THE RELATIONSHIP BETWEEN ATTITUDE, SUBJECTIVE NORM, SENSE OF COMMUNITY, COLLECTIVE EFFICACY AND TRUST IN AGENCIES ON INTENTION TO PREPARE FOR A TSUNAMI DISASTER AMONG HOUSEHOLDS IN KUDAT, SABAH

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Abstract

Malaysia has only faced a tsunami once over the last two decades, but the effects of the tsunami were large enough to displace thousands from their homes. Tsunami disrupts daily activities and damage infrastructures especially to those living in the coastal areas at risk of a tsunami one of the areas with a potential for a tsunami hazard is Kudat, Sabah. This study aims to examine the relationship between attitudes towards tsunami preparedness, subjective norm, sense of community, collective efficacy, and trust in agencies with the intention to prepare for a tsunami disaster among vulnerable households in the area. A self-administered survey was conducted and a total of 443 usable samples were obtained from a total of ten villages at risk of a tsunami through proportionate sampling. Descriptive analysis was performed and results from the study showed that attitude towards tsunami preparedness, subjective norm, sense of community, collective efficacy and trust in agencies and intended to prepare was moderate. A correlation analysis was conducted to determine the relationship between the variable with the intention to prepare for a tsunami disaster. Based on the results obtained, attitude, subjective norm, sense of community, collective efficacy and trust in agencies were found to have a significant positive relationship with the intention to prepare for a tsunami disaster. The results suggest that the respondents have a positive attitude towards preparing for a tsunami, are more inclined to work together with their family and community members to prepare for a tsunami and trust the agencies to respond and protect them in the event of a tsunami disaster. The findings from this study

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suggest that a collective approach from all the stakeholders may help reduce the risks caused by a tsunami disaster.

Keywords: Disaster Preparedness; Intention to prepare; Sense of Community; Attitude

Abstrak

Malaysia pernah dilanda bencana tsunami sekali sejak dua dekad yang lalu namun kesan tsunami itu cukup besar kerana menyebabkan ribuan orang berpindah dari rumah mereka. Bencana tsunami menggangu aktiviti harian dan menyebabkan kerosakan kepada infrastruktur terutamanya kepada penduduk di pesisiran pantai berisiko tsunami dan salah satu kawasan yang berpotensi untuk hazad tsunami adalah di Kudat, Sabah. Tujuan utama kajian ini adalah untuk mengkaji hubungan antara sikap terhadap persediaan menghadapi tsunami, norma subjektif, rasa kemasyarakatan, keberkesanan kolektif, dan kepercayaan terhadap agensi dengan niat untuk membuat persediaan bagi bencana tsunami dalam kalangan isi rumah yang terdedah kepada ancaman tsunami. Borang soal selidik telah diedarkan dan sejumlah 443 sampel yang boleh digunakan telah diperolehi dari sepuluh kampong yang berisiko tsunami melalui persampelan berkadar. Hasil dari analisis deskriptif menunjukkan bahawa sikap terhadap kesiapsiagaan tsunami, norma subjektif, semangat kemasyarakatan, keberkesanan kolektif, kepercayaan kepada agensi dan niat untuk bersedia adalah sederhana. Analisis korelasi telah dijalankan untuk menentukan hubungan antara pembolehubah dengan niat untuk bersedia menghadapi bencana tsunami. Hasil kajian menunjukkan bahawa responden mempunyai sikap yang positif terhadap persediaan menghadapi tsunami, lebih cenderung untuk bekerjasama dengan keluarga dan ahli masyarakat mereka untuk persediaan menghadapi tsunami dan mempercayai agensi untuk bertindak balas dan melindungi mereka sekiranya berlaku bencana tsunami. Dapatan daripada kajian ini menunjukkan bahawa pendekatan kolektif daripada semua pihak berkepentingan boleh membantu mengurangkan risiko yang disebabkan oleh bencana tsunami.

