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INVESTIGATING THE RELATIONSHIP BETWEEN PAST FLOOD EXPERIENCE AND FLOOD PREPAREDNESS INTENTION: THE MEDIATING ROLES OF PERCEIVED SEVERITY AND SUSCEPTIBILITY

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ABSTRACT

Background and Purpose: In 2021, the state of Pahang had the highest number of flood victims, with 94,865 people affected and 21 fatalities, surpassing all other Malaysian states. Floods exacerbate income disparities, disproportionately impacting the poor rather than the wealthy. The affordability and convenience of flood-prone areas can increase the vulnerability of low-income individuals to flood-related impacts. Therefore, emphasizing the importance of flood preparedness measures becomes crucial, as they can play a role in maintaining the socioeconomic well-being of the nation. This study seeks to investigate how perceived severity and susceptibility mediate the connection between past flood experiences and residents of Pahang's intentions to prepare for floods.

Methodology: This study employed purposive sampling, exclusively targeting Pahang residents as eligible respondents. An online questionnaire via Google Forms was utilized, with participants informed of the study's purpose and guaranteed anonymity. A total of 216 questionnaires were received; after weeding out duplicates and other non-responses, 200 were considered useable, for a 93% effective rate. The study's hypotheses were tested using SPSS 27 and SmartPLS 4.0 software.

Findings: This study revealed that Pahang residents who had experienced previous floods tended to perceive flood events as more severe and were more likely to believe they were susceptible to future floods. Furthermore, individuals who considered themselves vulnerable to future floods and assessed flood severity as high were more inclined to prepare for such events. It is interesting to note that both perceived severity and perceived susceptibility serve as mediating effects between past flood experiences and the intention to prepare for future floods. This suggests that past flood experiences indirectly influence people's preparedness intentions for future floods by shaping their perceptions of severity and susceptibility.

Contributions: This study contributes theoretically to the body of knowledge by utilizing the SOR model. The results of the present study align with the Stimulus-Organism-Response (SOR) model, as they demonstrate how exposure to flooding among people in Pahang has influenced their internal cognitive processes (perceived severity and susceptibility). These, in turn, have shaped their intentions to take preventive measures in the event of future flooding. The results of this study also carry notable practical implications. They suggest that intervention and education programs aimed at increasing flood preparedness should consider individuals' past experiences with floods. Programmes designed to reduce the risk of flooding should also work to increase people's awareness of the dangers they face and the steps they can take to protect themselves from flooding. To better plan for and respond to future flood calamities, the National Disaster Management Agency (NADMA), local authorities, and the Fire and Rescue Department of Malaysia can all gain a more thorough understanding of these causal relationships. This research can serve as a valuable resource for enhancing their disaster prevention and response programs.

Keywords: Flood preparedness intention, perceived susceptibility, perceived severity, socio-economic disparities, SOR model.

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1.0 INTRODUCTION

Climate change significantly contributes to the rising occurrence of destructive floods observed in many countries. Extreme flooding and the resulting death tolls are common outcomes of these calamities, especially in floodplain areas (Ridzuan et al., 2023). Floods are inevitable occurrences that have happened and will continue to happen in both developed and developing

countries. Aqilah et al. (2024) highlighted that floods result in the loss of human life, the destruction of communities, and significant socio-economic and environmental losses. In Malaysia, many homes have been destroyed due to frequent flooding. Pahang state had the highest number of flood victims, at 94,865 people, with 21 fatalities, exceeding all other states in Malaysia, according to the 2021 National Disaster Incident Report. The impacted community now feels helpless and uneasy due to the persistent risk of flooding. Individuals and societies can be profoundly affected by the psychological trauma and stress brought on by such occurrences. Ridzuan et al. (2022) observed that floods exacerbate income disparities since they have a greater impact on the poor than on the wealthy. Beltrán et al. (2018) and Winsemius et al. (2018) both argued that the conveniences and low property prices in flood-prone locations may put the poor at a greater risk of being affected by floods. Hence, the importance of flood preparedness activities needs to be highlighted as they can help sustain the socio-economic well-being of the country.

The inclusion of flood preparedness measures is an integral component of the Sendai Framework for Disaster Risk Reduction in 2015. It emphasizes understanding, governance, resilience-building, early warning systems, public awareness, and international cooperation, which are crucial to flood preparedness. Research in the past, including those of Bempah and Øyhus (2017) and Kellens et al. (2011), has highlighted the significance of past hazard experiences in local community assessments. The community's perception of the hazard and its impacts may be triggered by personal experience, which in turn affects how effectively mitigation measures should be adopted (Bempah & Øyhus, 2017). The failure to accurately assess a hazard, however, may render some areas particularly vulnerable and increase the likelihood of severe damage. When a community has a low perception of floods, often because flood events are rare, they may be unprepared and vulnerable to tragedy. Instead, communities with a realistic understanding of the threat are better able to anticipate its effects and adapt to them (Baan & Klijn, 2014). Knowing the physical science behind a danger is not enough to create effective mitigation and adaptation measures; rather, the community's perception and response to it are required (Adelekan & Asiyanbi, 2016). Harvatt et al. (2011) asserted that a fundamental concern highlighted by researchers of risk analysis and risk communication is how to inspire people to adopt preventive activities when they have limited past disaster experience. Moreover, although natural hazards and disasters are experienced frequently by the local public, people's perceptions of risk vary according to their psychological frameworks, prior experiences, and the values they hold (Kim & Madison, 2020). Hadian et al. (2022)

stressed the importance of thoroughly comprehending how past events affect preparedness for potential risks.

