

Analysis of the internal and external factors supporting and inhibiting community empowerment in disaster management based on disaster-resilient villages

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Abstract

Community empowerment has a universal and multidimensional application in addressing various challenges, including disaster management.

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aster management. Achieving the goals and targets of disaster management without empowerment presents considerable difficulties. Empowerment is linked to various internal and external factors that either support or inhibit it. In Indonesia, the government, through the National Board for Disaster Management (NBDM), has established a model disaster-resilient village (DRV) as a basis to apply empowerment in disaster management. This study aims to analyze the internal and external factors that support and hinder empowerment, using a descriptive, analytical, exploratory, and comparative design. This research was conducted in one of the DRVs called Bili-Bili Village, in Bontomarannu District, Gowa Regency, South Sulawesi Province. Proportional sampling was employed to select a sample of 125 families, representing 20% of the total population. Data were collected by observation, interviews, and documentation methods. Based on our findings, the internal factors influencing empowerment include anxiety, experience, perception, and the level of support and assistance available. Inhibiting internal factors are limited competencies, lack of capacity to act, low commitment, and insufficient participation and involvement. Externally, the inhibiting factors consist of policy and program limitations, the roles and coordination among leading and supporting sectoral institutions, the influence of community leaders and government leadership, and weaknesses in coordination and cooperation mechanisms. To strengthen community empowerment in disaster management, particularly in the context of disaster-resilient villages, there is a need to enhance awareness, build capacity, and cultivate a supportive community culture.

Introduction

Disasters often pose both physical and psychological threats and disruptions. They can cause significant damage to infrastructure, public facilities, and the environment. In addition, disasters present risks of harm and the potential for both material and non-material losses, including the threat of death. Overall, disaster events have wide-ranging impacts on human life, affecting social structures, culture, health, the environment, the economy, and other aspects of society.¹ Miradj *et al.* stated that empowerment can be a strategy for utilizing the power and potential within the community to create social change.^{2,3} This social change can occur if the empowerment process is sustained over time. Its success will be reflected in shifts in cultural values, patterns of thought, and behaviors at both the individual and group levels.⁴ In the context of disaster management, Purnomo *et al.* emphasize that it encompasses all aspects of planning and response, including actions taken before, during, and after a disaster. This approach also involves managing both disaster risks and their potential consequences.^{1,5} Therefore, communities hold a central role at the

forefront of responding to dangers and natural disasters. Community empowerment is a practical approach to reducing and managing potential disaster risks in the future. To achieve this, individuals and groups within the community must develop their capacity to make decisions in disaster management, implement strategies, and achieve goals. This includes managing all or part of the resources they possess and monitoring their performance effectively.^{6,7}

The World Risk Report classifies Indonesia as a nation with a significant disaster risk, attributed to its considerable exposure and susceptibility to calamities. UNESCO ranked Indonesia seventh among the most disaster-prone countries globally.^{8,9} Many people live in areas where it is increasingly difficult to separate daily life from the problems, risks, and impacts of disasters. As Sunarto *et al.* noted, Indonesia is widely recognized by several labels, including “the master of disasters” and “the country of a thousand disasters”, reflecting its high exposure to natural hazards.¹ The National Board for Disaster Management (NBDM) of Indonesia states that the country is often referred to as a “disaster market” due to its wide range of natural and human-induced hazards. Since 1815, disasters have consistently caused significant loss of life and property, with the number of victims increasing over time. Given this reality, it is crucial for Indonesia to implement effective mitigation and adaptation strategies to reduce disaster risks and address the growing challenges posed by climate change.^{8,9} The NBDM outlines the potential risks and impacts of losses caused by natural disasters in Indonesia as detailed in Table 1.

The types of natural disasters that are most dangerous and have the greatest impact and risk of loss of life are extreme weather and floods. The NBDM has released the results of a study and report on the potential number of people exposed to disaster risks across Indonesia, including physical, economic, and environmental losses. These risks are categorized as medium to high and are distributed across all 34 provinces, based on the type of disaster threat. According to the NBDM report, the five disaster types with the highest number of people exposed are extreme weather, affecting approximately 244 million people; drought, with 228 million; floods, with 100 million; earthquakes, with 86 million; and landslides, with 14 million individuals.

In terms of potential physical and economic damage, earthquakes represent the greatest threat, with estimated losses reaching IDR 648.874 trillion. This is followed by floods and flash floods at IDR 376.886 trillion, drought at IDR 192.737 trillion, and land-

slides at IDR 78.279 trillion. The report also highlights the potential environmental impact, with drought posing the highest threat at 63 million hectares affected, followed by forest and land fires at 42 million hectares, and landslides impacting 41 million hectares.

Looking further, the various types of disasters, with their ever-increasing risks and impacts, clearly highlight that it is the population or community members who consistently face direct consequences and the risk of significant losses, including both material losses and loss of life.^{8,9}

Disasters in Indonesia are diverse in type, nature, and form, and can generally be grouped into two categories: natural and non-natural disasters. However, in the last few decades, the most common events have been natural disasters such as floods, flash floods, extreme weather, whirlwinds, landslides, extreme waves and erosion, forest and land fires, droughts, volcanic eruptions, earthquakes, and tsunamis, with floods, landslides, and whirlwinds occurring more frequently.^{8,9} According to the United Nations Development Programme (UNDP), disasters cause significant losses to lives, property, and the social structures. These impacts often exceed the capacity of those communities to cope independently, making external protection and assistance essential.

