INTERNATIONAL JOURNAL OF ACADEMIC RESEARCH IN BUSINESS & SOCIAL SCIENCES

Vol 15, Issue 10, (2025) E-ISSN: 2222-6990

Communication and Social Support in Disaster Management: A Structured Model Using ISM–MICMAC Analysis

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DOI Link: http://dx.doi.org/10.6007/IJARBSS/v15-i10/26831

Published Date: 27 October 2025

Abstract

Effective communication and social support are essential for strengthening disaster management systems, particularly in enhancing community resilience and recovery. This study develops a structured model integrating communication mechanisms and social support networks using Interpretive Structural Modeling (ISM) and Matrix of Cross-Impact Multiplications Applied to Classification (MICMAC) analysis. Ten critical variables, including Effective Communication, Social Media Utilization, Crisis Communication Training, Multi-Agency Coordination, Virtual Operation Support Teams (VOST), Disaster Communication Networks, Risk Communication, Media Collaboration, ICT Integration, and Social Support Networks, were identified through expert consultation and literature synthesis. The ISM framework revealed hierarchical interdependencies, with communication and ICT Integration serving as foundational drivers, training and social media as amplifiers, and coordination mechanisms functioning as operational linkages. Moreover, dependent outcomes such as Risk Communication, Media Collaboration, and Social Support Networks were demonstrated to rely heavily on upstream enablers. MICMAC analysis further categorized these variables into independent, linkage, and dependent factors, confirming the systemic interconnections among them. The findings highlight the importance of integrating technological enablers, capacity-building initiatives, and collaborative networks to foster resilience. The proposed ISM–MICMAC model provides both theoretical and practical insights for policymakers, disaster managers, and community organizations in designing robust disaster communication and support strategies.

Keywords: Disaster Communication, Social Support Networks, ISM–MICMAC Analysis, Crisis and Risk Communication, Disaster Governance

Introduction

Effective communication and social support are critical components in disaster management, playing a vital role in response and recovery efforts. Communication connects first responders, support systems, and family members with the affected communities, enhancing resilience and facilitating coordinated actions (Huang et al., 2016; Liu & Ni, 2022). The integration of Information and Communication Technology (ICT) within disaster management systems further supports data collection, storage, and analysis, which are essential for informed decision-making and effective collaboration among various stakeholders (Munoz et al., 2017; Santos-Reyes & Beard, 2011). However, the complexity of disaster scenarios necessitates the use of structured models to optimize communication and social support mechanisms.

Social support, particularly through the involvement of social workers, is essential in disaster management. Moreover, social workers contribute significantly at every stage of the disaster management cycle, providing psychosocial support and helping to minimize the negative impacts of disasters (Çolak & Özsoy, 2025; Sewell, 2016). Their roles include assisting vulnerable groups, such as the elderly, children, and individuals with disabilities, ensuring that their needs are met during and after disasters (Çolak & Özsoy, 2025; Sim et al., 2023). Additionally, the integration of social capital and networks also plays a crucial role in disaster management, offering informal insurance and mutual aid, which can be efficient and cost-effective responses to crises (Aldrich, 2015).

The use of Interpretive Structural Modeling (ISM) and MICMAC (Matrix of Cross-Impact Multiplications Applied to Classification) analysis offers a structured approach to understanding and improving Communication and Social Support in Disaster Management (CSSDM). These methodologies help identify and analyze the relationships between various elements within the disaster management system, facilitating better coordination and resource allocation (Bunker, 2010; Fan & Mostafavi, 2020). Therefore, by employing ISM-MICMAC analysis, disaster management can be enhanced through improved integration of communication strategies and social support systems, ultimately leading to more effective and resilient disaster response and recovery efforts.

