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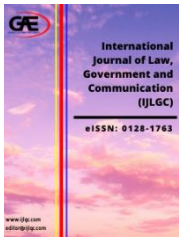

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INTEGRATED INTER-AGENCY COORDINATION FOR EFFECTIVE DISASTER MANAGEMENT IN KLANG VALLEY

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Abstract:

Disaster management in Klang Valley, Malaysia, requires robust inter-agency coordination to effectively handle natural disaster such as landslides and floods. This study explores the enhancement of integrated inter-agency coordination for effective disaster management in Klang Valley through a qualitative approach involving in-depth interviews, observations, and literature review. The findings highlight several key areas for improvement; 1) enhancing communication infrastructure by upgrading the Government Integrated Radio Network (GIRN) for extensive coverage, 2) establishing a centralized communication hub, and leveraging robust, independent communication systems to ensure continuous information flow during disasters, 3)Regular joint training exercises and tailored programs for District Officers are recommended to improve preparedness and operational readiness, 4) clear policies and Standard Operating Procedures (SOPs) defining the roles and responsibilities of each agency, 5)strengthening coordination with non-governmental organizations (NGOs) through formal mechanisms and regular meetings is crucial to ensure consistent and fair aid distribution, 6)enhancing community awareness and preparedness via regular programs and developing community-based response plans in collaboration with local authorities can further improve disaster management outcomes.

Keywords:

Coordination, Communication, Inter-agencies, Training, and Disaster Management

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Introduction

Klang Valley, Malaysia's economic and cultural hub, is a densely populated region encompassing the federal territories of Kuala Lumpur and Putrajaya, as well as the state of Selangor. Known for its rapid urbanization and significant population density, Klang Valley is highly susceptible to natural disasters, particularly landslides and floods (Kamarudin et al., 2022; Lee et al., 2021). The region's vulnerability is further heightened by the monsoon season, which brings heavy rainfall and increases the risk of flooding, especially in low-lying areas (Kamal et al., 2022). Over the past few decades, the region has faced numerous catastrophic events, including the Bukit Permai landslides and major floods in Hulu Langat, underscoring the critical need for effective disaster management strategies (Mokhtar et al., 2023).

Urban expansion into areas prone to natural hazards has exacerbated the impact of these disasters. As development has encroached into hilly terrains and flood-prone zones, the risk to both human life and property has increased significantly. For instance, the widespread destruction caused by the collapse of the Highland Towers in 1993 was a tragic consequence of such expansion into vulnerable areas (Hassan et al., 2022). The frequency and severity of these disasters have not only caused considerable economic losses but also disrupted the lives of thousands of residents, leading to long-term social and psychological impacts on the affected communities (Razak et al., 2020).

The impact of these disasters is poignantly illustrated by the December 2021 floods in Kuala Lumpur, where army soldiers were seen rescuing children from their flooded homes (Figure 1). This image, captured by Channel News Asia, highlights the immediate human cost of these disasters and underscores the critical need for effective emergency response measures (Channel News Asia, 2021). Such scenes have become increasingly common in Klang Valley, where floods and landslides frequently displace residents and strain the region’s disaster management resources.

Figure 1: Army Soldiers Rescue Children From Their House Affected By A Flood In Kuala Lumpur, Malaysia.

Source: Chanelnewasia online dated on 20 December 2021

The Klang Valley region's disaster profile is complex, characterized by a mix of natural and man-made hazards. The impact of climate change has further intensified these challenges, with rising temperatures and unpredictable weather patterns contributing to more frequent and

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severe disaster events (Rahman et al., 2023). Moreover, the region's infrastructure, while modern and extensive, is often tested by these events, revealing weaknesses in both design and preparedness (Ahmad et al., 2021). The floods in December 2021, which inundated large parts of the region, highlighted the limitations of current flood mitigation measures and prompted calls for a comprehensive review of disaster management policies (Kamal et al., 2022).

Several major disasters in the past decades have emphasized the necessity of comprehensive disaster management plans. Among the most significant incidents are the collapse of the Highland Towers on December 11, 1993, which remains one of the worst tragedies in the region's history, marking a significant moment in disaster awareness (Hassan et al., 2022). Additionally, major floods in 1971, 2007, and more recently in December 2021, caused extensive damage to property and infrastructure, displacing thousands of residents (Kamal et al., 2022). The landslides in Bukit Permai in March 2022 and Batang Kali in December 2022 resulted in fatalities and brought renewed attention to the ongoing risks associated with hilly areas (Figure 2). Moreover, the COVID-19 pandemic also tested the region's emergency response capabilities, revealing gaps in coordination among various agencies (Ahmad et al., 2021).