Kata kunci: *Persediaan Hadapi Bencana; Niat nak sediakan; Rasa bermasyarakat; Sikap*

Introduction

The severity, frequency, length, and scale of climate-related hazards are all increasing due to climate change which creates complex and cascading risks placing people and systems at greater risk both now and in the future (UNDRR, 2022). Malaysia is a country that is most susceptible to hydrological natural disasters resulting in either floods or landslides, however, in December 2004, Malaysia was

affected by the Indian Ocean Tsunami occurring 155km from North Sumatra. The Indian Ocean Tsunami was the largest tsunami recorded in recent history where a total of 19 countries were afflicted and a total of 12 deaths were reported in Malaysia (Lay et al., 2005, 2005). Following the disaster, the Malaysian Ministry of Science Technology and Innovation (MOSTI) established the Malaysian Early Warning System under the Malaysian Meteorological Department (MMD) as most affected countries were unprepared due to the absence of an early warning system in the region (Muttarak & Pothisiri, 2013).

Several years later in March 2011, another tsunami struck the east coast of Japan which is officially known as the 2011 Tohuku Earthquake and Tsunami recorded a magnitude 9.0 earthquake and a tsunami height of 28m (Norio et al., 2011). The Sendai Framework for Disaster Risk Reduction 2015-2030 was then adopted at the United Nations World Conference on Disaster Risk Reduction to address disaster risk reduction with a more people-centred preventive approach to disaster following the disaster. The framework requires all-of-society engagements which pay special attention to people disproportionately affected by disasters, especially the poorest. In Malaysia, several efforts have been made since 2004 to prepare for a tsunami disaster such as installing warning sirens in high-risk areas and developing a Standard Operating Procedure (SOP) for tsunami disasters. Additionally, the National Disaster Management Agency of Malaysia (NADMA) has also adopted the Sendai Framework and conducted workshops to enhance resilience and minimize the risk faced by the country (Mohd Khairul et al., 2018).

Several areas in Malaysia are at risk of a tsunami disaster and one of the areas is Kudat, Sabah as it is at risk of a tsunami generated from the Manila Trench (Mardi et al., 2017). Additionally, it is also vulnerable to tsunami threats caused by an underwater landslide originating from North West Borneo Through which is also known as the Brunei Slide with predicted waves as high as 22m (Koh et al., 2016). Tsunamis in general have been known to cause severe damage affecting the local community, infrastructure and the environment. To date, studies on the communities residing in the high-risk areas namely Kudat are limited. These vulnerable communities have to be prepared in the event a tsunami disaster occurs as they have to respond once a warning is issued (Paton, 2013; Aini et al., 2011) to evacuate.

Experiencing a disaster such as a tsunami causes a consumer to be in a state of vulnerability as the event that occurs i.e., tsunami, is beyond their control which results in loss of lives and property (Baker, Gentry, & Rittenburg, 2005). Since the state of vulnerability remains over a prolonged period, a consumer should take precautionary measures to protect themselves, and their belongings and sustain themselves while recovering from the aftermath of the tsunami. Due to the threat of tsunamis particularly in Kudat, it is imperative to assess what influences the consumers' intention to prepare for a tsunami. Based on the Theory of Reasoned

Action by Ajzen*, this study aims to identify the relationship between attitude and subjective norm with the intention to prepare for a tsunami disaster. Additionally, considering the collectivistic culture of Malaysia (Hofstede, 2001), collective efficacy and a sense of community were included to examine its relationship with intention to prepare as it has been found to have a significant positive influence on intention to prepare for distinct types of disasters (Paton et al., 2006; Syakura, 2014). Trust in agencies was also included in this study to determine its relationship to preparation as the government has established a tsunami early warning system to reduce the impact of a tsunami disaster on the coastal residents. This factor was incorporated as it has been found to have a positive relationship with intention, especially in an unfamiliar hazard (Frandsen, 2012; Liu & Mehta, 2021; Paton, Okada, & Sagala, 2013). Therefore, this study aims to examine the relationship between attitude, subjective norm, sense of community, collective efficacy, and trust in agencies with the intention to prepare for a tsunami disaster among households in Kudat, Sabah.