Literature Review

Communication in Disaster Management: Effective communication is crucial during and immediately after a disaster, as it connects first responders, support systems, and family members with affected communities, thereby enhancing resilience (Huang et al., 2016). Notably, social media platforms have emerged as vital tools for disaster communication, providing information, coordinating inter-agency efforts, and fostering community building (Liu & Ni, 2022). However, the massive volume of information and prevalence of misinformation on social media pose significant challenges (Rasouli Panah et al., 2025). Tailored communication strategies that resonate with local cultures and involve community engagement are essential for effective disaster preparedness and response (Sugiana et al., 2025). Additionally, training for various stakeholders, including civil servants, public relations personnel, and media, is necessary to ensure professional and accurate communication during disasters (Jethwaney, 2023b).

Role of Social Support Networks: Social Support Networks play a crucial role in disaster preparedness and recovery. These networks provide essential resources, including information, food, water, shelter, and emotional support, which are crucial for securing and reviving flood-affected livelihoods (Karunarathne & Lee, 2020). Notably, social workers play a crucial role in disaster management, providing psychosocial support and helping to mitigate the negative impacts of disasters (Çolak & Özsoy, 2025; Sewell, 2016). The involvement of social workers at every stage of the disaster management cycle ensures that vulnerable groups receive the necessary support (Çolak & Özsoy, 2025). Furthermore, social capital and networks can modify responses, overcome barriers to collective action, and provide informal insurance and mutual aid, as evidenced by historical disaster events (Aldrich, 2015).

Challenges and Strategies for Enhancing Social Support: Nevertheless, despite the benefits of Social Support Networks, challenges exist, including attention inequality and the overwhelming number of help-seeking requests on social media (He et al., 2022). Effective disaster management requires a comprehensive approach that encompasses alternative sources of information and considers the sociocultural dynamics of the affected regions (Rasouli Panah et al., 2025; Sugiana et al., 2025). Conversely, community-based initiatives and partnerships with local organizations can enhance disaster preparedness and resilience (Sugiana et al., 2025). Additionally, interdisciplinary approaches that integrate sociocultural insights with technical solutions are vital for adaptive governance and sustainable disaster response strategies (Farazmand et al., 2025). The experiences of Houston residents during Hurricane Harvey highlighted the importance of offline and online neighborhood networks in coordinating rescue efforts and providing support (Rammah et al., 2022).

Research Objectives

1. To identify and validate through expert consensus the key communication and social support variables that influence disaster management effectiveness, particularly in the context of preparedness, response, and recovery.
2. To develop a structured model using ISM that maps the interrelationships among communication strategies, coordination mechanisms, and social support systems in disaster governance.
3. To apply MICMAC analysis to classify the identified variables into driving, linkage, and dependent factors, thereby providing insights into their systemic roles and contributions toward building disaster resilience.

Methodology

This study applies ISM and MICMAC to systematically analyze the interrelationships between communication and social support mechanisms in disaster management. Expert input was incorporated to uncover how communication flows between agencies and communities interact with different forms of social support, particularly in the Southeast Asian disaster governance context, where coordination challenges are complex. Furthermore, ISM, pioneered by Warfield (1974) and Sage (1977), is especially effective in addressing multifaceted problems by organizing variables into a clear hierarchical structure. It allows researchers to capture both direct and indirect influences among communication and support variables through structured techniques such as the Nominal Group Technique (NGT), brainstorming, or focus group discussions (Prasad et al., 2020). As an interpretative method, ISM provides clarity by simplifying complex systems into structured models, where digraphs

illustrate the multi-layered relationships among variables. This approach has been applied in diverse fields, including policy, environmental governance, aviation, and education, underscoring its suitability for disaster studies, where human interaction and decision-making are crucial (Attri, Singh, & Mehra, 2017; Kumar et al., 2018).