In Klang Valley, disaster management involves collaboration among various governmental and non-governmental organizations to mitigate and respond to catastrophes. Key agencies include the National Disaster Management Agency (NADMA), the central coordinating body for disaster management policies and operations; the Fire and Rescue Department of Malaysia (JBPM), responsible for search and rescue operations; and the Royal Malaysia Police (PDRM), tasked with maintaining public order during disaster events. Other crucial players are the Malaysian Civil Defence Force (APM), which provides emergency assistance, including evacuation and first aid, and the Ministry of Health (MOH), which ensures the availability of medical services and public health measures during disasters (NADMA, 2023). The Public Works Department (JKR) is involved in post-disaster infrastructure repair, while local government authorities coordinate ground-level response and recovery efforts (Figure 3).

Figure 2: The Incident Information at the Bukit Permai Landslide

Source: Jabatan Bomba dan Penyelamat Malaysia, Zon Hulu Langat.

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Figure 3: The Example of Organization Chart of The Incident On-Scene Control Post During The Landslide at Bukit Permai

Source: Jabatan Bomba dan Penyelamat Malaysia, Zon Hulu Langat.

Malaysia's National Security Council Directive No. 20 serves as a guideline for disaster management, outlining the roles of each agency involved in national disaster management (NSC, 2022). However, recent disaster incidents have revealed areas where inter-agency disaster response can be improved. The collaboration between civil and military forces during disasters is critical for effective management, with leadership from military forces often facilitating a more coordinated response (Nugroho, Pandanwangi, & Suprapto, 2016). This research aims to explore the strengths and challenges in interagency cooperation in disaster management within Klang Valley. By analyzing past disaster events and conducting interviews with key stakeholders, this study seeks to identify critical areas for improvement. The goal is to provide actionable recommendations to enhance disaster resilience in Klang Valley.

Literature Review

Disaster management is an important field of study and practice that aims to mitigate the effects of both natural and man-made disasters. Interagency coordination is critical to achieving effective disaster management. This literature review delves into previous research that has investigated the importance, challenges, and strategies of inter-agency collaboration in disaster management, with an emphasis on the Klang Valley region.

Gao et al. (2011) stated that when a disaster relief agency operates independently, it complicates rescue efforts. To prevent this, the study emphasizes "inter-agency" coordination to avoid conflicts while maintaining centralized control. Additionally, a crisis map should be used to coordinate responses by displaying assistance requests from agencies. Relief organizations can then review these requests and respond to those they can support, avoiding conflicts and ensuring no tasks are duplicated among agencies.

Effective disaster management requires collaboration among multiple authorities, including governmental bodies, non-governmental organizations (NGOs), and private organizations. Studies have continually emphasized the importance of an integrated approach to dealing with disasters of varying complexities and scales. For example, Alexander (2005) emphasized how

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inter-agency collaboration improves resource allocation, information exchange, and operational efficiency during the disaster response and recovery stages.

Despite its importance, successful collaboration among agencies poses various challenges. Comfort et al. (2004) highlighted several main challenges, including bureaucratic command structures, a lack of communication infrastructure, and inter-organizational misinformation. Ahmad and Ibrahim (2016) highlighted how overlapping jurisdictions and poorly defined roles can cause disaster response operations to become delayed and inefficient in the Klang Valley. Furthermore, the variety of agencies engaged, each with its own standards and opinions, affects coordinating efforts.

Several approaches have been proposed to address these issues and improve interagency coordination. The literature frequently discusses the construction of centralized command structures and integrated communication networks. For example, Kapucu (2006) emphasized the importance of Incident Command Systems (ICS) in expediting decision-making and encouraging a united response. Similarly, Khalid and Shafiai (2019) promoted the use of technology, such as Geographic Information Systems (GIS) and real-time data-sharing platforms, to improve situational awareness and coordination among Malaysian agencies.

