

The Role of Stakeholder Dialogue in Facilitating Private Sector Support in Disaster Recovery: Evidence from Tanzania

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Abstract

This study investigates the role of private sector support in disaster recovery in Tanzania, with a particular focus on the mediating role of stakeholder dialogue. Grounded in Stakeholder Theory, the study employs Structural Equation Modeling to analyze survey data from 300 respondents representing public and private sector institutions engaged in disaster management. The findings reveal that private sector contributions, particularly logistical support and technological innovation, have a significant direct impact on recovery effectiveness, while financial contributions play a stronger role in facilitating stakeholder dialogue. Stakeholder dialogue was found to partially mediate the relationship between technological innovation and recovery outcomes, underscoring its role in enhancing coordination and collaboration among stakeholders. These results emphasize the differentiated value of private sector support types and the importance of structured and inclusive stakeholder platforms. The study contributes to disaster management literature by offering empirical evidence on the mediating role of stakeholder dialogue in facilitating private sector support in disaster recovery. It also provides specific recommendations on policy strategies required to strengthen coordination of public and private sector initiatives towards disaster recovery.

Keywords: Disaster Recovery, Financial Contributions, Logistical Support, Private Sector, Stakeholder Dialogue, Technological Innovation.

Introduction

Natural disasters are becoming increasingly frequent and severe, leading to significant socio-economic and infrastructural disruptions worldwide (Saatchi et al., 2024). A disaster, as defined by the United Nations Office for Disaster Risk Reduction (United Nations Office for Disaster Risk Reduction (UNDRR), 2020), is a significant disruption in a community or society caused by hazardous events. These disruptions, exacerbated by factors such as exposure, vulnerability and limited capacity, result in human, material, economic or environmental losses. Disasters can be categorized as slow-onset events (e.g., drought, desertification, and epidemics) or sudden-onset events

(e.g., earthquakes, flash floods, infrastructure failures, and industrial accidents). Developing countries including Tanzania face compounded challenges due to inadequate disaster preparedness, limited technical and financial resources, and weak coordination mechanisms for recovery efforts. The impacts of these disasters are far-reaching, often including the destruction of critical infrastructure, business disruptions, displacement of populations, and outbreaks of diseases such as cholera, malaria, and dengue fevers (Ubwani, 2023).

Recent events in Tanzania illustrate the devastating consequences of natural disasters. For instance, heavy rains in northern Tanzania caused severe socio-economic hardship, with mudslides in Katesh and Gendambi near Mount Hanang leading to 69 fatalities, 120 injuries, destruction of 1,150 homes as well as 750 acres of crops and grain reserves (Ubwani, 2023). Similarly, the El Niño rains caused widespread devastation, destroying physical infrastructure, resulting in 155 deaths, 236 injuries, and significant disruptions to livelihoods (Lasteck, 2024). Beyond natural disasters, structural failures such as the collapse of a four-story building in Kariakoo, Dar es Salaam, have highlighted vulnerabilities in urban infrastructure, causing tragic loss of life and heightened fears among affected communities (Lamtey, 2024). While governments across the globe lead disaster management efforts, their capacity is often stretched thin, particularly in developing nations like Tanzania. Acknowledging these limitations, the Tanzanian government has emphasized the need for multi-stakeholder engagement in disaster management through policies such as the National Disaster Management Policy (2015) and Strategy (2022 - 2027). These policies call for the involvement of donor agencies, NGOs, and the private sector to complement public initiatives and enhance disaster preparedness and recovery efforts (United Republic of Tanzania (URT), 2022).

The private sector has increasingly stepped up as a critical stakeholder, providing immediate disaster response through logistical support and funding for community recovery efforts (Srinivas, 2015). **Private sector** refers to the segment of the economy that is owned, managed, and operated by individuals or organizations seeking to generate profit (Birt, 2024). While typically independent from government ownership, private sector often collaborates with governments and non-governmental organizations in disaster management. This collaboration can take various forms, including financial, technological, and logistical support during disaster preparedness and recovery (Chandra et al., 2016). Empirical evidence demonstrates the positive impact of private sector involvement. For example, Lasteck (2024) documented private sector contributions to relief operations during floods and infrastructural rebuilding after mudslides. Similarly, Izumi and Shaw (2015) and Bae et al. (2016) found that private sector engagement enhances the overall effectiveness of disaster response efforts. To harness this potential

more effectively, scholars have emphasized the importance of collaborative approaches. Danar and Novita (2024) and Goyal (2019) argue that multi-stakeholder collaboration fosters resilience and strengthens adaptive capacity. Supporting this view, Bae et al. (2016) and Tang et al. (2021) demonstrate that collaborative efforts can result in more efficient disaster management practices. Disaster management encompasses the processes of coordinating, planning, and implementing measures required for disaster preparedness, response, and recovery (UNDRR, 2020). Effective disaster management therefore involves the integration of diverse stakeholders to enhance resilience and mitigate impacts.

