Journal of Information Systems Engineering and Management
2026, 11(3s)
e-ISSN: 2468-4376
https://www.jisem-journal.com/

Research Article

Exploring Citizen Awareness of AI Technologies in Disaster Preparedness and Risk Reduction

Ezekiel R. Borja[1], Davood Pour Yousefian Barfeh[2]
[1]*National University, Manila, Philippines*
[2]*National University, Manila, Philippines*

ARTICLE INFO

Received: 30 Dec 2024

Revised: 05 Feb 2025

Accepted: 25 Feb 2025

ABSTRACT

This study seeks to explore the level of awareness, perceptions, trust, and concerns of citizens about the application of Artificial Intelligence (AI) technologies in disaster preparedness and risk reduction. With the help of a descriptive quantitative approach, the data were collected from 100 respondents across cities and municipalities across the country through an online survey. The results show that while the citizens demonstrate awareness of both disaster preparedness and knowledge in AI concepts, their perception of AI's effectiveness in disaster prediction and response remains neutral. The respondents express uncertainty about AI's capability to produce accurate, reliable, and life-saving capabilities, resulting in the least trust and limited acceptance of AI-generated disaster result information. The issues and concerns include data privacy, technological failure, and the necessity of maintaining human intervention in AI-based systems. Overall, the study highlights a gap between trust and public awareness. Featuring the importance of transparency, proper communication, and community-level education to improve public confidence in AI-supported disaster management systems.

Keywords: Artificial Intelligence, Disaster Preparedness, Risk Reduction, Citizen Awareness, Early Warning Systems, Public Perception

INTRODUCTION

The Philippines is considered one of the most disaster-prone countries in the world due to frequent exposure to typhoons, floods, earthquakes, and other natural disasters, resulting in long-term socio-economic problem losses and impacts [1]. The different government agencies always strengthen the preparedness and early-warning system capabilities with the help of the Department of Science and Technology's (DOST) LiDAR-based flood modelling application through the project NOAH [2]. The interest in using Artificial Intelligence (AI) increases, which enhances the application, prediction, detection, and response mechanisms.

Studies from international communities also demonstrate how AI and machine-learning-based systems can improve disaster prediction accuracy and early-warning information by combining complex weather and environmental data patterns [3]. In the Philippine-context, AI-based tropical cyclone rainfall models have shown predictive performance. It outperforms a few traditional approaches for identifying rainfall activities [4]. Despite the technological advancements, there are concerns in relation to transparency, trust, and ethical consideration in AI-based results and emergency systems, specifically when the unclear model explanations heavily influence the public understanding during emergencies [5].

With the list of challenges mentioned, the importance of assessing the citizen awareness, perceptions, and trust about the use of Artificial Intelligence in disaster preparedness, response, and risk reduction is vital to ensure the effective use and acceptance of the public of AI in the Philippines.

STATEMENT OF THE PROBLEM

The sudden increase in the use of Artificial Intelligence in both disaster preparedness and risk reduction introduces promising benefits for prediction and early-warning signals, the public is still unclear when it comes to knowledge, understanding, trust, and acceptance of AI in the Philippines. The communities rely on timely and reliable

Journal of Information Systems Engineering and Management
2026, 11(3s)
e-ISSN: 2468-4376
https://www.jisem-journal.com/

Research Article

information during disaster events; it is essential to examine how citizens see the AI-driven applications ensure their effectiveness when they are used. Specifically, this research aims to answer the following questions:

1. What is the level of citizen awareness of disaster preparedness measures?
2. What is the level of citizen awareness of artificial intelligence (AI) technologies?
3. How do citizens perceive the use of AI in disaster preparedness and risk reduction?
4. What is the level of trust and acceptance toward AI-generated disaster information?
5. What concerns do citizens have regarding AI integration (e.g., accuracy, privacy, system failure, human oversight)?

How do awareness, perception, trust, and concerns influence citizens' willingness to rely on AI-supported disaster preparedness systems?

OBJECTIVES

A. General Objective.

To assess the level of awareness, perceptions, trust, and concerns of citizens about the application of Artificial Intelligence (AI) in risk reduction and disaster preparedness.

