RISK COMMUNICATION AND COMMUNITY'S SAFETY IN HULU LANGAT DURING POST FLOOD HAZARDS

Nur Hidayah Salam Hussain, Muhammad Hakimi Tew Abdullah*, Norwati Roslim
Universiti Teknologi MARA, Negeri Sembilan
**muhammad_hakimi@uitm.edu.my*

Abstract
In Malaysia, flooding can potentially have devastating effects. During the previous flood catastrophe, social media, notably Twitter, was heavily used to disseminate natural disaster information. However, focusing on various types of social media use during a natural disaster in a country like Malaysia, where floods can be severe, could result in the loss of both human lives and financial liabilities. Individuals who are at risk need to be made aware of the danger and precautions to take. Effective risk communication will have a greater influence on the community in terms of disaster risk mitigation in the future. Through risk communication, people can understand more of their acceptance of risk communication and use social media to get information about flood disasters. Hence, this study aimed to investigate the relationship between risk communication and community's safety in Hulu Langat during post-flood hazards. This study was conducted quantitatively with 351 communities of Nanding, Hulu Langat participating in this survey. Data were collected through self-administered questionnaires and analysed descriptively and inferentially using Statistical Package for the Social Sciences (SPSS). The results showed the community has increased their awareness on risk communication and changed their behaviour towards it. The findings also showed the relationship between risk communication of community behaviour, of emergency agencies messages through social media usage and of risk perception towards community safety This study contributes an understanding of the factors that influence flood risk preparedness. As a result, the implications of this study can aid and may urge the community to pay more attention to the government's alert signal or information in advance of flood threats.

Keywords: Risk communication, Safety, flood hazards, social media, Hulu Langat

1.0 Introduction

Thousands of individuals all around the world are impacted by natural disasters and other urgent circumstances each year. A tragedy occurs whenever natural occurrences encounter with people who are weak or defenceless [1]. The process of communicating the risks involved is an integral part of any risk management strategy. The way communication is done and the aims that it seeks to achieve change significantly depending on whether the communication is done several hours before an event that is planned crisis communication or during typical periods. Kurniasari, Mukhiar and Saad [2] stated that by having an extensive knowledge of crisis communication may allow practitioners or crisis communicators to devise innovative approaches to successfully involving stakeholders, particularly citizens.

In Malaysia, flooding is a rather typical event. Individuals who are at risk need to be made aware of the danger, precautions to take, the appropriate response time, and the benefits of receiving warnings in order to increase the number of times they are alerted [3]. Since flooding is the most common type of natural disaster and that it can have devastating effects, it is imperative that information on flooding

be made publicly accessible and subjected to consistent scrutiny. The availability of technically better risk assessment tools for professionals, in conjunction with the building of protective structures, enhances hazard protection. However, the effect of these factors on the reduction of the risk of catastrophic events is limited. For instance, these precautions contribute to the "barrier effect," often known as the "feeling of safety" [4].

This was evident in the most recent monsoon flood started on December 17, 2021, after it had been raining heavily for many days. On the 18th of December 2021, the Klang district of Selangor received 316 millimetres of precipitation over the course of one day. In the meantime, flooding in Hulu Langat was caused by a water flow from the surrounding mountains, as well as by construction activities on a highway project near here in Kampung Asahan, Kuala Selangor, which broke through an infrastructure and caused water to overflow. Subsequently, flood risk management should place an emphasis on cultivating social capacities within the community that is at risk, such as knowledge of potential dangers and a sense of personal responsibility [5]. Flood risk management should also prioritise the development of social capacities in the affected community, such as risk awareness and a sense of self-sufficiency.

The Malaysian National Disaster Management Agency, should provide weather warnings on a regular basis, such as the yellow alert for predicted continuous rain. The challenge in this situation is whether long-term planners, legislators, and people can learn about flood risk communication using social media. The researchers want to examine how risk is conveyed in this study, considering the direction of communication, the responsibilities of the communicator and the receiver, and the communication's aim. This study aimed to investigate the flood calamity in Hulu Langat. The villagers of Hulu Langat considered the 2021 flash flood as the worst natural calamity they had ever encountered. According to a post published by The Vibes' sister portal Getaran, the calamity devastated a lot of residences, infrastructure, and personal possessions, including automobiles. Residents in Hulu Langat were not expecting their homes to be completely submerged in the flood. Hence, this study intended to answer the following hypothesis;

1. There is a relationship between risk communication of community behaviour towards community safety among Hulu Langat community.
2. There is a relationship between risk communication of emergency agencies messages through social media towards community safety among Hulu Langat community.
3. There is a relationship between risk communication of risk perception towards community safety among Hulu Langat community.

2.0 Literature Review

Just spreading information about the hazard and the risks that relate to it will not result in a significant shift in attitude, perception, or behaviour [6]. The first step in communicating the risk of flooding is by locating areas that are at risk of being flooded, and the second step is telling those who are at risk of being flooded when flooding is anticipated to take place. Both phases are extremely important when it comes to supporting those who are at risk in preparing for, predicting, and taking action to lessen the consequences of flood catastrophes. As a result, it is still predominated by an expert-to-lay viewpoint, which is founded on the idea of a knowledge gap, and thus is unable to properly convey flood hazard to communities. The sort of information, the function of social media, and the communication medium that has been employed in this flood risk assessment are the indications that are contained inside this variable.

