

Improving Community Resilience on the Lembang Fault: Local Wisdom as the Basis for Innovative Volunteer Communication Strategies for Disaster Mitigation

Mochamad Iqbal¹, Hermin Indah Wahyuni^{2*}, Dina Ruslanjari³

Student of Doctoral Program in Communication, Extension and Development,
Graduate School of Gadjah Mada University, Yogyakarta 55284, Indonesia¹

Lecturer of Doctoral Program in Communication, Extension and Development,
Graduate School of Gadjah Mada University Yogyakarta 55284, Indonesia²,

Lecturer of Doctoral Program in Communication, Extension and Development,
Graduate School of Gadjah Mada University, Yogyakarta 55284, Indonesia.³

Corresponding Author: hermin_iw@ugm.ac.id²

ORCID ID: <https://orcid.org/0000-0001-7477-6125>²

ARTICLE INFORMATION

ABSTRACT

Publication information

Research article

HOW TO CITE

Iqbal, M., Wahyuni, H. I., Ruslanjari, D. (2025). Improving community resilience on the Lembang fault: Local wisdom as the basis for innovative volunteer communication strategies for disaster mitigation. *Journal of the Community Development in Asia*, 8(1), 146-161.

DOI:

<https://doi.org/10.32535/jcda.v8i1.3746>

Copyright @ 2025 owned by Author(s).
Published by JCDA



This is an open-access article.

License:

Attribution-Noncommercial-Share Alike (CC BY-NC-SA)

Received: 16 November 2024

Accepted: 19 December 2024

Published: 20 January 2025

This study examines the role of volunteers in implementing innovative communication strategies based on local wisdom for disaster management in Lembang District, West Bandung Regency. Using a qualitative descriptive method, data were collected through observation, interviews, and document analysis. The findings highlight three innovative programs developed by the Lembang Disaster Management Volunteers (RPBL): *Pelesir Jauh Tina Mamala*, *Kelasmina*, and *Susur Sesar Mikawanoh Lembur*. These initiatives integrate Sundanese cultural principles, such as *Katiluan* (Third) and *Panca Wilayah* (Five Regions), effectively blending indigenous knowledge with edutainment approaches. RPBL's programs represent a significant shift from hierarchical disaster management to a participatory, community-driven model. By embedding cultural values into disaster preparedness strategies, these initiatives enhance public awareness, engagement, and resilience. This study emphasizes the importance of culturally contextual communication in disaster management and offers insights into creating sustainable and inclusive mitigation frameworks. It also sets the stage for future research to assess their long-term impact.

Keywords: Communication Innovation; Community Resilience; Disaster Management; Disaster Mitigation; Local Wisdom

INTRODUCTION

Community resilience refers to the ability to adapt and recover following crises, which depends on proficient communication skills and the effective use of media ([Houston et al., 2015](#)). The importance of local wisdom is apparent in communication and disaster development initiatives, including folklore, which can be utilized for disaster mitigation by conveying essential messages from community leaders who serve as key opinion leaders ([Fakhruddin & Elmada, 2022](#)). Nonetheless, a common misunderstanding in communities is the view of emergency communication as a one-way transmission of information from authoritative sources. Creating a collective sense of security relies on the cooperative actions of volunteers and community organizations ([Haataja et al., 2014](#)).

Disaster risk reduction can help reduce disaster losses in disaster-prone areas, for example, in Indonesia by using a local knowledge approach. Indonesian educational institutions have successfully incorporated local knowledge into the disaster mitigation curriculum to improve student resilience and preparedness ([Triastari et al., 2021](#)). There is evidence that combining long-term experience with traditional knowledge has improved public understanding, mitigation, and response skills to natural disasters. In West Sumatra, Minangkabau communities have incorporated their customary knowledge, such as land use regulations, food preservation techniques, and post-disaster plans ([Anwar, 2021](#)). By creating innovative teaching resources, the use of indigenous knowledge in education to reduce disaster risk is enhanced ([Widyawardana et al., 2021](#)).

One important tool in dealing with disasters and conflicts is the use of local knowledge through community-based approaches. In Karo culture, *purpusage* is a customary technique for resolving social disputes through honest conversation ([Lestari et al., 2019](#)). The legal framework governing forest fires in Central Kalimantan incorporates Dayak customs ([Juriyah et al., 2024](#)). Garda Caah's community participation is very important in reducing disasters, especially in preventing flooding through technology-based information systems ([Rochim et al., 2020](#)).

Modern disaster mitigation strategies have proven inadequate, especially in high-risk areas such as the Lembang fault. There are a number of problems identified, including ineffective collaboration between municipal and district authorities, inadequate community involvement and training, insufficient contributions from various stakeholders, and the need to evaluate disaster mitigation strategies. Communication is often marginalized during disasters. The results of research ([Wahyuni, 2019](#)) show that during disasters, poor communication is often found, which can limit effective crisis identification and management. Disaster risk reduction can occur if communities at various levels can have a role in the local context by using comprehensive methods, including evaluating hazards by prioritizing risk management efforts, utilizing methods systematically in reducing risk, and monitoring the program.

[Al Ayyubi \(2024\)](#) and [Jannah et al. \(2014\)](#) said that resources can be utilized as an initiative for disaster risk management strategy, with the ultimate goal being the community. The most basic layer of society can have a role in reducing disaster risk in its area, using strategies including evaluating threats and hazards and determining priorities in disaster risk management efforts with systematic methods starting from planning and monitoring the effectiveness of disaster risk reduction programs.

