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Unveiling the Influence of Subjective Norms on Flood Preparedness Among Household Renters: The Moderating Effect of Trust in Public Protection

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ABSTRACT

This research builds on the social norms theory to investigate the connection between subjective norms, flood preparedness intention, and flood preparedness behavior. Furthermore, this study investigates how trust in public protection moderates the causal link between subjective norms and flood preparedness intention. Purposive sampling was used in this study by administering an online survey to a random sample of 150 tenants in Malaysia's East Coast Region. Structured equation modeling (SEM) utilizing Smart Partial Least Squares (SmartPLS) was then used to analyze the data. The results showed that subjective norms (SN) have a positive relationship with flood preparedness intention (INT), and INT has a positive relationship with flood preparedness behavior (FPB). Interestingly, trust in public protection negatively moderates the relationship between SN and INT. The findings will offer valuable insights for policymakers, renters, landlords, and community organizations to develop targeted interventions and bolster flood preparedness among household renters in the East Coast region, ultimately fostering resilience and mitigating the impact of future flood events. This study provides first-hand information on the predictors of flood preparedness behavior among household renters in the East Coast Region, Peninsular Malaysia.

Keywords: Climate change, disaster risk reduction, flood preparedness, renters, social norm theory, trust in public protection

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INTRODUCTION

Climate change has drastically altered the lives of people in the world through natural disasters, especially floods. Climate change has the potential to enhance the frequency and intensity of natural disasters utilizing diverse mechanisms, including heightened temperatures, alterations in precipitation patterns, rising sea levels, and shifts in ecosystems (Barnett et al., 2023). The United Nations Office for Disaster Risk Reduction (2013) states that global economic damages exceeding $40 billion occur yearly due to floods, impacting around 250 million individuals. While developing nations suffer disproportionately from natural catastrophes, their level of disaster preparedness is low (Gammoh et al., 2023). Floods are prevalent in Malaysia, which poses significant challenges to infrastructure, agriculture, and the overall well-being of communities, requiring comprehensive strategies for mitigation and adaptation. Numerous fatalities ensue whenever floods occur in Malaysia, and the economy experiences constraints. Terengganu, Kelantan, and Pahang, located along the East Coast of Peninsular Malaysia, are most frequently affected by flooding. Renters are at a greater risk of flooding than homeowners since they have fewer opportunities and fewer resources to prepare for such a calamity (Burby et al., 2003; Ma & Smith, 2020).

Past studies related to disasters (Ajzen, 1991; Ejeta et al., 2015) extensively leaned on psychological frameworks. However, exploring social and psychological theories associated with disaster preparedness remains in its preliminary stages (Vinnell et al., 2018). Levac et al. (2012) highlighted that utilizing social norm theory offers an avenue to investigate both the theoretical and pragmatic dimensions of disaster preparedness. However, the effectiveness of efforts to encourage disaster preparedness is limited when they do not align with or consider the prevailing social norms (Solberg et al., 2010). The purpose of this study, which is grounded on social norm theory, is to examine the connection between subjective norms and flood preparedness intentions and between flood preparedness intention and behavior. Additionally, the study explores the potential moderating impact of trust in public protection on the positive association between subjective norms and flood preparedness intention.

LITERATURE REVIEW

Social Norms Theory

There is an urgent call for researchers to investigate factors influencing flood preparedness behavior, especially in developing countries (Hoffman & Muttarak, 2017). However, Ng (2022) argued that most past studies on disaster preparedness behavior lacked an underpinned theory. Based on this foundation, the present study utilized social norm theory to explore influences on individuals' responses to flood preparedness measures. The social norm theory was employed as an underpinning theory of the study because the theory is specifically tailored to understanding how societal expectations and norms influence

flood preparedness intention and behavior among household renters residing in the East Coast region of Malaysia.

The adoption of social norm theory is also grounded in existing empirical evidence. Evidences such as Hausenblas et al. (1997) and recent research (Al Mamun et al., 2018; De Jong et al., 2019; Huang et al., 2021) have consistently reported weak or non-significant associations between subjective norms and intention, justifies the need to explore deeper into the application of social norm theory. This evidence suggests a gap in understanding that social norm theory may help address. The inclusion of trust in public protection as a moderating variable adds a layer of complexity to the study. Social norm theory is well-suited to accommodate moderating variables, as it recognizes the impact of external factors on the relationship between norms and behavior. This theoretical framework allows for a deeper investigation into how trust in public protection may influence the strength of the association between subjective norms and flood preparedness intention.

Past studies have utilized several theories, namely the theory of planned behavior (Jacob et al., 2023), the health belief model (Ejeta et al., 2016), and the Protection Motivation Theory (Kurata et al., 2023). These previously employed theories emphasize individual cognitive factors and risk perceptions, which may not specifically capture this study's research objectives. Thus, the exclusive use of a theory specifically focused on social norms provides a more fitting framework for comprehensively exploring the communal aspects shaping intentions related to flood preparedness in this study.

