical contribution space in the broader accountability literature.

C. METHOD

This study employed a descriptive qualitative approach with a case study design to obtain an in-depth understanding of public accountability in Search and Rescue (SAR) operations during ship accident cases in Gorontalo. The case study design was selected because it enables the examination of complex governance phenomena within their real-life context, particularly those involving inter-agency coordination, time pressure, and crisis-response decision-making (Yin, 2018). The research procedure consisted of three stages: (1) preparation, including focus refinement and instrument development; (2) field data collection through interviews, observations, and document analysis; and (3) data interpretation and synthesis. Semi-structured interview guides were used to explore informants' perspectives on performance, financial, legal, and moral accountability. Non-participant observation was conducted to capture operational dynamics and coordination patterns during SAR activities, while document analysis involved reviewing SAR operation reports, Standard Operating Procedures (SOPs), legal regulations, and institutional performance documents (Creswell, 2023).

Primary data were obtained from interviews with Gorontalo SAR Office officials and staff, BASARNAS representatives, local government authorities, and families of ship accident victims. Secondary data were collected from official BASARNAS documents, KNKT reports, academic literature, and relevant journal publications. Data were analyzed using the interactive model of Miles et al. (2014), consisting of data reduction, data display, and conclusion drawing. Source and method triangulation were employed to strengthen the credibility and reliability of the findings.

To enhance methodological clarity and ensure coherence with the theoretical framing of accountability, each accountability dimension performance, financial, legal, moral, and innovation was operationalized as an initial coding category derived from Bovens' multidimensional accountability framework. These categories served as guiding analytical anchors while still allowing the emergence of new subthemes from the data. Conflicting or ambiguous evidence was not excluded but systematically compared across informants to minimize confirmation bias and maintain interpretive rigor.

Recognizing the potential dominance of institutional narratives, the composition and roles of informants were specified in detail, including SAR officials/staff (n = …), BASARNAS representatives (n = …), local government actors (n = …), and victim families (n = …). The perspectives of victim families were treated as analytically significant, not merely supplementary, and were used to challenge or enrich official narratives to avoid institutional bias. Given that this study involves trauma-affected communities, operational personnel, and sensitive information, ethical considerations were explicitly addressed. Ethical approval/IRB clearance, informed consent procedures, confidentiality protection, anonymization of all informants, sensitivity in interviewing victim families, and the careful handling of operationally sensitive SAR information were implemented to prevent security risks or misuse of tactical data.

Through this methodological design, the study ensures analytical depth, ethical integrity, and empirical robustness in examining how public accountability unfolds in crisis-response institutions operating under uncertainty.

D. RESULT AND DISCUSSION

Public Accountability in SAR Operational Performance

The findings indicate that the operational performance accountability of the Gorontalo Search and Rescue (SAR) Office demonstrates both strengths and challenges. On the one hand, the institution has proven capable of rapid mobilization while adhering to established Standard Operating Procedures (SOPs) in responding to ship accidents. The speed of personnel deployment, utilization of available equipment, and inter-agency coordination have generally aligned with prescribed procedures. This reflects a commitment to professional standards of public service, consistent with the principles of performance accountability in the public sector (Romzek & Dubnick, 2018). Nevertheless, significant constraints remain, particularly in terms of limited advanced equipment and the continuous need to enhance personnel capacity. In several cases, operational delays were caused by logistical barriers and resource shortages. These findings resonate with Bovens (2007), who argues that accountability entails not only procedural compliance but also the ability of institutions to deliver substantive outcomes. Thus, while the Gorontalo SAR Office has demonstrated procedural accountability, its substantive accountability still requires further strengthening.

However, a deeper analysis of interview transcripts reveals that these performance gaps are not merely operational but structurally embedded. As one SAR officer stated, "We follow the SOPs as required, but in emergencies, SOPs alone cannot compensate for the tools we don't have." This quotation demonstrates that procedural compliance is insufficient to ensure performance, thereby challenging Bovens (2007) assumption that procedural and substantive accountability are naturally aligned. Instead, the Gorontalo case shows that structural limitations can undermine the very capacity to meet substantive expectations, even under perfect procedural compliance (Martinez, 2020; Yokwana, 2024).