Examining factors such as past disaster experiences that can influence intentions towards disaster preparedness could be a primary focus within the field of disaster risk reduction (Aerts et al., 2018). Past studies (e.g., Wang & Tsai, 2022; Ariccio et al., 2020) examined the direct effect of an individual's disaster experience on disaster preparedness intention. Meanwhile, Sahadev et al. (2024) investigated the mediating roles of disaster cognition and attitude toward disaster preparedness on the direct relationship between disaster experience and disaster preparedness intention. They utilized either the Theory of Planned Behavior (TPB) (Wang & Tsai, 2022; Sahadev et al., 2024) or attachment theory (Ariccio et al., 2020) to predict the impact of past experience on disaster preparedness intention. Instead of adopting TPB, this study embraced a novel approach by utilizing the Stimulus–Organism–Response (SOR) model to investigate flood preparedness intention among Pahang residents. Many fields, including marketing (Suparno, 2020), supply chain (Ngah et al., 2021), accounting (Tuan Mansor et al., 2021), social media engagement (Islam & Rahman, 2017), healthcare (Suess & Mody, 2018), and psychology (Pandita et al., 2021), have all used the SOR model to predict individual behaviour. Nonetheless, there has been little research into the utilization of the SOR model for investigations of people's flood preparedness intentions. This study represents one of the earliest endeavours to explore the utilization of the SOR model in the context of a natural disaster. Consequently, it demonstrates how this theory can be effectively employed in examining individuals' intentions regarding flood preparedness.

Building on the preceding discussion, this study aims to investigate factors influencing flood preparedness intention. Firstly, it examines the direct effect of past flood experiences on perceived severity, followed by the direct effect of perceived severity on flood preparedness intention. Additionally, it explores the mediating role of perceived severity in the causal link between past flood experiences and flood preparedness intention. Moreover, this study investigates the direct effect of past flood experiences on perceived susceptibility, as well as the direct impact of perceived susceptibility on flood preparedness intention. Furthermore, it explores the mediating effect of perceived susceptibility in the causal relationship between past flood experiences and flood preparedness intention. This study aims to enrich the literature on flood preparedness intention, particularly regarding the application of the SOR model. By incorporating past flood experience, perceived severity, perceived susceptibility, and flood preparedness intention in the SOR model, this study can ascertain the flexibility of the SOR model in incorporating the variables related to disaster preparedness studies. Through the

incorporation of perceived severity and perceived susceptibility as mediators, this study will be beneficial to both scholars and policymakers.

2.0 LITERATURE REVIEW

2.1 Stimulus–Organism–Response Model

The traditional stimulus-response model was developed by (Pavlov, 1927) and expanded upon by Woodworth (1929) in his stimulus-organism-model (S-O-R). Based on the dynamic interplay of stimulus, organism, and response, the S-O-R model predicts the behavioural outcome of an event. Originally suggested by Skinner (1935), the concept of stimulus and reaction is an integral aspect of both behaviour and its context. Donovan and Rossiter (1982) found that abrupt environmental changes have a major effect on people's psychological and emotional well-being and, by extension, their behaviour. The term stimulus is used to describe any outside factor that can affect an individual's state of mind or actions (Young, 2016). Biological systems that act as buffers between initial exposure to an external stimulus and the subsequent behaviour are called organisms (Bagozzi, 1986). The "internal processes and outcomes" (both good and negative) that originate from stimuli and often operate as mediators between the stimulus and reaction make up an organism (Fu et al., 2020). A person's response is the ultimate behavioural outcome, which can be positive or bad depending on the circumstances (Robert & John, 1982). The model has been extensively field-tested to make inferences about future conduct such as behavioral intention. The SOR model was selected for this study because it is malleable and can be tailored to fit the needs of the investigation by incorporating different stimulus-organism and response variables (Ngah et al., 2021). In the present study, the researchers utilized past experiences as a representation of external environmental factors (Stimuli), perceived severity, and perceived susceptibility to represent internal cognitive aspects (Organism), and flood preparedness intention as a representation of an individual's response (Response). This was done to forecast flood preparedness intentions among the residents of Pahang.

2.2 Past Experience and Perceived Severity

Assessments of past experiences shape how threats are perceived and influence behavioural intentions. Research by Pennings and Grossman (2008) and Usher et al. (2013) has demonstrated that individuals' perceptions of a threat can change based on whether or not they have previously encountered a severe weather event. Previous studies have found that past experiences have influenced people's perceptions of the severity of floods and may

significantly affect their livelihoods and lives (Kuhlicke et al., 2020a, 2020b). Personal experiences contribute to people's belief in the possibility of severe consequences in flood disaster occurrences, especially in a country like the Philippines which is prone to natural disasters (Heidenreich et al., 2020). Kurata et al. (2022) examined the impact of typhoon–flood experiences on perceived severity in the Philippines. Their study revealed that typhoon–flood experiences had a significantly positive effect on perceived severity. Past experiences with natural calamities contribute to respondents' belief in the possibility of severe consequences in flood disaster occurrences and were found to be significant contributing indicators to perceived severity (Kurata et al., 2022). Based on the justifications above, a hypothesis is proposed as follows:

H1: Past experience has a positive effect on perceived severity.