Besides that, the social norms theory is relevant and suitable to be adopted in the context of Malaysia. Malaysia practices a collectivistic culture where the actions of individuals are expressed on a foundation of cultural beliefs that value shared purpose and alignment with social norms (Zaremohzzabieh et al., 2021). In cultures prioritizing collectivism, people's behaviors are influenced by cultural ideas emphasizing the importance of shared objectives and adherence to societal norms. It fosters the development of social connections aimed at attaining collective goals and future aspirations (Paton & Jang, 2016). Palm (1999) states that a positive correlation exists between higher subjective norms within communities and a collective problem-solving orientation. Oyserman (2008) contends that people in collectivistic societies are likely to be interdependent and pursue group rather than individual goals. Hence, subjective norms may be a key factor in influencing an individual decision.

Hausenblas et al. (1997) conducted a meta-analysis study and found that, on average, most scholars reported a weak coefficient of 0.27 between subjective norms and intention. Meanwhile, recent studies (Al Mamun et al., 2018; De Jong et al., 2019; Huang et al., 2021) found no statistically significant association between subjective norms and intention. This observation emphasizes the need for the present study

to transcend these limitations by utilizing social norms theory. By recognizing the consistent trend of weak associations or non-significant findings in previous research, our study aims to address these gaps by examining the relationship between subjective norms and intention.

Exploring social norms encompasses a diverse array of disciplines within the realms of social sciences and humanities, theoretically and empirically (Legros & Cislaghi, 2020). Within the existing literature, there is a widely held belief that social norms effectively mirror the collective agreement of society regarding what is considered acceptable conduct (Krupka & Weber, 2013). Ostrom (2000) defined social norms as a shared understanding of suitable, unsuitable, and forbidden behaviors. Behavior is regulated by social norms, which promote conformity to what is accepted by the majority within a given community (Broady et al., 2023). Appealing to these implicit standards may prompt positive behavioral and attitude changes (Mollen et al., 2010).

Blay et al. (2018) contend that subjective norms, which involve individuals' perception of others' anticipated actions, represent a significant element within social norm theory. Following social norm theory, individuals typically aim to conform to the group's norms rather than attempting to set their own (Blay et al., 2018). Subjective norms are another social pressure that people must conform to (Fishbein & Ajzen, 2010). Individuals are inclined to respond to others' expectations when they believe they are commonly held within their social circle (Chen & Fu, 2022). When individuals experience influence from individuals they hold in high regard, the impact of social pressure tends to be heightened (Thompson-Leduc et al., 2015).

An individual's drive to act can be shaped by their perceptions of others' anticipations and by observing the conduct of their peers (Blay et al., 2018). Ozaki and Nakayachi (2020) mentioned that theoretical considerations related to disaster risk reduction are also linked to approaches that involve social norms. Based on the explanation above, it can be construed that an individual's beliefs about what others expect in terms of flood preparedness can influence their behaviors. Suppose individuals perceive that flood preparedness is valued and expected by those around them. In that case, they are more likely to engage in the recommended actions, thus contributing to improved overall flood resilience.

Subjective Norms and Flood Preparedness Intention

The core of the subjective norm concept lies in an individual's assessment of the extent to which they encounter social influence to carry out a particular behavior. When individuals experience peer influence urging them to behave in a specific manner, social norm theory suggests that they are more inclined to comply (Fishbein & Ajzen, 2010). Individuals are more prone to act based on others' anticipations when they believe these expectations are commonly

held within their social circle (Chen & Fu, 2022). Oktavianus and Bautista (2023) highlighted the significance of subjective benchmarks and their potential to enhance behavioral intention.

Past studies (Bautista et al., 2022; Chen & Fu, 2022; Godin et al., 2008; Thompson-Leduc et al., 2015) found that subjective norms were positively associated with behavioral intentions. Subjective norms were found to have the greatest impact on behavioral intention in a meta-analysis of healthcare professionals' shared decision-making behaviors (Thompson-Leduc et al., 2015). Furthermore, initial investigations suggested that larger social networks contributed to a higher likelihood of evacuation among Black individuals compared to White individuals (Perry, 1979).