The literature also emphasizes the relevance of policy measures that support inter-agency coordination. Abdullah et al. (2018) suggested developing clear policies that define the roles and responsibilities of each agency involved in disaster management. They also underlined the importance of regular collaborative training exercises and simulations to build confidence and increase operational readiness.

During disaster response, each rescue agency has a designated role and must be aware of its responsibilities. Role definition challenges arise from conflicts in responsibilities and overlapping roles (Drabek & McEntire, 2002). When roles are unclear, disaster management becomes chaotic, leading to dissatisfaction. Factors contributing to these issues include resource scarcity, lack of a higher authority to allocate resources, and absence of an accountability mechanism (Waugh & Streib, 2006). These factors cause mismatches between agencies, complicating disaster response efforts.

Comfort, Ko, and Zagorecki (2004) emphasized how important information exchange is to improving agency collaboration during disaster response. Their research shows that prompt information transmission and efficient communication greatly enhance the efficacy and efficiency of coordinated disaster response operations, enabling agencies to quickly adjust to changing circumstances and mitigate the effects of disasters. Apart from that, in the analysis of multiple urban disaster case studies, Kapucu and Van Wart (2006) highlighted the vital role that interagency collaboration plays in the phases of disaster response and recovery. According to their findings, public sector organizations working together can enhance response times in densely populated urban regions, optimize resource utilization, and streamline operational efficiency.

Additionally, the role of civil society organizations in disaster risk reduction in Asian megacities, such as Manila, Bangkok, and Jakarta, has been explored by Shaw and Izumi (2014). Their study emphasized the value of involving agencies and communities in disaster management initiatives, and it suggested that a cooperative strategy involving both

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governmental and non-governmental organizations is necessary for an all-encompassing and successful framework for disaster risk reduction.

Furthermore, as noted by Bali (2022), community-based disaster risk reduction is a widely adopted and effective strategy in both developed and developing countries. Communities possess a deep understanding of their environment, recognize their strengths, and have established indigenous emergency response methods. Enhancing community training and skills is crucial for improving disaster preparedness. Community involvement also fosters a better understanding of disasters and conventional coping mechanisms, making their local knowledge invaluable in emergency situations.

Using the Incident Command System (ICS) as a paradigm for integrated coordination, Moynihan (2009) analyzed the difficulties and successful approaches in multi-agency disaster response. The study showed that although ICS offers an organized framework for coordination, all participating agencies must be committed to and cooperative for it to be effective. This emphasizes the necessity of ongoing training and interagency cooperation.

Doyle et al. (2015) highlighted that effective responses to crises, like volcanic eruptions, are characterized by strong interorganizational networks, efficient shared mental models, and high interorganizational trust. To achieve this, it is essential to conduct multi-organizational and multi-disciplinary planning activities, along with collaborative exercises and simulations involving all team members and advisors. These activities help develop a shared understanding of roles, dependencies, information needs, and the overall response environment.

A review of previous studies demonstrates that, while great progress has been made in enhancing inter-agency collaboration for disaster management in Klang Valley, problems still exist. Resolving these difficulties requires a multidimensional approach that involves improvement in regulatory frameworks, technological advancements, and ongoing capacity-building efforts. By learning from previous experiences and using best practices, Klang Valley can improve its disaster management capabilities and ensure a more robust response to future disasters.

Theoretical Frameworks

Network Theory could be used to understand how relationships and communication patterns among agencies influence the effectiveness of disaster management. It helps explain the dynamics of collaboration, information exchange, and resource sharing in multi-agency disaster response operations.

In Klang Valley, the complexity and scale of natural and man-made disasters necessitate a robust and well-coordinated network of agencies. Network theory provides insights into how this can be achieved. First with Enhancing Communication and Collaboratio. By mapping the network of agencies involved in disaster management in Klang Valley, it is possible to identify key nodes and connections that are critical for effective collaboration. Efforts can be made to strengthen these connections, particularly between agencies that do not frequently interact but are crucial during disaster response. For example, regular inter-agency drills and communication exercises can help solidify these connections and ensure that they function smoothly during actual emergencies.

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Second, improving network density**.** Ensuring that all relevant agencies, including local government bodies, NGOs, and private sector partners, are well-integrated into the disaster management network can enhance overall network density. This can be achieved by creating platforms for regular information exchange and collaborative planning, thus ensuring that all agencies are on the same page and can work together seamlessly when a disaster occurs.