B. Specific Objectives.

1. To identify the level of citizen awareness of disaster preparedness and the use of Artificial Intelligence technologies.
2. To assess the perception of the use of AI in both disaster preparedness and risk reduction, and the level of trust and acceptance toward AI-generated disaster information.
3. To identify citizens' concerns regarding the integration of AI, particularly issues related to accuracy, privacy, data security, system reliability, and human oversight.
4. To analyze how awareness, perception, trust, and concerns influence citizens' willingness to rely on AI-supported disaster preparedness systems.

LITERATURE REVIEW

Disaster Vulnerability and Preparedness in the Philippines

The Philippines, one of the countries in the world identified as the most disaster-prone nation due to a high exposure to different disasters such as typhoons, floods, and earthquakes, which leads to high-impact socio-economic losses and long-term vulnerabilities [1]. To strengthen the foundational preparedness of nations' disaster response, the different government agencies, such as the Department of Science and Technology, have already implemented an advanced hazard-mapping information system equipped with early-warning measures, which includes the LiDAR-based flood framework with the help of Project NOAH, which improves the risk assessments in local level [2].

Global Advancements in AI-Driven Hazard Prediction

The advantages of Artificial Intelligence (AI) already impact disaster forecasting worldwide. Different machine-learning models are capable of processing complex meteorological and environmental datasets, increasingly improving the forecast accuracy of different natural disasters [3]. Systematic reviews also confirmed the strong performance in earthquake early-warning systems, demonstrating the reliability of neural-network and probabilistic models in seismic prediction activities [6]. The sudden increase in cited AI-driven research areas creates a global scientific community's confidence in its potential [7].

Journal of Information Systems Engineering and Management
2026, 11(3s)
e-ISSN: 2468-4376
https://www.jisem-journal.com/

Research Article

Local Applications of AI in Philippine Disaster Forecasting

The advantages of AI capabilities are increasingly evident in the Philippine context via the forecasting environment. Recent studies show that the use of AI-based tropical cyclone rainfall model like self-organizing maps and random forest algorithms, outperforms traditional forecasting techniques. And shows strong predictive capabilities for determining heavy-rainfall events [4]. The international community initiatives, like the United Nations' Early Warnings for All (EW4All), also applied the AI-enhanced hazard detection and prediction with alert dissemination, which supports the preparedness efforts in different vulnerable regions, including Southeast Asian countries [8].

Ethical, Transparency, and Trust Issues in AI-Enabled Emergency Systems

Despite AI advantages, there are concerns about transparency, ethical issues, and trust remains a major barrier to adopting its benefits. Existing studies also show that many AI-based emergency systems still lack clear model explanations, creating "black-box" effects that reduce user confidence, particularly during critical situations [5]. Ethical concerns still persist, such as data privacy, fairness, accountability, and responsibility when AI is deployed in critical situations [9].

Citizen Awareness, Preparedness, and Technology Acceptance

In the Philippine context, it reveals that the communities are generally knowledgeable in disaster awareness but vary in preparedness, with disparities due to several factors such as age, income, and education [10]. Even with the existence of digital tools that improve engagement and information access, the gaps persist in terms of technological literacy, trust, and acceptance, specifically for AI-generated hazard information. The findings still illustrate the need for public awareness and perception to ensure the accurate implementation of AI-driven disaster models.

RESEARCH METHODOLOGY

Research Design

A descriptive quantitative approach was used in this study. To systematically assess the level of awareness, perceptions, and existing conditions of the respondents about employing Artificial Intelligence (AI) technology in disaster preparedness. The used design allows the research to collect numerical data through an online structured survey and process it with the use of statistical techniques, such as getting the weighted mean for identifying the level of awareness, determining trends, and interpreting the response of participants without changing any variables. The descriptive research focuses on getting the characteristics of a population as they naturally happen, making it compatible for different studies that aim to generate an accurate profile of respondents, trust, perceptions, knowledge, and concerns on a provided topic. With the help of this type of design, the study can group the participants' responses and present clear, objective, and evidence-based insights into their understanding and acceptance of AI technologies in risk reduction and disaster preparedness.