Following the ISM process, a set of communication and social support variables was identified through expert consultation and literature synthesis. These were then compared pair-wise using the Structural Self-Interaction Matrix (SSIM), enabling experts to determine the relative importance and interdependence of each variable. The SSIM was subsequently transformed into the Reachability Matrix (RM), which guided the construction of a hierarchical digraph representing the layered nature of communication–support interactions in disaster contexts. Once the ISM model was established, MICMAC analysis was conducted to classify variables into four categories: autonomous, dependent, linkage, and driving factors based on their driving and dependency power. In particular, this dual analysis revealed how communication strategies can enhance or hinder social support during disaster preparedness, response, and recovery. It demonstrated the underlying structural dynamics of interagency and community collaboration. Ultimately, the ISM–MICMAC framework offers disaster managers a practical model for enhancing communication and social support mechanisms, contributing to more resilient disaster governance in vulnerable regions.

Figure 1: Disaster Management Strategy Process

Sample

For this research, seven education experts were enlisted to participate in the ISM sessions. Seven professional experts were willing to take part in the research. The experts from various education divisions and public sector organizations are profiled in Table 1, categorized by their area of knowledge and academic degree.

Table 1
Expert Fields Expertise

No.	Academic Qualification	Fields Expertise
1	PhD	Communication
2	PhD	Psychology
3	PhD	Political Science
4	Master	Sociology
5	Master	Public Health
6	Master	Journalism
7	Master	Human Resource

Data Analysis

Findings from Step 1

For the first step, the researcher interviewed experts and reviewed some literature to determine the elements or steps that can be taken to implement CSSDM. The results are as follows.

Table 2
Elements/Guidelines for Communication and Social Support in Disaster Management (CSSDM)

No	Elements	Key Actions
1.	Effective Communication	Ensure reliable and swift communication channels between first responders, support systems, and affected communities to enhance resilience (Huang et al., 2016).
2.	Social Media Utilization	Leverage social media for rapid information sharing, coordination of relief efforts, and emotional support provision (Balraj et al., 2025).
3.	Crisis Communication Training	Train civil servants, public relations personnel, disaster management teams, and media persons in effective disaster communication across all stages (Jethwaney, 2023a, 2023b).
4.	Multi-Agency Coordination	Design disaster response activities that are simple, realistic, and easy to follow, ensuring swift and coordinated actions (Ramekar, 2025).
5.	Virtual Operation Support Teams (VOST)	Establish VOST to monitor social media, support situational awareness, counter rumors, and disseminate official communication (Roth & Prior, 2019).
6.	Disaster Communication Networks	Develop and maintain diverse and local disaster communication networks to facilitate emotional, informational, and physical support (Liu & Zhao, 2023).
7.	Risk Communication	Implement risk communication processes, including planning, transparency, expert training, and infrastructure, to reduce confusion and inconsistency (Dehghani et al., 2022).
8.	Media Collaboration	Foster a symbiotic relationship between media and disaster response organizations for proactive and transparent communication (Karamanis, 2021).
9.	ICT Integration	Integrate ICT within the disaster management system for better coordination and information dissemination (Santos-Reyes & Beard, 2011).
10.	Social Support Networks	Utilize social support networks for providing information, basic needs, and emotional support before, during, and after disasters (Karunarathne & Lee, 2020).

Effective disaster management requires a comprehensive approach that integrates communication and social support systems to ensure effective response and recovery. Moreover, establishing reliable communication channels ensures that all stakeholders remain connected, while social media platforms enable the rapid dissemination of information and coordination of relief efforts. Crisis Communication Training for civil servants, disaster managers, and media personnel strengthens the capacity to manage information effectively at all stages of disaster response. Notably, clear Multi-Agency Coordination protocols further enhance collective action, supported by Virtual Operation Support Teams (VOST) that monitor social media, counter misinformation, and provide situational awareness. Building diverse Disaster Communication Networks fosters emotional, informational, and physical support, complemented by robust Risk Communication strategies emphasizing planning, transparency, and expert training to reduce uncertainty. Conversely, Media Collaboration is vital for timely and accurate reporting, while integrating ICT tools within disaster management frameworks improves coordination and recovery processes. Ultimately, leveraging Social Support Networks ensures the provision of essential services and emotional support for affected communities, thereby reinforcing resilience and facilitating a holistic disaster response.