Applying network theory to the analysis and improvement of interagency collaboration in disaster management, Klang Valley can create a more integrated, resilient, and efficient disaster response system. This theoretical approach underscores the importance of strong, well-connected networks where information flows freely and where all agencies are capable of both independent and collaborative action when responding to disasters.

Table 1. Summary Table of Past Studies

Study	Focus	Key Findings
Gao et al. (2011)	Inter-agency coordination during disaster relief	Emphasizes the need for coordinated efforts to avoid task duplication and conflicts among agencies.
Alexander (2005)	Role of collaboration in disaster response	Highlights the benefits of inter-agency collaboration in improving resource allocation, information exchange, and operational efficiency.
Comfort et al. (2004)	Challenges in inter-agency collaboration	Identifies bureaucratic command structures, communication issues, and inter-organizational misinformation as key challenges to effective collaboration.
Ahmad & Ibrahim (2016)	Coordination challenges in Klang Valley	Discusses how overlapping jurisdictions and poorly defined roles delay and complicate disaster response in Klang Valley.
Kapucu (2006)	Importance of Incident Command Systems (ICS)	Advocates for the use of ICS to expedite decision-making and promote a unified response during disasters.
Khalid & Shafiai (2019)	Technological tools for disaster management	Promotes the use of GIS and real-time data-sharing platforms to enhance situational awareness and coordination among agencies.
Moynihan (2009)	Integrated coordination using ICS	Analyzes the effectiveness of ICS in fostering interagency coordination, highlighting the need for commitment and cooperation among agencies.
Doyle et al. (2015)	Effective interorganizational networks during crises	Highlights the role of strong interorganizational networks, shared mental models, and high trust levels in successful crisis responses.

Source: Illustrated by author

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Research Methodology

This study adopts a qualitative research approach to explore the coordination efforts among various agencies involved in disaster management in the Klang Valley. Qualitative research is particularly suited for this study as it allows for an in-depth understanding of complex social processes and the perspectives of different stakeholders (Creswell, 2012; Bougie & Sekaran, 2020). The primary methods of data collection included in-depth interviews, observations, and analysis of information gathered from the literature review and relevant materials.

Sampling and Data Collection

The respondents for this study were purposively selected based on their involvement in disaster management within the Klang Valley. The study focused on agencies that play a crucial role in disaster response, including the Fire and Rescue Department of Malaysia (JBPM), the Malaysian Civil Defence Force (APM), and the Malaysian Armed Forces (ATM). These agencies were selected because of their direct involvement in managing several disasters in the region. To ensure a comprehensive understanding of the coordination efforts, respondents were chosen from three levels of management within each agency: tactical, operational, and strategic.

In total, nine respondents were interviewed and three from each agency. The interview sessions were conducted physically to allow for a more interactive and detailed discussion. The respondents included leaders and representatives from various levels of management within their respective agencies. This stratified approach ensured that the study captured a range of perspectives, from high-level strategic considerations to on-the-ground operational challenges.

Interview Process and Questions

The interview questions were both adopted and adapted from existing studies on disaster management and interagency coordination. These questions were tailored to fit the specific context of disaster management in the Klang Valley and were designed to elicit detailed responses about the experiences, challenges, and strategies of each agency in coordinating with others during disaster events.

The interview questions covered several key areas:

1. Perception of Interagency Coordination: How do different agencies perceive the effectiveness of their coordination with other agencies during disaster response?
2. Challenges in Coordination: What are the main challenges faced by the agencies in coordinating with others?
3. Strategies for Improvement: What strategies do the agencies suggest enhancing interagency coordination?
4. Case-Specific Experiences: Can the respondents provide specific examples of successful or problematic coordination during recent disaster events?

The interviews were semi-structured, allowing the respondents the flexibility to discuss issues in depth and introduce topics not covered by the prepared questions.

Observation and Additional Data Collection

In addition to interviews, observational methods were employed to gather data on how agencies interacted during disaster response scenarios. The researchers attended disaster management

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drills and simulations organized by the agencies. These observations were critical for understanding the practical aspects of interagency coordination, such as the communication flow, decision-making processes, and the allocation of resources during a disaster.

Observations were systematically recorded using an observation checklist adapted from Chua (2006) and Creswell (2012). The checklist included criteria such as response times, clarity of communication, role definition, and resource management.