Community disaster resilience and people's perceptions have relevant correspondence concerning hazardous conditions. Local governments must establish partnerships with

external organizations, particularly NGOs, to enhance community disaster preparedness and prevention capacities ([Ma et al., 2023](#)). Local governments must establish and maintain communication with external institutions and organizations, particularly non-governmental organizations (NGOs), to enhance the resilience and capacity of communities in disaster prevention. For instance, the BPBD Medan City utilizes the diffusion of innovations theory, which posits that novel concepts, ideas, or technologies are disseminated through designated media channels and propagated within a social system comprising individuals, groups, or communities. A prime example of a communication system failure is the 2011 flooding event in Thailand. This calamity underscores the imperative for a disaster communication system that is accessible to its target users through the integration of multiple media channels. This advancement is of particular pertinence to the domain of communication and crisis management, wherein the proliferation of social media has emerged as a pivotal medium for the dissemination of information ([Pathak, 2019](#)).

In Indonesia, the eruption of Mount Merapi in 2010 precipitated a shift in the public communication tools and disaster mitigation information sources utilized by the government and the general public ([Wardyaningrum, 2014](#)). Moreover, the dominance of social media compared to conventional information systems, like 911, in seeking help highlights the necessity for evolution in emergency communication strategies. This occurrence led the United States Coast Guard to implement digital advancements during the Hurricane Harvey incident in 2017 ([Leake, 2019](#)). Technological advances that may be perpetually advanced in emergency management are crucial for enhancing interaction processes among markets, technology, and social settings, including governments, the private sector, and society.

The purpose of this study is to analyze the innovative communication strategies of disaster response volunteers by utilizing the local wisdom approach. This study holds significant value as it delves into the innovative communication strategies of disaster response volunteers, a critical area in disaster management, particularly within the context of Lembang District, West Bandung Regency. The use of a local wisdom approach aligns with the need for culturally sensitive and community-centric disaster response strategies. By integrating local traditions, knowledge, and practices into communication efforts, this research emphasizes the importance of leveraging community-based resources to enhance the effectiveness of disaster response initiatives. The findings are expected to contribute to improving preparedness, response efficiency, and community resilience in disaster-prone areas.

The novelty of this research lies in its unique focus on local wisdom as a foundational element in shaping innovative communication strategies among disaster response volunteers. While previous studies have examined disaster management strategies broadly, this study specifically investigates the integration of cultural and traditional knowledge into modern disaster response communication. This perspective provides a fresh lens through which to understand how local wisdom can bridge gaps in communication and foster stronger bonds between disaster response teams and affected communities. By highlighting the innovative use of local knowledge, this research adds a new dimension to the discourse on disaster management.

The contribution of this study is threefold. Theoretically, it enriches the existing literature on disaster communication by introducing and analyzing the role of local wisdom in enhancing volunteer strategies. Practically, it offers actionable insights and recommendations for disaster response teams, policymakers, and local governments to design culturally sensitive communication frameworks that resonate with local communities. Socially, the study underscores the importance of preserving and utilizing

local wisdom, fostering a sense of ownership and participation among community members in disaster preparedness and response activities. Through these contributions, the research provides a valuable foundation for more effective and inclusive disaster management practices.

LITERATURE REVIEW

Community Resilience Theory

In emergency response management, the concept of community resilience emphasizes the ability of communities to prepare for, respond to, and recover from disasters. Governance, social capital, and active community participation are key components that together foster resilience and recovery capacity within the community. Community resilience can be realized when education and resources are provided to strengthen responsiveness and leadership during a crisis. Beyond that, community resilience can be enhanced if communities are involved in the disaster response management process. This is because the community is more enthusiastic about coping with disasters, there is superior interpersonal interaction, and it fosters shared commitment.

Several studies explain that driving successful disaster risk reduction and recovery can be achieved by utilizing community-based disaster management (CBDM) strategies. Shared commitment and investment during disaster rehabilitation can reduce government responsibility and potentially make disaster recovery more effective ([Azad et al., 2019](#)). Flexible governance involving community participation can foster resilience to natural disasters ([Djalante et al., 2011](#)). The Disaster Resilient Village Program is a successful tool for disaster risk management. However, the lack of resources is one of the obstacles faced ([Rumambi et al., 2023](#)).

Community resilience is the capability to survive and adjust to adversity and transition ([Magis, 2010](#); [Prati & Pietrantonio, 2009](#); [Vaneekhaute et al., 2017](#); [Zamboni, 2017](#)). The collective capability to face obstacles, prevent calamities, and maintain vigilance is at the root of community resilience ([Prati & Pietrantonio, 2009](#)). Examining the nexus of vulnerability, resilience, and preparedness gaps provides the theoretical context, which is utilized to examine individual-level resilience. The framework is commonly used to measure resilience at both the individual and regional levels.

The fundamental elements of community resilience are community resources, operational skills, and social memory. Aspects of protection, social cohesion, and support are some of the factors that can enhance resilience ([Prati & Pietrantonio, 2009](#)). The active contribution of social continuity, along with the utilization of resources in mobilizing during unclear situations, is crucial. Testing community resilience is still a complex issue, but further research is needed to achieve this ([Zamboni, 2017](#)).

Arguably, community resilience theory can be used for disaster management because it legitimizes the significance of social capital that accommodates and enables local strategies. Implementing adaptive governance methods, intensifying community networks, and optimizing resilience are likely to strengthen disaster preparation and recovery.

Innovation Diffusion Theory

The theory of diffusion of innovations was developed by Everett Rogers, a communication and sociology scientist from the United States. This theory examines the extent to which new concepts and technologies can be welcomed and disseminated in society ([Miller, 2018](#)). The diffusion of innovation is triggered by elements such as the function of innovation, the communication channels applied, and the social conditions

that contribute to the distribution of information. Rogers' thinking about ideas and technology gradually seeped into the social system. There are four main elements of the social system, consisting of time, communication channels, social system, and innovation.