Findings from Step 2

The SSIM illustrates the interrelationships among the ten key variables of CSSDM. The analysis demonstrates that Effective Communication is the most dominant driver, exerting influence over nearly all other variables, while also sharing mutual influence (X) with Social Media Utilization, Crisis Communication Training, and ICT Integration. Furthermore, Social Media Utilization and Crisis Communication Training serve as strong enablers, mutually reinforcing other elements such as Multi-Agency Coordination and Risk Communication. Multi-Agency Coordination emerges as a critical linkage variable, driven by higher-level communication factors but extending its influence to VOST, ICT, and Disaster Communication Networks. VOST, on the other hand, demonstrates a dependency on prior elements, such as communication and coordination, yet significantly supports situational awareness, risk communication, and information flow. Notably, Disaster Communication Networks function as an outcome variable that consolidates upstream drivers, while Risk Communication and Media Collaboration are highly interdependent, ensuring transparency and reducing uncertainty. Finally, ICT Integration plays a cross-cutting role, strengthening coordination and communication systems, while Social Support Networks appear as the most dependent outcome, benefiting from the combined effectiveness of all preceding drivers. Overall, the SSIM highlights a layered hierarchy where communication and ICT act as foundational enablers, coordination and VOST as intermediaries, and social support as the ultimate dependent outcome.

Table 3
Structural Self-Interaction Matrix (SSIM)

Variables	1	2	3	4	5	6	7	8	9	10
Effective Communication	O	X	X	X	X	X	X	X	V	X
Social Media Utilization		X	X	X	X	X	X	X	X	A
Crisis Communication Training			X	X	X	X	X	X	X	X
Multi-Agency Coordination				X	X	X	X	X	X	X
Virtual Operation Support Teams					A	A	X	X	X	X
Disaster Communication Networks						X	X	X	X	X
Risk Communication							X	X	X	X
Media Collaboration								X	X	X
ICT Integration									X	X
Social Support Networks										X

Findings from Step 3 (Reachability Matrix)

The RM highlights the structural relationships among ten key variables in CSSDM. The results demonstrate that several factors—including Crisis Communication Training, Multi-Agency Coordination, Disaster Communication Networks, Risk Communication, Media Collaboration, and Social Support Networks—possess the highest driving power (10). Hence, this indicates that they are highly influential and interconnected within the system. Effective Communication and ICT Integration follow closely with a driving power of (9), underscoring their roles as foundational enablers that facilitate coordination and information flow across other variables. Conversely, Social Media Utilization and VOST record slightly lower driving power (8), positioning them as supportive mechanisms that enhance awareness and rapid dissemination rather than acting as primary structural drivers. Therefore, the dependence power scores confirm that outcome-oriented variables, such as Social Support Networks, Risk Communication, and Media Collaboration, are highly dependent on upstream enablers, including communication, ICT, and coordination. Overall, the RM demonstrates a layered system where Effective Communication, ICT Integration, and training act as core drivers. Multi-Agency Coordination and VOST serve as intermediaries, and Disaster Networks, Risk Communication, and Social Support emerge as dependent outcomes, collectively ensuring resilient disaster management.

Table 4
Reachability Matrix (RM)

Variables	1	2	3	4	5	6	7	8	9	10	Driving Power
Effective Communication	1	0	1	1	1	1	1	1	1	1	9
Social Media Utilization	0	1	1	1	1	1	1	1	0	1	8
Crisis Communication Training	1	1	1	1	1	1	1	1	1	1	10
Multi-Agency Coordination	1	1	1	1	1	1	1	1	1	1	10
Virtual Operation Support Teams	1	1	1	1	1	0	0	1	1	1	8
Disaster Communication Networks	1	1	1	1	1	1	1	1	1	1	10
Risk Communication	1	1	1	1	1	1	1	1	1	1	10
Media Collaboration	1	1	1	1	1	1	1	1	1	1	10
ICT Integration	0	1	1	1	1	1	1	1	1	1	9
Social Support Networks	1	1	1	1	1	1	1	1	1	1	10
Dependence Power	8	9	10	10	10	9	9	10	10	9	