Risk Communication

Communicating the risk of flooding must incorporate not just the sharing of knowledge but also a translation of information with a specific purpose in mind. Three most essential components in examining the significance of risk communication are the message, the messenger, and the media. When crafting a message, it is necessary to determine not only what

the audience wishes and needs to know, but also the facts that, if not stressed, the audience is likely to misunderstand. The selection of the appropriate messenger is another essential component of risk communication. It has been discovered that competence and expertise contribute more to trust in messengers when the environment is not very stressful. However, while dealing with a lot of pressure, it is more important to be kind and open than it is to be competent and knowledgeable [7].

Rollason et al. [8] stated that flood risk communications could therefore be judged to be counterproductive. They attempt to provoke a heightened perception of flood risk, without providing the information required by users to establish strong, positive threat and coping appraisals. In other words, these communications are trying to make the situation appear worse than it is. Future flood communications need to shift away from the basic flood threat messages that are now being disseminated to those at risk in order to foster positive threat and coping evaluations.

Flood literacy repositions persons at risk as active agents in controlling local flood risk. This means that those at risk can make their own judgements and decisions on risk and protective behaviour rather than depending on expert information. Flood literacy develops local resilience in a way that simple, threat-based communications cannot. This is because it provides at-risk individuals and communities with the information necessary to assess their personal level of risk and how they might be affected, determine when a flood might be about to occur and how it might affect them, and determine appropriate actions by which they might mitigate potential flood impacts. In other words, flood literacy empowers people in this way so that they can determine when a flood might be about to occur and how it might affect them. Hence, an improved flood risk communications are necessary to accomplish the goal of encouraging effective flood literacy [8].

Emergency Agencies Messages through Social Media

Floods have long been a major destructive danger in Malaysia owing to a mix of factors both natural and human (Center for Excellence in Disaster Management and Humanitarian Assistance). Flooding is regarded as a frequent occurrence in Malaysia since history has demonstrated that floods occur on a yearly basis.

The government is in charge of flood disaster management initiatives to assist flood-affected populations. They are the ones that handle emergency agencies towards Malaysian communities that are faced with flood hazards. Rescue efforts, relief goods and temporary shelters, financial help, and other forms of support are provided. In Malaysia, both the national and state governments are responsible for mitigating or preventing the flood's impact. As a result, the government has the status of legally associated volunteers. Most nations use flood risk management, which is a strategy framework for assessing, evaluating, and mitigating flood effects. In general, governments hold themselves accountable in all aspects of flood risk management, which might limit the responsibilities of the private sector and nongovernmental organisations. This is because flood disaster management in many poor nations is centred on what is known as a "strategic approach," in which the government responds after catastrophes occur [9].

In terms of human and economic damage, as well as occurrence, the Asia-Pacific region, including Malaysia, was the most hit by disasters. The situation is projected to worsen in the next years as a result of the predicted effects of climate change. Furthermore, as more people and assets relocate to high-risk locations, susceptibility and exposure to disasters increase. Malaysia has had a variety of disasters of differing magnitudes. Some of these were historic disasters in which numerous regulations, actions, and laws were altered or enacted. It also led to the development of specialised functional entities such as the HAZMAT team, the SMART team, and so on. Furthermore, as a result of the lessons learned from these tragic disasters, disaster response and management strategies in the country

have evolved. This is demonstrated by the implementation of the national strategy of inland major disaster management.

In Malaysia, the government has implemented several flood protection and mitigation techniques in order to minimise and limit property devastation and loss, mortality, and the spread of infectious illnesses. Flood prevention or mitigation refers to the steps, both structural and non-structural, taken to safeguard regions defined as flood zones [10].

Parallel to the advancement of technology, social media is increasingly popular and is frequently used to share and acquire information during natural disasters around the world. Social media are dynamic digital or mobile platforms that enable users to not only access but also discover or influence content [11]. The usage of social media is progressively becoming more essential as a primary source of information during disasters. For example, researchers discovered that community communication via social media such as social sites like Facebook, text and instant messaging apps, blogs, wikis, and other web forums were broadly used for assisting additional, often essential, and accurate, data dissemination within the larger society in a study that examined the 2007 wildfire disaster in Southern California, United States [11].

Social media can offer access to reliable and fast facts from both official and non-official sources during natural disasters, and it improves a sense of comfort and closeness to both family and responders. This allows the public to receive real-time and up-to-date information on the crisis, which may help people travel to safer places or find support and methods to help. The easy availability and low cost of social media has resulted in an upsurge in social networkers. These people have been using social media for communication since it is less expensive and easier to use than previous communication methods like short message systems (SMS) or email. The emergency authorities understood that by giving updated and approved information to the public via SM as official communication, they might improve emergency management. It gives options for engaging people during disaster management by releasing information to the public and getting information from them by employing the social media [12].