Perceived Severity and Flood Preparedness Intention

The term 'perceived severity,' sometimes referred to as 'perceived seriousness,' can be defined as the adverse impact that a particular incident or situation has on an individual (Miles, 2020). Within the context of disasters, this term pertains to the negative consequences of catastrophes, encompassing elements such as the level of fear, the perceived threat to life, health risks, and property damage (Zhang et al., 2017). Furthermore, there is a significant correlation between the expected severity of a flood and people's likelihood to take precautions. People are more inclined to prepare for natural disasters if they perceive them as more terrible and frightening (Babcicky & Seebauer, 2019). An empirical study conducted by Masud et al. (2018) revealed that the greater the fear of flooding (perceived severity), the more likely people are to engage in flood control efforts (flood preparedness intention). High perceived severity can increase individuals' motivation to prepare for floods. When people believe that floods pose a severe threat, they are more likely to recognize the importance of taking precautionary measures to protect themselves, their families, and their properties. Based on the justifications above, a hypothesis is proposed as follows:

H2: Perceived severity has a positive effect on flood preparedness intention.

Mediating Role of Perceived Severity

As previously discussed, past experience was found to positively influence perceived severity. Meanwhile, perceived severity was found to positively influence flood preparedness intention.

Hence, the missing link between past experience and flood preparedness intention is filled by perceived severity. The SOR theory has already indicated that the organism, represented by perceived severity in this study, acts as a mediating factor between the stimulus (past experience) and the response (flood preparedness intention). Therefore, an increase in past experience will be reflected in perceived severity and will increase flood preparedness intention among Pahang residents. Based on this consideration, a hypothesis is offered as follows:

> H3: Perceived severity positively mediates the direct relationship between past experience and flood preparedness intention.

Past Experience and Perceived Susceptibility

The term 'perceived susceptibility' is used to describe a person's innate fear of risk. Being directly affected by a disaster heightens one's awareness of vulnerability to future disasters (Terpstra, 2011). As stated by Weinstein (2000), enduring the impact of natural disasters such as typhoons is believed to enhance an individual's preparedness for self-defence, primarily because they perceive a higher level of vulnerability. The study by Ardaya et al. (2017) indicated that experiencing a flood enhances the perceived susceptibility to subsequent risks. Having experienced a natural disaster or extreme weather event in the past can influence one's outlook on similar events in the future (Kanakis & McShane, 2016), as individuals' perceptions of the world are shaped by their unique experiences (Paton et al., 2006). Wachinger et al. (2013) asserted that past disaster experiences are among the factors influencing people's perceptions and judgments regarding the potential susceptibility to future floods. Gumasing et al. (2022) studied the response efficacy of Filipinos under Typhoon Conson 2021 and found that typhoon experience positively and significantly influences perceived susceptibility. In their study, personal experience with the negative effects and impacts of typhoons increases an individual's susceptibility to hazards. Based on this consideration, a hypothesis is offered as follows:

> H4: Past experience has a positive effect on perceived susceptibility.

Perceived Susceptibility and Flood Preparedness Intention

Past studies (e.g., Masud et al., 2018; Bosschaart et al., 2016; Kanakis & McShane, 2016) have established a causal relationship between how vulnerable a person feels and their likelihood of taking preventative measures against flooding. People who feel they are at risk from a future weather disaster are more inclined to take further preparedness measures (Kanakis & McShane,

2016). According to Bosschaart et al. (2016), perceived susceptibility has a positive effect on flood preparedness intention. Those who are at risk of floods would be motivated to develop a positive intention to participate in prevention activities. Masud et al. (2018) conducted a study on individuals' intention to get involved in flood preparedness in Marine Protected Areas, and their study revealed that perceived susceptibility has a positive effect on flood preparedness intention. They further contend that individuals who perceive susceptibility to floods may have a greater intention to prepare for floods. Based on these considerations, a hypothesis is offered as follows:

> H5: Perceived susceptibility has a positive effect on flood preparedness intention.

Mediating Role of Perceived Susceptibility

Perceived susceptibility (organism) is expected to have a mediating role between flood experience (stimulus) and flood preparedness intention (response). It is posited that there is an interplay between perceived susceptibility and past experience in determining flood preparedness intention. Therefore, this study proposes that an increase in past experience will be reflected in an increase in perceived susceptibility, leading to an increase in flood preparedness intentions among Pahang residents. This supposition leads to the formulation of the following hypothesis:

> H6: Perceived susceptibility positively mediates the direct relationship between past experience and flood preparedness intention.

In summary, past flood experiences may indirectly predict the flood preparedness intention among Pahang residents through the mediating roles of perceived severity and perceived susceptibility. This study utilizes the SOR model as a general framework. The SOR model offers the flexibility to researchers to include their own unique stimulus-organism and response factors into their research model. In this study, past flood experiences are represented as the stimulus, perceived severity, and perceived susceptibility as the organism, and flood preparedness intention as the response. The research framework is depicted in Figure 1.