Findings from Step 4 and Step 5

The Level Partitioning (LP) results reveal the hierarchical positioning of all ten variables within the ISM framework for CSSDM. Specifically, each element's Reachability Set (R) contains the variables it can directly or indirectly influence, while the Antecedent Set (A) indicates the variables that influence it. Thus, the Intersection Set identifies the overlap between the two. Consequently, the analysis indicates that all variables (1–10) have identical levels in this iteration, classified as Level 1, which means they exhibit mutual interdependence and strong connectivity across the system. Therefore, this outcome suggests that the disaster management framework is highly integrated, where communication, training, coordination, ICT, networks, and social support are not isolated but function in a strongly interlinked structure. In practical terms, this demonstrates that enhancing one factor such as Effective Communication or ICT Integration will simultaneously strengthen the entire system, leading to improved disaster response and resilience.

Table 5
Level Partitioning (LP)

Elements (Mi)	Reachability Set R(Mi)	Antecedent Set A(Ni)	Intersection Set R(Mi) ∩ A(Ni)	Level
1	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	1
2	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	1
3	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	1
4	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	1
5	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	1
6	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	1
7	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	1
8	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	1
9	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	1
10	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	1

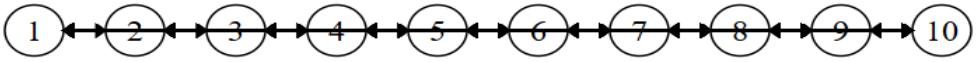

Figure 2: Model Digraph (ISM output)

The digraph illustrates a linear chain of interdependencies among the ten variables in CSSDM, where each factor (1–10) is directly connected in sequence. This configuration suggests a highly structured progression, in which improvement or disruption in one element cascades sequentially to the next. For example, Effective Communication (1) initiates the process, driving subsequent factors such as Social Media Utilization, training, and coordination, eventually culminating in Social Support Networks (10) as the outcome. Moreover, the bidirectional arrows indicate mutual influence, emphasizing that while each factor drives the next, it is also shaped by feedback from subsequent elements, creating a continuous loop of reinforcement. Thus, this highlights the systemic and interlinked nature of disaster management, where communication, coordination, and social support cannot function in isolation but must be integrated to ensure resilience and effective response.

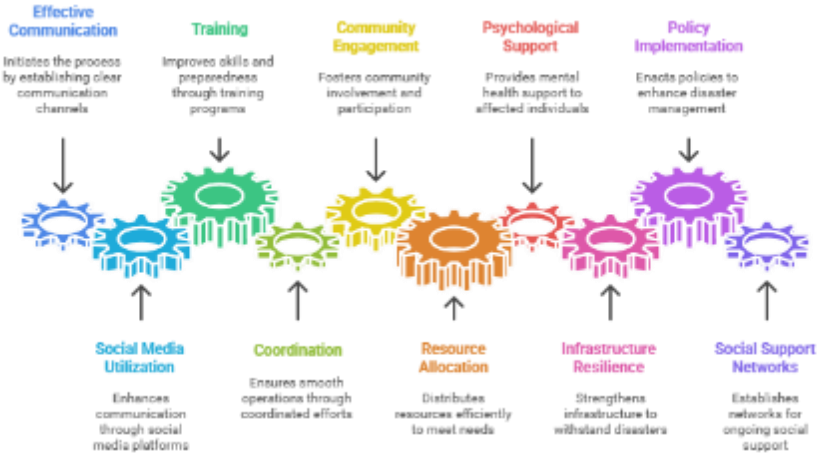

Figure 3: Model of Communication and Social Support in Disaster Management (CSSDM)

Findings from Step 6

This MICMAC analysis diagram positions the variables of CSSDM across four quadrants based on their driving and dependence power. Furthermore, variables in Quadrant IV (Independent Variables) demonstrate high driving power but low dependence, such as Effective Communication, Crisis Communication Training, and ICT Integration. These are critical enablers that influence most other factors in the system, acting as the foundation of disaster management. On the other hand, Quadrant III (Linkage Variables) contains elements like Multi-Agency Coordination, VOST, and Disaster Communication Networks, which exhibit both high driving and high dependence power. These are interactive and sensitive factors, meaning that any change in them can significantly affect the entire system, either positively or negatively.