Data Analysis

The collected data were analyzed using thematic analysis, a method well-suited for identifying and interpreting patterns within qualitative data. The analysis process involved several steps: 1) Data Familiarization**,** the researchers transcribed the interviews and organized the observation notes. This step involved repeatedly reading the transcripts and notes to become thoroughly familiar with the data. 2) Initial Coding, the data were coded to identify significant statements and recurring themes. This process involved tagging sections of the text with codes that corresponded to different aspects of interagency coordination. 3) Theme Development, the initial codes were then grouped into broader themes that represented the major findings of the study. For example, themes such as "communication barriers," "role ambiguity," and "effective resource sharing" were identified. 4) Theme Refinemen, the themes were reviewed and refined to ensure they accurately reflected the data. This involved checking the themes against the original data to ensure consistency and validity. 5) Reporting, The final themes were then organized into a coherent narrative that forms the basis of the study's findings. This narrative was supported by direct quotes from the interviews and examples from the observations.

Flow Chart of the Research Process

The following flow chart summarizes the research process:

Figure 4: Flow Chart of the Research Process

Source: Illustrated by author

This flow chart illustrates the step-by-step process used in this study, highlighting the systematic approach taken to ensure the reliability and validity of the research findings.

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Results And Discussion

Table 1 displays the respondents' profile. With over five years of work experience, they participated in disaster relief activities. The parameters that the agency considers most important for integrated inter-agency coordination in situations of catastrophe are listed in Table 2. Consequently, the researchers discovered that effective communication channel, clear instruction and organised cooperation in disaster response tend to provide the anticipated benefits. Consequently, cooperation is necessary for any catastrophe effort to be effective.

Table 1. Respondents Profile

RES	Organisation	Function
RES 1	Malaysia Civil Defence Department (APM), Negeri Selangor	Operation officer
RES 2	Malaysia Civil Defence Department (APM), Negeri Selangor	Operation officer
RES 3	Malaysia Civil Defence Department (APM), Negeri Selangor	Operation officer
RES 4	Fire and Rescue Department of Malaysia (JBPM), Negeri Selangor	Operation officer
RES 5	Fire and Rescue Department of Malaysia (JBPM), Negeri Selangor	Operation officer
RES 6	Fire and Rescue Department of Malaysia (JBPM), Negeri Selangor	Operation officer
RES 7	Fire and Rescue Department of Malaysia (JBPM), Zon Hulu Langat.	Operation officer
RES 8	Fire and Rescue Department of Malaysia (JBPM), Zon Hulu Langat.	Operation officer
RES 9	Fire and Rescue Department of Malaysia (JBPM), Zon Hulu Langat.	Operation officer
RES 10	Malaysian Armed Forces (ATM)	Commanding Officer
RES 11	Malaysian Armed Forces (ATM)	Logistics Officer
RES 12	Malaysian Armed Forces (ATM)	Logistics Officer

Source: Illustrated by The Author

Table 2. Key Factors The Agency Prioritizes For Integrated Inter-Agency Coordination During Disasters

RES	Key Factors the Agency Prioritizes for Integrated Inter-Agency Coordination During Disasters
RES 1	Community awareness. The community in Selangor, during the major flood in 2021 only thought that the flood would recede quickly. But the opposite happened. they do not take immediate action because there is no awareness like the community in Kelantan who are familiar with the situation. In addition, it is also suggested that an act be created so that victims do not avoid going to the evacuation center.
RES 2	The main challenge during the disaster relief operation during the major flood that hit Selangor in December 2021 was the difficulty of the APM to reach the location of the incident. The main challenge during the disaster relief operation