Communities in Indonesia, including South Sulawesi Province and especially Gowa Regency, face two major problems to date, namely the threat of disaster and helplessness. In Gowa Regency, various types of disasters, including floods, tornadoes, and landslides, frequently occur, and local residents face these disasters almost every year, particularly during the rainy season with moderate to high rainfall. Other sub-districts, such as Somba Opu, Bontomarannu, Pattalassang, Parangloe, Palangga, Tombolopao, and Manuju Districts, experience floods, tornadoes, and landslides every year. These catastrophes result in numerous injuries requiring hospitalization, the displacement and evacuation of hundreds, and fatalities.

Specifically, in the Bontomarannu District, one of the villages often hit by natural disasters is Bili-Bili Village.¹⁰

Bili-Bili is one of two villages in Gowa Regency that have been designated as a disaster-resilient village (DRV) since 2019. However, residents still face issues related to helplessness, a lack of independence, and high reliance on assistance from others for evacuation. They also struggle with a lack of competence – encompassing knowledge, understanding, skill, experience, and motivation – regarding health and disease issues, disaster mitigation, prevention and preparedness for disasters, and disaster emergency

Table 1. Potential risks and impacts of losses from disasters.

Disaster type	Potential Risk and loss impact				
	Hazard Area (hectare)	Number of people exposed	Physique (Rupiah in billion)	Economy (Rupiah in billion)	Environment (hectare)
Flood	39,371,167	100,814,666	176,329,821	140,520,440	12,135,957
Flash flood	2,733,966	8,637,161	44,679,539	15,358,006	1,056,365
Extreme Weather	106,582,476	244,295,774	11,972,702	3,088,869	-
Extreme waves & abrasion	1,888,085	4,917,327	22,042,350	1,290,842	460,252
Earthquake	52,374,614	86,247,258	466,689,834	182,185,171	-
Forest and land fires	86,457,259	-	-	59,036,830	41,856,289
Drought	46,735,107	48,491,666	-	192,737,143	29,820,457
Volcanic eruption	1,162,220	3,910,775	2,695,427	12,613	139,676
Landslide	57,418,460	14,131,542	78,279,825	75,870,343	41,337,707
Tsunamis	961,133	3,702,702	71,494,821	7,976,358	119,688

Sources: references 8, 9.

response. All of this shows that there is still minimal empowerment of the population or members of the community. Community empowerment through a top-down approach is suboptimal. This is marked by insufficient awareness, limited capacity building, and inadequate community empowerment regarding disaster prevention, preparedness, and emergency response.

A study conducted by Hady *et al.* identified several internal factors contributing to feelings of helplessness, powerlessness, and lack of independence among the community in Bili-Bili when it comes to preventing, facing, and overcoming disaster-related problems, risks, and impacts in rural areas. These internal factors include: i) mental attitudes, behaviors, and cultural dependence on external assistance; ii) low levels of awareness, knowledge, and understanding; iii) limited human resource competencies; iv) weak commitment, motivation, and consistency; v) institutional weaknesses; vi) cultural barriers; vii) internal policy constraints; viii) lack of community leadership; ix) inadequate infrastructure, facilities, and technology; and x) insufficient financial resources or budget.

Meanwhile, the main external problem factors consist of i) government or relevant agency policies and programs; ii) a dominant top-down approach; iii) insufficient bottom-up initiatives; iv) low public awareness; v) inadequate socialization and community coaching; vi) lack of education and training; and vii) insufficient support and assistance. Importantly, all these factors are interconnected and influence one another.¹

In this context, various international studies have identified numerous factors that influence community empowerment and disaster management. Internal factors include human resource capacity, culture, awareness, knowledge, skills, preparedness, response, collaboration, participation, communication, trust, resilience to disasters, socio-economic conditions, environmental aspects, accessibility, social capital, and geographical location. External factors encompass policies and programs, general and technological planning, government support, awareness and capacity-building initiatives, empowerment programs, behavioral development, coordination and collaboration efforts, innovations in disaster crisis communication, disaster risk analysis, technology quality, preparedness systems, animal insurance schemes, disaster education programs, and monitoring mechanisms.

Given this comprehensive understanding, it is increasingly important to conduct research aimed at analyzing the internal and external factors that support or hinder community empowerment in disaster management. This study focuses specifically on DRV in Bili-Bili Village.

Materials and Methods

This study employs a descriptive research design¹¹ aimed at capturing and describing the responses of informants and respondents regarding factors influencing community empowerment in disaster management based on the DRV framework. The design integrates analytical components, critically questioning and analyzing issues, exploratory elements for in-depth investigation, and comparative methods to identify similarities and differences. The research was conducted in Bili-Bili Village, located in Bontomarannu District, Gowa Regency, South Sulawesi Province, Indonesia. The population comprised 567 households. A proportional sampling technique was used to take a sample of 125 families as participants (or 20% of the total population). All data were collected using library studies, field studies, observations, ques-

tionnaires, interviews, and documentation methods. A library study was performed to obtain secondary data on regional conditions and population statistics. A field study was conducted through surveys and mapping of research locations. Observation was used to assess environmental and infrastructure conditions, daily activities of village communities, DRV activities, and other relevant factors. Interviews were conducted in-depth, structured, and systematically using a guideline to explore information related to research problems. Interview activities involved informants and key speakers, such as community leaders, Non-Governmental Organization (NGO) activists, village heads, village officials, DRV administrators, and other stakeholders. Documentation was used to document research activities. Data validity checks were conducted through editing, classification, verification, analysis, and conclusion. Data were processed into tables and analyzed qualitatively. In data analysis, reduction, abstraction, display, and deductive conclusion were carried out.¹²⁻¹⁴