Participants of the Study

TABLE I. PARTICIPANTS OF THE STUDY

City / Municipality		Count	
		Frequency	***Percentage***
1.	Caloocan City	3	3%
2.	City of Antipolo, Rizal	2	2%
3.	City of Dasmariñas, Cavite	1	1%
4.	City of Davao, Davao Region	1	1%
5.	City of Dipolog, Zamboanga del Norte	1	1%
6.	City of General Trias, Cavite	1	1%
7.	City of Isabela, Basilan	1	1%
8.	City of Meycauayan, Bulacan	2	2%
9.	City of San Jose del Monte, Bulacan	2	2%
10.	City of Santa Rosa, Laguna	1	1%

Journal of Information Systems Engineering and Management
2026, 11(3s)
e-ISSN: 2468-4376
https://www.jisem-journal.com/

Research Article

11.	City of Santiago, Isabela	1	1%
12.	Makati City	1	1%
13.	Malabon City	6	6%
14.	Manila City	2	2%
15.	Marikina City	4	4%
16.	Municipality of Baras, Rizal	1	1%
17.	Municipality of Binangonan, Rizal	2	2%
18.	Municipality of Governor Generoso, Davao Oriental	3	3%
19.	Municipality of Rodriguez, Rizal	12	12%
20.	Municipality of San Mateo, Rizal	1	1%
21.	Municipality of Sindangan, Zamboanga del Norte	1	1%
22.	Municipality of Taytay, Rizal	1	1%
23.	Pasig City	1	1%
24.	Quezon City	43	43%
25.	San Juan City	1	1%
26.	Taguig City	4	4%
27.	Valenzuela City	1	1%
	Total:	**100**	**100%**

Table I shows the distribution of the participants of the study. 100 Participants from different cities and municipalities across the Philippines who voluntarily submitted their responses thru online survey. The majority of responses came from Quezon City, Municipality of Rodriguez, Rizal, Malabon City, Marikina City, and Taguig City. A smaller portion of respondents are from different areas such as the Province of Bulacan, Cavite, Laguna, Isabela, Zamboanga del Norte, Basilan, and the Davao Region. The respondent's geographic distribution shows that most participants came from different urban and peri-urban communities; the majority were from the National Capital Region (NCR) and the Province of Rizal. The collected data from the participants is essential for assessing the citizen awareness and attitudes toward AI technologies in disaster preparedness and risk reduction.

Sampling Technique

The researcher used the convenience sampling technique, an example of a non-probability method, which chose the participants according to their willingness to respond and availability. The appropriateness of the technique to the proposed study is because the Philippines experiences typhoons annually, making it important to collect insights quickly and efficiently from different communities that are easily reachable through online communication. Through online, the survey distributed via Google Forms, the researchers were able to gather responses from participants from different cities and municipalities with internet access and able to participate despite different weather conditions, geographical constraints, or disaster-related interruptions. But, this technique does not ensure the full representation of the entire population, allowing the researchers to collect timely and related data from a different set of respondents. The effectiveness of this technique is essential for understanding public awareness and perceptions of participants about AI in disaster preparedness within the Philippines, which frequently experiences natural disasters.

Research Instruments

This study uses an online structured questionnaire via Google Forms as its primary research instrument to gather responses on citizens' awareness and perceptions of Artificial Intelligence (AI) in risk reduction and disaster preparedness. It allows the respondents from different cities and municipalities to participate conveniently through Google Forms. The instrument is composed of five major components aligned to the study's variables:

Part I - Awareness of Disaster Preparedness

Part II - Awareness of Artificial Intelligence (AI)

Journal of Information Systems Engineering and Management
2026, 11(3s)
e-ISSN: 2468-4376
https://www.jisem-journal.com/

Research Article

Part III - Perception of AI in Disaster Preparedness

Part IV - Trust and Acceptance of AI

Part V - Concerns about AI

It enables the respondents to indicate the level of their agreement with each component.

Data Gathering Procedures

A modified questionnaire was used and validated by the experts to ensure accuracy. The items were appropriate, accurate, and aligned with the study's objectives related to disaster preparedness and the use of Artificial Intelligence (AI). After validating the questionnaire, the instruments were finalized and used as the primary tool for collecting the necessary information to answer the research questions. The researcher must also secure informed consent from each participant. The respondents were also informed of the purpose of the study, the nature of their participation, and the confidentiality of their responses.

Statistical Treatment of Data

The weighted mean was employed to analyze the quantitative data gathered from the provided questionnaire. It also employs a 5-point Likert scale, and it uses the weighted mean to properly identify the respondent's level of awareness, perception, trust, and concerns about the use of Artificial Intelligence (AI) in disaster preparedness and risk reduction.