Based on [Liao \(2005\)](#), mass media has the ability to make people understand the existence of innovations, but interpersonal relationships play a very strong role in adoption. Based on a stable communication system, the role of fast, effective transmission and application of innovation is determined by the capacity of the channel itself. The gradual expansion of innovation through a certain network of policy diffusion has been recognized as capable of dealing with emergency social problems.

[Kaya \(2017\)](#) emphasizes that demographic factors and innovation tendencies progressively and radically change the acceptance patterns of different groups when agreeing on new ideas. Small changes, called incremental innovations, are often well received, compared to radical innovations that are more complicated to accept because they require major changes to behavior and infrastructure. The systematic architecture of innovation diffusion theory is utilized to measure adoption in various conditions and situations. Elements of innovation, social structure, communication channels, and early adopters are factors that can influence the success of a diffusion system.

RESEARCH METHOD

This study optimizes the qualitative approach by collecting, analyzing, and presenting data. The research focuses on the individual as the main subject, utilizing a narrative framework by coding the data and interpreting the text ([Mulyana, 2006](#)). The informants involved consisted of three Lembang Disaster Management Volunteers (RPBL), one Lembang sub-district government officer, one Lembang village government officer, and four community members in the Lembang sub-district area, West Bandung Regency, West Java Province. Information was extracted from informants using a semi-structured interview guide, developed and adjusted by the researcher. Interviews were conducted using audio devices to record data for further analysis. Data analysis methods were implemented to strengthen the credibility of the research and confirm the accuracy of the data.

RESULTS

To conduct an empirical evaluation of disaster volunteer groups, sub-district and village government officials, and communities in Lembang Sub-district, West Bandung Regency, this study used a methodological triangulation approach. Based on the results of the study, the organization underwent a significant transformation. Changes included the formation of the RPBL, created by various local community groups.

Grassroots movement groups such as Endog Line, Avengers, IKTM, STEPPA, ALAS, Sog Rescue, and Andir Monkey Care Community played key roles in forming the RPBL, an integrated entity with a common goal.

The legitimacy of RPBL is formalized by Lembang Village Head Decree Number 144/KEP.32-SEKRET/2019 and Lembang Sub-district Recommendation Number 300/83/TRANTIBUM/2021. This institutional framework exemplifies the application of Law No. 24/2007 on Disaster Management, which emphasizes a CBDM model. The operational structure of the RPBL incorporates both vertical and horizontal elements within the disaster governance framework, which facilitates effective communication between community dynamics and administrative authorities.

This phenomenon is epistemologically significant, marking a paradigmatic shift from conventional top-down disaster management strategies to a participatory approach that considers the complexities of local social systems. The involvement of multiple stakeholders in the RPBL strengthens institutional capacity for disaster management and promotes comprehensive community resilience development.

The social construction articulated through the RPBL represents a methodological advancement in disaster management, carrying significant theoretical implications for the evolution of participatory governance frameworks and the enhancement of community adaptive capacity. The applied collaborative paradigm offers a conceptual basis for the development of a more responsive and contextually aware disaster management system.

Within the epistemological framework of modern disaster management, RPBL express a transformational paradigm included in the formulation of the Fundamental Vision of "Community Resilience in Facing Disasters." This conceptual development is demonstrated by a complete operational framework that embodies the systemic complexity of a CBDM method, including the following components: (1) enhancing education, training, and simulation, (2) enhancing collaboration among the community, government, business sector, academia, and media, and (3) executing disaster management in emergency scenarios.

One of the objectives of the RPBL is to increase community resilience to disasters through the implementation of a comprehensive strategy. The objective of its initiatives is to improve the community's ability to handle emergencies. The RPBL consists of three interrelated pillars, with the first pillar focusing on community capacity building. This includes the development of simulation, training, and education programs that enhance theoretical knowledge about disasters as well as practical skills required in emergency situations. These programs aim to foster effective knowledge exchange and enhance sustainable capabilities in managing disaster risks.

The importance of building cooperative networks involving various stakeholders is underlined in the second pillar. The RPBL places the community at the center, the government as the regulatory body, the business sector as the medium of development, academia as the source of development insights, and the media as the tool of information dissemination. Undertaking this comprehensive integration improves the environment, which enables the sustainable and efficient implementation of disaster management programs. The third pillar emphasizes the commitment of the RPBL to implement disaster management in crisis situations. The organization's ability to effectively handle disasters is demonstrated in this aspect.

RPBL positions itself as an organization that prioritizes preventative and preparatory strategies alongside providing a rapid and measurable response in times of crisis. The three mission pillars operate within a synergistic framework, offering a holistic approach to catastrophe management. Through the implementation of this structured objective, RPBL significantly improves community resilience that is robust, adaptable, and responsive to the changing dynamics of disaster risk in the Lembang region.

The establishment of the RPBL has the following objectives: (1) increase public participation and awareness of living in disaster-prone areas, (2) increase the capacity of community-based institutions and explore local wisdom, and (3) strengthen cooperation between stakeholders in DRR: government, private sector, universities, media, NGOs, community organizations, and other groups.

The organizational structure of RPBL consists of the Chairman, Secretary, and Treasurer, with support from the Field. The organization's purpose encompasses all societal segments, with a particular emphasis on vulnerable populations such as children and individuals with impairments. RPBL also engages with community-based organizations, including youth groups, PKK, and other relevant associations, as well as village apparatus, BPD, LPMD, Linmas, and similar entities. In addition, educational institutions, such as learning establishments and PKBM, are involved. The organization further collaborates with advocates for tourism and both public and private entities to achieve its goals.