According to the American Red Cross, around 60% of the general population receives disaster-related information online, with Facebook (18%) and Twitter (15%) accounting for most of this figure [12]. During this vital phase, young generations are also more likely to utilise social media to provide relevant information. For example, in the recent flood tragedy in Hulu Langat, Shah Alam, and others, everyone on social media, particularly the younger generation, kept updated on the victims' rescue on Twitter. This appears on people's feeds even if they have scrolled numerous times. People are more inclined to share flood knowledge with others when they are motivated to help others [13]. Despite information published on social media may be erroneous, victims of disasters may believe that unofficial updates from people using social media are more reliable and valuable than non-existent government reports [12].

Risk Perception

When designing risk communication in flood risks, various variables must be considered, including unawareness, unconcern/sense of security, irresponsibility/risk denial, and predictability. According to Burningham, Fielding, and Thrush [14], the first variable is unawareness. Unawareness is a flood risk visibility that may be thought to be somewhat appropriate for persons who are generally happy and positive, and hence are not overly concerned. Invisibility of flood risk and flaws in the risk information requirements that should be supplied by individuals assumed to have professional expertise, such as risk managers who can foresee the danger that will occur.

The second aspect is unconcern/sense of security. This refers to those who normally enjoy themselves and have no need to be concerned about their surroundings. Even when they are confronted with risk occurrences or receive risk-related knowledge, their emotions do not change. They are poorly prepared, however, since they are more ready to accept the risk, given the rarity of major floods, that they would not suffer economically during their stay in flood-prone areas. Many of these folks would prefer to incur the risks of investing in and/or living in flood-prone locations. Flood risk presence may

be seen as more unpleasant for persons who have a greater perception of worry and negative attitudes about risks, such as nervousness.

The third element is irresponsibility/risk denial. These individuals express strong rejection and opposition to the risk, with the aim of overcoming and/or reducing it. However, once they are directly touched by a risk, they typically rely on others to limit their losses, such as insurance or other measures. Some of these individuals are ready to incur the risk of investing or residing in flood-prone locations.

The fourth one is controllability. This refers to persons who think they have adequately prepared for the risk and have sufficient control over it. They feel they are completely prepared and have done, or intend to take, all essential precautions to avoid/reduce the loss. This type is characterised by the fact that, since they are cheery and positive, they choose to approach flood prevention from a favourable position, in which they measure all the repercussions.

Community's Behaviour

Environment Agency [15] show that individuals respond to flood warnings in similar ways in rapid to intermediate floods irrespective of the origin or type of warning conveyed. Despite expenditures in flood warning systems, those who have been flooded may not always obtain an official response. Some people may not receive a flood warning at all. This is a good place to start when trying to explain anything of how individuals react to flood warnings, or why some people do not react. Assuming that people are warned, in some ways, the degree to which people exercise caution methods to prepare for a flood warning, and flood warning is tightly linked to potential floods reaction behaviours.

This sense of social identity is found to be the fundamental motivator of people's behaviour in a variety of social and organisational situations, primarily because it is what "makes group behaviour feasible". A collective identity within a group serves as a foundation for coordination and cooperation among group members because it strengthens their psychological feeling of interconnectedness and sense of unity. It can also give group members with shared descriptions of circumstances as well as common rules for how to behave in certain settings [16].

There are several reasons why previous flood experience is important in understanding family flood protection motives. First, the occurrence of a flood is a shock that may provide new knowledge regarding flood possibilities. Households' ideas about background risk may change, affecting protective intentions [17]. Second, disaster exposure provides greater experience, which, along with the fact that a person has already survived and lived with a disaster, may make her more likely to cope in the future. This is consistent with the "inoculation theory," which holds that people who have previously encountered a comparable sort of natural catastrophe are less likely to endure long-term psychological anguish during future disasters. Third, having experienced a disaster previously may result in increased worry and anxiety when the potential of disaster arises again [18].

Thus, while the psychological research is not definitive, it does show the presence of a link between prior flood experience and flood protective motives. The reliance of families on non-individual flood mitigation is also connected to desire for protective behaviours.

3.0 Methodology

This study used a quantitative approach to describe risk communication and community safety in Hulu Langat, Malaysia, following catastrophic floods. The instruments used to assess the variables in this study were derived from previous research. A questionnaire was created with 31 items. Each item was scored on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The questionnaire had been reviewed for face validity by the experts from the School of Media and Communication, Faculty of Social Sciences and Humanities, Universiti Kebangsaan Malaysia (UKM). A reliability test was performed, and the Cronbach Alpha values were acceptable for risk communication (.71) and community safety (.76). The survey questionnaires were subsequently distributed at random to the Hulu Langat neighbourhood in Nanding via self-administered surveys,

with Nanding locals serving as respondents for this study. A total number of 351 localities participated in this study. The data were analysed descriptively and inferentially using version 26 of the Statistical Package for the Social Sciences (SPSS).

4.0 Findings and Discussion

Table 1 shows the majority of the respondents participated in the self-administered survey of risk communication model used by Hulu Langat community consisted of 69.2% males and 30.8% females. The age range were between 36 and above (53.2%) and both 18-25 years old and 26-35 years old with 23.4% each. Most of the respondents were Malays (83.2%), Indians (9.4%), Chinese (3.1%) and others (4.1%). The employment of the community consisted of government servants (34.2%), self-employed (28.5%), private sector (21.7%), students (10.5%) and housewives (5.1%). The majority of Nanding, Hulu Langat community (85.2%) agreed that they know the existence of risk communication flood hazards and 57.8% of the community disagreed that they are staying in a nearby flood risk potential area. However, all of them (100%) agreed that they have experienced one or more flooding events in their lives.