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	during the major flood that hit Selangor in December 2021 was the difficulty of the APM to reach the location of the incident. At that time, only 1 road could be used and it was filled with people and NGOs who wanted to enter the flooded area to distribute aid. The situation became challenging because it was necessary to manage the crowd who wanted to enter the incident area. Here, the aspect of information sharing is very important, at the initial stage, involved agencies such as those who have access data about other alternative routes that can be taken need to act quickly by sharing that information with other rescue agencies.
RES 3	APM also faces problems in communication. Difficult to connect with other agencies. For example, for the use of the Government Integrated Radio Network (GIRN) which can only be used for short distances and not for long distances. This problem often occurs in the field because of the difficulty in giving instructions and conveying information.
RES 4	Coordination that was not properly organized became chaos during the floods that occurred in Selangor in December 2021. At the initial stage, ATM did not get permission to go down to provide assistance. However, upon receiving permission, the ATM arrived at a relocated site in Petaling Jaya that had been reassigned to coordinate with another agency. The lack of prior coordination led to a chaotic situation as the agencies arrived suddenly and without a plan.
RES 5	Excessive bureaucratic procedures for communicating with other agencies will exacerbate delays in the disaster response process.
RES 6	Regular training to enhance knowledge is crucial, such as training focused on managing ship fires. This is because many members lack the necessary expertise to manage ship fires, which are highly risky and prone to explosions. Additionally, challenges arise when members from different agencies are unclear about their respective responsibilities and roles, as seen during the landslide in Ampang. This lack of clarity can lead to inter-agency conflicts during operations.
RES 7	One of the key areas for improvement during disaster response is communication tools. It is well-known that if a disaster area lacks phone line coverage, the Government Integrated Radio Network (GIRN) will be used. However, GIRN also proven ineffective in forested areas, making rescue operations in such regions particularly challenging.
RES 8	In addition, the knowledge of district officials is crucial. They need to understand the immediate actions required when managing a disaster, as every decision made by the involved agencies depends on their guidance. Therefore, the arrangement of the command structure from the top down is vital for ensuring smooth operations at the lower levels.
RES 9	There is a need to coordinate the assistance provided by NGOs to ensure that victims receive the same assistance, as the difference in assistance can lead to dissatisfaction and ultimately the agency that needs to be responsible for resolving it
RES 10	Inappropriate military assets, such as combat boats unsuitable for rescuing flood victims, can hinder effective rescue operations. Large boats are prone to colliding

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	with underwater vehicles. However, these boats can navigate faster than standard vessels and have greater capacity to accommodate passengers.
RES 11	There is no cross-training with other agencies; our training only involves ATM personnel. The National Disaster Management Agency (NADMA) participated as an observer. For instance, flood management training includes modules on operating boats, installing rafts, and other related skills.
RES 12	Internally, using GIRN for communication poses no issues. However, integrating with other agencies becomes challenging due to differing frequencies, which complicates establishing connections. Nevertheless, a tactical headquarters is set up for every disaster response operation to facilitate coordinated information gathering and dissemination.

Source: Illustrated by The Author

Table 1 illustrates the profile of the respondents involved in this study, all of whom have over five years of experience in disaster relief activities. The respondents represent various key agencies engaged in disaster response, including the Malaysia Civil Defence Department (APM), the Fire and Rescue Department of Malaysia (JBPM), and the Malaysian Armed Forces (ATM). Their roles range from operation officers to commanding officers and logistics officers, ensuring a comprehensive perspective on inter-agency coordination challenges.

The research identifies several critical factors that agencies prioritize for effective inter-agency coordination during disasters, as detailed in Table 2. These factors underscore the importance of communication, clear instructions, and organized cooperation in disaster response efforts. One significant issue highlighted was the lack of community awareness during the 2021 major flood in Selangor, which led to delayed actions by residents. Unlike communities in Kelantan, which are more accustomed to such situations, Selangor residents did not immediately seek evacuation. The respondent suggests the creation of legislation to ensure residents promptly head to evacuation centers during such events.

Access and information sharing were also noted as significant challenges. APM faced difficulty in reaching flood-affected locations due to congested roads filled with people and NGOs. Efficient information sharing about alternative routes among agencies is crucial to managing such challenges and ensuring timely disaster response. Communication issues were prevalent, with APM experiencing difficulties in communicating with other agencies, particularly with the Government Integrated Radio Network (GIRN), which is effective only over short distances. This issue hampers the ability to give instructions and convey information efficiently during field operations.

Coordination and bureaucracy also posed substantial challenges. Poorly organized coordination led to chaotic situations, as seen when ATM did not initially receive permission to assist during the floods. Upon receiving permission, the lack of prior planning resulted in disorganized efforts. Additionally, excessive bureaucratic procedures exacerbate delays in disaster response. Regular training and role clarity were emphasized as essential elements for effective disaster management. Regular training is necessary to enhance knowledge, especially for managing specific disasters like ship fires. The lack of clarity about roles among different agencies can lead to conflicts during operations, as evidenced during the Ampang landslide.