Ethics clearance

This research received ethical approval from the Health Research Ethics Commission of the Nursing Department, Health Polytechnic, Ministry of Health in Makassar. Throughout the research process, the researchers took great care to adhere to ethical principles, such as obtaining permission from relevant parties before conducting research, arranging appointments with respondents and informants for questionnaires and interviews, and maintaining the confidentiality of respondents'/informants' identities if requested.

Results

Supporting and inhibiting internal factors

Based on the research results, several internal factors were identified that support and/or hinder local community empowerment in disaster management, as observed in disaster-resilient villages in Bili-Bili Village and outlined in Table 2.

Based on Tables 2 and 3, eight internal factor determinants can hinder and support community empowerment in disaster management based on DRV, including: i) anxiety factor, ii) experience, iii) perception, iv) competence, v) action ability, vi) commitment, vii) need for support/ assistance, viii) participation and involvement factor.

Anxiety

The results of the study indicated that 84.8% of the village community experienced high anxiety, while 15.2% of the other residents showed either less anxiety or had no anxiety. Individuals exhibiting elevated anxiety levels experienced significant worry, apprehension, and fear regarding floods, landslides, and tornadoes in their community or surroundings during the rainy season, particularly in the event of the Bili-Bili Dam's rupture or water overflow. They reported anxiety about reliving the specter of past disasters, which included the risk of losing property and livestock, damage to homes and plants, health issues and diseases, injuries, and even the loss of some family members. Those with low anxiety levels felt capable of facing and overcoming disasters; they were also unconcerned because they believed their homes and residential environments were relatively safe and remote from disasters. Thus, most village residents experience high anxiety over the potential threat of disasters, along with their associated risks and impacts,

which can serve as a supporting factor for community empowerment in disaster management.

Experience

The results indicated that 68.8% of the villagers experienced negative and troubling effects due to the floods, landslides, and tornadoes that occur almost every year in their community. Every rainy season, they feel threatened by the risk of material and non-material losses. Meanwhile, 31.2% of respondents reported less experience in dealing with disasters and their risks and impacts. Thus, many villagers have had bad and unpleasant experiences with the potential threats of disasters, which can serve as a supporting factor for community empowerment in disaster management.

Perception

According to the findings, 88.0% of community members have a positive perception of disasters. They regard disasters as sources of wisdom and benefits for their lives and livelihoods. They perceive disasters as good advice from God and nature, viewing them as God's way of warning humanity to return to the right path and not to harm nature and the environment recklessly. They believe it

is God's way of raising awareness, encouraging humans to be more careful in managing the Earth responsibly and compassionately. They view or interpret disasters positively and maintain an optimistic attitude, believing that disasters can be prevented, managed, and overcome. The associated risks and impacts can be minimized, handled, controlled, and restored.

On the contrary, 12.0% of village residents tend to view or interpret disasters negatively. They consider disasters as punishment from God and nature, which leads to feelings of anxiety, fear, sadness, hesitation, stress, depression, and trauma. They lament the disaster that harmed their living environment and residence, destroyed their crops and livestock, damaged their property, caused injuries and health issues, and led to certain diseases, among other consequences. They maintain a pessimistic outlook, believing that disasters are difficult to prevent and manage, cannot be controlled, and adopt a resigned attitude toward the risk of loss and its impacts. This perspective leaves them feeling helpless, with little choice but to wait for assistance. Consequently, they lack interest in empowerment programs and often refuse to participate or take an active role. Thus, it can be concluded that their perception serves as an internal factor inhibiting empowerment.

Table 2. Formulation of the supporting and inhibiting internal factors for community empowerment in disaster management based on the Bili-Bili disaster-resilient village.

No.	Internal factors	Informant answer categories (%)				
		VG	G	GE	L	VL
	Rating score	5	4	3	2	1
1	Anxiety over the frequency of catastrophic events	22 (17.6)	31 (24.8)	53 (42.4)	13 (10.4)	6 (4.8)
2	Experience in dealing with disasters and risk of loss	12 (9.6)	33 (26.4)	41 (32.8)	28 (22.4)	11 (8.8)
3	Perception on the prevention and disaster preparedness	20 (16)	26 (20.8)	64 (51.2)	11 (8.8)	4 (3.2)
4	Competency on disaster response	14 (11.2)	18 (14.4)	21 (16.8)	40 (32.0)	32 (25.6)
5	Ability to act in the face of disasters	6 (4.8)	13 (10.4)	22 (17.6)	53 (42.4)	31 (24.8)
6	Commitment and motivation to learn	5 (4)	14 (11.2)	26 (20.8)	58 (46.4)	22 (17.6)
7	Need for support/ assistance	11 (8.8)	20 (16)	51 (40.8)	25 (20)	18 (14.4)
8	Participation and involvement	6 (4.8)	15 (12)	21 (16.8)	57 (45.6)	26 (20.8)
	Average (%)	12 (9.6)	21 (16.8)	37 (29.6)	35 (28.0)	20 (16)
	Category	70 (56.0)			55 (44.0)	
		Good			Low	

Source: primary data. VG, very good; G, good; GE, good enough; L, low; VL, very low.