Despite these positive findings, existing research points to the need for a more structured and coordinated approach to maximize the impact of private sector engagement. As Sachin et al. (2021) note, critical gaps remain in clarifying the appropriate roles of private sector, defining effective engagement processes, and ensuring their alignment with public disaster recovery goals. This gap is particularly evident in the context of Tanzania, where limited empirical research has explored the mediating role of stakeholder platforms such as stakeholder dialogue in facilitating private sector support for disaster management. These limitations drive the need to promote structured stakeholder dialogue as a mechanism to enhance private sector participation. Drawing on Stakeholder Theory, this study argues that stakeholder dialogue can serve as an essential mediating process to improve the quality and effectiveness of private sector contributions. Dialogue enables mutual understanding, aligns stakeholder incentives, and supports transparent and accountable disaster recovery efforts.

To address these research gaps, this study investigates the role of private sector support in disaster recovery initiatives in Tanzania. Anchored in Stakeholder Theory, the research specifically examines the mediating role of stakeholder dialogue in enabling effective private sector engagement. By analyzing this relationship, the study aims to offer actionable insights on how structured stakeholder interactions can contribute to improved disaster preparedness and recovery outcomes. The study is guided by the following key questions:

1. To what extent is private sector engagement relevant in addressing disaster management challenges in Tanzania?
2. Does stakeholder dialogue mediate the relationship between private sector support and disaster recovery?

The study's findings reveal that among the various forms of private sector support, logistical support has the strongest direct influence on recovery effectiveness, followed by technological innovation, while financial contributions show only marginal significance. However, financial resources

play a crucial role in enhancing stakeholder dialogue, which in turn partially mediates the relationship between private sector support and recovery outcomes. All three forms of private sector support (financial, logistical, and technological) significantly promote stakeholder dialogue. This highlights its relevance as a collaborative platform. Although the mediation effect is marginally significant, the results suggest that stakeholder dialogue serves as an enabling mechanism for coordinating and aligning efforts among stakeholders involved in disaster recovery. These insights emphasize the need for a more structured and transparent stakeholder engagement framework to optimize the effectiveness of private sector contributions. The remainder of this paper is organized as follows. First, the paper reviews the theoretical and empirical literature, highlighting existing debates and gaps. It then describes the methodology adopted in the study, including the research design, data collection, and analysis procedures. This is followed by the presentation and discussion of empirical findings. Finally, the paper concludes by summarizing the study's contributions, providing practical recommendations, and suggesting areas for future research.

Literature Review

Stakeholder Theory and Disaster Management

This study is grounded in Stakeholder Theory introduced by Freeman (1984). The theory posits that, organizations have responsibilities not only to shareholders but to a broader group of stakeholders including employees, customers, communities and governments. In the context of disaster management where challenges are complex and involve diverse actors, this theory offers a relevant lens for understanding how multi-stakeholder collaboration can be structured and optimized for achieving effective recovery and resilience (Bader, 2023). Stakeholder Theory supports the view that no single actor can independently manage the wide-ranging effects of disasters. As observed by Kapucu (2014), effective recovery requires joint efforts based on mutual recognition, shared goals, and structured dialogue. In their study, Nonet et al.(2022) underscore the value of multi-stakeholder engagement in building resilience and coordinating responses across sectors. Similarly, Yang et al. (2023) argue that disaster response systems function more effectively when built upon networks of interdependent actors, as opposed to hierarchical models.

Researchers also note that private sector involvement in disaster recovery is often motivated by Corporate Social Responsibility (CSR) practices associated with brand reputation, risk reduction, and stabilization of operating environments (Porter & Kramer, 2006). Lema (2018) also demonstrates that companies with strong stakeholder engagement cultures tend to integrate disaster resilience into their core CSR strategies, making them more proactive in preparedness and response. Despite this growing

recognition, effective stakeholder engagement remains a challenge. Fragmented efforts, lack of trust, and inconsistent communication often undermine the potential of private sector contributions (Global Facility for Disaster Reduction and Recovery [GFDRR], 2020 and Taranekar, 2021). In this regard, stakeholder dialogue, as both a principle and a structured mechanism, can mediate these challenges by aligning objectives, promoting transparency, and establishing accountability mechanisms (Silva & de Campos, 2020). Stakeholder Theory is therefore not only a theoretical foundation but also a practical guide for understanding how structured collaboration mechanisms, such as dialogue platforms, can facilitate more coordinated and impactful private sector engagement. This theoretical framing informs the study's investigation into the mediating role of stakeholder dialogue between private sector support and disaster recovery effectiveness.

Stakeholder Dialogue and its Importance

According to the Collective Leadership Institute (CLI), stakeholder dialogue refers to an interactive communication process aimed at aligning the objectives and expectations of all involved parties (Collective Leadership Institute (CLI), 2013). This process fosters trust, transparency, and mutual understanding, creating an environment conducive to effective collaboration (Silva & de Campos, 2020). The CLI emphasizes that structured dialogue provides clarity on roles and responsibilities, enhancing private sector contributions to disaster response and recovery (Collective Leadership Institute (CLI), 2013). Similarly, Bryson et al. (2006) highlight that open dialogue encourages meaningful participation and aligns stakeholder efforts with broader community needs. To enhance stakeholder engagement, collaborative platforms such as public-private consultative meetings and joint workshops have been proven effective (Chandra et al., 2016). Information-sharing mechanisms, including task forces and structured committees, also play a critical role in strengthening coordination during crises (Kapucu, 2006).