In the context of disasters, Riad et al. (1999) pointed out that individuals typically turn to others for guidance when making choices during natural calamities. Moreover, earlier investigations have shown that subjective norms positively influence the intention to prepare for disasters (Kahlor et al., 2019; Ong et al., 2021; Wang & Tsai, 2022). Subjective norms play a crucial role as communal benchmarks that greatly assist a community in mitigating the impacts of a flood disaster (Kahlor et al., 2019). McIvor and Paton (2007) identified a favorable correlation between subjective norms and earthquake preparedness. Ong et al. (2021) noted that individuals are experiencing peer-driven pressure to prepare for significant events like the Big One. In a study conducted in a disaster-prone region of Japan, Motoyoshi and Takao (2004) discovered that the influence of subjective norms, which encompass interpersonal connections, significantly affected individuals' inclination to engage in community-based disaster reduction efforts. Based on the explanation above, this hypothesis is offered:

Hypothesis 1(H1): There is a positive relationship between subjective norms and flood preparedness intention.

Flood Preparedness Intention and Flood Preparedness Behavior

Individuals create intentions for behavior by giving themselves instructions on how to behave in particular circumstances (Triandis, 1980). Sheeran (2002) contends that an individual's behavioral intention can be seen as a reflection of their degree of motivation to perform a specific behavior. Arendt et al. (2013) pointed out that behavioral intention is the driving force that influences an individual's choice to act in a specific manner. Studies in natural disaster preparedness have shown that an individual's behavioral intention strongly forecasts their real actions in terms of preparedness (Ning et al., 2020). It is the position of Kurata et al. (2022) that behavioral intentions are causally linked to actual behavior. Intentions and actions have been found to have a high correlation of 0.90 to 0.96 (Ajzen et al., 2009). Household renters with the most serious intentions of preparing for floods are thus expected to be the most proactive. Based on the explanation above, this hypothesis is offered:

Hypothesis 2 (H2): There is a positive relationship between flood preparedness intention and flood preparedness behavior.

The Moderating Role of Trust in Public Protection

While earlier studies have demonstrated that individual norms have a favorable impact on the intention to be prepared for floods (Kahlor et al., 2019; Ong et al., 2021; Wang & Tsai, 2022), contrasting findings have been presented by another research (Armitage & Conner, 2010; Prasetyo et al., 2020). Due to conflicting results, the researchers intend to incorporate trust in public protection as a moderating factor. Trust in public protection refers to the belief that governmental bodies, authorities, and public institutions will ensure the population's safety against various hazards, such as floods. In flood management, trust in public protection could be crucial in shaping preparedness intentions (Kellens et al., 2011).

Individuals with a heightened trust in governmental institutions exhibit a greater propensity to rely on said institutions for safeguarding against flooding while concurrently assigning diminished significance to the influence of other individuals who are important to them. This situation pertains to alternative sources of influence, as citizens relied on the government to safeguard them from calamity rather than relying on the prominent individuals in their immediate vicinity. In situations where trust levels are elevated, individuals may exhibit a greater inclination to rely on the behaviors of authoritative figures than those of a social network.

Hypothesis 3 (H3): The positive relationship between subjective norms and flood preparedness intention will be weakened when trust in public protection is higher.

METHODOLOGY

Research Design

This study used a cross-sectional survey approach, meaning questionnaires were sent out to participants and collected all at once. The study also incorporates hypothesis testing, with three hypotheses formulated based on social norms theory and previous research. Furthermore, a correlational approach is applied to explore the correlations among subjective norms, intentions for flood preparedness, and actual behavioral patterns. Besides that, the study introduces trust in public protection as a moderating variable, aiming to assess its impact on the association between subjective norms and flood preparedness intentions.

Instrument Development

This study used a questionnaire divided into two parts: the first collected participants' demographic data, and the second scored items related to four theoretical constructs. The items used to measure these concepts were adopted from existing studies, and minor adjustments were made.

Specifically, the measurement items for flood preparedness intention and subjective norms were adapted from the works of Ajzen (1991), Najafi et al. (2017), and Ng (2022). Besides that, trust in public protection items was derived from Gumasing et al. (2022) and Terpstra (2011). The items for flood preparedness behavior were adopted and adapted from Najafi et al. (2017) and Ng (2022). Furthermore, to address the issue of social desirability bias (SDB), measurement items were adopted from Fischer and Fick (1993). Common method variance (CMV) can be reduced using separate anchor scales to evaluate independent and dependent variables (Podsakoff et al., 2003). Respondents' impressions of item similarity and redundancy are diminished when many scales are used, which minimizes biases in item understanding, memory recall, and judgment. It was accomplished by measuring the independent factors on a five-point Likert scale and the dependent variables on a seven-point Likert scale to reduce the influence of CMV.