Literature review

Attitude

Based on the Theory of Reasoned Action, attitude is one of the factors that influence the intention to perform a behaviour. Attitude has been widely used in various types of behavioural research and had been defined as the tendency to react favourably or unfavourably to a psychological object (Fishbein and Ajzen, 2011). The concept of attitude has been measured using positive and negative statements in past studies which describe whether a person is positively or negatively inclined towards a psychological object. In the context of this study, attitude is defined as the attitude towards the intention of performing a specific behaviour (Ajzen and Fishbein, 1969) i.e., the intention to prepare for a tsunami disaster. During an individual's life, the recollection of experience will influence their belief and thoughts regarding situations, actions and events based on their observations obtained either from their self or social agents such as family, friends, colleagues, community members and other sources (Paton, 2003). The existing belief of a person can be influenced to be either strengthened, weakened, or replaced resulting in a positive or negative attitude. Multiple previous research has found that a positive attitude has a significant relationship with the intention to prepare for various types of natural disasters such as earthquakes (Becker et al., 2012; Ong et al., 2021), volcanic eruptions (Sagala et al., 2009), flood (Samaddar et al., 2014) and bushfire (Paton et al., 2006). Thus, this paper aims to identify the effect of attitude towards tsunami preparedness on the intention to prepare for tsunami disasters.

Subjective Norm

Subjective norm is another variable from the Theory of Reasoned Action which theorises the effect of social norms on intention. The concept of social norms is defined as the acceptable behaviour of a group or society which guides an individual in performing a selected behaviour. It reflects an individual's perception of important people in their environment who thinks they should (or should not) perform a specific behaviour. Subjective norm consists of the influence of family members, friends and community members on the individual's perception of performing a selected behaviour. Hence, this study defines subjective norm as the influence of family members, friends and community members on the perception towards preparing for a tsunami disaster. There have been many previous studies in the field of disaster research have found a relationship between subjective norm and intention to prepare (Syakura, 2014; Motoyoshi et al., 2004; Sadeka, 2020; Zaremohzzabieh et al., 2021) specifically among individuals in a highly collectivistic community or society such as Malaysia (Bochner, 2016; Fauziah & Kamaruzaman, 2010).

Sense of Community

The concept of a sense of community or a psychological sense of community is based on a theory proposed by McMillan and Chavis (1986) which focuses on the elements of community and social psychology and is the most influential theory included in disaster research to date (Eriksen and Prior, 2013; Ricci et al., 2013). The definition of a sense of community as members of a group feels a sense of belonging to other people with similar beliefs in the group's need which will be achieved through a commitment to each other in the community (McMillan and Chavis, 1986). Four criteria were identified based on the definition proposed which were membership, influence, integration and fulfilment and emotional connection. Membership is the feeling of being a part of a group which is limited in a community thus limiting the feeling of sense of belonging whereas influence is a two-way relationship of attraction and influence. The attraction to a group can only arise when they are certain to have an influence within the group meanwhile integration and fulfilment, is when a member of the community can accept each other to meet each other's needs. Last in order is the emotional connection criteria where members do not experience similar events or emotions but can relate to them. Based on previous studies, family members are an agent for community change (Sadeka et al., 2020) as people are impacted by the opinions and actions of others (Paek, Hilyard, Freimuth, Barge, & Mindlin, 2010). One study by Hasan et al (2021) suggests the role of community members in reducing uncertainty through mutual support which is one of the elements of a sense of community. Thus, people who are in a community which has a close relationship with one another facilitate the healing process when an unwanted event such as a disaster occurs.

Collective Efficacy

Due to the collectivistic culture in Malaysia, collective efficacy was selected to identify its relationship to preparation. The concept of collective efficacy stems from the Social Cognitive Theory by Bandura (2000) which proposed that an individual do not have full or direct control of social conditions affecting their lives but are also interdependent on the efforts of proxy agencies or collection agencies. A shared belief among the individuals in a community through shared knowledge, skills, and coordination to produce the desired outcome is the key element of collective efficacy. Due to the nature of a tsunami disaster which requires a swift response and assistance from other members of a community to evacuate safely, the relationship between collective efficacy and intention to prepare has been studied with positive results (Paton, 2008; Sagala et al., 2009). More recently, a study by Ntontis et al. (2021) found that collective efficacy is a form of social identity which is crucial during recovery from disasters. Based on the positive results of previous studies and the collectivistic culture in Malaysia, this paper aims to examine the relationship between collective efficacy and intention to prepare for a tsunami disaster among the residents in Kudat, Malaysia.