Despite its benefits, stakeholder dialogue faces challenges such as communication breakdowns, power imbalances, and inconsistent stakeholder commitment (Brouwer et al., 2013). Addressing these barriers is essential. The UNDRR (2019) underscores the importance of inclusive dialogue platforms that balance power dynamics and integrate diverse perspectives to reduce conflicts. Structured dialogue not only resolves these challenges but also enables the development of unified disaster management strategies that leverage private sector support (Brown & Ashman, 1996). Building on this theoretical foundation, the present study examines the role of structured stakeholder dialogue in facilitating private sector participation in disaster management in Tanzania. The following subsection reviews empirical literature on private sector support and disaster recovery outcomes, and

subsequently it develops hypothesized relationships among the key variables of the study.

Empirical Literature Review and Hypotheses Development

Empirical research increasingly demonstrates that private sector plays a vital role in disaster management through financial, technological, and logistical support. Financial contributions are widely recognized as an important component of disaster recovery due to their immediacy, flexibility, and ability to mobilize resources rapidly in response to emergent needs. For instance, Bae et al. (2016) demonstrate that corporate donations during the Nepal earthquake response played a critical role in addressing urgent humanitarian needs and enabled smooth delivery of relief supplies. Similarly, Goodwin et al. (2022) emphasize the link between timely financial interventions and mitigation of drought-related impacts, highlighting their potential to support both immediate relief and long-term resilience-building efforts. In Africa, innovative financing initiatives such as community risk insurance schemes in Kenya and micro-finance interventions during recurrent droughts have demonstrated the transformative role of private sector financial contributions in improving recovery outcomes (Chen, 2025). In Tanzania, however, financial contributions are often fragmented, with CSR programs targeting immediate relief but rarely integrated into national disaster financing frameworks (United Republic of Tanzania (URT), 2025). This underscores the dual nature of financial contributions: when well-coordinated, they are transformative; when fragmented, they risk redundancy and inefficiency. Based on this argument, the study hypothesized that:

H1a: Financial contributions have positive impact on recovery effectiveness.

Technological innovation by private firms can strengthen disaster recovery primarily by accelerating information flow, improving coordination process, and enabling faster recovery. Gumiskey et al. (2015), for instance, demonstrated how telecom firms in Bangladesh developed early warning SMS platforms for flood-prone areas. Similarly, in Indonesia, Mohd et al. (2022) demonstrated that tech firms provided drone-based damage assessments to expedite government responses. Lasanthika and Wickramasinghe (2020) revealed that real-time data platforms supported by private IT companies improved aid targeting in Sri Lanka. In Sub-Saharan Africa, technological innovations in financial domain, mobile money platforms such as M-Pesa and Tigo-Pesa created by private operators have been shown to cushion households against shocks. In Kenya, access to M-PESA improved consumption, smoothing and reducing vulnerability after negative disaster shocks (Jack & Suri, 2014). Comparable evidence from Tanzania indicates that mobile money has been integrated into humanitarian responses, enabling

rapid disbursement of funds and enhancing community resilience (Abiona & Koppensteiner, 2022). Taken together, these studies demonstrate that private-sector technological innovation through faster situational awareness and more efficient resource distribution enhance the effectiveness of disaster recovery interventions. Informed by this empirical review, the study hypothesized that:

H2a: Technological innovation has a positive impact on recovery effectiveness.

Regarding logistical support, numerous studies emphasize that private firms provide critical infrastructure and supply chain resources during emergencies thereby supplementing overstretched government services. Kapucu (2006) and Carr et al. (2009) highlight the strategic role of private logistics in bridging resource gaps during crises. Akhtar et al. (2025) report that private sector supply chains significantly improve the speed and efficiency of relief delivery, while Koseoglu and Yıldırım (2015) document how logistics firms in Turkey ensured timely delivery of food and medical supplies. In the African context, Carreras-Coch et al. (2022) and Okonta and Odior (2024) stress on the importance of private logistics firms in restoring disrupted communication networks and supporting flood responses. In Tanzania, International Federation of Red Cross [IFRC], (2024) and Ubwani (2023) report that private transport companies partnered with the Tanzania Red Cross during the 2023 Hanang landslides to deliver food and medical supplies to the affected population. Such cases demonstrate that logistical support is not only one of the most studied forms of private sector involvement but also the most visible in Tanzania's disaster recovery. Accordingly, this study hypothesized that:

H3a: Logistical support has a positive impact on recovery effectiveness.

Beyond their direct impact, private sector contributions also play a critical role in fostering stakeholder dialogue, which is defined in this context as structured interaction, communication, and coordination among relevant actors in disaster recovery. Financial contributions, for example, can catalyze stakeholder engagement by enabling the establishment of multi-stakeholder platforms such as recovery task forces and planning committees (Bryson et al., 2006), Chandra et al., 2016). Similarly, technological contributions provide platforms for information sharing, early warning systems, and digital tools that facilitate coordination across institutions (Lasanthika and Wickramasinghe, 2020; Mohd et al., 2022). In the Tanzanian context, joint public-private consultative forums on flood response have relied heavily on financial sponsorship and technological inputs from the telecom sector (International Federation of Redcross and Red Crescent Societies (IFRC), 2024). Logistical support, meanwhile, often requires close collaboration with government

agencies and humanitarian organizations to align resources and timelines, necessitating dialogue and joint decision-making (ULN, 2024). Taken together, these forms of support help to institutionalize dialogue mechanisms and nurture a culture of cooperation, which in turn can amplify the impact of recovery efforts. This study, therefore, hypothesized that:

H1b: Financial contributions are positively related to stakeholder dialogue.