RPBL Disaster Mitigation Innovation Communication

Mitigation is the series of efforts made by organizations and individuals to reduce disaster risk, whether natural or non-natural. These efforts may take the form of physical development, as well as increasing awareness and the ability to deal with disaster threats. In Indonesia, disaster mitigation must be integrated with the development process, with a focus on not only disaster mitigation but also on education, food, jobs, housing, and other basic needs.

The role of volunteers in disaster management is a critical component of disaster risk management, and disaster risk mitigation is a range of actions taken to mitigate the impact of disasters, including public education and the establishment of early warning systems. Disaster volunteers must prepare not only to assist but also to deal with the risk of further disasters. This is of particular significance given the frequent and substantial role volunteers play in disaster management. A comprehensive understanding of the psychology of aid has been demonstrated to enhance the effectiveness of volunteers (Soleman et al., 2024). Moreover, social support has been shown to enhance the efficacy of volunteers' responses to catastrophes by stimulating prosocial behavior (Firdaus et al., 2023). The Lembang Catastrophe Management Volunteers, as principal stakeholders, emphasize the mitigation of natural disasters in Lembang by executing several programs, including education, training, and catastrophe simulations.

This is in line with the [Regulation of the Minister of Home Affairs Number 33 of 2006](#) on General Guidelines for Disaster Mitigation. There are four important aspects in disaster mitigation: (1) the availability of information and maps of disaster-prone areas for each type of disaster, (2) socialization to increase public understanding and awareness in dealing with disasters, particularly because people live in disaster-prone areas, (3) knowing what needs to be done and avoided, as well as how to save oneself in the event of a disaster, and (4) structuring disaster-prone areas to reduce the threat of disasters. In addition to the three mitigation programs stipulated in the Ministerial Regulation, the RPBL also conducts training programs for internal and external personnel on disaster response and rescue efforts.

The RPBL employs the Sundanese people's belief philosophy, which prioritizes environmental protection, as a foundation for its disaster management programs. This philosophy is rooted in the concept of *katiluan*, namely: *Leuweung Larangan* (conservation), *Leuweung Tutupan* (protected forest), and *Leuweung Baladaheun* (production). This concept was then expressed in more detail by Prabu Niskala Wastu Kancana, who popularized the term *Panca Wilayah* (Five Regions), comprising *Gunung Kaian*, *Gawir Awian*, *Darat Imahan*, *Lebak Sawahan*, and *Legok Balongan*. This idea has developed into many disaster management activities executed by the RPBL to mitigate disasters within the community. The translation of the five regions has substantial importance since it is an initiative to propagate disaster management techniques across the community.

Gunung Kaian (Mountain as a Source of Life)

This mountain functions as a water catchment area and as a habitat for flora and fauna. In disaster mitigation, it is imperative to protect mountainous areas to prevent flash floods. A strategic step to restore the function of these ecosystems is to reforest deforested areas.

Gawir Awian (Cliffs as a Critical Area)

Given the high susceptibility of cliffs to landslides, effective management strategies are imperative. These strategies include the planting of strong-rooted vegetation, such as bamboo, and the utilization of modern technologies, such as geotextiles, to fortify the soil.

Darat Imahan (Plain for Settlements)

It constitutes the primary residential area. Mitigation strategies in this region include risk-based spatial planning, the construction of earthquake-resistant structures, and the implementation of zoning that distinguishes between areas considered safe and areas considered disaster-prone.

Lebak Sawahan (Agricultural Valley)

This valley functions as a center for agricultural endeavors, employing mitigation strategies that incorporate green infrastructure irrigation systems, including natural reservoirs and canals, to enhance water management and diminish flood risk during the rainy season. This means a "basin for ponds," which is a reservoir that serves as a water reserve. This reservoir may be used as a water buffer zone in disaster mitigation, therefore reducing the effects of floods and supplying water reserves during droughts.

Due to their extensive knowledge of local ecosystem dynamics, citizen participation in the management of these areas is crucial. Modern technologies such as GIS mapping can be used to determine mitigation priorities based on empirical data. Applying a process based on community resilience combined with local wisdom has the opportunity to intensify community preparedness and respond on a regional basis to environmental issues.

Katiluan and *Panca Wilayah* illustrate local values born from Sundanese cultural heritage and pragmatic ways of addressing disaster and environmental issues. *Katiluan* or three concepts and *Panca Wilayah* or five regions are applied in spatial design along with disaster mitigation methods to promote community resilience using local value interpretations of sustainable living in the future.

These local values can be an effective way to manage environmental disasters. This concept can be consolidated into urban design and disaster management policies so that communities can achieve sustainability and resilience based on local knowledge. Volunteers who are members of the RPBL have intensified community participation through innovative educational materials drawn from local knowledge so that disaster mitigation programs can be adopted easily by the community in the Lembang sub-district area, especially residents living in earthquake-prone areas of the Lembang fault.

Table 1. RPBL Innovation Program

Activity Name		Description
1	<i>Pelesir Jauh Tina Mamala</i>	Education to tourism activists, tourists and even the community around tourist destinations to be safe from potential disasters.

2	<i>Kelasmina</i>	A discussion space for the community to learn about disasters.
3	<i>Susur Sesar Mikawanoh Lembur</i>	Disaster education along the Lembang fault line in the form of tracking.

The *Pelesir Jauh Tina Mamala* is an innovative localization program that aims to familiarize the community, tourists, and tourism actors with disaster awareness (see [Table 1](#)). This effort is based on the fact that Lembang, as a tourist spot, is still vulnerable to several potential hazards, such as floods, landslides, earthquakes, and tornadoes. This is a pilot initiative intended to provide information and monitor warning signals at specific locations in the region.