Trust in Agencies

The definition of trust has been defined as the interdependence of both parties where one of the parties has a choice of whether to trust the other party Kee and Knox (1970). A state of vulnerability exposes an individual to risks and necessitates faith in another party when there is a presence of trust. Disasters such as tsunamis cause an individual to be vulnerable which influences trust (Paton, 2008). Agencies which are the source of information have a stronger influence especially when a hazard is unfamiliar (Frandsen, 2012; Siegrist & Cvetkovich, 2000). People expect the government to take appropriate action, especially during natural disasters which require extreme measures (Badruddin, 2012). Previous studies have found that trust in agencies is an important factor among households with no experience of a disaster (Frandsen, 2012; Seebauer & Babcicky, 2018; Siegrist & Cvetkovich, 2000) and has to be built over time for it to exist in the moment of need (Shmueli, Ozawa & Kaufman, 2021). Since trust in agencies is essential as the primary source of information during an unfamiliar situation (Liu and Mehta, 2012), it is essential to explore its relationship to prepare for a tsunami disaster in Kudat which has never experienced a tsunami disaster.

Intention to Prepare

Intention to prepare also known as behavioural intention is one of the factors in the Theory of Reasoned Action that indicates the potential of performing a behaviour and intends to behave. Based on the theory, attitude and subjective norms are

antecedents to intention whereas actual behaviour can be predicted by intention. In disaster research, the intention is less inclined to bias from influences (Jang et al., 2016) and has been found to be a predictor of preparedness for various types of disasters (Bourque et al., 2013; Gowan et al., 2014; Paton and Johnston, 2001; Becker et al., 2013). The measure of behavioural intention assesses the intention to obtain strategies and acquire knowledge for disaster preparedness, efforts to carry out preparedness measures and collaborating with other community members or relevant agencies to develop their knowledge and capabilities (Jang et al., 2016; Paton et al., 2005). Numerous research has studied the factors affecting the intention to prepare for various types of disasters namely earthquakes (Ong et al., 2021; Zaremohzzabieh et al., 2021), volcanic eruptions (Sagala et al., 2009) as well as floods among urban residents (Wang et al., 2022) and elementary and junior high school teachers (Wang and Tsai, 2022). The intention was selected as the dependent variable in this study because it is a reliable predictor of actual behaviour (Paton et al., 2005) and is less susceptible to bias such as previous experiences, culture and strategies for public education (Jang et al., 2016). Therefore, this study aims to identify the factors (attitude, subjective norm, sense of community, collective efficacy, and trust in agencies) that influence households' intention to prepare for a tsunami disaster in Kudat, Sabah.

Methodology

This study utilized the quantitative research design using self-administered questionnaires and the population for this study were households residing in tsunami-risk zones with a total population of 12,859 which was obtained from the Kudat Local District Council. As Vaske (2008) proposed that a 400 sample size was enough to represent the population at a 95% confidence interval and ±5% margin of error. However, to compensate for lost or missing cases, Salkind (2010) suggests oversampling therefore, a sample size of 450 was used in this study. The sample size from each village prone to the tsunami was identified and the proportionate sampling method was used to determine the sample size in each village. The households were then selected using systematic sampling. The first house on the right is selected first and if no one can represent the head of household, the next house is selected.

A pilot test was conducted before the data collection to determine the reliability of the measurements for each variable by measuring its internal consistency using Cronbach's Alpha value. The total number of questionnaires returned was 22 out of 30 that were distributed among residents in the town of Kudat. All the variables were found to have a high Cronbach's Alpha value of higher than 0.6 which is acceptable (Nunnally, 1994). The collection of data for this study was conducted in May 2016 and a total of 450 questionnaires were collected from ten villages at risk of a tsunami. After the data was cleaned by removing outliers, a total of 443 data was usable for data analysis.

The questionnaire comprised seven sections namely the demographic background of respondents, attitude towards tsunami preparedness, subjective norm, sense of community, collective efficacy, trust in agencies, and intention to prepare. The measurements in this study were adopted and adapted from McIvor and Paton (2007) (attitude and subjective norm), Paton and Johnston (2001) (sense of community), Benight (2004) (collective efficacy), Frandsen (2012)(trust in agencies), and Paton (2007) (intention to prepare). The attitude was measured using positive attitude items with a total of four items, subjective norm had a total of six statements, sense of community with nine items, collective efficacy using 12 items, trust in agencies consisting of nine items and intention to prepare with five items. All the variables were measured using a Likert-type scale ranging from 'Strongly Disagree' (1) to 'Strongly Agree' (5) except for collective efficacy which had a range between 'Not very well' (1) to Very well (7). The details of the measurements used and results from the reliability test are tabulated in Table 1 below.