Table 3. Formulation of the supporting and inhibiting internal factors for community empowerment in disaster management based on the Bili-Bili disaster-resilient village.

No.	Internal factors	Category (%)		Internal factor status
		Good	Low	
1	Anxiety over the frequency of catastrophic events	106 (84.8)	19 (15.2)	Supporter
2	Experience in dealing with disasters and risk of loss	86 (68.8)	39 (31.2)	Supporter
3	Perception on the prevention and disaster preparedness	110 (88.0)	15 (12)	Supporter
4	Competency on disaster response	53 (42.4)	72 (57.6)	Inhibitor
5	Ability to act in the face of disasters	41 (32.8)	84 (67.2)	Inhibitor
6	Commitment and motivation to learn	45 (36)	80 (64.0)	Inhibitor
7	Need for support/assistance	82 (65.6)	43 (34.4)	Inhibitor
8	Participation and involvement	42 (33.6)	83 (66.4)	Inhibitor
	Average (%)	70 (56.0)	55 (44.0)	
		125 (100)		

Source: Table 2.

Competence

The results indicated that 42.4% of the village population possesses strong human resource competencies related to disaster and disaster management. This is evidenced by their extensive knowledge of disaster issues, skills, and experience, as well as their ability to act in preventing disasters, preparing for emergencies, mitigating risks, managing impacts, and engaging in recovery, rehabilitation, and reconstruction. They are fully aware that their residential and surrounding environments are prone to disasters and understand that the potential threat from disasters constantly affects their lives. Having dealt with disaster events, they recognize the associated risks and impacts. Consequently, from that experience, they are capable and skilled in making decisions and taking actions to prevent and prepare for disasters. They know how to protect themselves, provide first aid such as Basic Life Support (BLS) or breathing assistance to victims, help family members and neighbors, and take action to save and evacuate their belongings, among other things.

On the other hand, 57.6% of residents have inadequate or limited human resource competencies in disaster management. This highlights several issues, such as their knowledge of disaster-related topics being insufficient, their lack of experience and ability to prevent disasters, and their unfamiliarity with disaster preparedness, emergency response, and risk reduction. They often do not know what actions to take in preventing, managing, and mitigating the impacts of disasters. Furthermore, they sometimes exhibit indifference and lack awareness of potential threats and dangers posed by disasters in their environment that jeopardize their lives. Additionally, they lack the necessary knowledge, skills, experience, and capabilities to prevent and address the risks and impacts of disasters. These individuals tend to maintain attitudes, behaviors, and a culture of dependence on assistance from external sources for rescue and evacuation support. They resign themselves to disasters and continuously hope for help from external parties such as the government, relevant agencies, Search and Rescue Teams (SRT), law enforcement, health workers, and others. Therefore, it can be concluded that the competencies of human resources can be an internal factor that inhibits progress.

Action capability

The study's results showed that 32.8% of the village population has good action capabilities regarding disaster and disaster management. This is indicated by their ability to carry out the necessary procedures and steps to anticipate disasters, evacuate, save themselves and their property, and prevent health problems and diseases during or after a disaster. They can quickly and appropriately provide first aid in the form of BLS or breathing assistance to victims, help family members and neighbors evacuate to safe shelters, and take measures to save and evacuate their property, among others. On the other hand, 67.2% of people still have low capacity for action. They are still confused about the procedures and steps needed to anticipate disasters. They do not know how to evacuate, how to save themselves and their belongings, or what actions to take to prevent health problems and diseases during or after a disaster. Furthermore, they lack an understanding of disaster preparedness, emergency response measures, and risk reduction. As a result of their low capacity for action, they maintain attitudes and behaviors that depend on the help of other people or outside parties to obtain rescue and evacuation assistance, as well as support in the event of a disaster. On that basis, action capability can be an internal factor inhibiting community empowerment.

Commitment

According to the study findings, 36.0% of the village residents have a good commitment to disaster management. This is demonstrated by their active attitude and consistency in continually improving their knowledge, skills, experience (competence), and capacity in the areas of prevention, disaster preparedness, disaster emergencies, risk mitigation, disaster impact management and control, recovery, and post-disaster rehabilitation and reconstruction within their surrounding environment or region. They are proactive in participating in socialization/counseling activities, advocacy development, education, and training conducted by the government, related agencies, or other competent external parties.

In contrast, 64.0% of respondents demonstrated a lower or low level of commitment. They are still quite strong in maintaining attitudes and behaviors of dependence on assistance from other people or outside parties. They always expected aid from outside. Hence, commitment can be an internal factor inhibiting community empowerment in disaster management.

Need for support and assistance

The results of the study showed that 65.6% of participants feel they need support in terms of policies, institutions, materials, infrastructure, facilities, technology, and finance to carry out disaster management in an integrated and comprehensive manner during prevention activities, disaster preparedness, disaster emergencies, risk mitigation, managing and controlling disaster impacts, recovery, and post-disaster rehabilitation and reconstruction in their villages. They hope that the government and related agencies, especially NBDM of Indonesia and the Regional Disaster Management Agency (RDMA) of Gowa, as the leading sector for national and regional disaster management, can provide the necessary infrastructures, facilities, technology, and funding. On the other hand, 34.4% of other villagers feel doubtful, apathetic, and skeptical because assistance and support are typically only available when a disaster occurs or after it has happened. They believe that before a disaster, there is almost no assistance or support from the government or other external parties, which only comes when there are already many victims. Therefore, it can be stated that the need for support and assistance can be an internal factor supporting disaster management.