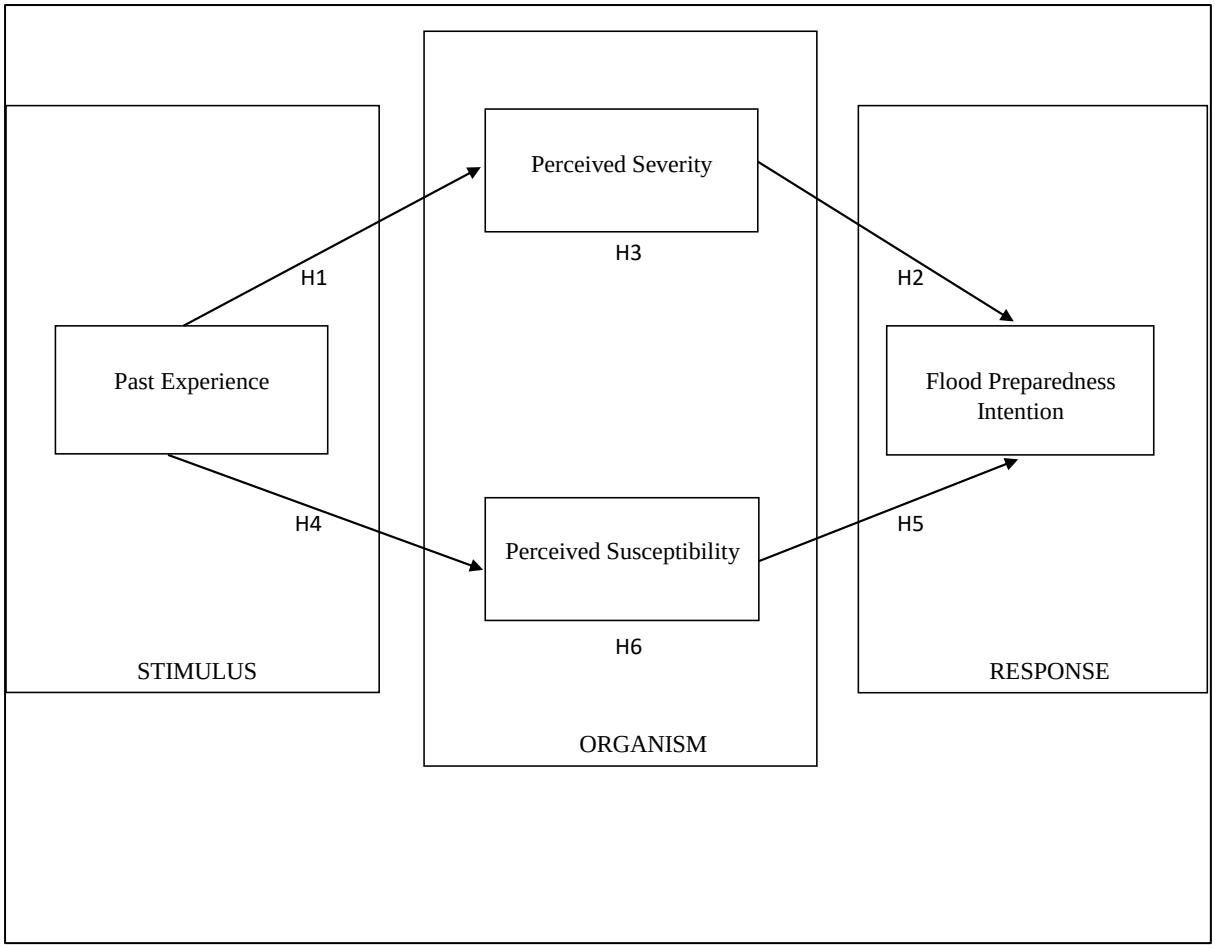

Figure 1: Research framework

3.0 RESEARCH DESIGN

3.1 Sample and Procedure

This study employed a purposive sampling technique, meaning that only Pahang residents were eligible to participate as respondents. An online survey administered through Google Forms was employed, and participants were briefed on the study's objectives while being assured of the confidentiality of their responses. The importance of respondents' voluntary involvement in the research was emphasized and explained before they completed the questionnaire. According to G*Power (Faul et al., 2009), the minimum sample size required for the study model, considering a medium effect size (f^2), a significance level (α) of 0.05, a power of 0.80, and two predictors, is 68 respondents.

Initially, 216 questionnaires were gathered. Following the removal of invalid questionnaires, 200 were deemed suitable, leading to an effective rate of 93%. Table 1 depicts the details of the respondents. Among the questionnaires that were validly returned, 71 (35.5%) were completed by male respondents, while 129 (64.5%) were completed by female

respondents. In terms of ethnicity, Malays constituted the majority at 61.0%, followed by Chinese (17.5%), Indians (21.0%), and a smaller group categorized as 'Others' (0.5%). A significant portion of the participants were undergraduates (46.5%), followed by those with a school-level education (35.0%) and postgraduates (18.5%). Urban areas had the highest representation at 50.5%, followed by sub-urban communities (29.5%) and rural communities (20.0%).