Formula:

$$WM=\frac{\sum_{i=1}^{n} fiXi}{N} \quad (1)$$

Where:

W = weighted mean

N = number of terms to be averaged

f(i) = weights applied to x values

x(i) = data values to be averaged

Likert Scale

TABLE II. FIVE-POINT LIKERT SCALE

Scale Point	Interpretation
5	Strongly Agree
4	Agree
3	Undecided
2	Disagree
1	Strongly Disagree

Table II five-point Likert Scale was used, and its interpretation is shown above.

Weighted Mean Interpretation Table

TABLE III. WEIGHTED MEAN INTERPRETATION TABLE

Weighted Mean Score	Interpretation
4.21 – 5.00	Strongly Agree
3.41 – 4.20	Agree

Journal of Information Systems Engineering and Management
2026, 11(3s)
e-ISSN: 2468-4376
https://www.jisem-journal.com/

Research Article

2.61 – 3.40	Undecided
1.81 – 2.60	Disagree
1.00 – 1.80	Strongly Disagree

Table III shows the weighted mean interpretation. The score is based on dividing the 5-point Likert scale into five equal ranges of 0.80, producing the weighted mean score. The mean score classifies the respondents' interpretation, starting from "Strongly Disagree" to "Strongly Agree" to create a clearer analysis of survey results.

RESULTS AND DISCUSSION

One-Hundred (100) participants across the country participated in the survey. The results were calculated using the weighted mean formula and interpreted using the weighted mean interpretation table.

TABLE IV. AWARENESS OF DISASTER PREPAREDNESS

No.	Questions	Weighted Mean	Interpretation
1.	I am familiar with the basic concepts of disaster preparedness.	3.86	Agree
2.	I know what to do before, during, and after common natural disasters.	3.96	Agree
3.	My community provides enough information about disaster readiness.	3.35	Undecided
4.	I feel confident in my ability to respond to emergencies.	3.63	Agree
	Total Weighted Mean:	**3.70**	**Agree**

Table IV represents the awareness of respondents in disaster preparedness. It demonstrates that the respondents were aware of basic concepts in disaster preparedness, with a WM of 3.86, followed by knowing what to do before, during, and after common natural disasters, with a WM of 3.96. These results show that the respondents are knowledgeable about disaster preparedness, possibly due to the influence of national disaster advisories and community-based drills. However, the community information about disaster readiness got the lowest score with a WM of 3.35. It clearly shows the uncertainty of local government units to provide sufficient information about disaster-related events. Despite regular announcements and advisories, institutional communication may not be consistent, accessible, visible, or comprehensive. With an overall WM of 3.70, it shows that the community is moderately prepared but fully depends on stronger information dissemination from different government agencies.

TABLE V. AWARENESS OF ARTIFICIAL INTELLIGENCE (AI)

No.	Questions	Weighted Mean	Interpretation
1.	I am familiar with the term "Artificial Intelligence (AI)."	4.55	Strongly Agree
2.	I understand how AI is used in everyday technologies.	4.31	Strongly Agree
3.	I have encountered news or content about AI in disaster management.	3.64	Agree
4.	I believe AI is already being used in the Philippines.	4.36	Strongly Agree
	Total Weighted Mean:	**4.21**	**Strongly Agree**

Table V. shows the awareness of respondents about Artificial Intelligence (AI). With the WM of 4.55, it shows that the respondents strongly agree that they are familiar with AI concepts and knowledgeable about the functions and use across digital platforms, digital assistants, and social media algorithms, with a WM of 4.31. The respondents believe that AI is already used in the Philippines, with a WM of 4.36 suggest that people already recognize the

Journal of Information Systems Engineering and Management
2026, 11(3s)
e-ISSN: 2468-4376
https://www.jisem-journal.com/

Research Article

increasing presence of AI in both public and private sectors. Meanwhile, the awareness of respondents in the inclusion of AI in disaster management got a WM of 3.64, which still indicates a meaningful exposure. In summary, with a total WM of 4.21, the existence of AI to the public is not new, and the awareness is well-established, which recommends the introduction of AI in disaster preparedness and risk reduction initiatives.