The second innovation program is the *Kelasmina* (disaster mitigation class), which functions as a discussion space for the community to learn about disasters and is open to stakeholders with an interest in disaster-related topics. This discussion room serves as a conduit for translating natural language and local wisdom about disasters, including the legend of Sangkuriang, which can be interpreted from the perspective of disasters. RPBL underscores the potential of local wisdom to serve as a guideline for mitigating disasters at the community level. This underscores a profound belief in the wisdom of their ancestors, as exemplified by the concept of five regions popularized by Prabu Niskala Wastu Kencana, one of the kings of Sunda.

Following the completion of his kingdom, Prabu Niskala exiled himself and went to Mount Galunggung, where he coined the term "five regions." This *Kelasmina* also revealed that historical relics can serve as a source of knowledge for contemporary humans to understand the contributions of their ancestors, particularly in the context of megalithic sites, which function as a form of ancestral mitigation for the community in the event of disasters. In the Lembang area, there are bell stones, kujang stones, and tombs.

Figure 1. Overtime Activities of the *Mikawanoh* Fault Line



Source: Researchers (2024)

The most recent innovation program initiated by the RPBL is *the Susur Sesar Mikawanoh Lembur*, which employs a method of disaster education that follows the Lembang Fault route through tracking (see [Figure 1](#)). This program has been recognized with an award from the Geospatial Information Agency, namely *the Bhumandala Award*, in recognition of its role as a mitigation program carried out by volunteers. The objective of this program is to provide education and entertainment to the community, thereby enhancing awareness of potential disasters.

The program seeks to be engaging while promoting health by maintaining a specified distance from the Lembang fault lines. The *Susur Sesar Mikawanoh Lembur*, or Fault Line, represents an innovative initiative spearheaded by the RPBL. This method entails direct interaction with disaster-related topics to enhance familiarity and confidence within the community or participants. The aim is to improve the community's knowledge of toponymy associated with the Lembang Fault region, especially with regard to terms related to disaster mitigation.

DISCUSSION

There is thus a greater need to manage disasters with increased resilience and preparedness by the communities. Indeed, old wisdom, cultural practices, and social conventions help in recovery during the post-disaster periods. For better proactive risk management, local knowledge needs to be integrated into education programs. Coupled with educationally interactive methods, attraction towards the community and acceptance of voluntary initiatives are enhanced. Results herein support the claims of [Hidayat and Yatminiwati \(2023\)](#) that a mitigation culture should be built from an early age using indigenous knowledge. This is because such cultural necessity can provide relief to communities. [Rozi et al. \(2021\)](#) support this perspective on the grounds that a community-oriented approach to disaster management, which enshrines those based on religion and culture, empowers communities toward pro-activeness. More often, this model stands to depend on wider external information than that locals possess of the environment that is immediate ([Rozi et al., 2021](#)). It is very communicative about disasters through indigenizing the knowledge behind it. [Fakhrudin and Elmada \(2022\)](#) have mentioned that local storytelling traditions can enrich disaster mitigation methods by embedding community risk understanding.

Creative RPBL projects, such as *Pelesir Jauh Tina Mamala*, *KelasMina*, and *Susur Sesar Mikawanoh Lembur*, build trust and enhance the dissemination of disaster information. Messages will be conveyed to local residents through these. These programs will enhance community resilience in managing disasters, including preparation, response, recovery, and adaptation. They form an essential component of the overall program designed to ensure the development of community resilience in responding effectively to all challenges associated with disasters. The definition of community resilience can be defined as a state of adjustment and the ability to move forward ([Magis, 2010](#); [Prati & Pietrantonio, 2009](#); [Vaneekhaute et al., 2017](#); [Zamboni, 2017](#)).

Disaster volunteers play a very important role in disaster mitigation, including various efforts to reduce the impact of disasters on communities. Disaster volunteers contribute a great deal to community resilience through their involvement in training programs that enhance their skills and knowledge on disaster mitigation. Many existing studies in this area have highlighted how significantly volunteer participation is valued both for the phase of disaster planning as well as for its aftermath response. The programs have a very strategic design for rendering volunteers with the acquisition of sufficient skills and knowledge, thereby enabling them to handle disasters adequately. Furthermore, these activities promote the preparedness culture within communities for building overall

resilience.

As indicated by volunteers like RPBL, the local knowledge approach employs communication appropriate to the socio-cultural setting for disaster mitigation efforts. The approach enhances the innovation capabilities of an organization and improves the innovation process. Technological innovation is highly facilitated by communication to share information within firms and across firms. Disaster resilience refers to the work done by applying scientific, technical, and practical knowledge to meet human needs and solve problems systematically through technology. The social technologies combine both Indigenous and modern knowledge systems, apart from facilitating knowledge dissemination through public information and education aimed at changing people's behavior to improve disaster risks. RPBL combines education with entertainment in a special way of communication, for example, *Pelesir Jauh Tina Mamala*, *Kelasmina*, and *Susur Sesar Mikawanoh Lembur* programs, while using informal channels.