H2b: Technological contributions are positively related to stakeholder dialogue.

H3b: Logistical support is positively related to stakeholder dialogue.

Finally, prior studies confirm that structured dialogue fosters transparency, long-term commitment, and improved outcomes (Brown and Ashman 1996; Edlmann and Grobbelaar 2021; and UNDRR 2019). In Tanzania, where institutional coordination is relatively weak, dialogue platforms are especially important for aligning diverse private and public actors toward shared recovery goals. Based on this argument, the study hypothesized that:

H4: Stakeholder dialogue positively influences recovery effectiveness.

Despite this growing body of work, key gaps remain. First, most studies treat private sector contributions in isolation and focus on their solo effectiveness. They rarely examine the impact of interaction with other stakeholders. Second, while stakeholder dialogue is often discussed as a best practice, there is limited empirical evidence assessing its mediating role especially in Tanzanian contexts where institutional coordination is relatively weak. Third, few studies apply a structured theoretical lens such as Stakeholder Theory to analyze how dialogue can align diverse private and public actors toward shared recovery goals.

This study addresses these gaps by empirically testing how stakeholder dialogue mediates the relationship between different forms of private sector support and recovery outcomes. Informed by the classical mediation model of Baron and Kenny (1986), the study draws on Tanzania's context to explore how dialogue structures enable or constrain effective disaster recovery. In view of this argument, the following mediation hypotheses were developed:

H5: Stakeholder dialogue mediates the relationship between financial contributions and recovery effectiveness.

H6: Stakeholder dialogue mediates the relationship between technological innovation and recovery effectiveness.

H7: Stakeholder dialogue mediates the relationship between logistical support and recovery effectiveness.

The respective conceptual framework representing this study's hypothesized model is presented in the following section.

Conceptual Framework

Building on the reviewed empirical evidence, this study proposes a conceptual model that integrates private sector support mechanisms namely: financial contributions, technological innovation, and logistical support with disaster recovery outcomes. Central to this model is the role of stakeholder dialogue as a mediating variable that enhances coordination, transparency and impact. Informed by the empirical gaps identified earlier, the framework also allows for comparative assessment of which support mechanism has the strongest influence on stakeholder dialogue and recovery outcomes. As shown in Figure 1, both direct and indirect statistical relationships between stakeholder dialogue and private sector support-measured through financial contributions, technological innovation and logistical support in disaster recovery and mitigation - were predicted and empirically tested.

Direct effects:

H1a: Financial contributions have a marginal impact on recovery effectiveness.

H1b: Financial contributions positively influence stakeholder dialogue in disaster management.

H2a: Technological innovation has a positive impact on recovery effectiveness.

H2b: Technological innovation positively influences stakeholder dialogue in disaster management.

H3a: Logistical support has a positive impact on recovery effectiveness.

H3b: Logistical support positively influences stakeholder dialogue in disaster recovery efforts.

Role of stakeholder dialogue:

H4: Stakeholder dialogue positively influences recovery effectiveness.

Mediated effects through stakeholder dialogue:

H5: Stakeholder dialogue mediates the relationship between financial contributions and recovery effectiveness.

H6: Stakeholder dialogue mediates the relationship between technological innovation and recovery effectiveness.

H7: Stakeholder dialogue mediates the relationship between logistical support and recovery effectiveness.

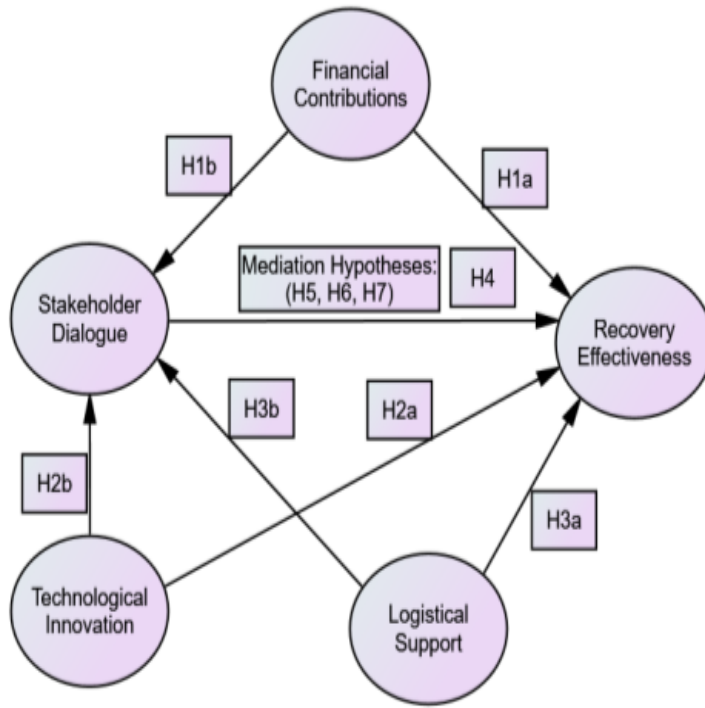


Figure 1: Conceptual Model for Assessing Mediation Effect of Stakeholder Dialogue in Disaster Recovery