Participation and role

The results illustrated that 33.6% of people exhibit good participation and involvement in disaster management. This is indicated by: their involvement in contributing ideas and thoughts in the decision-making process; their participation in actively attending programs and activities for socialization, coaching, advocacy, education, and training in the field of disasters organized by the government/related agencies or other competent parties; their involvement in assisting in the form of manpower, ideas, materials and facilities and specific equipment including the technology needed in the implementation of preventive measures, preparedness, risk mitigation, handling and controlling the impact of disasters, emergency recovery, and post-disaster rehabilitation and reconstruction in the surrounding environment or region.

On the other hand, 66.4% of people have low or inadequate levels of participation before, during, and after the disaster. This is indicated by their attitudes and behaviors, which tend to be passive, rarely contributing ideas and thoughts, seldom attending programs and activities for socialization, education, and training in the field of disaster, and infrequently providing necessary assistance in preventing, handling, and overcoming disasters in the surrounding

environment. On that basis, it can be said that the factor of participation and involvement can be an internal factor inhibiting community empowerment.

Supporting and inhibiting external factors

Based on the results, several external factors were identified as supporting or hindering local community empowerment in disaster management, as formulated in Table 4, in relation to Bili-Bili Village.

Based on Tables 4 and 5, there are five external factor determinants that can hinder and support community empowerment in disaster management based on disaster-resilient villages, namely: i) policy and program factors, ii) institutional role factors of leading sectors and coordinating sectors, iii) resource assistance factors from external parties, and iv) external coordination and cooperation factors. All of these external factors are classified as inhibiting factors.

Policy and program

The study's results showed that 32.8% of village residents possess good knowledge about the government's and related agencies' policies and programs related to disaster management and community empowerment in their villages. They know about the policies of Law No. 24 of 2007 concerning disaster management, they know about the objectives, functions, and roles of the DRV, and they have participated in socialization, education, and training programs and activities in the field of disaster. On the other hand, 67.2% of people have insufficient knowledge about disaster management and community empowerment policies and programs in

their village. They do not know about laws and regulations related to disaster management and community empowerment in their village, they feel they have never received a program, they think they do not need it, and they never/rarely participate in counseling, education, and training activities in the field of disaster. They consider disaster management to be a government responsibility. In addition, they also feel doubtful and do not trust government policies and programs. From this, it can be stated that policies and programs can be external inhibiting factors for community empowerment in disaster management.

Role of the institutional leading sector

The results of the study showed that 38.4% of participants consider the role of the government, particularly related agencies such as NBDM, RDMA of Gowa, and the Community and Village Development Agency (CVDA) of Gowa, along with the Health Office and others, to be essential for implementing disaster management programs in their village. They have received assistance in the form of counseling, coaching, education, and disaster training from related agencies, as well as support from rescue teams, the military, police, health workers, and others, both during and after a disaster.

On the other hand, 61.6% of villagers view the role of officials and officers from related agencies as severely lacking, expressing feelings of doubt, apathy, skepticism, pessimism, and a lack of confidence in these agencies. Thus, it can be stated that the role of the leading sector and coordinating agencies is still an external inhibiting factor.

Table 4. Formulation of external factors supporting and inhibiting community empowerment in disaster management based on the Bili-Bili disaster-resilient village.

No.	External factors	Informant answer categories (%)				
		VG 5	G 4	GE 3	L 2	VL 1
1	Policy and program factors	6 (4.8)	13 (10.4)	22 (17.6)	53 (42.4)	31 (24.8)
2	The role of institutional leading sector	8 (6.4)	18 (14.4)	22 (17.6)	48 (38.4)	29 (32.0)
3	The role of community leaders and NGOs	11 (8.8)	18 (14.4)	20 (16)	51 (40.8)	25 (20)
4	The role of local government leadership	4 (3.2)	11 (8.8)	20 (16.0)	64 (51.2)	26 (20.8)
5	Coordination and cooperation factors	5 (4)	14 (11.2)	26 (20.8)	58 (46.4)	22 (17.6)
	Total average (%)	7 (5.6)	15 (12)	22 (17.6)	55 (44)	27 (21.6)
	Category	43 (32.4)			82 (65.6)	
		Good			Low	

VG, very good; G, good; GE, good enough; L, low; VL, very low.

Table 5. Formulation of external factors supporting and inhibiting community empowerment in disaster management based on the Bili-Bili disaster-resilient village.

No.	External factors	Category (%)		External factor status
		Good	Low	
1	Policy and program factor	41 (32.8)	84 (67.2)	Inhibitor
2	The role of institutional leading sector factor	48 (38.4)	77 (61.6)	Inhibitor
3	The role of community leaders and NGOs factor	49 (39.2)	76 (60.8)	Inhibitor
4	The role of local government leadership factor	35 (28)	90 (72)	Inhibitor
5	Coordination and cooperation factors	45 (36)	80 (64.0)	Inhibitor
	Total average (%)	43 (32.4)	82 (65.6)	Inhibitor
		125 (100)		

Source: Table 4.