TABLE 1

Demographic profile of Nanding Hulu Langat Community (n=351)

	Demographic	Frequency	Percentage (%)
Gender	Male	243	69.2
	Female	108	30.8
Age of group	18-25 years old	83	23.4
	26-35 years old	82	23.4
	36-above years old	186	53.2
Race	Malay	292	83.2
	Indian	33	9.4
	Chinese	11	3.1
	Others	15	4.3
Employment	Self Employed	100	28.5
	Government Servant	120	34.2
	Private Sector	76	21.7
	Housewife	18	5.1
	Student	37	10.5
Know the existence of risk communication flood hazards	Yes	299	85.2
	No	52	14.8
Are you staying nearby flood risk potential area?	Yes	148	42.2
	No	203	57.8
Have you experienced one or more flooding events in your life?	Yes	351	100
	No	0	0

Table 2 highlights the results of risk communication. The item, "I believe that responsibility for preparedness is equally distributed among institutions and citizens" has a higher mean score at 4.01.

Two items, "I shared information related about the flood in general" and "I had updated information about the flood victims" were each at 3.96. The other two items, "I am informed about the level of risk" was at 3.85 and "I am confident I got the information on flood risk coming from: (Options: experts, technicians, scientists, emergency managers)" was at the mean score of 3.84. The community also agreed that "I help the rescue and cleaning teams in the task of rehabilitating the portion of public road adjacent to my house" which was at 2.47. The lowest mean score was for the item, "I know the location of routes and places of evacuation from social media" with the mean score of 3.40. The overall mean score for all items was 3.74. This clearly shows that the community mostly agreed that risk communication is important in order to increase the knowledge and awareness while also moderating public expectations. This is further supported by [17], "well-informed risk communication can assist practitioners in meeting these objectives by increasing the possibility that at-risk groups will take adequate protective measures and decreasing the likelihood that low-risk people would overwhelm emergency response systems."

TABLE 2
Frequency distribution, percentage, and mean score of risk communication (n=351)

Items	Frequency	(Percentage)				Mean
	1	**2**	**3**	**4**	**5**	
I am informed about the level of risk.	5 (1.4%)	15 (4.3%)	23 (6.6%)	294 (83.8%)	14 (4.0%)	3.85
I know the location of routes and places of evacuation from social media.	1 (0.3%)	100 (28.5%)	28 (8.0%)	202 (57.5%)	20 (5.7%)	3.40
I help the rescue and cleaning teams in the task of rehabilitating the portion of public road adjacent to my house.	10 (2.8%)	40 (11.4%)	88 (25.1%)	202 (57.5%)	11 (3.1%)	3.47
I am confident I got the information on flood risk coming from: (Options: experts, technicians, scientists, emergency managers).	3 (0.9%)	15 (4.3%)	35 (10.0%)	279 (79.5%)	19 (5.4%)	3.84
I shared information related about the flood in general.	1 (0.3%)	10 (2.8%)	20 (5.7%)	291 (82.9%)	29 (8.3%)	3.96
I believe that responsibility for preparedness is equally distributed among institutions and citizens.	1 (0.3%)	8 (2.3%)	17 (4.8%)	285 (81.2%)	40 (11.4%)	4.01
I had updated information about the flood victims.	0	40 (11.4%)	68 (19.4%)	227 (64.7%)	16 (4.6%)	3.96
Overall Mean Score						**3.74**

Notes: 1 – Strongly Disagree, 2 – Disagree, 3 – Slightly Agree, 4 – Agree, 5 – Strongly Agree

Table 3 shows the results of emergency agencies messages through social media usage. The majority of the community agreed that "Social media has several advantages over traditional communication methods (e.g., email, telephone) when communicating information during disasters" with the highest mean score of 4.46. The second highest mean score was at 4.43 where the community of Nanding, Hulu Langat agreed that "I think social media usage needs to have better governance in terms of understanding who owns the data and the most efficient way in disseminating the data to have better coordination and communication if a disaster occurs." Next, the community strongly agreed that "I think Twitter only can be used as a channel for the younger generation: as a go-to online venue for related people to know or being updated on what is happening in any given moment" with the mean score of 4.40. The community also agreed that "I think WhatsApp is the fastest social media because it helps victims during evacuation as, and responders know where to find the victims that need to be evacuated faster and easily," indicating that they used WhatsApp for flood information sharing as the mean value is 4.24. Furthermore, the next item, "I think the media is tasked with ensuring that information can be easily shared among all agencies, especially information that needs to be sent quickly such as the number of victims, locations, and assets available for rescue work," had the same mean value as "I think social media can lead to inaccurate, information to be disseminated, which if people post it can be quite dangerous," with 4.38 each. Next, with the mean value of 3.55, the community agreed with the item, "I prefer to use Twitter and WhatsApp in getting the latest update of flood risk" Finally, the respondents reported "The increasing use of smart phones has contributed to the increase usage of social media in information dissemination during a disaster " with the mean value at 3.95. The overall mean score of 4.22 indicated the importance of emergency agencies messages through social media as this helps individuals to discover and spread information.