Source: Author's elaboration

Methodology

Research Design and Data Sources

This study employed a quantitative research design to examine the role of stakeholder dialogue in facilitating private sector support for disaster recovery in Tanzania. Data was collected through a structured survey administered to stakeholders engaged in disaster management in Tanzania. The survey targeted employees and representatives from both public and private institutions, including the Prime Minister's Office - Disaster Management Department, the Tanzania Red Cross Society, the Ministry of Health, the National Environment Management Council (NEMC), as well as private companies in logistics, construction, telecom, and insurance sectors. The population frame was estimated at approximately 1,500 stakeholders, based on official registries and membership lists obtained from the Disaster Management Department (PMO-DMD, 2022), the Tanzania Red Cross Society annual report (2022), and corporate CSR program reports from key private sector actors. A stratified random sampling technique was used to ensure adequate representation across sectors (public, private, NGO, and

community-based organizations) and levels of engagement. Using Yamane's formula with a 95% confidence level and a population of 1,500, a sample size of 330 respondents was determined. The stratification ensured proportional representation from each stakeholder group, thereby enhancing the validity and generalizability of the findings within the Tanzanian disaster management context. While a total of 330 questionnaires were distributed to targeted respondents, only 300 valid responses were returned and analyzed, yielding a response rate of approximately 91%. Thirty questionnaires were excluded due to incomplete and inconsistent responses.

Data Analysis Techniques

A two-step data analysis procedure was applied. First, Exploratory Factor Analysis (EFA) was conducted to assess the factor structure of the measurement items used in this study. Sampling adequacy was verified using the Kaiser-Meyer-Olkin (KMO) test and Bartlett's Tests of Sphericity, both of which produced acceptable results (KMO = 0.837; Bartlett's = 1417.052, $p < 0.001$), indicating suitability for factor analysis (Lowry & Gaskin, 2014). Factor extraction was performed using Maximum Likelihood estimation with Promax oblique rotation while observing eigenvalue greater than 1 criterion. Three items were excluded due to low factor loadings and cross-loadings. The revised model retained 20 items with factor loadings above 0.5 (Figure 2). In the second step, a Confirmatory Factor Analysis (CFA) was conducted to validate the measurement model to ensure its reliability and construct validity. Data was then analyzed by using Structural Equation Modeling (SEM) with the help of AMOS version 26 to test the hypothesized relationships and mediation effects. The SEM approach enabled simultaneous testing of both direct and indirect relationships among latent variables. The analysis employed Full Information Maximum Likelihood (FIML) estimation, an advanced technique that allows for unbiased parameter estimates in the presence of missing data, assuming that data is missing at random (Enders, 2001).

Results and Discussion

Demographic Characteristics of Study Respondents

The demographic profile of the 300 respondents revealed a mean age of 39.2 years. Respondents were categorized into three age groups: 18–34 years (33.9%), 35–50 years (45.8%), and above 50 years (20.3%), with the majority falling in the 35–50 age range. Gender distribution indicated that 60.3% of respondents were males and 39.7% were females. This aligns with Scott (2022), who observed that men tend to dominate physically intensive roles in disaster response. In terms of experience, 30% of respondents had 4–6 years in disaster management, 25.5% had 7–10 years, and 20% had 1–3 years. Sectoral representation included government agencies (40.6%), private sector organizations (30.3%), NGOs (19.7%), and community-based or religious

organizations (9.4%). Notably, 63% of participants reported prior involvement in multi-stakeholder discussions, emphasizing the collaborative nature of effective disaster recovery efforts.

Model Fit Evaluation and Validation

The evaluation of the study conceptual model followed the recommended two-stage SEM procedure, consisting of measurement model validation and subsequent structural model assessment. This approach ensured that the constructs were reliable and valid before testing the hypothesized relationships.

The measurement model was validated using Confirmatory Factor Analysis (CFA). As shown in Table 1, the model fit indices indicated a strong fit between the observed data and the measurement model: Comparative Fit Index (CFI) = 0.94 (>0.90), Goodness of Fit Index (GFI) = 0.91 (>0.90), Tucker-Lewis Index (TLI) = 0.93 (>0.90), χ^2/df = 2.10 (<3) and Root Mean Square Error of Approximation (RMSEA) 0.05 (<0.08) with P-value for Close Fit (PCLOSE) = 1.000 (>0.05). These values confirm that the measurement model was adequately specified.

Table 1: Measurement Model Fit Indices

Fitness Index	Recommended Threshold ^a	Obtained Index
Chi-square/ df	<3	2.10
CFI	>0.90	0.94
GFI	>0.90	0.91
TLI	>0.90	0.93
RMSEA	<0.08	0.05
PCLOSE	>0.05	1.000

Source: Author's computation.

Reliability was assessed using Cronbach's alpha and Composite Reliability (CR). All constructs recorded Cronbach's alpha values above 0.80, surpassing the minimum acceptable threshold of 0.70 (Gaskin et al., 2025). This demonstrates strong internal consistency across the measurement items. The CR values ranged between 0.86 and 0.91 supporting construct reliability as shown in Table 2.

Convergent validity was assessed using Average Variance Extracted (AVE). All constructs achieved AVE values above 0.50 (ranging from 0.68 to 0.76), indicating that the latent variables adequately explained the variance of their indicators. Discriminant validity was established by comparing the square root of AVE with inter-construct correlations as shown in Table 3. For all constructs, the square root of AVE exceeded the inter-construct correlations,

confirming discriminant validity. Together, these results demonstrate that the data are both reliable and valid, and therefore suitable for hypothesis testing.