These empirical findings therefore modify existing theories by illustrating that substantive performance accountability in crisis environments depends not only on institutional behavior but also on resource governance, inter-agency legal clarity, and financial flexibility (Ramraj, 2020). For instance, limited communication equipment often forced SAR personnel to rely on manual coordination, revealing that accountability performance is deeply interconnected with the legal and financial dimensions. This interaction shows that performance failures cannot be analyzed in isolation from regulatory ambiguity and budget rigidity.

These results are highly relevant to the theoretical debate on public accountability in crisis management. Performance accountability in high-risk operations such as maritime SAR requires not only procedural compliance but also adaptive capacity in facing complex and unpredictable situations (Christensen et al., 2016). At the international level, best practices emphasize the integration of technologies such as satellite-based communication systems and drone utilization to enhance operational effectiveness (Liu et al., 2020). Compared to global practices, SAR operations in Gorontalo remain limited, underscoring the urgent need for innovation and capacity building. Yet, these international comparisons must be contextualized carefully. Unlike Japan and Norway, which operate under centralized command systems, high fiscal capacity, and extensive technological support, Gorontalo faces geographical dispersion and budget inflexibility(Ibrahim, 2020). Therefore, the performance gap observed in Gorontalo should not be interpreted as a managerial deficit but as a structural condition shaped by resource inequality and regulatory fragmentation. This critical positioning provides a more accurate comparative foundation and avoids the simplistic assumption that SAR Gorontalo fails to match global standards because of internal weaknesses.

In summary, the empirical findings expand global theories of performance accountability by demonstrating that in resource-constrained crisis environments, procedural, legal, and financial dimensions converge to shape operational performance. The Gorontalo case therefore contributes to a more nuanced understanding of performance accountability one that is structurally contingent rather than purely procedural.

Financial Accountability in SAR Operations

The study found that the financial accountability mechanisms at the Gorontalo SAR Office are implemented in accordance with national regulations and internal audit processes. Budget allocations for SAR activities such as fuel, equipment maintenance, and personnel allowances are formally reported and verified by the BASARNAS central office. Informants emphasized that financial transparency is maintained through regular audits, ensuring compliance with public financial governance standards (Mardiasmo, 2016). However, challenges remain concerning the adequacy and flexibility of the budget. SAR operations often require rapid mobilization that exceeds allocated funds, particularly in large-scale accidents. This creates a gap between financial procedures and operational realities, whereby strict adherence to budgetary mechanisms can at times hinder timely response. Such conditions reflect the classic dilemma between bureaucratic control and operational agility (Hood, 2010).

The interview data, however, provide deeper insight into how these financial constraints directly undermine operational accountability. One SAR finance officer explained: "During major accidents, the budget ceiling limits what we can deploy. We sometimes have to wait for approval even when we know delays risk lives." This empirical statement reveals that financial accountability is not simply a matter of transparency or compliance but is a structural barrier that shapes real-time operational capacity. The finding challenges Hood (2010) assumption that the tension between control and agility is primarily managerial; in this case, it is embedded in rigid budgeting frameworks that restrict field-level discretion.

These results demonstrate that financial accountability interacts strongly with performance accountability. When funds cannot be mobilized rapidly, the ability to deploy assets is constrained, directly affecting search speed, victim recovery rates, and public trust. Thus, the

financial dimension cannot be analyzed separately; it functions as an upstream determinant of performance outcomes. This integrated pattern contradicts models that treat financial accountability as a parallel or independent dimension.

These findings highlight the need for a more flexible and adaptive financial management system in emergency response agencies. Comparative studies on disaster management suggest that hybrid models combining ex-ante control with ex-post adaptive justification are better suited to address the dynamic requirements of emergency operations (Kapucu & Ustun, 2018). In the context of the Gorontalo SAR Office, the establishment of contingency funds or rapid response financing schemes may serve as viable solutions without undermining public transparency.

However, such international models must be contextualized. Countries like Japan and Norway utilize contingency-based financing because they operate within high fiscal capacity and integrated crisis-governance systems, conditions not fully comparable to Gorontalo or Indonesia. Therefore, financial reforms for SAR Gorontalo must be adapted to Indonesia's bureaucratic constraints, decentralization structure, and varying regional capacities. Simply adopting global models without modification would risk misalignment with existing institutional realities.

Overall, the empirical evidence modifies existing financial accountability theory by demonstrating that in low-resource crisis agencies, rigid budgeting is not merely an administrative inconvenience but a core driver of accountability gaps that cascade into operational, legal, and moral dimensions. The Gorontalo case therefore contributes a contextually grounded explanation of why financial accountability must be reconceptualized as an integrated governance issue rather than a standalone procedural mechanism.