Role of community leaders and NGOs

The results indicated that 39.2% of village residents believe that local community elites, such as community leaders and NGOs, are capable of fulfilling their leadership roles and influencing community members to engage in prevention activities, disaster preparedness, emergency response, risk mitigation, disaster impact management, recovery, and post-disaster rehabilitation and reconstruction in their surrounding environment or region. Besides, 60.8% of village residents consider the leadership role of local elites in their village to be very lacking. They believe that local community elites tend to be passive or less active in fulfilling their leadership functions and roles before a disaster occurs, and are considered very rare in providing counseling, enlightenment, advice, guidance, or coaching to community members regarding the disaster issues they face. Sometimes, they go directly to the community to play their roles in providing direction and advice during and after a disaster. Thus, the role of local community elite leadership factors can be an external inhibiting factor.

Role of the local government leadership

The results revealed that 28.0% of villagers stated that the Village Government and its staff play a leadership role in coordinating and collaborating with the government and related agencies, especially the National Disaster Management Agency (NDMA), the RDMA, the CVDA, the Regional Development Planning Agency (RDPA), the Environmental Office, the Education Office, the Health Office, the Social Office, and others to obtain assistance in accordance with their capabilities within the context of community empowerment programs related to disasters in their villages. On the other hand, 72.0% of respondents believe that the village government does not provide maximum attention to the community's needs for disaster preparedness, both before a disaster occurs and in situations where there is a potential for disaster. The Village Government is primarily focused on providing guidance during and after a disaster has occurred. Therefore, it can be stated that the leadership factor of the local government represents an external inhibiting factor.

Coordination and cooperation

The results showed that 36.0% of the village community considered the coordination and cooperation between the village government and community leaders, between the village government and officials and apparatus from related agencies, and between government agency officials to be quite good when a disaster occurs or after a disaster occurs in their village. On the other hand, 64.0% of others considered the coordination and cooperation to be very lacking before a disaster occurs. They considered that coordination and cooperation between various parties in the government and outside the government were only carried out by officials and apparatus when a disaster was occurring, when there were already many victims, and after a disaster had occurred. On that basis, it can be said that coordination and cooperation are still external inhibiting factors for community empowerment in disaster management based on disaster-resilient villages in Bili-Bili Village.

Discussion

The research findings align with those of Kafoutis *et al.* in Greece, who identified that technological planning factors play a crucial role in effectively managing crises and emergency disaster responses.¹⁵ In this context, community empowerment in disaster

management in Bili-Bili Village has not received support from technological planning to address floods, landslides, and tornadoes that occur annually. Therefore, the government and related agencies need to implement technological planning strategies to manage crises and disaster emergency responses in disaster-prone areas, like Bili-Bili. This technology planning can be achieved by preparing various facilities and equipment necessary to detect potential disaster situations and conditions, establishing early warning systems to help people avoid, prevent, and prepare for disasters, and developing risk mitigation plans alongside emergency recovery strategies in the event of a disaster. Additionally, it is essential to create a plan for utilizing technology before a disaster strikes, including the installation of early detection tools for potential disaster events.

Additionally, our findings align with Prasad's research in Nepal, which analyzed the influence of preparedness, response, and recovery factors in risk management programs and economic losses due to disasters.¹⁶ In Bili-Bili Village, preparedness factors are not yet fully embraced by the village community, while response and recovery factors remain primarily the responsibility of the government and relevant agencies. As a result, village communities still need programs to enhance disaster preparedness and emergency response in their areas. Likewise, research by Klein *et al.* emphasizes the importance of enhancing trust factors among mental health professionals and promoting interdisciplinary collaboration in disaster response.¹⁷ This is relevant in Bili-Bili, where disaster events often lead to psychological impacts for victims, including sadness, regret, stress, frustration, and even depression and trauma. The presence of competent parties, such as health officers, experts, or psychologists, is essential to help restore mental health among disaster victims. Therefore, mental health professionals need education and training in integrating disaster emergency principles with disaster management education.

A study by Kyne *et al.*¹⁸ emphasizing the importance of building community resilience to disasters aligns closely with the findings of our research. Bili-Bili has been designated as one of the DRVs by the NBDM and the RDMA of Gowa. However, the current implementation of the DRV program reveals challenges, particularly in the unequal distribution of roles and the limited effectiveness of its functions. This calls for a thorough evaluation and optimization to enhance its capacity in harnessing the social potential of village communities through empowerment and active involvement in disaster management. The designation of Bili-Bili as a DRV represents a strategic opportunity to increase government and institutional support for local communities, thereby strengthening their disaster preparedness and resilience.

The findings of this study align with research by Sandoval *et al.* in Honduras and Lima, which found that planning factors play a crucial role in assessing disaster risk reduction, particularly in residential environments.¹⁹ In the context of Bili-Bili Village, disaster risk mitigation analysis and planning are critically needed, particularly in residential areas. However, the issue is that the government, including both leading and supporting sectors, especially Gowa RDMA, the Local Planning Board (LPB), the Public Works Department, and the Spatial Planning Service, along with the Village Government, has not effectively demonstrated its roles in coordinating and collaborating to prepare strategic planning for residential land, enforcing zoning regulations, as well as providing outreach, education, and training in risk mitigation skills for village communities to prevent disasters.