Table 1: Source and reliability of variables

Variable	No. of statements	Source	Reliability (Cronbach's Alpha)	
			Pre-test	**Actual**
Attitude towards flood*	4	McIvor and Paton (2007)	0.682	0.752
Subjective norm*	6		0.766	0.931
Sense of community*	9	Paton and Johnston (2001)	0.956	0.914
Collective efficacy**	12	Benight (2004)	0.968	0.964
Trust in agencies*	9	Frandsen (2012)	0.950	0.923
Intention to prepare*	5	Paton (2007)	0.896	0.887
Scale: *Strongly disagree (1) to Strongly agree (5) **Not very well (1) to Very well (7)				

The respondents were provided with the questionnaire however respondents that were unable to read were assisted to fill in the questionnaire and a token of appreciation was given to those that participated in the survey. Data collected from the survey were analysed using Statistical Package for Social Science (SPSS) version 22 to evaluate the level of attitude towards tsunami, sense of community and intention to prepare for a tsunami disaster through descriptive analyses. Pearson correlation was also used to determine the relationship between the factors with the intention to prepare.

Results and Discussion

Respondent's background

The survey results show that out of the total of 443 respondents, 227 males and 228 females participate in the study with an average age of 43 years old. Concerning the respondents' educational background, 31.3 per cent of the respondents had no formal schooling whereas only 20.2 per cent completed primary school, 19.3 per cent lower secondary and 2.8 per cent higher secondary. The ethnicity of respondents who participated was of Bajau ethnicity (53.6%) followed by other ethnicities (29.6%) which consists of Ubian, Rungus and Suluk. Subsequently, most of the respondents were married, and an average of six people lived in one household. The average household size in Sabah as of 2020 is 4.7 which is lower than what was reported in Kudat during the survey (Department of Statistics Malaysia, 2020). As for the source of income of the respondents, most of them sustain their businesses where most of them were either fishermen or carry out aquaculture farming. Only a handful of the respondents were working in either the government sector or private sector and the average household income was found to be RM922.00 per month. The average household income of the respondents was significantly lower than the mean income of households in Sabah recorded at RM5,354 and within the below 40 groups at RM2,848 (Department of Statistics Malaysia, 2017).

Attitude towards tsunami preparedness

The measurement of attitude towards tsunami preparedness was measured using items that relate to how the respondents perform a specific behaviour resulting in a positive behaviour which can have a positive influence on the intention to prepare for a tsunami disaster. The four statements showed a moderately positive attitude (M=3.67, SD=0.900) level where respondents agree that preparing for a tsunami can save lives (M=4.06, SD=1.078) and tsunami preparedness can improve their ability to deal with disruption to their family or community lives (M=3.64, SD=1.115). These results suggest that the overall attitude of the respondents was moderately positive which requires more efforts to facilitate preparedness efforts for the local community to be more proactive in saving themselves when a tsunami occurs.

Table 2: Attitude towards tsunami preparedness

Statement	Mean	Standard Deviation (SD)
Overall Attitude	**3.67**	**0.900**
Preparing for tsunami will significantly reduce damage to my home.	3.53	1.298

Table 3 (continues)

Statement	Mean	Standard Deviation (SD)
Preparing for tsunami will improve my everyday living conditions.	3.46	1.248
Preparing for tsunamis will improve my ability to deal with disruption to family/community life.	3.64	1.115
Preparing for tsunami will save lives.	4.06	1.078

Subjective norm

The measurement of subjective norm consists of six items each for family members, friends and community members which includes statements such as how likely the people around them (family, friends, and community members) would influence their decisions to adopt tsunami preparedness measures. Based on the results in Table 3, family members (M=4.02, SD=0.710) had the highest mean followed by community members (M=3.91, SD=0.707) and friends (M=3.84, SD=0.704). These results suggest that family members had a stronger influence on the respondents compared to their community members and friends. Since family and community institutions are important for societal development (Miller, 2001; Sadeka et al., 2020), it is essential to educate all members of a society as they can influence other people around them to prepare for a tsunami disaster.