Table 2: Convergent Validity - AVE and Composite Reliability

Construct	Composite Reliability (CR)	Average Variance Extracted (AVE)
Financial Contributions	0.86	0.68
Technological Innovation	0.89	0.73
Logistical Support	0.87	0.69
Stakeholder Dialogue	0.91	0.76
Recovery Effectiveness	0.90	0.72

Source: Author's computation.

In Table 3, the diagonal values (in bold) represent the square root of AVE where values should exceed inter-construct correlations.

Table 3: Discriminant Validity

	FC	TI	LS	SD	RE
FC	0.82				
TI	0.42	0.85			
LS	0.49	0.46	0.83		
SD	0.52	0.51	0.58	0.87	
RE	0.54	0.59	0.63	0.61	0.85

Source: Author's computation

Notes : FC = Financial Contribution; TI = Technological Innovation; LS = Logistical Support; SD = Stakeholder Dialogue; RE = Recovery Effectiveness.

The structural model was assessed to test the hypothesized relationships among constructs. The model fit indices indicated an acceptable fit, with all indices exceeding recommended thresholds comparable to those of measurement model in Table 1. The χ^2/df ratio of 2.18 indicates an acceptable model to data fit, while incremental fit measures (CFI = 0.93; TLI = 0.92; GFI = 0.90) all surpassed the 0.90 cutoff. The RMSEA value of 0.052, together with a PCLOSE of 0.872, further supports the adequacy of the model. These results indicate that the proposed structural framework is robust and suitable for testing the hypothesized causal relationships. The validated structural model is illustrated in Figure 2 showing the path coefficients.

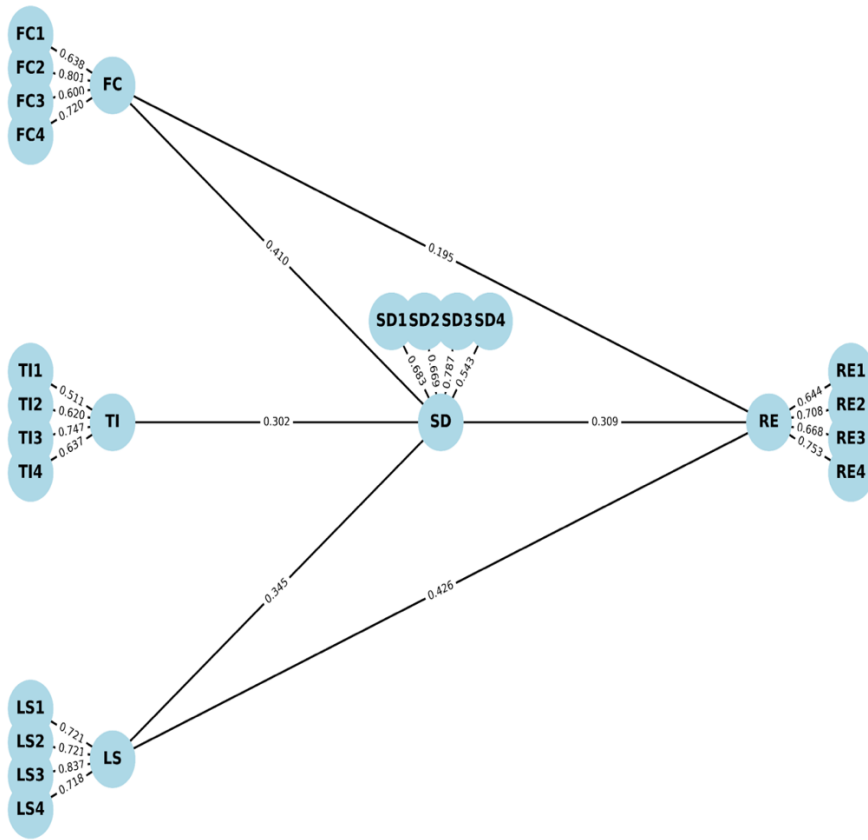


Figure 2: SEM Structural Model
Source: Author’s elaboration

Hypothesis Testing Results

The role of private sector support in disaster recovery was analyzed by testing two sets of hypotheses: direct effects and indirect (mediation) effects. These hypotheses aimed to explore the direct contributions of private sector support – financial contributions, technological innovations and logistical support, as well as the mediating role of stakeholder dialogue in enhancing the effectiveness of these contributions. Table 4 provides a detailed summary of the tested hypotheses, highlighting the relationships between private sector support, stakeholder dialogue, and disaster recovery outcomes.

Findings show that, among the three forms of support, logistical support (H3a) had the strongest positive impact on recovery effectiveness ($\beta = 0.426$, $p < 0.001$). This finding suggests that contributions from the private sector such as the use of their supply chain network to send food, medical supplies, and other requirements to the affected areas are crucial for improving the efficiency and effectiveness of recovery efforts. This finding also aligns with Kittaneh and Jaaron (2023) as well as Koseoglu and Yıldırım

(2015), who showed that private logistics firms significantly improve the speed of relief operations. Technological innovation (H2a) also had a significant positive effect on recovery effectiveness ($\beta = 0.243$, $p = 0.029$), supporting the growing role of digital solutions in disaster management.