Table 1: Demographic profile of the respondents

Variable	Items	Frequency (n)	Percentage (%)
Gender	Male	71	35.5
	Female	129	64.5
Ethnicity	Malay	122	61.0
	Chinese	35	17.5
	Indian	42	21.0
	Others	1	0.5
Highest Education	Schools	70	35.0
	Undergraduates	93	46.5
	Postgraduates	37	18.5
Types of community	Rural Community	40	20.0
	Sub-urban	59	29.5
	Urban	101	50.5

3.2 Measurement

This study consists of four constructs: past experience, perceived severity, perceived susceptibility, and flood preparedness intention. The study adopted the six-item past experience scale used by (van Manen, 2014; Gumasing et al., 2022). The measurement of all six items was conducted using a 5-point Likert scale, with response options ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The perceived severity and perceived susceptibility assessments were derived from Ejeta et al. (2016) and assessed using a 5-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The present study utilized the three-item scale for assessing flood preparedness intention, which has been previously employed by Ng (2022). The measurement of flood preparedness intention encompassed three items, which were assessed using a 7-point Likert scale. The study's measurement details are provided in Appendix 1.

3.3 Data Analysis

The research hypotheses were tested utilizing SPSS 27 and SmartPLS 4.0. SmartPLS facilitates bootstrapping, enabling the estimation of significance for both direct and indirect (mediating) effects. This resampling technique provides robust p-values and confidence intervals for mediation analyses, even when the data does not meet the assumptions of normality.

4.0 ANALYSIS AND DISCUSSION

4.1 Analysis

4.1.1 Common Method Bias

Concurrently collecting data on exogenous and endogenous variables from the same respondents can lead to common method bias. It is best to steer clear of it because it can skew the results and introduce flaws in the study's findings. Methodological and statistical approaches are used in this study to exclude prevalent sources of common method bias. As for the methodological strategy, respondents were made aware that giving their information was completely optional and would remain confidential. In addition, researchers emphasized that respondents should react based on their own beliefs and experiences, with the caveat that there is no single "correct" response. Furthermore, different measurement scales were used for exogenous and endogenous variables: a 5-point Likert scale for past experience, perceived severity, and perceived susceptibility, and a 7-point Likert scale for flood preparedness intention. Regarding the statistical approach, this study employed a full collinearity test as suggested by Kock (2015). Kock (2015) claims that studies free from common method bias have a variance inflation factor (VIF) of less than 5. All of the VIF values for the constructs in Table 2 were below 5. It confirms that the study does not suffer from the common method bias problems.

Table 2: Full-collinearity testing

Construct	SUC	PE	INT	SEV
VIF	3.312	3.195	1.262	3.302

4.1.2 Two-Step Procedure Assessment

This study used Anderson and Gerbing's (1988) two-step procedure to examine how perceived severity and susceptibility affect the relationship between past experiences and flood preparation intention.

4.1.2.1 Measurement model

Measurement model analyses include composite reliability (CR), convergent validity, and discriminant validity. Table 3 shows that composite reliability has been demonstrated for INT, PE, SEV, and SUC, which exceeds Hair et al. (2019)'s minimum value of 0.7. All items in this analysis have outer loadings between 0.770 and 0.953, exceeding Hair et al. (2017)'s minimum of 0.5. Convergent validity is demonstrated when Average Variance Extracted (AVE) values exceed 0.5, ranging from 0.738 to 0.862.

Table 3: Construct reliability and convergent validity assessment

Construct	Indicator	Outer Loading	CR	AVE
INT	INT1	0.936	0.949	0.862
	INT2	0.946		
	INT3	0.902		
PE	PE1	0.810	0.944	0.740
	PE2	0.770		
	PE3	0.880		
	PE4	0.906		
	PE5	0.918		
	PE6	0.868		
SEV	SEV1	0.909	0.933	0.738
	SEV2	0.931		
	SEV3	0.786		
	SEV4	0.911		
	SEV5	0.739		
SUC	SUC1	0.922	0.968	0.859
	SUC2	0.953		
	SUC3	0.944		
	SUC4	0.944		
	SUC5	0.869		

This study also conducted a Heterotrait–Monotrait assessment to examine the discriminant validity of the study. This analysis is crucial for distinguishing one construct from another. Table 4 illustrates that all construct values for HTMT were below 0.85, in line with the recommendation by Franke and Sarstedt (2019). Therefore, it can be concluded that the measurement model of the study has achieved satisfactory discriminant validity.

Table 4: Heterotrait–monotrait (HTMT) assessment

Construct	INT	PE	SEV	SUC
INT				
PE	0.417			
SEV	0.464	0.849		
SUC	0.463	0.824	0.838	