Legal Accountability and Regulatory Compliance

Legal accountability constitutes a critical dimension in SAR operations. The Gorontalo SAR Office operates under Law No. 29 of 2014 on Search and Rescue, which mandates the execution of tasks within the framework of applicable legal provisions. The study found that legal compliance is generally maintained, particularly in terms of inter-agency coordination, adherence to maritime safety regulations, and respect for the rights of victims. However, challenges persist in the harmonization of regulations among agencies such as BASARNAS, the Indonesian Navy, local governments, and the National Transportation Safety Committee (Komite Nasional Keselamatan Transportasi, 2022). Overlapping authorities and unclear jurisdiction in certain cases have led to delays in decision-making and the emergence of accountability gaps. This reflects the fragmented governance problem within Indonesia's disaster management system (Prasetyo, 2021).

Interview evidence provides sharper insight into how this fragmentation manifests in practice. One SAR coordinator stated: "When an incident happens near the boundary of two jurisdictions, we sometimes wait for confirmation on who should take command. That delay costs us valuable time." This quote demonstrates that jurisdictional ambiguity is not merely an administrative inconvenience but a direct source of operational delay thereby linking legal accountability to performance outcomes. The finding empirically supports Boin et al. (2013), who argue that unclear mandates weaken crisis-time responsiveness, while simultaneously extending their argument by showing how legal ambiguity interacts with Indonesia's multi-agency structure.

These findings align with international literature on crisis governance, which underscores the importance of clear legal frameworks and robust institutional coordination in ensuring accountability Boin et al. (2013). In countries with advanced SAR systems such as Norway and Japan, legal accountability is reinforced through unified command structures and clearly defined jurisdictions (Rogers, 2019). For the Gorontalo context, strengthening legal

accountability requires the consolidation of inter-agency agreements and regulatory harmonization to minimize bureaucratic friction.

However, direct comparison with Norway or Japan must be interpreted cautiously. Both countries operate under high institutional coherence, stable inter-agency protocols, and strong legal enforcement capacity conditions that differ significantly from Indonesia's decentralized governance and variability in regional capabilities. Thus, while the principles of unified command are relevant, they cannot be transferred wholesale without considering Indonesia's provincial autonomy and differentiated resource distribution. This contextual differentiation is crucial, as it indicates that accountability failures in Gorontalo stem not only from legal ambiguity but also from structural limitations embedded in Indonesia's governance architecture.

Importantly, the legal dimension also interacts with financial and moral accountability (Ridzuan et al., 2024). Rigid legal mandates on budgeting, for example, limit the ability to deploy emergency funds quickly, reinforcing the financial rigidity discussed earlier. Likewise, delays caused by regulatory ambiguity can erode public trust during crises, affecting moral accountability as communities perceive slow response as neglect or incompetence (Bhutto, 2024; Sanusi Gumbi & Baba, 2024). These cross-dimensional interactions show that legal accountability cannot be isolated; it functions as a structural driver shaping other accountability outcomes.

Collectively, the findings refine existing crisis-governance theory by showing that in multi-level governance contexts like Indonesia, legal accountability failures are not simply procedural but systemic. They emerge from the collision between overlapping mandates, decentralization, and uneven institutional capacity. The Gorontalo case thus contributes an empirically grounded explanation of why strengthening legal accountability requires both regulatory harmonization and adaptive coordination mechanisms tailored to local governance constraints.

Moral Accountability and Public Trust

Moral accountability emerged as a key finding of this study. Beyond performance, financial, and legal aspects, the Gorontalo SAR Office is also assessed by society in terms of its moral responsibility toward victims and their families. Field evidence indicates that SAR personnel often go beyond their formal duties, for example by providing emotional support and ensuring that victims are treated with dignity (O'Reardon, 2023). Such practices foster public trust and institutional legitimacy. Nevertheless, dissatisfaction also arises among victims' families, particularly regarding delays in search operations or insufficient transparency in communication. This highlights the fragile nature of public trust during crises, as societal expectations are both high and emotionally charged (Vollertsen et al., 2020).