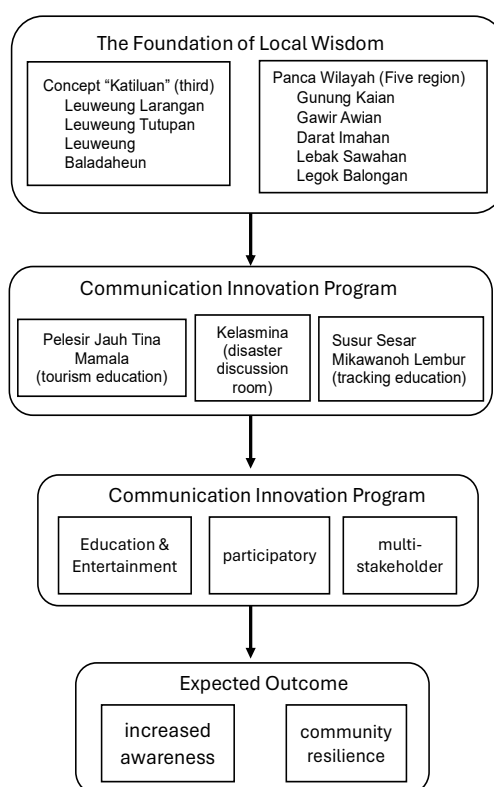
Figure 1. The *Kelasmina* Program



Source: Researchers (2024)

Non-formal communication channels help to cooperate and share important ideas, as illustrated in [Figure 2](#). Studies show that this can lead to successful innovations ([Stachova et al., 2017](#); [Stojanovic & Allen, 2019](#)). To improve community resilience and preparedness in disaster mitigation, communication, and innovation are essential. Community involvement, education, and the integration of technology are crucial for cultivating a culture of disaster preparation. CBDRM techniques promote collaboration, community, and responsibility in disaster preparation initiatives, as shown by research. Participation in disaster preparation improves personal readiness and yields communal advantages, including reduced losses post-disaster via the exchange of knowledge and resources.

Figure 2. Communication Pattern of RPBL Disaster Mitigation Innovation



Source: Researchers Modification (2024)

Figure 3 illustrates that RPBL communication innovation patterns are grounded in Sundanese indigenous knowledge, encompassing two fundamental concepts: *Katiluan* (conservation forest), *Leuweung Tutupan* (protected forest), and *Leuweung Baladaheun* (production forest), alongside the *Panca Wilayah* concept (*Gunung Kaian*, *Gawir Awian*, *Darat Imahan*, *Lebak Sawahan*, and *Legok Balongan*), which underpin catastrophe mitigation strategies.

Building on this foundation, RPBL created three new communication programs that complement one another. The first program, *Pelesir Jauh Tina Mamala*, emphasizes safe tourism education. The second program is *Kelasmina*, which provides a forum for disaster conversation. *Susur Sesar Mikawanoh Lembur* is the third program of RPBL that provides education through tracing the Lembang fault line. These programs aim to integrate disaster mitigation programs with local knowledge values.

The innovation program was realized through a three-pronged strategic communication approach. First, encouraging community acceptance combined with informative and entertainment elements, which makes it easier for the community to accept. Second, mobilizing the community to actively participate in all programs. Third, collaboration with multiple entities, which implies a variety of stakeholders, ensuring that the program can be implemented according to plan and purpose.

This innovative communication method aspires to create resilience and sharpen awareness of disaster risk at all levels of society. It demonstrates what steps are appropriate to increase knowledge about future disasters and what actions are suitable for reducing the risk of disasters. By integrating local wisdom and modern strategies as a sustainable effort to introduce disaster mitigation programs, community resilience can be strengthened, enhancing their ability to adapt and recover from disasters.

Community resilience is a critical element when disasters occur. Communities have the potential to find solutions, react to disasters, and bounce back by utilizing a variety of methods to maximize preparedness and reduce vulnerability through community participation, informative and entertaining educational programs, and sophisticated means of communication. This also includes the application of local knowledge, which sharpens preparedness, reaction, and recovery capacities by intensifying awareness, participation, and resource utilization. Reducing vulnerability through adaptive capabilities is the vision of various methods to create strong and resilient communities.

CONCLUSION

The new communication strategy built by the RPBL can be classified as effective. Their three programs, such as *Pelesir Jauh Tina Mamala*, *Kelasmina*, and *Susur Sesar Mikawanoh Lembur*, have successfully incorporated local knowledge from Sundanese culture into the efforts of disaster prevention measures in the Lembang region. There is a paradigm shift from top-down to participatory methods driven by elements of the community in disaster management, which aligns with the belief that overcoming disasters requires the active role of all stakeholders, including the community.

The position of RPBL is strengthened through the Decree of the Head of Lembang Village and the Recommendation of Lembang Sub-district as an organization involved in the disaster management system in the region. RPBL's educational methodology and its edutainment strategy have increased community participation in disaster mitigation programs. Their multi-stakeholder collaboration model has also improved institutional capacity and community resilience.

In conclusion, the creative RPBL program emphasizes the local context in disaster mitigation communication strategies. However, it is imperative to acknowledge the limitations of this research. The geographical and cultural constraints inherent in the study's scope preclude the generalizability of its findings. Additionally, the analysis is constrained in its evaluation of communication innovation programs without quantifying their long-term impact on behavioral changes, necessitating the execution of more comprehensive and nuanced research to ascertain the effectiveness of each program across various demographic groups. Consequently, longitudinal studies are required to assess the long-term impact of innovation programs on community preparedness. Comparative research with other regions exhibiting similar disaster risk characteristics is also imperative to identify best practices. In addition, in-depth evaluations of the effectiveness of integrating modern technology with local wisdom in disaster mitigation communication, as well as the development of metrics and indicators to measure the success of disaster mitigation communication programs based on local wisdom, are crucial for future research.

ACKNOWLEDGMENT

N/A

DECLARATION OF CONFLICTING INTERESTS

The author(s) declared no conflict of interest.