This result echoes studies by Lasanthika and Wickramasinghe (2020), and Mohd Daud et al. (2022), which showed that innovations such as drones, GIS mapping, and mobile applications enhance efficiency in aid targeting and coordination.

In contrast, financial contributions (H1a) did not have a statistically significant direct effect on recovery effectiveness ($\beta = 0.195$, $p = 0.063$). This finding is consistent with Sachin et al. (2021), who warned that uncoordinated financial support can result in redundancies and inefficiencies. However, financial resources were found to play a crucial role in fostering stakeholder dialogue (H1b: $\beta = 0.410$, $p < 0.001$). This finding aligns with Bryson et al. (2006), who noted that financial inputs often catalyze collaboration through support for coordination offices and multi-stakeholder platforms. On the other hand, both technological innovation (H2b) and logistical support (H3b) significantly enhanced stakeholder dialogue. This finding highlights the idea that technical tools and operational partnerships foster inclusive collaboration. This argument supports the findings by Kapucu (2014), who argued that disaster response systems are more effective when built on interdependent stakeholder networks.

Finally, while stakeholder dialogue (H4) showed a positive coefficient ($\beta = 0.309$), it was not statistically significant at the 5% level ($p = 0.057$). This suggests that dialogue contributes to alignment and coordination, but its measurable impact on recovery effectiveness may depend on other factors such as inclusivity and quality of engagement. This finding resonates with Burchel and Cook (2006), who argue that stakeholder dialogue is more impactful when it is carefully designed with clear rules, accountability and openness.

Mediation Analysis Results

The mediating role of stakeholder dialogue in influencing recovery effectiveness was conducted based on the guidance of Baron and Kenny (1986) classical approach. The analysis was carried out by using direct and indirect effects assessment based on bootstrap procedures (5000 samples) and bias corrected bootstrap confidence interval of 95%. As shown in Table 5, results indicated a marginal significance suggesting a partial mediation effect. Despite the borderline significance, (H6) was supported while (H5) and (H7) were not supported (partial mediation). This result suggests that stakeholder dialogue acts as a crucial enabler fostering collaboration and aligning the efforts of diverse stakeholders. It implies that the effectiveness of stakeholder dialogue in disaster recovery may depend on other factors such as the quality

of relationships among stakeholders, the inclusivity of dialogue processes, or the availability of resources to support collaborative efforts.

Table 4: Hypothesis Testing Results (Direct Effects)

Path	Estimate	S.E.	C.R.	p-value	Remarks
H1a: Financial Contribution--> Recovery Effectiveness	.195	.105	1.856	.063	Not Supported
H1b: Financial Contribution--> Stakeholder Dialogue	.410	.074	5.530	***	Supported
H2a: Technological Innovation--> Recovery Effectiveness	.243	.112	2.181	**	Supported
H2b: Technological Innovation--> Stakeholder Dialogue	.302	.085	3.541	***	Supported
H3a: Logistical Support--> Recovery Effectiveness	.426	.098	4.341	***	Supported
H3b: Logistical Support--> Stakeholder Dialogue	.345	.066	5.245	***	Supported
H4: Stakeholder Dialogue--> RecoveryEffectiveness	.309	.162	1.905	.057	Not Supported

Source: Author's computation

Notes: *** $p < 0.001$, ** $p < 0.05$, * $p < 0.10$

Table 5: Mediation Evaluation

Path	Direct Effects	Indirect Effects	Total Effects	Remarks
H5: Financial Contribution-->Stakeholder Dialogue-->Recovery Effectiveness	.195	.127	.321	Not Supported
H6: Technological Innovation-->Stakeholder Dialogue-->Recovery Effectiveness	.243**	.093*	.337***	Supported
H7: Logistical Support-->Stakeholder Dialogue-->Recovery Effectiveness	.426***	.106	.532	Not Supported

Source: Author's Computation

Notes: *** $p < 0.001$, ** $p < 0.05$, * $p < 0.10$

The next section discusses the broader implications of these statistical findings and it outlines practical recommendations informed by the results.

Implications of the Study

The findings of this study have several implications for both theory and practice in disaster recovery and private sector engagement. First, the direct positive impact of logistical support and technological innovation on recovery effectiveness reaffirms the critical value of practical assistance and digital solutions offered by the private sector in improving disaster response outcomes. Logistical support, being the most influential variable, emphasizes the strategic role of private sector physical assets such as transport networks and warehousing in enabling efficient and timely recovery operations. These findings align with Koseoglu and Yildirimli (2015) as well as Okonta and Odior (2024), who underscored the operational strength of logistics firms in disaster response.

The significant role of technological innovation suggests that, with the assistance of private sector, the adoption of advanced technologies can enhance data sharing, real-time communication, and operational efficiency in disaster management. This confirms earlier findings by Lasanthika and Wickramasinghe (2020) and Mohd et al. (2022), but extends their insights by statistically confirming the mediating role of stakeholder dialogue. In addition, the strong positive effects of financial contributions, technological innovation, and logistical support on stakeholder dialogue emphasize the enabling function of private sector support in fostering effective collaboration. The finding that financial contributions had the strongest influence on stakeholder dialogue aligns with Bryson et al. (2006), who argue that financial inputs often catalyze stakeholder engagement through support for platforms, coordination offices, and consultative forums.