To ground these observations empirically, several family members expressed the emotional stakes directly. One interviewee stated: "We appreciated that the officers stayed with us and explained the situation, but we still felt anxious because updates were slow." Another family member noted: "They tried to comfort us, but sometimes we were left waiting without clarity." These quotes illustrate that moral accountability is not only shaped by compassion but also by communication practices suggesting that public trust depends on the alignment between emotional support and timely, transparent information. This nuance expands Dubnick & Frederickson (2011) argument by showing that moral accountability emerges from a combination of empathy and procedural openness, not empathy alone.

Theoretically, moral accountability complements the instrumental dimensions of accountability by emphasizing ethical and humanitarian obligations in public service delivery (Dubnick & Frederickson, 2011). Globally, moral accountability is increasingly recognized as

vital for sustaining the legitimacy of public institutions, especially in disaster response contexts (Olsen, 2017). For the Gorontalo SAR Office, strengthening moral accountability requires enhancing public communication, improving transparency, and providing feedback mechanisms as well as support services for victims' families.

However, the Gorontalo findings also challenge parts of the global literature. Many international studies such as those in Japan and Norway assume high institutional capacity, well-resourced teams, and standardized communication units dedicated to family liaison. These conditions differ sharply from Gorontalo, where limited personnel and resource constraints force rescuers to handle both operational and emotional duties simultaneously. As one officer explained: "We want to talk to families more, but sometimes we are still in the field or understaffed." This divergence indicates that moral accountability in lower-resourced contexts is structurally conditioned by operational capacity, not simply by ethical commitment.

Moreover, moral accountability interacts closely with other accountability dimensions. Delays caused by legal ambiguity (as shown in Section 3) often manifest as moral dissatisfaction among families. Financial rigidity can also restrict the availability of personnel dedicated to public communication, which then weakens moral legitimacy. Likewise, performance failures whether real or perceived are often moralized by the public, amplifying anger or loss of trust. These interdependencies demonstrate that moral accountability is an outcome shaped by broader structural constraints, not an isolated ethical domain.

Taken together, the findings refine existing theoretical perspectives by showing that moral accountability during crisis response is co-produced through empathy, communication transparency, and institutional capacity. The Gorontalo SAR Office illustrates that moral legitimacy cannot be strengthened merely through frontline compassion; it requires coordinated improvements across legal, financial, and operational dimensions. This insight positions moral accountability as a relational construct embedded in multi-dimensional public governance.

Integration of Findings: Towards Public Accountability Innovation in SAR

However, the integrated analysis of this study reveals that these accountability dimensions do not operate independently; they shape and constrain each other in patterned ways. For example, legal fragmentation such as unclear authority between BASARNAS, the Navy, and local governments—directly weakens performance accountability by delaying operational decisions. One SAR staff member explained: "Sometimes we wait for confirmation from different agencies, and that slows down our response." This illustrates that legal accountability failures cascade into operational consequences.

Similarly, financial rigidity interacts with moral accountability: insufficient contingency funds limit the ability to maintain personnel dedicated to family communication, which then generates dissatisfaction among victims' families. As one officer noted, "We want someone to focus only on updating families, but we don't always have the budget to assign extra staff." These patterns demonstrate that moral legitimacy is structurally conditioned by financial and organizational capacity challenging theories that treat moral accountability as primarily ethical rather than institutional.

Innovation accountability also emerges as a cross-cutting factor. The absence of advanced technologies (e.g., drones or satellite systems) reduces the speed of search operations, which then diminishes both performance and moral accountability. Yet, technological innovation cannot be adopted in isolation: legal rules on procurement, financial limitations, and varying inter-agency standards all shape the feasibility of innovation. This confirms Bovens (2007) proposition that accountability systems are "nested," meaning that reform in one dimension depends on structural reforms in others.

The comparative reflections included in the original draft are strengthened by contextualization. While Norway and Japan employ unified command structures and technologically advanced SAR capabilities, these systems rely on abundant resources and long-established institutional capacities conditions that differ significantly from Gorontalo. Therefore, direct comparison would be misleading unless adjusted for differences in governance maturity, geographic scale, and resource endowments. The Gorontalo case, instead, demonstrates how accountability must evolve within structural constraints rather than emulate high-capacity systems wholesale.

Taken together, the integration of accountability and innovation reflects a new dynamic in 21st-century public governance. Osborne (2020) emphasizes that public sector accountability must adapt to dynamic environments through collaboration, technological utilization, and the reinforcement of ethical values. The evidence from this study refines this claim by showing that adaptive accountability depends not only on collaborative and technological innovation, but also on the institutional capacity to harmonize legal mandates, adjust financial frameworks, and sustain moral legitimacy.