Table 3: Summary of subjective norm descriptive results

Subjective norm of	Mean (M)	Standard Deviation (SD)
Family members	4.02	0.710
Friends	3.84	0.704
Community members	3.91	0.707

Sense of community

The sense of community in this study was to measure the respondent's sense of belonging and attachment to their environment which includes the people and places in the environment (Becker et al., 2012a). A total of nine statements were used and the overall mean obtained was moderate (M=3.69, SD=0.718) where the respondents mostly agree that their neighbours will assist them during an emergency (M=4.10, SD=0.967), are loyal to the people in their community (M=3.96, SD=0.936) and would like to remain a member of the community for several years (M=3.89, SD=1.031). These results suggest that the respondents have a moderate sense of community and have a feeling of attachment to the community whereby collective action is an essential mitigation strategy.

Table 4: Sense of community

Statement	Mean	Standard Deviation (SD)
Overall	**3.69**	**0.718**
I feel loyal to the people in this community	3.96	0.936
I believe my neighbours would help me in an emergency	4.10	0.967
Given the opportunity, I would like to move out of this community	3.12	1.351
If I can I will remain a resident of this community for a number of years	3.89	1.031
I feel like I belong in this community	3.93	0.957
I rarely have neighbours over to my house to visit	3.17	1.330

Collective efficacy

The measurement of collective efficacy comprises 12 items which assess the respondents' perception of their community members and leaders' ability to cope with the needs of the community to deal with a tsunami disaster. The overall mean score was found to be good (M=5.04, SD=1.240) with respondents having the most confidence in the ability of the community to deal with emotional responses that are part of a disaster (M=5.12, SD=1.420), to successfully respond to a future disaster (M=5.11, SD=1.498) and to identify appropriate individuals within the community to lead recovery efforts (M=5.11, SD=1.449). These results suggest that respondents perceive their community as capable of carrying out cooperative actions such as delegation of tasks and appointing leaders in the event of a disaster. A smaller community in Kudat may have contributed to this as the members are familiar with one another and the establishment of the Village Development and Security Committees (JKKK) enabled an easier delegation of tasks based on their current role in the committee.

Table 5: Descriptive results of collective efficacy

Statement	Mean (M)	Standard Deviation (SD)
Overall	**5.04**	**1.240**
Ability to quickly coordinate community wide action.	4.99	1.509
Ability to organize how specific demands facing the community will be addressed across the community.	4.98	1.409
Ability for organizational structure to delegate responsibility to the most appropriate individuals to meet crisis demands.	5.00	1.544
Ability of community to identify and respond to individuals in greatest need.	4.98	1.551

Table 5 (continues)

Statement	Mean (M)	Standard Deviation (SD)
Ability of community to recognize the need for outside support.	5.06	1.439
Effective utilization of outside resources (physical labour, money, food) that are offered.	5.04	1.474
Ability to adequately solve conflicts within the community.	5.06	1.393
Ability of community to successfully respond to a future disaster.	5.11	1.498
Ability for me to work effectively with others in the community.	5.05	1.467
Ability of others within the community to work effectively with me.	4.99	1.470
Ability to identify appropriate individuals within the community to lead recovery efforts.	5.11	1.449
Ability of community to deal with emotional responses that are part of a disaster.	5.12	1.420

Trust in agencies

Trust in agencies was measured using a total of nine items and based on the results in Table 6 below, the overall mean score obtained was high (M=4.04; SD=0.770). This indicates a strong trust in the agencies when responding to a tsunami. The respondents are most likely to use the information from government agencies when they are at risk of a tsunami (M=4.13; SD=0.926) and they feel secure that the government are very knowledgeable about tsunami behaviour and their consequences (M=4.11; SD=1.030). These results suggest that due to the unfamiliarity with the disaster, the respondents have a higher trust in agencies as they depend on the information provided by the agencies.

Table 6: Descriptive results of trust in agencies

Statement	Mean (M)	Standard Deviation (SD)
Overall	**4.04**	**0.770**
I feel secure that the government agencies are very knowledgeable about tsunami behaviour and their consequences.	4.11	1.030
If I was at risk of tsunami, I would definitely want to use information from the government agencies.	4.13	0.926

Table 6 (continues)

Statement	Mean (M)	Standard Deviation (SD)
When a tsunami issue or problem arises, I would feel comfortable depending on the information provided by the government agencies.	3.97	1.059
I feel that I could count on the government agencies to provide information about a crucial tsunami issue/incident.	3.97	0.994
It seems clear that the government agencies are very concerned about my welfare.	4.02	0.977
I feel assured that the government agencies do a good job developing policies to protect people.	4.10	0.952
I feel confident that the government agencies and other institutions take adequate steps to promote tsunami preparedness and protection.	4.09	0.914
I feel sure that the government agencies adequately protect me.	3.92	0.964
I feel sure that the government agencies would act in my best interest.	4.07	0.983