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The study also highlighted the need for better communication tools. The ineffectiveness of GIRN in forested areas underscores the necessity for improved communication technology. In disaster areas lacking phone coverage, GIRN becomes the fallback, but its limitations pose significant challenges. Additionally, the knowledge of district officials and a well-arranged command structure are vital. Decisions by district officials significantly impact the effectiveness of disaster management operations, necessitating a clear top-down command structure.

Coordinating assistance from NGOs is also necessary to ensure equal support for victims. Disparities in aid can lead to dissatisfaction, requiring agencies to resolve the ensuing issues. The use of inappropriate military assets, such as combat boats unsuitable for rescuing flood victims, hinders effective operations. While these boats navigate faster and can carry more passengers, they are prone to collisions with underwater objects.

Finally, joint training and integration remain areas needing improvement. There is lack of joint training with other agencies; training is confined to ATM personnel, with NADMA only observing. Communication integration remains challenging due to differing frequencies used by various agencies. A tactical headquarters is set up for each disaster response to facilitate coordinated information gathering and dissemination.

In summary, the study highlights the critical need for improved inter-agency coordination in disaster management in Klang Valley. Effective communication channels, clear instructions, and organized cooperation are essential to overcoming the challenges faced during disaster response. The findings suggest that enhancing joint training exercises, standardizing communication technologies, and developing integrated response policies can significantly improve disaster management outcomes. Regular training and better role clarity among agencies are crucial to avoid conflicts and ensure a unified response. By addressing these issues, disaster response efforts can be more efficient, reducing the impact on affected communities and fostering resilience.

Strategies to Improve Inter-Agency Coordination

Enhanced Communication Systems

A major challenge in disaster response operations is the inefficiency of existing communication tools, particularly in regions without phone coverage. Upgrading the GIRN to offer comprehensive nationwide coverage, including remote and forested areas, is crucial. This enhancement will improve coordination, ensuring timely responses during emergencies and reducing delays and miscommunications. Although medium communication like WhatsApp and Telegram facilitate quick information sharing, relying on them during major disasters with power outages can be problematic. It is advisable to establish a more robust communication system that can operate independently of the power grid to ensure uninterrupted information exchange among agencies. Establishing a central hub for information dissemination and coordination among all involved agencies will streamline communication. This hub will serve as the main point for gathering, verifying, and distributing essential information, ensuring that all agencies have access to accurate and timely data.

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Integrated Training

Frequent collaborative training sessions with all relevant agencies, including government bodies, NGOs, and the military, are essential for improving preparedness and coordination. These exercises should simulate different disaster scenarios to practice coordinated response strategies and enhance operational readiness. Moreover, District Officers are crucial in disaster response, making swift and informed decisions that affect overall operations. Tailored training programs for District Officers should be developed to provide them with essential knowledge and skills. This training should encompass all facets of disaster management, from immediate response to long-term recovery, ensuring a well-organized and effective command structure.

Clear of Roles and Responsibilities

Implementing clear policies and Standard Operating Procedures (SOPs) that outline the roles and responsibilities of each agency in disaster management is crucial. These policies should be regularly reviewed and updated to incorporate best practices and lessons learned from previous disasters. Clear guidelines will prevent task duplication, ensure efficient resource allocation, and improve overall coordination.

Strengthen Coordination with NGOs

Enhancing coordination with non-governmental organizations (NGOs) is crucial to ensure that victims receive consistent and fair aid. A formal coordination mechanism should be established to align NGO efforts with those of governmental agencies, guaranteeing timely and adequate support for all victims. This approach will prevent discrepancies in assistance and reduce the burden on the responsible agencies. Conduct regular coordination meetings with NGOs to discuss strategies, exchange information, and address any issues. These meetings will enhance collaboration and ensure all parties are aligned, thereby improving the overall effectiveness of disaster response operations.

Community Awareness

Boosting community awareness and preparedness is essential for a rapid and effective disaster response. Regular programs should inform the public about disaster risks, evacuation procedures, and available resources. Additionally, community engagement initiatives can promote active participation in disaster preparedness activities. Community-based response plans should be created in partnership with local authorities and community leaders. These plans should detail specific actions that community members can take during a disaster to ensure they are well-prepared, thereby reducing casualties and property loss.