Thus, the Gorontalo case contributes to theory-building by demonstrating that accountability innovation in developing-country SAR institutions emerges from the interaction of structural constraints, frontline practices, and community expectations—rather than from any single reform initiative. This insight highlights both the opportunities and the challenges of fostering innovative public accountability in crisis-response institutions.

Figure 1. Five Dimensions of Accountability Graph for Gorontalo SAR Office
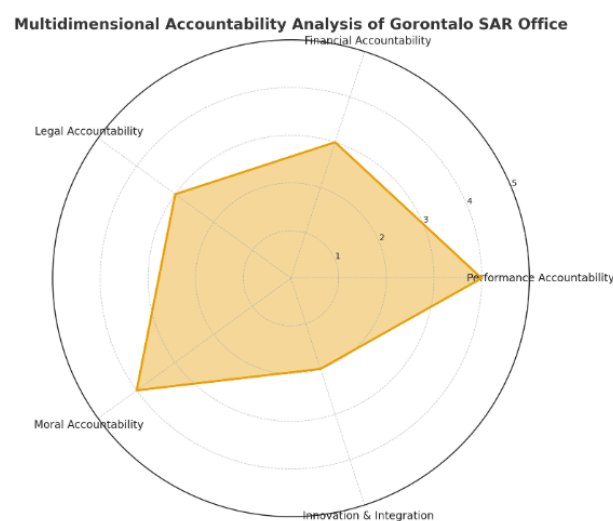
Source: Research Results 2025

Figure 2. Comparative Analysis Dimensions at Gorontalo SAR Office
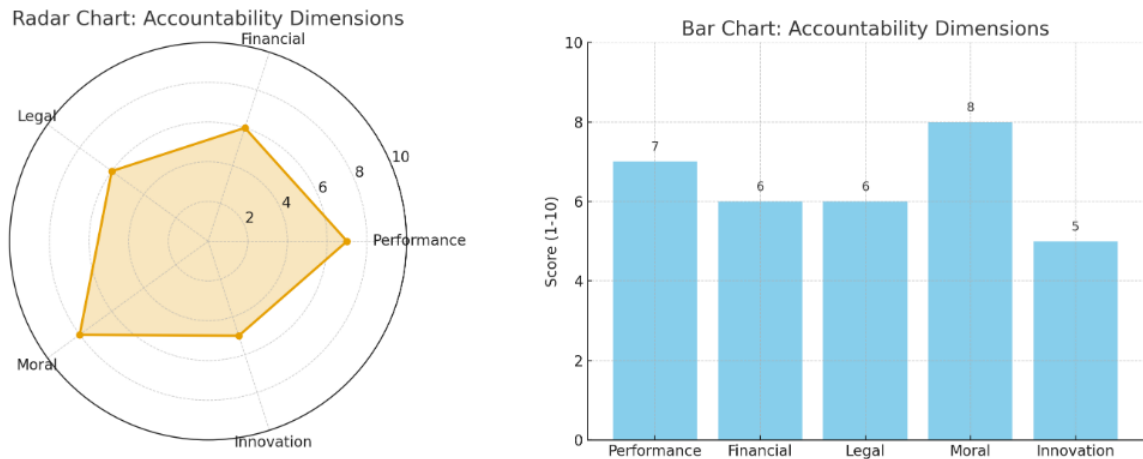
Source: Research Results 2025

The visualization of data through radar and bar charts illustrates a multidimensional profile of public accountability at the Gorontalo Search and Rescue (SAR) Office. The moral accountability dimension received the highest score (8/10), indicating that humanitarian responsibility, emotional support for victims' families, and dignified treatment of victims constitute the institution's primary strength. This finding aligns with Dubnick & Frederickson (2011) argument that moral accountability forms the foundation of public institutions' legitimacy, particularly in crisis contexts. The performance accountability dimension also demonstrated relatively strong results (7/10). Rapid response, adherence to Standard Operating Procedures (SOPs), and inter-agency coordination serve as the main indicators of operational effectiveness. Nevertheless, limitations in equipment and logistical constraints continue to affect operational outcomes, suggesting that substantive accountability has not yet been fully optimized (Bovens, 2007). Meanwhile, both the financial and legal accountability dimensions scored at a moderate level (6/10). Financial reporting mechanisms, internal audits, and compliance with national regulations were implemented as prescribed, yet the system still faces dilemmas between bureaucratic compliance and operational flexibility (Hood, 2010). On the legal side, overlapping authority among institutions and regulatory disharmony often result in delays in decision-making, creating gaps in accountability (Prasetyo, 2021).