Intention to Prepare for a tsunami disaster

The intention to prepare in the context of this study is to measure the motivation of performing a set of behaviour to adopt protective measures to reduce the effects of a tsunami disaster (Paton et al., 2005) using a total of four items. The overall mean was moderate (M=3.90, SD=0.834) and results suggest that respondents would like to involve themselves with the local community to discuss methods to minimize damages and losses from a tsunami (M=3.95, SD=1.020), seek information on tsunami risk (M=3.93, SD=0.965) and increase their level of preparedness (M=3.90, SD=1.031). Results indicate that there is an intention to take preparedness measures by working with the local community and the search for information to prepare themselves for a tsunami.

Table 7: Intention to prepare for a tsunami disaster

Statement	Mean	Standard Deviation (SD)
Overall	**3.90**	**0.834**
I intend to check my level of preparedness for tsunami.	3.83	1.011
I intend to increase my level of preparedness for tsunami.	3.91	1.033
I intend to become involved with a local group to discuss how to reduce damage or losses from tsunami.	3.95	1.020

Table 7 (continues)

Statement	Mean	Standard Deviation (SD)
I intend to seek information on tsunami risk.	3.93	0.965
I intend to seek information on things to do to prepare for tsunami.	3.90	1.031

Relationship with intention to prepare for tsunami disaster

To answer the main objective of this paper, all the variables namely attitude, subjective norm, sense of community, collective efficacy and trust in agencies were tested against the intention to prepare using Pearson correlation analysis based on the total score of each variable. Based on the results obtained, all the variables were found to have a strong positive relationship with the intention to prepare for a tsunami disaster as depicted in Table 8. Sense of community (r=0.705, p=0.000) followed by trust in agencies (r=0.623, p=0.000) were found to have the strongest influence on intention to prepare compared to the other variables. These findings imply the importance of strong support from the community and agencies when preparing for an unfamiliar hazard such as a tsunami disaster.

Table 8: Correlation between attitude, subjective norm, sense of community, collective efficacy and intention to prepare for a tsunami disaster

Variables	r	p
Attitude	0.440	0.000**
Subjective norm	0.531	0.000**
Sense of community	0.705	0.000**
Collective Efficacy	0.557	0.000**
Trust in agencies	0.623	0.000**

**Significant at $p < 0.01$

Conclusion and Implication

The results of this study conclude that the respondents have a moderate attitude towards tsunami disasters which shows that there is room for improvement. Family and community members have a strong influence on the households which indicates the importance of encouraging all members of society to prepare for a tsunami disaster. Furthermore, a strong sense of trust in agencies suggests that the respondents depend on the information provided by the agencies. The residents living in these tsunami-risk areas need guidance from relevant authorities such as the local government and responding agencies to increase their level of preparedness towards a tsunami disaster.

Moreover, all the variables in the study were found to have a significantly positive influence on the intention to prepare. Attitude and subjective norm were found to have a significant influence on the intention to prepare which is like findings from previous studies (Ong et al., 2021, Zaremohazzabieh et al., 2021) whereas findings from this study support case analyses which found the importance of the sense of community and collective efficacy in influencing commitment to planning (Paton and Buergelt, 2019) i. e., intention to prepare for a disaster. Subsequently, the reliance on other people such as family, community members and agencies reflects a collectivistic community (Bochner, 2016; Burns & Brady, 1992; Fauziah & Kamaruzaman, 2010). The households in Kudat, Sabah are more vulnerable to disasters as they were found to have a significantly lower income compared to Sabah's state mean household income. Findings from this study suggest that since the average household income is significantly lower, the residents will experience financial difficulties to build back their lives in the event of a tsunami disaster.

The government can provide support to those with lower income living in tsunami risk zones by providing an affordable insurance plan so that those at risk will be less dependent on financial aid in the event of a disaster. Additionally, the local government with the assistance of the responding agencies can develop activities during community events as the respondents are willing to work together not only with their community members but also with the local government and responding agencies. Thus, a more collective approach from all stakeholders in the community can help reduce and manage risks and threats emerging from a tsunami disaster.

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