4.1.2.2 Structural model

This study proceeds to the structural model since no issues were found in the measurement model. The study's hypotheses were put to the test via the structural model assessment. Before analyzing the structural model, researchers are obliged to examine whether the model suffers from multicollinearity issues. If the issue arises, it may affect the accuracy of the study's findings. As proposed by Diamantopoulos and Siguaw (2006), VIF values below 3.3 indicate the absence of multicollinearity concerns within the model. Table 5 shows that all VIF values in this study are below 3.3, thus confirming the absence of multicollinearity as a concern in the study. The study's findings on direct and indirect effects are shown in Table 5 and Figure 2. The first hypothesis indicates that past experience has a positive effect on perceived severity ($\beta = 0.784$, $t = 28.306$, $p < 0.01$, LL = 0.732, UL = 0.824). The second hypothesis suggests that perceived severity has a positive effect on flood preparedness intention ($\beta = 0.212$, $t = 1.988$, $p < 0.05$, LL = 0.048, UL = 0.397). The third hypothesis reveals that perceived severity positively mediates the direct relationship between past experience and flood preparedness intention ($\beta = 0.166$, $t = 1.985$, $p < 0.05$, LL = 0.039, UL = 0.314). The fourth hypothesis demonstrates that past experience has a positive effect on perceived susceptibility ($\beta = 0.783$, $t = 26.877$, $p < 0.05$, LL = 0.727, UL = 0.824). The fifth hypothesis indicates that perceived susceptibility has a positive effect on flood preparedness intention ($\beta = 0.270$, $t = 2.501$, $p < 0.05$, LL = 0.081, UL = 0.437). Additionally, the sixth hypothesis found that perceived susceptibility positively mediates the relationship between past experience and flood preparedness intention ($\beta = 0.211$, $t = 2.514$, $p < 0.05$, LL = 0.066, UL = 0.341). Therefore, all six hypotheses of this study were supported.

Regarding effect size analysis (f^2), Cohen (1988) categorizes it into three distinct levels: small, medium, and large effect sizes when the f^2 values are 0.02, 0.15, and 0.35, respectively. Table 5 reveals that past experience had a large effect on perceived severity ($f^2 = 1.598$) and perceived susceptibility ($f^2 = 1.580$), while perceived severity ($f^2 = 0.021$) and perceived susceptibility ($f^2 = 0.035$) had a small impact on flood preparedness intention. This study also

assessed the coefficient of determination (R^2). Cohen (1988) categorized an R^2 value of 0.26 or higher as substantial, an R^2 value of 0.13 to < 0.26 as moderate and an R^2 value of 0.02 to < 0.13 as weak. Figure 2 depicts that the R^2 values are 0.615 for perceived severity (substantial), 0.207 for flood preparedness intention (moderate) and 0.612 for perceived susceptibility (substantial).

Table 5: Hypotheses testing

Hypothesis	Relationship	Beta	SE	t-value	p-value	f^2	VIF	LL	UL
H1	PE -> SEV	0.784	0.028	28.306	0.000	1.598	1.000	0.732	0.824
H2	SEV -> INT	0.212	0.106	1.988	0.023	0.021	2.628	0.048	0.397
H3	PE -> SEV -> INT	0.166	0.084	1.985	0.024		1.000	0.039	0.314
H4	PE -> SUC	0.783	0.029	26.877	0.000	1.580	1.000	0.727	0.824
H5	SUC -> INT	0.270	0.108	2.501	0.006	0.035	2.628	0.081	0.437
H6	PE -> SUC -> INT	0.211	0.084	2.514	0.006		1.000	0.066	0.341