The lowest-performing dimension was innovation accountability (5/10). Limited adoption of advanced technologies, such as drones, satellite-based communication systems, and real-time digital dashboards, indicates that the Gorontalo SAR Office has not fully integrated innovative practices commonly applied in countries with more advanced SAR systems (Ansell & Torfing, 2021; Liu et al., 2020). Overall, the findings highlight that the Gorontalo SAR Office has established a solid accountability foundation, particularly in moral and performance aspects. However, gaps in financial, legal, and especially innovation dimensions demand strategic attention. Strengthening innovation and regulatory harmonization will be crucial for enhancing both operational effectiveness and public legitimacy, in line with the requirements of modern public governance (Osborne, 2016).

E. CONCLUSION

The findings of this study conclude that the Gorontalo Search and Rescue (SAR) Office has developed a multidimensional framework of public accountability encompassing performance, financial, legal, and moral aspects, with the strongest achievements demonstrated in moral and performance accountability. The results highlight the institution's strength in delivering responsive, human-centered, and procedurally compliant services, while also exposing significant gaps in financial flexibility, regulatory harmonization, and the adoption of technological innovation. This study not only addresses a knowledge gap regarding public accountability in SAR operations in Indonesia which has been predominantly examined at the macro level but also expands academic discourse by linking accountability, crisis management, and public sector innovation. The relevance of this research lies in its contribution to strengthening the legitimacy of crisis response institutions through governance innovation, digital technology adoption, inter-agency collaboration, and community participation. Practically, the findings provide strategic insights for BASARNAS to enhance operational effectiveness, transparency, and public trust, while theoretically offering a new conceptual foundation for integrating accountability and innovation in modern public governance. The study's limitation lies in its single-case focus on Gorontalo, and future research is recommended to conduct comparative analyses across different SAR offices or explore the dimension of innovative accountability more deeply within the framework of e-governance. In addition, this study contributes a significant novelty to the field of public administration by demonstrating that innovation accountability through the adoption of technologies such as drones, satellite communication systems, and real-time operational dashboards should be considered a core component of modern public accountability rather than a supplementary technical feature. The conclusion further reinforces the new insight that moral accountability plays a decisive role in shaping institutional legitimacy during crisis situations, offering an important contribution to contemporary discourse on human-centered public governance. Overall, the study provides a novel empirical foundation showing that fragmented regulations, limited inter-agency coordination, and technological constraints directly influence accountability outcomes in crisis governance, thereby offering a fresh contextual understanding relevant for administrative reform in Indonesia's archipelagic regions.

Acknowledgement

REFERENCES

Acintya, A. (2025). *Exploring the dynamics of NGO accountability: a case study of an Indonesian NGO*. Doctoral dissertation, University of Sussex.

Ali, B., & Obembe, E. (2025). Leveraging Technology for Enhanced Operational Effectiveness in the Nigerian Navy. *Journal of Science Innovation and Technology Research*.

Andreassen, N., & Borch, O. J. (2020). Co-ordination of emergency response systems in high-complexity environments: Structuring mechanisms and managerial roles. In *Crisis and emergency management in the Arctic* (pp. 126–159). Routledge.

Ansell, C., & Torfing, J. (2021). Co-creation: The new kid on the block in public governance. *Policy & Politics*, *49*(2), 211–230.

Arredondo, P., Fawcett, M. L., Cigrand, D. L., Grant, S. B., Miyakuni, R., & Adams, D. (2024). *Counseling with immigrants, refugees, and their families from social justice perspectives.* John Wiley & Sons.

Bhutto, F. (2024). Trust in public institutions: Causes of decline and ways to restore it. *Research Consortium Archive*, *2*(3), 123–131.

Boin, A., Kuipers, S., & Overdijk, W. (2013). Leadership in times of crisis: A framework for assessment. *International Review of Public Administration*, *18*(1), 79–91.

Bovens, M. (2007). Analysing and assessing accountability: A conceptual framework 1. *European Law Journal*, *13*(4), 447–468.