TABLE VI. PERCEPTION OF AI IN DISASTER PREPAREDNESS

No.	Questions	Weighted Mean	Interpretation
1.	AI can help predict natural disasters more accurately.	2.99	Undecided
2.	AI technologies can improve early warning systems.	3.68	Agree
3.	AI can help reduce risks and save lives during disasters.	3.21	Undecided
4.	AI can provide faster and more reliable disaster alerts.	3.40	Undecided
5.	AI can assist authorities in better planning and preparation.	3.44	Agree
	Total Weighted Mean:	**3.34**	**Undecided**

Table VI. Illustrates the perception of respondents about AI in disaster preparedness. Regardless of the high general awareness of respondents about AI knowledge, it still remains neutral or uncertain about the use or application in disaster preparedness, according to the WM scores. The WM of 2.99, it shows that the respondents are still undecided about AI's accuracy in predicting natural disasters. The ability of AI to save lives or reduce risk with a WM of 3.21, and the potential of AI to create or provide a more reliable alert with a WM of 3.40. The results create a noticeable hesitancy about the capability of AI in life-saving, generating reliable and precise data, which may stem from limited exposure to the public with real-world application or a lack of information about the existence of AI-based systems in disaster risk reduction in the Philippines. The only question that got the highest score with a WM of 3.68 is whether the AI can improve early warning systems. Even though the respondents recognize the benefits of using AI, still not convinced about its effectiveness. In summary, the results of public knowledge about AI in disaster preparedness are promising but not fully validated. Highlighting the additional need for clear information dissemination, real-life demonstrations, practice, and evidence-based application to strengthen the confidence of the public in AI-driven disaster preparedness.

TABLE VII. TRUST AND ACCEPTANCE OF AI

No.	Questions	Weighted Mean	Interpretation
1.	I trust AI-generated disaster warnings.	2.95	Undecided
2.	I believe AI information is more reliable than manual reports.	2.87	Undecided
3.	I am comfortable relying on AI tools during emergencies.	2.91	Undecided
4.	I believe AI technologies should be implemented more widely in disaster management.	3.28	Undecided
	Total Weighted Mean:	**3.00**	**Undecided**

Table VII. Illustrates the trust and acceptance of respondents in AI. The respondents are still undecided about trusting the applications of AI in disaster events, with a WM of 3.00. The respondents are still unsure about totally relying on AI-generated warnings, with a WM of 2.95, trusting AI more than manual data with a WM of 2.87, or relying on AI during emergencies with a WM of 2.91, which clearly shows a lack of confidence in its reliability. Another, AI use in disaster management got an undecided response with a WM of 3.28. It creates a strong awareness and trust gap, which means people may know what AI is, but not be ready to rely on it in critical situations and decisions. It only shows the necessity of information, transparency, good communication, and exposure to create public trust about the use of AI technologies.

Journal of Information Systems Engineering and Management
2026, 11(3s)
e-ISSN: 2468-4376
https://www.jisem-journal.com/

Research Article

TABLE VIII. CONCERNS ABOUT AI

No.	Questions	Weighted Mean	Interpretation
1.	I am concerned about the accuracy of AI-generated alerts.	3.62	Agree
2.	I worry about privacy and data security when using AI tools.	3.90	Agree
3.	I am concerned about technology failure during disasters.	4.00	Agree
4.	I believe humans should still have the final decision over AI recommendations.	4.20	Agree
	Total Weighted Mean:	**3.93**	**Agree**

Table VIII. Illustrates the concerns about AI. It shows that the respondents express a strong concern about the application of AI in disaster preparedness and risk management, with a WM of 3.93. The respondents worry about the accuracy of AI-generated alerts with a WM of 3.62, privacy and data security risk when using AI tools with a WM of 3.90, and the possibility of failures during critical situations with a WM of 4.00. It also shows that the individuals must have final decisions over AI recommendations with a WM of 4.20. Despite technological innovation that is open to the public, there are still concerns surrounding the use of AI systems, which must be safe, reliable, and ethically implemented in disaster preparedness and risk reduction. The importance of human intervention prefers AI to innovate or enhance, but not to replace human decision-making in disaster preparedness.

CONCLUSION

The overall results only show that the respondents across different cities and municipalities have a good level of awareness in terms of disaster preparedness and a strong awareness of AI, which indicates a strong familiarity with both topics. Despite strong awareness, their perception about the use of AI and effectiveness in disaster preparedness remains undecided, with many being hesitant about its accuracy and life-saving capabilities. The uncertainty aligns with the findings on trust; it creates hesitation in respondents to rely on AI-generated warnings or relying on the results of AI during emergencies and crucial situations, showing a clear gap in awareness and trust. Also, noticeable that the highest scores are found in the concerns item where the majority of respondents agreed that the accuracy issues, privacy concerns, technological failure, and the need for human intervention are important considerations. It only shows that the AI is promising but not yet trustworthy, highlighting the need for strong reliability, clear and transparent results, and still human intervention and decision-making in AI-based disaster management.