Adopting these strategies can greatly enhance integrated inter-agency coordination for effective disaster management in Klang Valley. These actions will improve communication, training, role clarity, NGO coordination, continuous improvement, and community preparedness, leading to a more robust and efficient disaster response framework.

Summary of Main Findings

The table below summarizes the main findings from the study, highlighting the key factors that affect inter-agency coordination during disaster response in Klang Valley.

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Table 3. Summary of Main Findings

Main Finding	Description	Implications
Communication Challenges	GIRN is effective only over short distances, leading to difficulties in conveying instructions and sharing information during disaster response.	Improved communication tools and systems are necessary for effective disaster response in remote areas.
Coordination Issues	Lack of prior planning and excessive bureaucracy led to chaotic and delayed disaster response efforts.	Streamlined coordination protocols and reduced bureaucratic hurdles are essential for efficient operations.
Training and Role Clarity	Regular training is needed to enhance knowledge, and role clarity among agencies is critical to avoid conflicts during operations.	Comprehensive and frequent inter-agency training programs are needed to improve operational readiness.
Community Awareness	Residents in Selangor lacked awareness during the 2021 flood, leading to delayed evacuation.	Increased community awareness programs and legislation to ensure timely evacuation during disasters.
NGO Coordination	Disparities in aid distribution by NGOs led to dissatisfaction among victims.	Formal mechanisms for coordinating NGO efforts with governmental agencies are needed to ensure fair support.
Inappropriate Military Assets	Use of combat boats that are unsuitable for rescuing flood victims hindered effective rescue operations.	Proper assessment and deployment of suitable assets are crucial for effective disaster response.
Joint Training	Lack of joint training with other agencies; training is often limited to ATM personnel only.	Establish joint training exercises involving all relevant agencies to improve coordination and response.

Source: Illustrated by The Author

Conclusion

This study aimed to identify and examine the key components of integrated interagency collaboration necessary for effective disaster management in Klang Valley. The study achieved its objectives by exploring the experiences and challenges faced by various agencies during past disaster events, including pandemics, landslides, and floods. Through in-depth interviews and observations, the research highlighted critical strategies for improving interagency coordination, such as enhancing communication infrastructure, conducting regular joint training exercises, and establishing clear policies and Standard Operating Procedures (SOPs).

The findings confirm that effective communication, clear role definition, and organized cooperation are fundamental to achieving efficient disaster response efforts in Klang Valley. The study also emphasized the importance of strengthening coordination with non-governmental organizations (NGOs) and enhancing community awareness and preparedness.

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By implementing the recommended strategies, Klang Valley can develop a more robust disaster management framework that is better equipped to handle future disasters.

Achievements of Study Objectives

The primary objectives of this study were to investigate the current state of interagency coordination in disaster management within Klang Valley and to propose actionable recommendations for improvement. These objectives were successfully met, as the study identified the major challenges and provided specific strategies to address them. The research has contributed valuable insights into the importance of integrated interagency collaboration and highlighted areas where enhancements can lead to more effective disaster response and management.

Limitations of the Study

While the study provides significant insights, it is important to acknowledge its limitations. First, the research was limited to a qualitative approach, which, while offering in-depth understanding, may not fully capture the breadth of interagency coordination issues. The study was also geographically confined to Klang Valley, which means that the findings may not be entirely generalizable to other regions with different socio-economic and environmental contexts. Furthermore, the reliance on self-reported data from agency representatives could introduce bias, as respondents might portray their agencies in a favorable light or underreport challenges.

Recommendations for Future Research

Future studies could address these limitations by adopting a mixed-methods approach, combining qualitative and quantitative data to provide a more comprehensive analysis of interagency coordination in disaster management. Expanding the research to include other regions in Malaysia or even other countries could offer comparative insights and contribute to the development of best practices applicable in various contexts. Additionally, future research could explore the long-term impact of implemented strategies on disaster management effectiveness, particularly in response to climate change-related disasters.

In conclusion, this study underscores the critical need for enhanced interagency collaboration in disaster management within Klang Valley. While the research achieved its objectives, ongoing efforts and further research are essential to continuously improve disaster preparedness and response strategies, ensuring the safety and resilience of communities in the face of future disasters.

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