Christensen, T., Lægreid, P., & Rykkja, L. H. (2016). Organizing for crisis management: Building governance capacity and legitimacy. *Public Administration Review*, *76*(6), 887–897.

Christensen, T., & Ma, L. (2021). Comparing SARS and COVID-19: Challenges of governance capacity and legitimacy. *Public Organization Review*, *21*(4), 629–645.

Conduah, A. K., & Ofoe, S. H. (2025). Community resilience and adaptation strategies during the COVID-19 pandemic in sub-Saharan Africa: a comparative analysis of Ghana and South Africa. *Discover Health Systems*, *4*(1), 1–18.

Coombs, W. T. (2007). *Ongoing crisis communication: Planning, managing, and responding.* Sage.

Creswell, J. W. (2023). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (6th ed.). SAGE Publications. https://books.google.co.id/books/about/Research_Design.html?hl=id&id=Rkh4EAAAQBAJ&redir_esc=y

Cruzate, R. F., Corpuz, J. T., & Corpuz, J. M. C. M. (2025). Case Study Analysis in Maritime Incidents: A Research Tool for Advancing Safety, Sustainability, and Security. In *Research Methods for Advancing the Maritime Industry* (pp. 109–144). IGI Global Scientific Publishing.

Denhardt, J. V, & Denhardt, R. B. (2015). *The new public service: Serving, not steering.* Routledge.

Dubnick, M., & Frederickson, H. G. (2011). Public accountability: Performance measurement, the extended state, and the search for trust. *National Academy of Public Administration & The Kettering Foundation*.

Dwiyanto, A. (2021). *Mewujudkan good governance melalui pelayanan publik.* Ugm Press.

Fink, S. (1986). Crisis management: Planning for the inevitable. *AMACOM.*

Hood, C. (2010). *The blame game: Spin, bureaucracy, and self-preservation in government.*

Ibrahim, H. B. (2020). *Maritime search & rescue services in Nigeria: examining the Regional Maritime Rescue Coordination Centre Lagos, Nigeria.*

Kapucu, N., & Ustun, Y. (2018). Collaborative crisis management and leadership in the public sector. *International Journal of Public Administration*, *41*(7), 548–561.

Karthik, K., & Kumar, K. (2025). Analyzing security vulnerabilities in maritime ad-hoc networks for real-time navigation data exchange. *Journal of Internet Services and Information Security*, *15*(2), 563–577.

Komite Nasional Keselamatan Transportasi. (2022). *Laporan tahunan keselamatan transportasi.* Komite Nasional Keselamatan Transportasi (KNKT). .

Kuriyama, N., Maly, E., León, J., Abramson, D., Nguyen, L. T., & Bostrom, A. (2020). Towards a comparative framework of adaptive planning and anticipatory action regimes in Chile, Japan, and the US: an exploration of multiple contexts informing tsunami risk-based planning and relocation. *Journal of Disaster Research*, *15*(7), 878–889.

Li, M. (2024). Climate risk perception and corporate ESG performance: evidence from China. *Journal of Accounting Literature*.

Liu, Y., Xu, X., & Wang, J. (2020). Emerging technologies for emergency management: A systematic review. . *Safety Science,*.

Loh, X. (2021). Suspicious activity reports (SARs) regime: reforming institutional culture. *Journal of Money Laundering Control*, *24*(3), 514–524.

Mardiasmo, M. B. A. (2016). *PERPAJAKAN–Edisi Terbaru*. Penerbit Andi.

Mardiasmo, M. B. A. (2021). *Akuntansi sektor publik-edisi terbaru*. Penerbit Andi.

Margaretha, R., Syuzairi, M., & Mahadiansar, M. (2024). Digital transformation in the maritime industry: Opportunities and challenges for Indonesia. *Journal of Maritime Policy and Strategy*, *1*(1), 1–12.

Martinez, V. R. (2020). Complex compliance investigations. *Columbia Law Review*, *120*(2), 249–308.

Miles, M. B., Huberman, A. M., & Saldana, J. (2014). Qualitative data analysis: A methods sourcebook. In *(No Title)* (3rd ed.).

Oh, S. E., Kim, J.-H., Kim, J.-Y., & Ahn, J.-H. (2025). Food safety distribution systems using private blockchain: Ensuring traceability and data integrity verification. *Foods*, *14*(8), 1405.