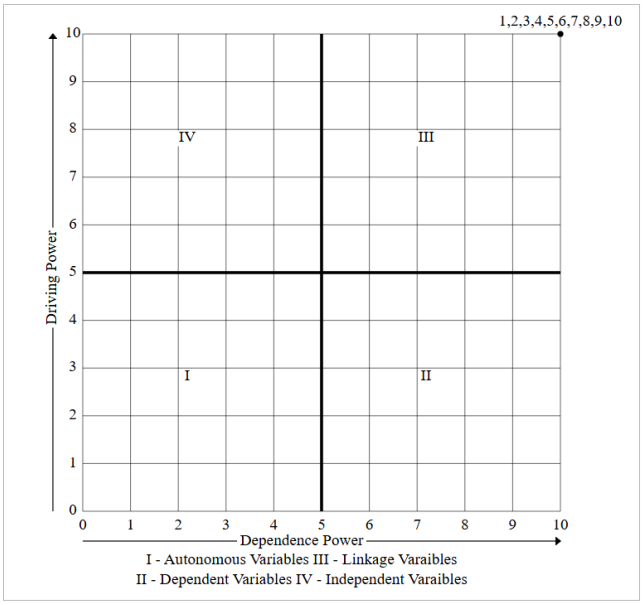

Figure 4: MIMAC Analysis

Meanwhile, Quadrant II (Dependent Variables) encompasses outcome-oriented factors, including Social Support Networks, Media Collaboration, and Risk Communication. These variables have high dependence power but relatively low driving power, making them heavily reliant on the foundational enablers and coordination mechanisms for effectiveness. Notably, no variables are placed in Quadrant I (Autonomous Variables), which indicates that every component in the model is interconnected and relevant to disaster management processes. The overall pattern reflects a layered structure: strong enablers (Quadrant IV) drive the system, operational and coordination mechanisms (Quadrant III) ensure integration, and dependent outcomes (Quadrant II) represent the ultimate results in terms of resilience, trust, and community support.

Key Findings

The analysis of ten critical approaches in disaster management—Effective Communication, Social Media Utilization, Crisis Communication Training, Multi-Agency Coordination, VOST, Disaster Communication Networks, Risk Communication, Media Collaboration, ICT Integration, and Social Support Networks—provides meaningful insights into their interrelationships and systemic importance. Using ISM–MICMAC analysis, these variables were mapped into a structured hierarchy that highlights both their driving and dependence power. Consequently, the results reveal a layered model where communication and technological enablers form the foundation, coordination mechanisms serve as operational drivers, and social support systems represent the ultimate outcomes. Notably, Effective Communication and ICT Integration emerged as the strongest foundational drivers, underscoring their role in enabling all subsequent processes. These variables possess high driving power but low dependence, signifying that without reliable communication systems and advanced ICT tools, the entire disaster management framework would collapse. Furthermore, Social Media Utilization and Crisis Communication Training were identified as amplifiers of communication capacity. Specifically, social media facilitates the rapid dissemination of information, while training equips key stakeholders with the skills necessary for accurate, transparent, and coordinated messaging throughout different stages of disaster management.