Although the direct effect of stakeholder dialogue on recovery effectiveness was found to be statistically not significant, its partial mediating role particularly in the link between technological innovation and recovery, reinforce its strategic importance in enabling disaster recovery initiatives. As noted by Burchel & Cook (2006), for stakeholder dialogue to translate into tangible recovery outcomes, it must be inclusive, structured, and goal-oriented. These findings extend that argument by showing that dialogue's contribution is conditional on how well it is integrated with other support mechanisms such as information-sharing platforms that enhance coordination frameworks, which align the logistics of public and private actors. In sum, this study confirms and extends prior literature while adding new empirical evidence from a Sub-Saharan African context. It highlights the differentiated impact of private sector support types and it offers practical insights into how stakeholder dialogue can serve as a coordination mechanism in disaster recovery.

Conclusion

This study investigated the role of private sector support in disaster recovery in Tanzania, focusing on the contributions of financial resources, technological innovation, and logistical support. It also examined the mediating role of stakeholder dialogue in enhancing the effectiveness of these support mechanisms. Using SEM analysis, the study confirmed the differentiated impact of private sector contributions and highlighted stakeholder dialogue as a crucial enabling mechanism. The findings indicate that logistical support exerts the strongest direct effect on recovery effectiveness, emphasizing the importance of private sector assets such as transport networks, warehousing, and supply chain coordination. Technological innovation also directly enhances recovery outcomes, confirming the value of advanced tools such as GIS mapping, drones, and mobile-based reporting platforms in improving disaster response.

In contrast, financial contributions did not have a statistically significant direct effect on recovery effectiveness. However, financial resources demonstrated the strongest positive influence on stakeholder dialogue ($\beta = 0.410$), more than logistical support ($\beta = 0.345$) and technological support ($\beta = 0.302$). This finding highlights the enabling role of financial inputs in establishing and sustaining dialogue platforms, coordination offices, and multi-stakeholder planning committees. In this sense, financial contributions remain indispensable not only for their direct impact on recovery outcomes, but also for their catalytic role in fostering collaboration. Although stakeholder dialogue itself did not achieve statistical significance in predicting recovery effectiveness, its partial mediating role reinforces its strategic value. Dialogue may not guarantee immediate improvements in recovery outcomes, but it strengthens alignment, transparency and coordination, which are essential for long-term resilience.

Drawing on this study's empirical findings, several targeted recommendations are proposed to enhance the contribution of the private sector in disaster recovery in Tanzania: Firstly, the study finds that private sector financial contributions, while impactful, are more effective when aligned with structured coordination mechanisms. It is therefore recommended that national and local disaster management authorities should establish formal financial partnership frameworks with private sector actors. These partnerships could include designated recovery funds, pre-agreed financial pledging systems, or CSR alignment protocols to ensure that contributions directly support prioritized recovery needs. Furthermore, fiscal incentives, such as tax deductions or matching public grants, could encourage sustained financial engagement. Secondly, the research highlights that logistical support from private companies enhances operational recovery outcomes but is often delivered in isolation. To address this assertion, policymakers should develop joint contingency logistics plans, jointly created

with key private sector actors (e.g., telecoms, transport and supply chain companies). These plans should clearly outline protocols for resource sharing, infrastructure use, and rapid deployment strategies. Embedding private logistics capabilities into national disaster preparedness frameworks would improve response time and resource efficiency. Thirdly, technological innovation was found to facilitate both recovery effectiveness and stakeholder coordination. To leverage this, the government should invest in public-private digital infrastructure platforms for disaster management such as shared dashboards, alert systems and mobile data reporting tools. At the same time, private sector-led innovation hubs should be supported through grants or technical partnerships to develop and pilot solutions tailored to Tanzania's environment.

Importantly, the study finds that all three forms of private sector support (financial, logistical and technological innovation) are positively associated with stakeholder dialogue, which in turn enhances recovery outcomes. Thus, institutionalizing multi-stakeholder dialogue platforms is essential. It is therefore recommended that permanent disaster coordination forums be created at regional and national levels and should include public agencies, private firms, NGOs and community representatives. These forums should convene regularly, not only during crises, and should also be backed by legal mandates and adequate resourcing to build trust and preparedness. While this study provides insights into the role of private sector support in disaster recovery, it is not without limitations. First, although the study establishes a positive relationship between private sector support and stakeholder dialogue, it does not fully explore the specific conditions under which stakeholder dialogue becomes most effective. Future research could look deeper into the quality of participation, leadership dynamics, and the institutional design of engagement platforms, all of which may significantly influence the effectiveness of dialogue in disaster contexts. Second, the study is based on data from the Tanzanian context, which may limit the generalizability of the findings to other geographic or institutional settings. Comparative studies across countries, regions, or disaster types such as natural versus human-induced disasters would help to validate and extend these findings particularly in understanding how contextual differences shape private sector engagement and coordination mechanisms. Finally, the study primarily focused on the perceived contributions and outcomes rather than longitudinal tracking of recovery processes or stakeholder behavior over time. Future studies may benefit from adopting mixed-method or longitudinal designs to capture evolving stakeholder dynamics and the sustained impact of private sector support beyond the immediate recovery phase.

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