TABLE 3
Frequency distribution, percentage, and mean score of the emergency agencies approach through social media usage (n=351)

Items	Frequency	(Percentage)				Mean
	1	2	3	4	5	
I prefer to use Twitter and WhatsApp in getting the latest update of flood risk.	0	60 (17.1%)	66 (18.8%)	198 (56.4%)	27 (7.7%)	3.55
The increasing use of smart phones has contributed to the increased usage of social media in information dissemination during a disaster.	1 (0.3%)	7 (2.0%)	34 (9.7%)	276 (78.6%)	33 (9.4%)	3.95
I think WhatsApp is the fastest social media as it helps victims during evacuation as, and the responders know where to find the	1 (0.3%)	5 (1.4%)	14 (4.0%)	220 (62.7%)	111 (31.6%)	4.24

victims that need to be evacuated faster and easily.					
I think Twitter only can be used as a channel for the younger generation: as a go-to online venue for related people to know or being updated on what is happening in any given moment.	2 (0.6%)	8 (2.3%)	11 (3.1%)	158 (45.0%)	172 (49.0%)	4.40
I think the media is tasked with ensuring that information can be easily shared among all agencies, especially information that needs to be sent quickly such as the number of victims, locations, and assets available for rescue work.	0	7 (2.0%)	25 (7.1%)	147 (41.9%)	172 (49.0%)	4.38
I think social media can lead to inaccurate, information to be disseminated, which if people post it can be quite dangerous.	0	6 (1.7%)	21 (6.0%)	158 (45.0%)	166 (47.3%)	4.38
Social media has several advantages over traditional communication methods (e.g., email, telephone) when communicating information during disasters.	0	6 (1.7%)	11 (3.1%)	151 (43.0%)	183 (52.1%)	4.46
I think social media usage needs to have better governance in terms of understanding who owns the data and the most efficient way in disseminating the data to have better coordination and	0	7 (2.0%)	14 (4.0%)	150 (42.7%)	180 (51.3%)	4.43

communication if a
disaster occurs.

Overall Mean Score	**4.22**

Notes: 1 – Strongly Disagree, 2 – Disagree, 3 – Slightly Agree, 4 – Agree, 5 – Strongly Agree

Table 4 shows the results of risk perception. Most of the community agreed that "I think additional flood prevention measures be taken in addition to what already happens." with the highest mean score of 4.58. This is followed by the second highest mean score of 4.48 where the community of Nanding, Hulu Langat, agreed that "I believe the flood disaster brings a very serious matter in my financial loss." Next, the community strongly agreed that "The flood does give an impact in my life in a very serious way which I am trauma by it even now" and the mean score was 4.35. The community further agreed that "I am sure that the damage caused by the flood can be controlled" and "Everything related to flood frightens me." with the same mean score each at 4.39. Furthermore, the community agreed that "I am currently fully prepared for the upcoming flood" indicating that they indeed had the flood experience with the mean score of 4.00. Some agreed with the item, "Flooding is a big problem in my locality" with a mean score of 4.29. The researchers predict that Nanding, Hulu Langat will be mostly at risk if there will be floods again. Next, with the mean score of 3.65, the community slightly agreed to the item, " In the community where I live, the likelihood of flooding is high". The item, "The experts know how to manage flood risk" had a mean score of 3.68. The lowest mean score of 3.46 was for the item, "I am aware that we live in flood prone area." The overall mean score was 4.13. This shows that the majority of the community agreed that risk perception is one of the important elements to create awareness among the public or flood victims when designing risk communication in flood risks.

TABLE 4
Frequency distribution, percentage, and mean score of the Risk Perception (n=351)

Item	Frequency	Percentage				Mean
	1	2	3	4	5	
I am sure that the damage caused by the flood can be controlled.	3 (0.9%)	14 (4.0%)	15 (4.3%)	130 (37.0%)	189 (53.8%)	4.39
The flood does given impact in my life in a very serious way which I am trauma by it even now.	1 (0.3%)	15 (4.3%)	19 (5.4%)	140 (39.9%)	176 (50.1%)	4.35
Everything related to flood frightens me.	0	10 (2.8%)	13 (3.7%)	158 (45.0%)	170 (48.4%)	4.39
I think additional flood prevention measures be taken in addition to what already happens.	0	5 (1.4%)	9 (2.6%)	116 (33.0%)	221 (63.0%)	4.58
The experts know how to manage flood risk.	1 (0.3%)	29 (8.3%)	95 (27.1%)	184 (52.4%)	42 (12.0%)	3.68
I am currently fully prepared for the upcoming flood.	0	15 (4.3%)	23 (6.6%)	259 (73.8%)	54 (15.4%)	4.00
In the community where I live, the	1 (0.3%)	53 (15.1%)	53 (15.1%)	206 (58.7%)	38 (10.8%)	3.65

likelihood of flooding is high.						
I believe the flood disaster brings a very serious matter in my financial loss.	0	8 (2.3%)	11 (3.1%)	135 (38.5%)	197 (56.1%)	4.48
Flooding is a big problem in my locality.	2 (0.6%)	12 (3.4%)	19 (5.4%)	167 (47.6%)	151 (43.0%)	4.29
I am aware that we live in flood prone area.	2 (0.6%)	34 (9.7%)	146 (41.6%)	140 (39.9%)	29 (8.3%)	3.46
Overall Mean Score						**4.13**