RECOMMENDATION

1. National and Local Government agencies should create an organized and accessible information dissemination that explains how Artificial Intelligence (AI) works in risk reduction and disaster preparedness, which includes the beneficial use, limitations, and real-life applications, such as in disaster events. It possibly improves the public trust when people are knowledgeable about the use of technology and see the evidence of accuracy and safety.
2. Technological failures may occur during its use. To address the issue, AI systems must provide transparent performance indicators, demonstrations, pilot tests, and community-based education and dissemination on how the AI will contribute to early warning systems and preparedness.
3. Disaster preparedness with the integration of AI-based systems must serve as a support system, not replacing human intervention. There should be a protocol for the validation of AI outputs acted upon by the experts.
4. Different government agencies must still adopt the policies from data and privacy laws, which ensure that the data collected using AI tools is secured, ethically managed, and monitored, and used for its purpose only. Posting privacy policies and regular audits ensures that the data is protected.
5. AI systems must have a backup or contingency plan in case of failure. Communicating with the public channels, such as SMS notifications, social media, and radio announcements, ensures continuous operation when the systems are disrupted.

6. Future studies should include a geographic representation, like a Web-based Graphical Information System, including high-risk areas. The vital information will provide a clear understanding of public perceptions across the country.

REFERENCES

[1] Arsenia S. Gonzales and Romualdo F. Go II, "Review of the National Disaster Risk Reduction and Management Fund (NDRRMF)." CPBRD Discussion Paper, 2025. [Online]. Available: https://cpbrd.congress.gov.ph/wp-content/uploads/2025/02/DP2024-11-A_Review_of_the_NDRRMF_Final.pdf

[2] Suzette Dalumpines and George Robert Valencia III, "DREAM, NOAH to report completed LiDAR-based flood models," DOST-STII, Oct. 2013. [Online]. Available: https://www.stii.dost.gov.ph/132-dream-noah-to-report-completed-lidar-based-flood-models

[3] H. Jain, R. Dhupper, A. Shrivastava, D. Kumar, and M. Kumari, "Leveraging machine learning algorithms for improved disaster preparedness and response through accurate weather pattern and natural disaster prediction," Front. Environ. Sci., vol. 11, p. 1194918, Nov. 2023, doi: 10.3389/fenvs.2023.1194918.

[4] C. G. Mesias and G. Bagtasa, "AI -Based Tropical Cyclone Rainfall Forecasting in the Philippines Using Machine Learning," *Meteorol. Appl.*, vol. 32, no. 4, p. e70083, Jul. 2025, doi: 10.1002/met.70083.

[5] J. Visave, "Transparency in AI for emergency management: building trust and accountability," AI Ethics, vol. 5, no. 4, pp. 3967–3980, Aug. 2025, doi: 10.1007/s43681-025-00692-x.

[6] P. Kolivand et al., "A systematic review of Earthquake Early Warning (EEW) systems based on Artificial Intelligence," Earth Sci. Inform., vol. 17, no. 2, pp. 957–984, Apr. 2024, doi: 10.1007/s12145-024-01253-2.

[7] M. Kappi and B. Mallikarjuna, "Artificial intelligence and machine learning for disaster prediction: a scientometric analysis of highly cited papers," Nat. Hazards, vol. 120, no. 12, pp. 10443–10463, Sep. 2024, doi: 10.1007/s11069-024-06616-y.

[8] UNDRR, "Global: AI-powered early-warning systems under the Early Warnings for All (EW4All) initiative," Jul. 2025. [Online]. Available: https://www.undrr.org/resource/case-study/global-ai-powered-early-warning-systems-under-early-warnings-all-ew4all

[9] J. Visave, "AI in Emergency Management: Ethical Considerations and Challenges," J. Emerg. Manag. Disaster Commun., vol. 05, no. 01, pp. 165–183, Jun. 2024, doi: 10.1142/S268998092450009X.

[10] Joanna Mae Yoro, Angela Jane E. Vicente, Seantelle R. Vidad, Dhon Jerome Vicente, and Jonathan M. Laranang, "Community Residents' Awareness and Preparedness on Disaster Management," Int. J. Sci. Eng. Manag. IJSEM, vol. 10, no. 10, pp. 121–146, Oct. 2023.