Olsen, J. P. (2017). Democratic accountability and the terms of political order. *European Political Science Review*, *9*(4), 519–537.

O'Reardon, M. (2023). Social workers and safeguarding adult reviews (SARs)–an exploration of the stories that are told and the narratives that they hold. *The Journal of Adult Protection*, *25*(1), 20–32.

Osborne, S. (2020). *Public service logic: Creating value for public service users, citizens, and society through public service delivery*. Routledge.

Osborne, S. P. , & R. Z. (2016). Public service management in contemporary contexts: New directions and challenging questions. . *Public Management Review*, *18*(8), 1213-1232.

Osborne, S. P., & Brown, L. (2011). Innovation in public services: Engaging with risk. *Public Money & Management*, *31*(1), 4–6.

Pérez-Durán, I. (2024). Twenty-five years of accountability research in public administration: Authorship, themes, methods, and future trends. *International Review of Administrative Sciences*, *90*(3), 546–562.

Prasetyo, D. (2021). Fragmentasi tata kelola dalam manajemen bencana di Indonesia. . *Jurnal Administrasi Publik Indonesia, *, *6*(2), 101–115.

Rahman, M. M. (2024). Ethical and Technological Convergence: AI and Blockchain in Halal Healthcare. *Artificial Intelligence-Enabled Blockchain Technology and Digital Twin for Smart Hospitals*, 451–466.

Ramraj, V. V. (2020). *Covid-19 in Asia: Law and policy contexts*. Oxford University Press.

Ridzuan, N. N., Masri, M., Anshari, M., Fitriyani, N. L., & Syafrudin, M. (2024). AI in the financial sector: The line between innovation, regulation and ethical responsibility. *Information*, *15*(8), 432.

Rogers, C. (2019). Legal frameworks and institutional coordination in maritime search and rescue: Lessons from Norway and Japan. . *Maritime Policy & Management*, *46*(6), 669-685.

Romzek, B. S., & Dubnick, M. J. (2018). Accountability. In *Defining public administration* (pp. 382–395). Routledge.

Sanusi Gumbi, K., & Baba, Y. T. (2024). Political trust and legitimacy crisis in the age of COVID-19: an assessment of the EndSARS protest in Nigeria. *Frontiers in Political Science*, *6*, 1334843.

Thompson, P., & Smith, C. (2024). Labour process theory: in and beyond the core: continuities, challenges, and choices. *Work in the Global Economy*, *4*(2), 145–169.

Tikanmäki, I., Räsänen, J., Ruoslahti, H., & Rajamäki, J. (2021). Maritime surveillance and information sharing systems for better situational awareness on the european maritime domain: A literature review. *Digital Transformation, Cyber Security and Resilience of Modern Societies*, 117–135.

Visave, J. (2025). Transparency in AI for emergency management: Building trust and accountability. *AI and Ethics*, 1–14.

Vollertsen, A. R., De Boer, D., Dekker, S., Wesselink, B. A. M., Haverkate, R., Rho, H. S., Boom, R. J., Skolimowski, M., Blom, M., & Passier, R. (2020). Modular operation of microfluidic chips for highly parallelized cell culture and liquid dosing via a fluidic circuit board. *Microsystems & Nanoengineering*, *6*(1), 107.

Wang, Y., & Han, Y. (2025). Measuring maritime search and rescue (SAR) accessibility using an improved spatiotemporal two-step floating catchment area method: A case study in the South China Sea. *Journal of Transport Geography*, *124*, 104155.

Wenham, C., Eccleston-Turner, M., & Voss, M. (2021). The Risks Associated with a Pandemic Treaty: Between Global Health Security and Cosmopolitanism. *Available at SSRN 3950227*.

Widjajanto, B. , & Setiawan, R. (2018). Accountability and transparency in local government administration. *Jurnal Bina Praja, , 10*(2), 133-144.

Yin, R. K. (2018). *Case study research and applications* (Vol. 6). Sage Thousand Oaks, CA.

Yokwana, M.-J. N. (2024). *The appointment of a SARS official as facilitator in alternative dispute resolution proceedings: is it a violation of a taxpayer's right under section 34 of the Constitution?*

Zhong, K., Liu, Y., & Christensen, T. (2022). Crisis coordination in centralized regimes: Explaining China's strategy for combatting the COVID-19 pandemic. *International Public Management Journal*, *25*(7), 1131–1150.