Notes: 1 – Strongly Disagree, 2 – Disagree, 3 – Slightly Agree, 4 – Agree, 5 – Strongly Agree

Table 5 indicates the results of community's safety. Most of the community agreed that "I do not touch electrical appliances if they are wet." with the highest mean score of 4.13. This is followed by the next items with the second highest mean score at 4.09 where the community of Nanding, Hulu Langat agreed that "With regard to the cleaning-up process and the nutrition of foodstuffs, I follow the basic rules on health and hygiene stipulated by the relevant authority." Next, the community agreed that "I do not drink water from the tap" with the mean value of 4.07. The item,
"I disconnect all electrical equipment" was at the mean score of 4.02 and the item, "I pay attention to the alarm signal and keep the radio or television tuned for information from the Meteorological Institute or Civil Defence" at 4.01 and lastly, the item, "I know the location of the emergency shelter" was respectively at 3.78. The total overall mean score was 4.02. This shows when the public trust in flood authorities is low for whatever reason, flood warnings issued by such organisations are likely to be met with uncertainty and inactivity. Hence, too much exposure to 'false warnings' may potentially erode the trust of flood warning services.

TABLE 5
Frequency distribution, percentage, and mean score of community's safety (n=351)

Item	Frequency					Mean
	1	2	Percentage 3	4	5	
I pay attention to the alarm signal and keep the radio or television tuned for information from the Meteorological Institute or Civil Defence.	0	8 (2.3%)	15 (4.3%)	295 (84.0%)	33 (9.4%)	4.01
I disconnect all electrical equipment.	0	4 (1.1%)	14 (4.0%)	304 (86.6%)	29 (8.3%)	4.02
I do not touch electrical appliances if they are wet	0	4 (1.1%)	6 (1.7%)	282 (80.3%)	59 (16.8%)	4.13
I do not drink water from the tap.	0	7 (2.0%)	9 (2.6%)	288 (82.1%)	47 (13.4%)	4.07
I know the location of the emergency shelter.	1 (0.3%)	30 (8.5%)	48 (13.7%)	237 (67.5%)	35 (10.0%)	3.78

With regard to the cleaning-up process and the nutrition of foodstuffs, I follow the basic rules on health and hygiene stipulated by the relevant authority.	1 (0.3%)	1 (0.3%)	9 (2.6%)	295 (84.0%)	45 (12.8%)	4.09
Overall Mean Score						**4.02**

Notes: 1 – Strongly Disagree, 2 – Disagree, 3 – Slightly Agree, 4 – Agree, 5 – Strongly Agree

Table 6 shows there is a significant and moderate relationship community behaviour towards community safety among Hulu Langat community with (r=0.485, p=<.000). Indeed, the result of the r value .483 is a moderate relationship. This study is able to discriminate between individuals who adapt well to flooding and those who adapt less well because of the moderate relationship. According to Diakakis [19], "A more direct method for determining a victim's behaviour would be to collect information on their reported actions and reported intentions at the time of the flood and leading up to the incident that each victim was involved in." Thus, "this would allow for a more accurate depiction of the victim's behaviour."

In the case of Hulu Langat community, some may understand the significance that risk communication will play in their lives in the years to come. While others are still unaware of the existence of risk communication. Thus, the community needs to be made aware of the risk communication so that they can prepare for the impending flood.

TABLE 6
Relationship between risk communication of community behaviour towards community safety among Hulu Langat community (n=351)

Correlations			
		Community Behaviour	Community Safety
Community Behaviour	Pearson Correlation	1	0.485**
	Sig. (2-tailed)		<.001
	N	351	351
Community Safety	Pearson Correlation	.485**	1
	Sig. (2-tailed)	<.001	
	N	351	351

**. Correlation is significant at the 0.01 level (2-tailed)

Variable	Community Behaviour	
Community Safety	r value	*p* value
	.485	<.000

Table 7 presents a significant and moderate relationship between emergency agencies' message through social media towards community's safety among Hulu Langat community. (r=0.459, p=<.001). Hence, this result shows that the presence of a significant and moderate relationship affects the community's safety in terms of their awareness towards their surroundings and their behaviour towards upcoming flood hazards. According to Elbanna et al. [20], "…an efficient and effective disaster communications interface between the public and disaster and emergency management agencies is a means to enhance the efficacy of agency processes, better target resources, and aid in the most effective way." Therefore, stakeholders must maintain open lines of communication, coordinate their efforts, and work together. Since this is the case, it is crucial that communities and public safety organisations learn to make effective use of all channels of communication during the many phases of a disaster.