REFERENCES

- Al Ayyubi, M. S. (2024). Analysis impact of natural disaster risk on labor market outcome: Do decrease middle-class workers?. *Asia Pacific Journal of Management and Education*, 7(1), 60-76. <https://doi.org/10.32535/apjme.v7i1.1961>

- Anwar, K. (2021). Disaster mitigation local wisdom in the tradition of the minangkabau community. In *E3S Web of Conferences* (Vol. 331, p. 04013). EDP Sciences. <https://doi.org/10.1051/e3sconf/202133104013>
- Azad, M. A. K., Uddin, M. S., Zaman, S., & Ashraf, M. A. (2019). Community-based disaster management and its salient features: a policy approach to people-centred risk reduction in Bangladesh. *Asia-Pacific Journal of Rural Development*, 29(2), 135-160. <https://doi.org/10.1177/1018529119898036>
- Djalante, R., Holley, C., & Thomalla, F. (2011). Adaptive governance and managing resilience to natural hazards. *International Journal of Disaster Risk Science*, 2, 1-14. <https://doi.org/10.1007/s13753-011-0015-6>
- Fakhruddin, I., & Elmada, M. A. G. (2022). Local wisdom as a part of disaster communication: A study on the local storytelling in disaster mitigation. *ETNOSIA: Jurnal Etnografi Indonesia*. <https://doi.org/10.31947/etnosia.v7i2.22145>
- Firdaus, M. F., Tambunan, S. M., & Dewi, M. P. (2023). Hubungan dukungan sosial dengan perilaku prososial pada relawan bencana alam [The relationship between social support and prosocial behavior in natural disaster volunteers]. *Humanis Jurnal Ilmu-Ilmu Sosial dan Humaniora*, 15(2), 1-10. <https://doi.org/10.52166/humanis.v15i2.4139>
- Haataja, M., Hyvärinen, J., & Laajalahti, A. (2014). Citizens' communication habits and use of ICTs during crises and emergencies. *Human Technology: An Interdisciplinary Journal on Humans in ICT Environments*, 10(2), 138-152. <https://doi.org/10.17011/ht/urn.201411203314>
- Hidayat, Z., & Yatminiwati, M. (2023). Role of local wisdom-based disaster education and training through education levels in disaster-prone areas. *International Journal of Accounting and Management Research*, 4(1), 1-8. <https://doi.org/10.30741/ijamr.v4i1.991>
- Houston, J. B., Spialek, M. L., Cox, J., Greenwood, M. M., & First, J. M. (2015). The centrality of communication and media in fostering community resilience. *American Behavioral Scientist*, 59, 270-283. <https://doi.org/10.1177/0002764214548563>
- Jannah, N. M., Pujiono, P., Magatani, A., Pristianto, J., Sudira, C., Parlan, H., & Wuryantari, T. (2014). *Panduan Pengelolaan Risiko Bencana Berbasis Komunitas (PRBBK) [Community-Based Disaster Risk Management (CBDRM) Guidelines]*. Deepublish.
- Juriyah, S., Widen, K., Heriamariaty, H., & Segah, H. (2024). Culture-based justice: Legal decisions on forest and land fires by indigenous people with local wisdom approach in the middle sentence. *Journal of The Community Development in Asia*, 7(3), 294-311. <https://doi.org/10.32535/jcda.v7i3.3165>
- Kaya, Ç. (2017). Radical or incremental innovation adoption: Do demographics and the frequency and form of innovation matter? *New Trends and Issues Proceedings on Humanities and Social Sciences*, 4(10), 33-42. <https://doi.org/10.18844/prosoc.v4i10.3060>
- Leake, M. L. (2019). *A Study of the Diffusion of Innovations and Hurricane-response Communication in the US Coast Guard* [Master's thesis, Old Dominion University]. ODU Digital Commons. https://digitalcommons.odu.edu/communication_etds/8/
- Lestari, P., Kertamukti, R., & Ruliana, P. (2019). Use of local wisdom (purpusage) through heart-to-heart communication in settling of social conflicts in Karo, North Sumatra Indonesia. *Jurnal Komunikasi: Malaysian Journal of Communication*, 35(3), 163-181. <https://doi.org/10.17576/JKMJC-2019-3503-10>
- Liao, H. A. (2005). Communication technology, student learning, and diffusion of innovation. *College Quarterly*, 8(2), n2.