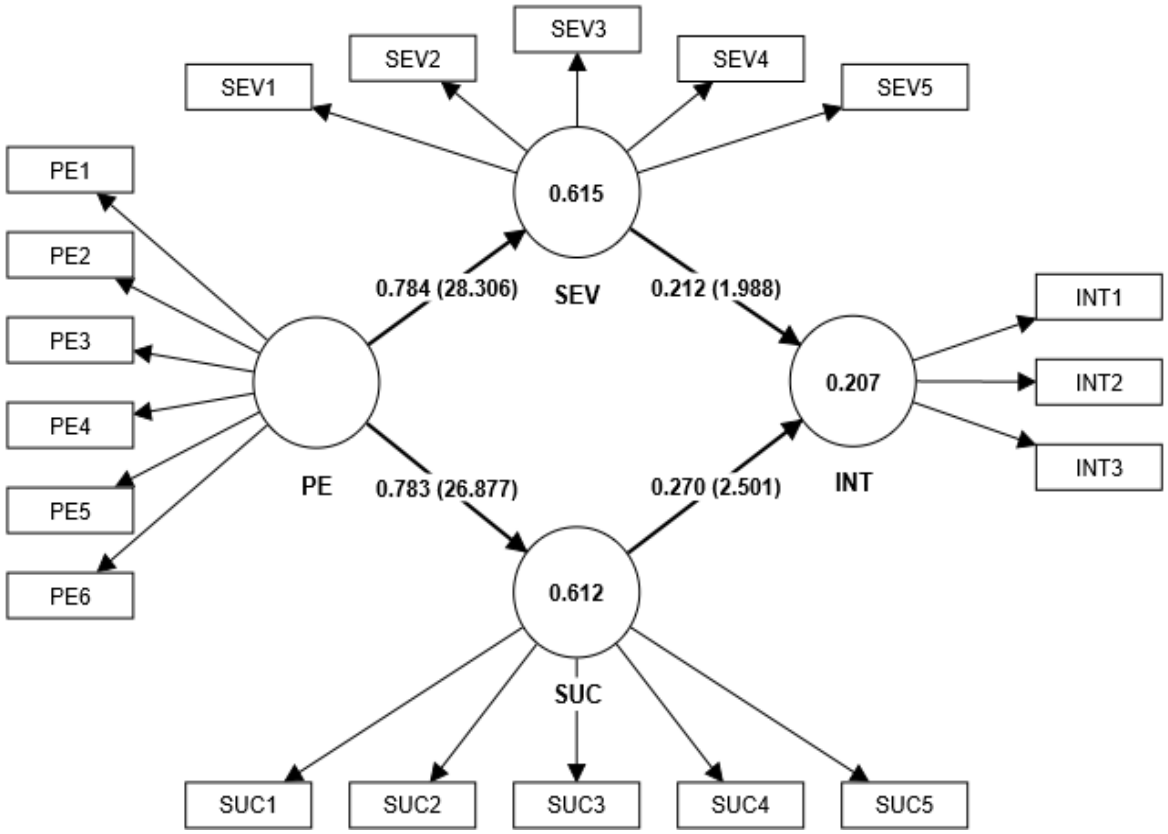

Figure 2: Hypothesis testing

To leverage the advantages of evaluating predictive models in Partial Least Squares Structural Equation Modeling (PLS-SEM), Shmueli et al. (2016) introduced a technique known as

PLSpredict. This approach employs a holdout-sample-based method to generate predictions at the individual case level for both items and constructs. Researchers evaluate the predictive capability by computing the PLS-LM value for all items within each construct. When the PLS RMSE produces lower prediction error values compared to the naive LM benchmark, it signifies strong predictive power. Conversely, higher error values indicate weaker predictive power. The PLS-SEM analysis in Table 6 demonstrates that the constructs related to flood preparedness intention, perceived severity, and perceived susceptibility display a medium level of predictive power.

Table 6: Predictive power

	PLS RMSE	LM RMSE	PLS-LM	Q^2predict	
INT1	1.389	1.394	-0.005	0.113	Medium Predictive Power
INT2	1.369	1.371	-0.002	0.137	
INT3	1.279	1.229	0.050	0.115	
SEV1	1.004	1.021	-0.017	0.514	Medium Predictive Power
SEV2	0.964	0.975	-0.011	0.554	
SEV3	1.098	1.095	0.003	0.386	
SEV4	1.024	1.029	-0.005	0.489	
SEV5	1.012	0.976	0.036	0.293	
SUC1	1.038	1.061	-0.023	0.482	Medium Predictive Power
SUC2	0.996	1.001	-0.005	0.528	
SUC3	0.895	0.892	0.003	0.582	
SUC4	0.909	0.933	-0.024	0.569	
SUC5	0.980	1.013	-0.033	0.431	

4.2 Discussion

The multiple dangers and repercussions that might result from floods make preparation a top priority. Natural disasters such as floods can have far-reaching consequences for human life, ecosystems, and economies. Flood preparedness is crucial to saving lives, limiting property loss, strengthening community resilience, and maintaining personal mental health. In this study, past experience was found to be positively correlated with perceived severity. Siegrist and Gutscher (2008) and Masud et al. (2018) report similar results. Those who have experienced a flood firsthand are more likely to have clear recollections of the ordeal. These encounters are frequently profoundly moving and can create an effect that lasts a lifetime. As a result, people who have experienced a flood may attribute more severity to subsequent floods, drawing on their painful memories. The emotional toll of having lived through a flood in the

past can amplify subsequent ones. People may expect future floods to have the same emotional and practical effects as the last one because they remember the terror, distress, and disruption it produced.

Additionally, there was a positive association between perceived severity and the intention to prepare for floods. This means that residents in Pahang who perceive floods as severe are more inclined to take measures to prepare for them. The degree of perceived negative consequences plays a significant role in motivating individuals to engage in private mitigation actions, as indicated by studies conducted by Takao et al. (2004), Grothmann and Reusswig (2006), and Siegrist and Gutscher (2008). Grothmann and Reusswig (2006) found that flood damage intensity accounts for 10–20% of mitigating behaviour variability. It is worth highlighting that among Pahang residents, perceived severity serves as a positive mediator in the connection between past experience and their intention to prepare for floods. According to Masud et al. (2018), when individuals can perceive the risks associated with flood disasters and the seriousness of the challenges they entail, it can result in more significant shifts in their attitudes. These observations align with the conclusions drawn by Bayard and Jolly (2007). Additionally, Kreibich et al. (2011) discovered that experiencing an extreme flood event significantly enhances the level of preparedness, whether among private households or businesses.

The finding of the study also found that past experience had a positive relationship with perceived susceptibility among Pahang residents. This result agrees with the work done by previous researchers (Gumasing et al., 2022; Weinstein, 2000). Gumasing et al. (2022) researched the effects of Typhoons and showed that exposure to disasters had a direct, positive effect on how vulnerable people feel in the future. Having firsthand knowledge of the devastation wrought by typhoons makes one more vulnerable to the consequences of that hazard. Individuals who have experienced multiple severe storms in the past, particularly those that led to evacuations, tend to have an amplified perception of the risk and impact associated with typhoons. Personal experience with natural catastrophes like typhoons increases defensive preparedness due to perceived vulnerability (Weinstein, 2000). Both Bubeck et al. (2018) and Bubeck et al. (2012) found a favourable correlation between prior flood experience and threat appraisal. This confirms the results of an earlier study (Cutter et al., 2014) that looked at how a person's exposure to disaster influenced their outlook on disaster.