TABLE 7
Relationship between risk communication of Emergency agencies messages through social media towards community safety among Hulu Langat community (n=351)

	Correlations	Emergency agencies messages through social media	Community Safety
Emergency agencies messages through social media	Pearson Correlation	1	0.459**
	Sig. (2-tailed)		<.001
	N	351	351
Community Safety	Pearson Correlation	.459**	1
	Sig. (2-tailed)	<.001	
	N	351	351

**. Correlation is significant at the 0.01 level (2-tailed)

Variable	**Emergency agencies messages through social media**	
Community Safety	r value	*p* value
	.459	<.001

Based on Table 8, there is a significant and moderate relationship between risk perception and community's safety among Hulu Langat community. (r=0.450, p=<.001). Hence, it clearly shows that risk perception affects the community's safety in terms of their knowledge regarding risk communication towards upcoming flood hazards. This is in line with [19] findings. Although the terms "threat," "event," "exposure," and "vulnerability" are all employed differently depending on the context. The term risk perception refers to the mental process by which threats, vulnerabilities, and dangers are identified and processed.

However, according to Lechowska [22], perception which is the amount of a flood danger seen by the society does not always match the level indicated by the researcher. Therefore, it is necessary to understand the elements that affect people's perceptions of flood risks. This eventually leads to the possibility to devise a method of warning the public that would lessen the impact of flooding on their

daily lives. It is also essential to note that risk perceptions will have a favourable correlation with the actual levels of danger as suggested by [21]. Those who are at a greater risk have more to lose if they are not adequately informed or prepared for a flood disaster.

TABLE 8
Relationship between risk communication of risk perception towards the community safety among Hulu Langat community (n=351)

Correlations		Risk Perception	Community Safety
Risk Perception	Pearson Correlation	1	0.450**
	Sig. (2-tailed)		<.001
	N	351	351
Community Safety	Pearson Correlation	.450**	1
	Sig. (2-tailed)	<.001	
	N	351	351

**.Correlation is significant at the 0.01 level (2-tailed)

Variable	Risk Perception	
Community Safety	r value	p value
	.450	<.001

5.0 Conclusion

This study found a link between risk communication and community safety in Hulu Langat during floods. Despite more than a half-century of flood management, Malaysia remains vulnerable to disastrous flooding. Floods will remain an inherent risk in Malaysia due to its geographical conditions. Flooding and other natural disasters will continue to harm people, property, and infrastructure. This issue can't be prevented. What is avoidable is for Malaysians to overlook the need of risk communication in their lives, even if they do not reside in a high-risk location. Disasters in the past provide us the opportunity to learn from our mistakes. Disasters are historical events that provides valuable lessons for preparedness that we must remember and avoid. They will strike if we forget about them and relax our guard.

It may be claimed that involving the community in flood risk communication is a technical procedure that raises people's knowledge of the risk of floods. Giving more people an opportunity to comment on community concerns increases our chances of discovering effective solutions and making activities more efficient and sustainable. Community participation is critical for integrated watershed management. Planners and politicians in the watershed area must therefore be aware of the problems, needs, and preferences of the people who live and work there. It is difficult to understand the environment and adequately manage its resources without first learning about the people who use it. Everyone in the area has an interest in the community's overall and economic well-being. The community is a collection of people who contribute significantly to the efficient and successful management of drainage basins.

The findings show that risk communication through social media usage both determines and influences a thorough understanding of risk communication acceptance and emergency response approach. Overall, the data indicate that using social media for information sharing is crucial during natural catastrophes. Flood victims appear to be flocking to mobile messaging apps, particularly WhatsApp, a popular messaging service in Malaysia. It was frequently used during the floods and was designed primarily for information transmission. Social media groups help to build local capacity by boosting information transmission and strengthening social support, but they also act as an important conduit for finances and information to aid in flood recovery. Social media has additionally been found

to be effective at disseminating information across communities and increasing community resilience to flooding [23].

Malaysia, which experiences flooding almost every year, has deployed a number of flood-prevention measures and tactics. At the same hand, while some of these strategies have helped to lessen the effects of floods, they have not been completely successful in terms of total flood risk assessment. Risk communication is designed to help persons who are vulnerable to an imminent hazard, such as a pandemic, make informed decisions about how to respond. People will become disoriented and stranded if flood warning information is not communicated. Although a unified team approach is required, each of these risk communication strategies achieves disaster management objectives.

Most residents in the study region acknowledged understanding the dangers and being prepared to deal with another flood if it occurred. However, the importance of understanding how people respond to risk communication varies widely. People can change their behavior in a variety of ways, both big and minor, to resist real or imagined dangers. These changes include what have been dubbed "spontaneous preventive behaviors." How the community influences its perceptions of risk through risk communication, resulting in behavioral intentions in safety and health risk scenarios. Although the 2021 flood catastrophe in Nanding, Hulu Langat, did not cause as much devastation as it could have, it served as a warning to governments that they needed to strengthen their communication about future flood outbreaks to boost the rate at which people followed safe measures.

6.0 References

[1]   A. Ali, I. A. Rana, A. Ali, & F. A. Najam, "Flood risk perception and communication: The role of hazard proximity." *Journal of Environmental Management,* vol. 316, 2022.M.