- Ma, Z., Zhou, W., Deng, X., & Xu, D. (2023). Community disaster resilience and risk perception in earthquake-stricken areas of China. *Disaster Medicine and Public Health Preparedness*, 17, e74. <https://doi.org/10.1017/dmp.2021.342>
- Magis, K. (2010). Community resilience: An indicator of social sustainability. *Society & Natural Resources*, 23, 401–416. <https://doi.org/10.1080/08941920903305674>
- Miller, R. L. (2018). Rogers' innovation diffusion theory (1962, 1995). In *Technology Adoption and Social Issues: Concepts, Methodologies, Tools, and Applications* (pp. 1558-1571). IGI Global. <https://doi.org/10.4018/978-1-5225-5201-7.ch073>
- Mulyana, D. (2006). *Metodologi Penelitian Kualitatif: Paradigma Baru Ilmu Komunikasi dan Ilmu Sosial Lainnya [Qualitative Research Methodology: A New Paradigm for Communication Science and Other Social Sciences]*. Remaja Rosdakarya.
- Pathak, S. (2019). Disaster crisis communication innovations: Lessons learned from 2011 floods in Thailand. *International Journal of Disaster Response and Emergency Management*, 2(2), 1-16. <https://doi.org/10.4018/IJDREM.2019070101>
- Prati, G., & Pietrantonio, L. (2009). Resilienza di comunità: Definizioni, concezioni ed applicazioni. *Psychofenia: Ricerca ed Analisi Psicologica*, (20), 9-26.
- Regulation of the Minister of Home Affairs Number 33 of 2006 on General Guidelines for Disaster Mitigation. (2006). https://www.gitews.org/tsunami-kit/en/E6/further_resources/national_level/peraturan_menteri/Permendagri%2033-2006_Pedoman%20Umum%20Mitigasi%20Bencana.pdf
- Rochim, M. O. C. H. A. M. A. D., Bajari, A. T. W. A. R., Damayani, N. A., & Bakti, I. R. I. A. N. A. (2020). Community-based disaster communication management. *Jurnal Komunikasi: Malaysian Journal of Communication*, 36(4), 339-350. <https://doi.org/10.17576/JKMJC-2020-3604-21>
- Rozi, S., Ritonga, A. R., & Januar, J. (2021). 'Local community-based disaster management' The transformation of religious and local wisdom values in preparation to deal with natural hazards in West Sumatra, Indonesia. *Jāmbā: Journal of Disaster Risk Studies*, 13(1), 1-7. <https://doi.org/10.4102/jamba.v13i1.1020>
- Rumambi, F. J., Sari, D. N., & Utami, D. A. (2023). Disaster resilient village program: Manifestation of community-based disaster risk management and reduction policy. *International Journal of Sustainability in Research*, 1(4), 261-272. <https://doi.org/10.59890/ijsr.v1i4.477>
- Soleman, S. R., Zahra, S. A., & Sandra, F. A. (2024). Gambaran pengetahuan tentang psychological first aid pada relawan bencana [Overview of knowledge about psychological first aid in disaster volunteers]. *An Idea Health Journal*, 4(02), 38-44. <https://doi.org/10.53690/ihj.v4i02.223>
- Stachova, K., Stacho, Z., & Vicen, V. (2017). Efficient involvement of human resources in innovations through effective communication. *Business: Theory and Practice*, 18, 33. <https://doi.org/10.3846/btp.2017.004>
- Stojanovic, D., & Allen, M. (2019). Communication and innovation. *Encyclopedia of Sustainable Management*, 1-6. https://doi.org/10.1007/978-3-030-02006-4_445-1
- Triastari, I., Dwiningrum, S. I. A., & Rahmia, S. H. (2021, November). Developing disaster mitigation education with local wisdom: Exemplified in Indonesia schools. In *IOP Conference Series: Earth and Environmental Science* (Vol. 884, No. 1, p. 012004). IOP Publishing. <https://doi.org/10.1088/1755-1315/884/1/012004>
- Vaneeckhaute, L. E., Vanwing, T., Jacquet, W., Abelshausen, B., & Meurs, P. (2017). Community resilience 2.0: Toward a comprehensive conception of community-level resilience. *Community Development*, 48(5), 735-751. <https://doi.org/10.1080/15575330.2017.1369443>

- Wahyuni, H. I. (2019). Ecological communication in information society: Reflections on Niklas Luhmann's thought in understanding ecological & disaster issues in Indonesia. *Jurnal Komunikasi Ikatan Sarjana Komunikasi Indonesia*, 4(1), 9-17. <https://doi.org/10.25008/jkiski.v4i1.270>
- Wardyaningrum, D. (2014). Perubahan komunikasi masyarakat dalam inovasi mitigasi bencana di wilayah rawan bencana gunung Merapi [Changes in community communication in disaster mitigation innovation in disaster-prone areas of Mount Merapi]. *Jurnal Aspikom*, 2(3), 179-197. <https://doi.org/10.24329/aspikom.v2i3.69>
- Widyawardana, A., Tanjung, A., & Bachri, S. (2021). The innovation of teaching materials based on local wisdom for disaster mitigation subject. *INNOVATION*, 7(1), 23-37. <https://doi.org/10.20961/ge.v7i1.42121>
- Zamboni, L. M. (2017). Theory and metrics of community resilience: a systematic literature review based on public health guidelines. *Disaster Medicine and Public Health Preparedness*, 11(6), 756-763. <https://doi.org/10.1017/dmp.2017.22>

ABOUT THE AUTHOR(S)

1st Author

Mochamad Iqbal is a doctoral student at the Graduate School of Gadjah Mada University, focusing on Extension and Development Communication. He is also a lecturer in the Communication Science study program at FISIP Pasundan. His academic and professional endeavors contribute to the development of communication studies, particularly in the areas of extension and development communication. You can reach him via email at moch.iqbal@unpas.ac.id or visit his ORCID profile at <https://orcid.org/0009-0007-7775-5347>.

2nd Author

Prof. Dr. Phil. Hermin Indah Wahyuni, S.IP., M.Si., is a senior lecturer at the Department of Communication Science, Faculty of Social and Political Sciences, Universitas Gadjah Mada (UGM) in Indonesia. She is a prominent figure in the field of communication science and an influential academic in Indonesian academia. Prof. Hermin has made significant contributions to communication studies, particularly in Indonesia. Her email is hermin_iw@ugm.ac.id, and her ORCID profile can be found at <https://orcid.org/0000-0001-7477-6125>.

3rd Author

Dr. Ir. Dina Ruslanjari, M.Sc., is an academic and researcher at Universitas Gadjah Mada (UGM) in Yogyakarta, Indonesia. She serves as the head of the Master of Disaster Management Study Program at UGM Graduate School. Dr. Dina specializes in catastrophe management and environmental science, with a focus on disaster management research. Her work emphasizes enhancing the capabilities of the Regional Disaster Management Agency (BPBD) in addressing flash floods. For further contact, she can be reached via email at dienarus@ugm.ac.id or through her ORCID profile at <https://orcid.org/0000-0002-2968-5379>.