The intention to take preventive measures was also found to have a positive correlation with individuals' perceived susceptibility to flooding. This confirms the findings of prior studies (Masud et al., 2018; Kanakis & McShane, 2016). Perceived vulnerability to flooding

was found to significantly and positively affect people's intent to take part in flood prevention efforts (Masud et al., 2018). Research conducted by Kanakis and McShane (2016) revealed that when individuals believed they were vulnerable to an upcoming weather event, they were more inclined to support proactive behaviours for preparation. It is valuable to mention that perceived susceptibility has been identified as a positive mediator in the connection between past experience and the intention to prepare for floods. Previous exposure to hazards is frequently regarded as having a significant influence on recognizing risks and appears to be a crucial factor influencing individual mitigation actions (Weinstein, 2000). The impact of experience on the inclination to engage in mitigation efforts is channelled through risk perceptions, a pattern also observed by Zaalberg et al. (2009).

5.0 CONCLUSION

Insights into how people and communities are likely to react to flood risks can be gleaned from research into their intentions to prepare for such events. The correlation between actual flood experience and subsequent flood-preparation behaviour has been the subject of numerous research. This research expanded previous knowledge by investigating the role of moderators, specifically, perceived severity and perceived susceptibility, in the connection between previous flood experience and flood preparedness intention.

This study found that Pahang residents who had experienced floods in the past tended to perceive flood events as more severe and were more likely to believe that they were susceptible to future floods. Those who perceived floods as being more severe were also more inclined to have the intention to prepare for future flood events. In other words, the seriousness or gravity they attached to floods positively influenced their readiness to take preparatory measures. Similarly, individuals who believed that they were susceptible to experiencing floods in the future were more likely to have the intention to prepare for such events. This means that their perception of being at risk played a role in their willingness to prepare for the flood. The findings indicate that both perceived severity and perceived susceptibility act as mediators between past flood experience and flood preparedness intention. This suggests that past flood experience indirectly influences people's intention to prepare for future floods by shaping their perceptions of severity and susceptibility. In simpler terms, past experience does not directly lead to preparedness intention; instead, it does so by affecting how individuals perceive the severity of the threat and their vulnerability to it.

Using the SOR model, this research theoretically contributes to the existing body of knowledge. The results of the present study are consistent with the SOR model since it shows

how people in Pahang's exposure to flooding has shaped their internal cognitive processes (perceived severity and susceptibility), which in turn has shaped their intention to take preventative measures in the event of future flooding. This model sheds light on the neural circuitry that underpins the chain of events connecting past experiences with current awareness and future readiness for flooding. This study also confirmed the mediating role of perceived severity and susceptibility between past experience and flood preparedness intention, which contributed to a richer understanding of the mechanisms by which prior flood exposure affects flood preparedness intention.

The implications of the study's findings hold significance in practical terms, as they indicate that intervention and education initiatives aimed at enhancing flood preparedness ought to take into account individuals' prior encounters with floods. These programs should also aim to improve people's perceptions of the severity of floods and their vulnerability to them, as both factors play a critical role in inspiring people to take preventative measures. The National Disaster Management Agency (NADMA), local authorities, and the Fire and Rescue Department of Malaysia can all benefit from a better understanding of these connections to enhance their preparedness and response to future flood catastrophes. These groups can utilize the research to improve their disaster prevention and response programs. Preparedness measures can significantly reduce the risks associated with flooding.

A greater number of individuals residing in flood-prone regions are at a heightened risk of encountering poverty or remaining unable to escape poverty due to the hazards associated with floods (Masozera et al., 2007). Flood preparedness measures can indeed play a crucial role in preventing the widening of income gaps resulting from floods. Floods can disrupt economic activities and result in income loss, especially for individuals working in sectors vulnerable to flooding, such as agriculture or informal labour. Flood preparedness measures can help protect livelihoods by allowing for early evacuation, providing financial assistance, and supporting the continuity of businesses.

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APPENDIX

The Measurement Items of the Study

Constructs	Codes	Items
PE	PE1	I have experienced several heavy floods in the past.
	PE2	I have experienced flood where people in my area were left homeless.
	PE3	I have experienced flood where our house was destroyed and damaged.
	PE4	I have experienced flood where our house was drawn by floodwater.
	PE5	I have experienced flood where our properties and assets were submerged in water.
	PE6	I have experienced flood that is traumatizing that I couldn't sleep
SUC	SUC1	I think the place where I am living is prone to flood disaster.
	SUC2	I think my house is prone to flood disaster
	SUC3	I think my family members and I are prone to flood disaster
	SUC4	I think my property is prone to flood disaster
	SUC5	I think electricity and water supplies in my area are prone to flood disaster.
SEV	SEV1	I think if a major flood event occurs, the place where I am living could be affected severely
	SEV2	I think if a major flood event occurs, my home could be damaged severely.
	SEV3	I think if a major flood event occurs, my family members and I could be affected severely (injured or killed).
	SEV4	I think if a major flood event occurs, my property could be damaged severely
	SEV5	I think if a major flood event occurs, electricity and water lines could be damaged severely, and supplies could be interrupted
INT	INT1	I expect to make preparation for a flood
	INT2	I plan to make preparation for a flood.
	INT3	I will make preparation for a flood

Notes: PE – Past experience, SUC – Perceived susceptibility, SEV – Perceived severity, INT – Flood preparedness intention.