At the operational level, Multi-Agency Coordination and VOST function as crucial linkage variables. They exhibit both high driving and dependence power, reflecting their dual role in shaping disaster responses while also being influenced by foundational enablers. Furthermore, multi-agency protocols ensure clarity and efficiency in collective action, while VOST enhances situational awareness, rumor control, and information verification. Consequently, these mechanisms bridge the gap between strategic communication and practical implementation on the ground. Additionally, the analysis further demonstrates that Disaster Communication Networks, Risk Communication, and Media Collaboration occupy a strategic layer of dependent variables. Their effectiveness is highly reliant on the strength of foundational and operational drivers. Networks provide channels for diverse actors to cooperate, while Risk Communication ensures trust, planning, and transparency. Media Collaboration, on the other hand, strengthens the credibility and accuracy of disaster-related information. Finally, Social Support Networks were identified as the most outcome-oriented variable, positioned at the top of the hierarchy. As a result, they represent the tangible benefits of an effective system, providing emotional, informational, and practical support to affected communities and contributing to resilience and recovery.

Further Recommendations

The study revealed that disaster management is not a linear process but an integrated system where foundational enablers drive operational mechanisms, which in turn determine the success of outcome-oriented support systems. Strengthening communication and ICT capacity, supported by training, coordination, and collaborative networks, is essential for ensuring effective disaster resilience and community well-being. Therefore, it is recommended that a comprehensive approach to disaster management be adopted by integrating communication systems and ICT tools as foundational drivers, ensuring interoperable platforms, and investing in infrastructure to enhance preparedness and response. Equally important is the institutionalization of Crisis Communication Training across all levels of the organization. This extends beyond communication officers to civil servants, media practitioners, and community leaders, with standardized modules tailored to local contexts to strengthen message clarity and public trust. Conversely, enhancing collaboration and coordination mechanisms is also critical, with Multi-Agency Coordination and VOST serving as pivotal linkages that require formalized protocols and expanded roles, including cross-border cooperation in disaster-prone regions. Overall, embedding Social Support Networks into disaster frameworks is essential, as they represent the outcome of effective communication and coordination, providing both emotional and practical assistance. Therefore, combining formal institutional efforts with grassroots initiatives ensures that disaster response and recovery address both physical needs and psychological well-being, leading to more resilient communities.

Conclusion

This study emphasizes that disaster management is a complex and interdependent system where communication and social support mechanisms must operate in tandem to ensure effective response and recovery. The ISM–MICMAC analysis reveals that Effective Communication and ICT Integration are the strongest drivers of disaster management, while Social Media Utilization and Crisis Communication Training serve as amplifiers that enhance stakeholder capacity. Moreover, operational coordination through Multi-Agency Coordination and VOST ensures that strategies are translated into action. On the other hand,

outcome-oriented elements, such as Disaster Communication Networks, Risk Communication, Media Collaboration, and Social Support Networks, represent the tangible benefits of a functioning system. Notably, the hierarchical and quadrant-based analysis illustrates that strengthening foundational enablers can significantly enhance dependent outcomes, particularly social support, which is critical for community resilience. Thus, by embedding communication, technology, and social support within disaster governance, this model provides practical pathways for developing integrated frameworks that can mitigate risks, foster trust, and enhance resilience in disaster-prone regions. Therefore, future research should test this model in different geographical contexts and expand its application to cross-border disaster governance, ensuring its adaptability and global relevance.

This study contributes theoretically by advancing disaster communication scholarship through the integration of ISM–MICMAC as a structural modelling lens to explain *how* communication enablers, coordination mechanisms, and social support outcomes interact as a systemic chain rather than as isolated components. Existing literature often treats communication, ICT, or social support as singular predictors whereas this paper demonstrates their *interdependency and hierarchical sequencing*, positioning effective communication and ICT integration as foundational drivers that govern the entire disaster governance landscape. Contextually, this research grounds the model in the Southeast Asian disaster management reality, where multi-agency coordination gaps, digital inequalities, and culturally embedded social support networks shape disaster response effectiveness. The model therefore provides a regionally responsive, practitioner-ready framework that can guide disaster authorities, NADMA equivalents, and local community-based actors in designing communication-led resilience strategies tailored to collectivist, network-dependent societies.

Conflicts of Interest

The authors declare no conflicts of interest.

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