[2]   N. Kurniasari, S. N. S. Mukhiar, & S. Saad, "Government Crisis and Risk Communication on COVID-19 Pandemic: A Conceptual Paper." *Malaysian Journal of Media Studies*. Vo. 25, no. 2, 2023.

[3]   *Developing early warning systems, a checklist: third international conference on early warning (EWC III), 27-29 March 2006, Bonn, Germany*. 27-March-2006. [Online] Available: https://www.undrr.org/publication/developing-early-warning-systems-checklist-third-international-conference-early-warning. [Accessed: 06 February-2023]

[4]   D. Demeritt, & S. Nobert, "Models of best practice in flood risk communication and management." *Environmental Hazards*, vol. 13, no. 4, 2014.

[5]   S. K. Colley, P. K. Kane, & M. J. Gibson, "Risk Communication and Factors Influencing Private Well Testing Behavior: A Systematic Scoping Review." *International Journal of Environmental Research and Public Health*, vol. *16*, no. 22, 2019.

[6]   J. Boura, 1998. Community Fireguard: Creating Partnerships with the Community to Minimize the Impact of Bushfire. *The Australian Journal of Emergency Management*, vol. 13, no. 3, pp. 42-47.

[7]   A. M. Salman, & Y. Li, "Flood Risk Assessment, Future Trend Modelling, and RiskCommunication: A Review of Ongoing Research." *Natural Hazards Review*, vol. 19, no. 3, 2018.

[8]   E. Rollason, L. J. Bracken, R. Hardy, & A. R. Large, "Rethinking flood risk   communication." *Natural Hazards*, vol. 92, no. 3, 2018.

[9]   S. C. Sandaran, & S. Selvaraj, "Government Agencies and their Discourses of Flood Disaster Preparedness: Impact on Response, Action and Community Empowerment." *GEMA Online® Journal of Language Studies*, vol. *21*, no. 4, 2021.

[10]   M. I. Yusoff, A. Ramli, M. N. A. Alkasirah, & M. N. Nasir, "Exploring the managing of flood disaster: A Malaysian perspective." *Malaysian Journal of Society and Space*, vol. 14, no. 3, 2018.

[11]   R. I. Ogie, J. C. C. Rho, R. J. Clarke, & A. Moore, "Disaster Risk Communication in Culturally and Linguistically Diverse Communities: The Role of Technology." *Proceedings*, vol. 2, no. 19, 2018.

[12]   N. W. Chan, "Impacts of Disasters and Disaster Risk Management in Malaysia: The Case of Floods." *Resilience and Recovery in Asian Disasters*, 2015.

[13] M. Ahmad, N. M. Zani, & K. F. Hashim, "Knowledge sharing behavior among flood victims in Malaysia." *APRN Journal of Engineering and Applied.* Vol. 10, no. 3, 2015.

[14] K. Burningham, J. Fielding, & D. Thrush, "It'll never happen to me: understanding public awareness of local flood risk." *Disasters*, vol. 32 no. 2, 2007.

[15] B. T. S. Putra, & B. Ardianto, "Why Does Risk Communication Matter? Preventive and Excessive Health Behavior among Uninfected People." *South Asian Journal of Social Studies and Economics*, vol. 13, no.2, 2022.

[16] S. L. Fong, K. S. Lim, L. A. Tan, N. H. Zainuddin, J. H. Ho, Z. J. Chia, W. Y. Choo, S. D. Puvanarajah, S. Chinnasami, S. K. Tee, A. A. Raymond, A. C. Law, & C. T. Tan, "Prevelence study of epilepsy in Malaysia." *Epilepsy Research,* vol. 170, 2021.

[17] B. Rogers, M., & J. M. Pearce, "Risk Communication, Risk Perception and Behavior as Foundations of Effective National Security Practices." *Strategic Intelligence Management*, 2013.

[18] S. T. Heydari, L. Zarei, A. K. Sadati, N. Moradi, M. Akbari, G. Mehralian, & K. B. Lankarani, "The effect of risk communication on preventive and protective Behaviours during the COVID-19 outbreak: mediating role of risk perception." *BMC Public Health*, vol. 21, no. 1, 2021.

[19] M. Diakakis, "Types of Behavior of Flood Victims around Floodwaters. Correlation with Situational and Demographic Factors." *Sustainability*, vol. 12, no. 11, 2020.

[20] A. R. Elbanna, Bunker, L. J. Levine, & A. Sleigh, "Emergency management in the changing world of social media: Framing the research agenda with the stakeholders through engaged scholarship." *International Journal of Information Management*, vol. 47, 2019.

[21] S. Rufat, & W. J. W. Botzen, "Drivers and dimensions of flood risk perceptions: Revealing an implicit selection bias and lessons for communication policies." *Global Environmental Change-Human and Policy Dimensions*, vol. 73, 2022.

[22] E. Lechowska, "What determines flood risk perception? A review of factors of flood risk perception and relations between its basic elements." *Natural Hazards*, vol. 94, no. 3, 2018.

[23] E. N. Sharp & H. Carter, (2020). Examination of how social media can inform the management of volunteers during a flood disaster. *Journal of Flood Risk Management*, *13*(4). https://doi.org/10.1111/jfr3.12665