Furthermore, our findings agree with several studies in Africa, such as research by Kithikii *et al.* in Kitui District, Kenya, which identified socio-economic, environmental, and capacity factors

that influence the level of community resilience both in facing the risk of drought disasters and the success of humanitarian aid interventions.²⁰ In Bili-Bili Village, the education level of the village residents remains one of the key inhibiting factors in achieving village community resilience. Village people are not yet supported by adequate knowledge, skills, and ability to act, especially in prevention, preparedness, risk mitigation, and controlling the impact of disasters. They need empowerment in disaster management through awareness activities, capacity strengthening, and empowerment.

The findings are also significantly in line with Aboagye's research in Ghana, which identified that family participation plays a role in increasing community resilience and reducing the risk of disasters (floods) through risk communication.²¹ In Bili-Bili Village, household participation remains relatively low in supporting its status as a DRV. Similarly, the role of families is still quite limited in terms of flood disaster risk mitigation and disaster risk communication. Besides, the research by Matsa *et al.* in Tsholotsho District, Zimbabwe, highlights that increasing awareness and culture of disaster is effective in the recovery, rehabilitation, and reconstruction phases.²² In Bili-Bili, people still need to enhance awareness, preparedness, and emergency response. They still need to foster a culture of cooperation in emergency recovery when a disaster occurs, as well as a participatory culture in post-disaster damage rehabilitation and reconstruction activities.

The research findings are in extremely close agreement with the research by Pepela *et al.* in Baringo District, Kenya, regarding the factors that influence vulnerability to climate change among households, namely accessibility, preparedness, government support, geographical location, and animal insurance.²³ In the context of Bili-Bili, many families and households remain vulnerable to the risks and impacts of floods, landslides, and extreme weather events like tornadoes due to climate change and the rainy season. First, accessibility factors, including access to infrastructure, facilities, technology, communication services, and disaster information, hinder the necessary assistance for supporting prevention activities, preparedness, risk mitigation, emergency recovery during a disaster, and post-disaster rehabilitation and reconstruction, which hampers community empowerment in disaster management. Second, the preparedness system for dealing with disasters and emergency responses still presents challenges in disaster prevention and management because many village residents lack adequate support and guidance in preparedness, indicating a need for further empowerment in disaster management. Third, government support significantly influences the implementation of policies, programs, and community empowerment activities in disaster management in Bili-Bili. This factor can either support or hinder efforts; proactive government and related institutional involvement in providing infrastructure, facilities, technology, and financial aid can enhance the empowerment and autonomy of village communities in preventing and managing disasters within their environment. Fourth, the geographical proximity of Bili-Bili Village to the Bili-Bili Dam heavily contributes to its susceptibility to disasters, leaving its residents and communities vulnerable. Fifth, the impact of animal insurance also affects household vulnerability to climate change. In Bili-Bili Village, compensation for injuries, disabilities, and livestock or pet losses due to disasters is not adequately addressed by existing policies and programs, signaling a need for further study.

Van Krieken *et al.*, based on their literature review, identified several empowerment factors during the disaster recovery period, including community participation in decision-making, utilization of community social capital, recognition of community strengths,

development of capacity, and assistance to neighbors.²⁴ This is also in accordance with the situation and conditions in Bili-Bili, where community participation in decision-making is still relatively low. Similarly, the use of community social capital remains quite low, resulting in limited participation and involvement from the community. Another issue is that the village community still largely holds a mindset and behavior of dependence on assistance from the government and relevant agencies, viewing disaster prevention and management as the responsibility of these entities rather than their own. On the other hand, the government, especially program actors, often overlooks the potential social strengths of the community, neglecting to consider the capacity and the ability of village residents.

In Dhaka, Bangladesh, the research conducted by Azad *et al.* identified accessibility factors that can mitigate or prevent economic losses and the decline of people's sources of income due to floods and other disasters.²⁵ In Bili-Bili, access to disaster information services is crucial for residents, enabling them to receive accurate information about potential risks. This access allows community members to evacuate safely and protect their property, thus reducing economic loss. By having readily available disaster information, residents can take preventive measures and minimize both material and non-material losses. Accurate disaster information enhances awareness, encourages disaster prevention efforts, and secures livelihoods.

The findings agree with Zulyadi's research on the importance of community empowerment in reducing disaster risk.²⁶ In Indonesia, communities in various rural areas that are prone to disasters, including and especially in Bili-Bili Village, really need socialization, guidance, education, and training in disaster risk mitigation to enhance empowerment and independence in overcoming or minimizing the risk of loss during or after a disaster. The findings of this research align with the criticism of the United Nations Office for Disaster Risk Reduction (UNDRR) regarding the still weak risk analysis and the uneven application of the disaster risk reduction concept in Indonesia.²⁷ In the context of Bili-Bili Village, the planning and implementation of flood disaster risk analysis have not been carried out optimally by the relevant agencies. Similarly, the execution of socialization, guidance, education, and training in disaster risk mitigation skills remains relatively limited, resulting in numerous victims, material and non-material losses, property damage, loss and death of livestock, and crop and plantation damage whenever a disaster occurs. Many residents suffer from health problems and illnesses due to disasters, with numerous injured victims and others affected. Our findings align with the Asian Disaster Preparedness Center, indicating that building the capacity of community members to determine disaster management goals and risk strategies contributes partially or fully to the resources needed and enables them to monitor their performance.⁶ In the context of Bili-Bili Village, the capacity of individuals and community groups is generally still limited, which means their ability to set goals and strategies for disaster management is also significantly insufficient. This limitation prevents them from effectively sharing and contributing to meeting resource needs, such as human resources, infrastructure, technology, and finances, in disaster management for their village. This lack of capacity stems from low education levels, insufficient coaching and skills training, and a lack of motivation to learn.

A study by Pathak in Thailand identified the importance of innovation factors in disaster crisis communication for the success of disaster management.²⁸ The results of this research are relevant to the situation and conditions in Indonesia, including in Bili-Bili Village, where communication, especially before a disaster occurs

or in situations where there is a potential for disaster, is still insufficient and ineffective. Miscommunication or communication gaps sometimes still occur between the parties involved, authorized, competent, and responsible. The findings of this study agree with May-Kyawt's research in Myanmar, which underscores the importance of cultural factors in the management of humanitarian assistance in disaster response operations in affected areas.²⁹ In Indonesia, cultural factors still hinder disaster management. Neither community nor bureaucratic cultures fully support disaster empowerment.

The research findings align with the study by Kurniawan *et al.*, which underscored the importance of local wisdom and cultural factors in strengthening community capacity for independence.³⁰ In Bili-Bili Village, where the population is predominantly of Makassar ethnicity, the community values local cultural wisdom, such as *Siri' na Pacce* (self-respect and work ethic), *Sipakatau* (humanizing each other), *Asseddiang* (unity), *Appalili* (guarding and protecting), *Asalamakeng* (safety), and *Sipatuwo sipatokkong* (the ability to give each other access to life and living). These values are highly beneficial for development and implementation in both empowerment and disaster management, particularly for enhancing the human resource capacity of the population in community empowerment and local culture-based disaster management.

The findings are in accordance with the research results of the National Assessment Report evaluation, which reported a number of obstacles in disaster management, including coordination in raising awareness of disaster-prone communities in Indonesia.⁸ In the context of Bili-Bili, coordination and cooperation factors remain significant challenges. Coordination among central and regional governments, related institutions and ministries, various agencies, and village governments, as well as between the government and the community, remains relatively limited. This limitation hampers both disaster management and community empowerment, making them less than optimal or effective.

Our findings align with Trueblood's research, which emphasizes the importance of educational and training factors in integrating disaster emergency principles and disaster management education.³¹ In the context of Bili-Bili, the village community in general still has a low level of education; the majority only have basic education (elementary and secondary school). Therefore, they still really need education and training in the field of disaster management. However, the government and related agencies still pay little attention to meeting village communities' needs for education and training in disaster management.

In connection with these internal and external factors, Blake *et al.* propose four general strategies for reducing population vulnerability to hydrological disasters, namely resilience management, partnerships, safety preparedness, and reserve preparedness.³² These four strategies are highly relevant for addressing disaster issues in Bili-Bili Village. First, resilience management is a vital and strategic factor to manage, develop, and maximize to enhance its function and role as DRV. Second, building partnerships is highly important and strategic for the government, relevant agencies, and village communities. The management of hydrological disasters in Bili-Bili Village truly requires collaboration among the government, community institutions, community leaders, universities, the private sector, the military, the police, and other stakeholders. Third, safety preparedness is crucial for the residents of Bili-Bili Village, who are vulnerable to hydrological disasters. It is essential that they receive education and training in disaster preparedness from the government and relevant agencies, particularly the NBDM and RDMA, to acquire the knowledge, skills, and experi-

ence needed to effectively respond to emergencies. Fourth, reserve preparedness involves equipping the village population with the ability to make alternative decisions and take strategic actions to prepare for the various risks and impacts of disasters.

The study's results provide both theoretical and practical contributions. In terms of theoretical contributions, it particularly enhances existing empowerment theories, especially regarding disaster management, to address various problems related to community powerlessness in pre-disaster situations, during emergency responses, and after disasters. Regarding practical contributions, these results propose solutions to both internal and external issues that hinder empowerment in disaster management efforts based on disaster-resilient villages.

Conclusions

There are several internal factors that support community empowerment in disaster management, including anxiety, experience, perception, and the need for support and assistance from internal and external parties. In contrast, internal inhibiting factors include low competence, reduced ability to act, decreased commitment, and a lack of participation and involvement. Regarding external factors, the study found no evidence of any supportive external influences. On the contrary, external inhibiting factors include policy and program factors, the role of the leading sector and coordinating institutions, the role of community leaders, the role of government leadership, and coordination and cooperation factors.

The recommendations for the Gowa Government, particularly the relevant agencies such as the RDMA as the leading sector, along with supporting sectoral agencies such as the Health Service, Social Service, and the CVDA, are as follows:

First, to improve the competence of human resources among the population, including their ability to take action, their commitment, and their participation in disaster prevention, preparedness, emergency response, recovery, rehabilitation, and reconstruction.

Second, to maximize the implementation of community empowerment policies and programs in disaster management based on disaster-resilient villages; to strengthen the roles of leading and coordinating agencies; to enhance coordination and collaboration among agencies, village governments, and local communities; and to reinforce the leadership of local governments and community leaders.

Third, and most importantly, to strengthen the implementation of awareness programs, capacity building, community empowerment, and the cultivation of disaster-aware behavior among village communities.

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