Sampling and Data Collection

The purposive non-probability sampling technique was used in this study, and the participants were all renters in the East Coast Region of Malaysia. According to Krause (2019), applying a probability sampling technique is hindered when complete accessibility to the sampling frame is unattainable. The purposive technique was applied in this case due to the unavailability of a complete sampling frame. Calder et al. (1981) categorized generalizability into two forms: effect application and theory application. Effect application occurs when researchers employ probability sampling techniques to generalize their findings to the population. In contrast, theory application pertains to instances where researchers employ non-probability sampling, test a sample, and generalize the findings to the theories used in the study. Hulland et al. (2018) highlighted that employing a convenience sample is sufficient when the study's main objective is assessing postulated theoretical effects' veracity. The necessity for a probability sample varies across research contexts (Sarstedt et al., 2018), and opting for either probability or non-probability sampling does not inherently indicate the research's quality (Memon et al., 2017). Previous research on disasters, published in Quartile 1 Scopus and Web of Science journals (Cahigas et al., 2023; Djimesah et al., 2018; Mata et al., 2023), employed the purposive sampling technique with SmartPLS.

The inclusion criteria for purposive sampling in this study require participants to reside in the East Coast Region of Malaysia (Kelantan, Pahang, or Terengganu), be household renters, and have experienced at least one flood event in their residential area within the past five years. These criteria aim to ensure that the sample accurately represents individuals affected by floods and possesses first-hand experience with flood preparedness, thereby facilitating an in-depth examination of the influence of subjective norms on flood preparedness behaviors among household renters. Additionally,

these criteria allow for consideration of the moderating effect of trust in public protection on flood preparedness intentions. Renters are frequently more vulnerable to floods because they have less control over their properties' physical qualities. They may experience difficulties executing structural alterations or making significant changes to their dwellings to reduce flood hazards. Therefore, renters must recognize their vulnerability and proactively prepare for floods.

The survey was conducted using Google Forms and distributed online through social media platforms such as Facebook and WhatsApp groups for one month. The number of predictors and the analytical power were used to determine the sample size. As Gefen et al. (2011) suggested, this study utilized parameters of 80% power, a medium effect size, and a *p*-value of 0.05 to obtain a minimum sample size of 108. However, the researchers obtained 150 respondents, exceeding the minimum sample size of 108. Hence, the sample size of the study is sufficient.

The descriptive analysis of the study found that 60.7% of research participants were female and 39.3% were male. Moreover, a significant proportion of respondents fell within the age range of 25 to 34 years old. Geographically, the highest percentage of respondents came from Pahang (43.3%), followed by Terengganu (32.7%) and Kelantan (24%). Regarding the types of communities represented, 41.3% were from sub-urban areas, 39.3% from urban areas, and 19.3% from rural areas. Table 1 also illustrates that a significant proportion of the surveyed population has a monthly income of RM 4999 or lower.

Table 1
Demographic profiles of respondents

Characteristics	**Category**	**Frequency (n= 150)**	**Percentage (%)**
Gender	Male	59	39.3
	Female	91	60.7
Age	15–24 years old	57	38
	25–34 years old	67	44.7
	35–44 years old	19	12.7
	45 years old and above	7	4.6
States	Kelantan	36	24
	Pahang	65	43.3
	Terengganu	49	32.7
Types of community	Rural	29	19.3
	Sub-urban	62	41.3
	Urban	59	39.3
Household Monthly Income	RM 4999 and below	113	75.4
	RM 5000–RM 9999	22	14.6
	RM 10 000 and above	15	10

Source: Authors' work

FINDINGS

The primary purpose of this research was to analyze the correlation between the variables included in the study's theoretical framework. Smart-PLS version 4 was utilized to analyze the study's collected data. A two-stage analysis was used in this study, as suggested by Hair et al. (2019). First, the measurement model was analyzed for convergent and discriminant validity. Second, using the bootstrapping technique, the structural model was put through its paces with a resampling frequency of 10,000 times (Hair et al., 2019).

Control Variables

Evaluating the influence of control factors on the dependent variable is crucial to exclude external effects not associated with the hypothesized relationships (Kock et al., 2008). This study employed age and household monthly income as control variables. Previous studies have demonstrated that age (Al-Rousan et al., 2014) and household monthly income (Okayo et al., 2015) significantly influence flood preparedness behavior. By incorporating age and household monthly income as control variables, this study effectively addresses any potential confounding factors related to the endogenous variable. This setting enables us to examine the unique impacts of the variables under study, thereby enhancing the robustness and accuracy of the research findings.

Common Method Variance

In this study, the same person answered the exogenous and endogenous variables simultaneously, making it necessary to employ both procedural and statistical measures to eliminate the possibility of common method variance (CMV) (Ngah et al., 2019). The techniques used in the procedures are detailed in the discussion and dedicated to developing the instrument. Regarding the statistical approach, the results obtained from the Measured Latent Marker Variable (MLMV) indicate that the difference in R^2 when including or excluding the marker (MV) is below the threshold of 0.09 (Table 2), as established by Lindell & Whitney (2001). Adding marker variables does not significantly alter the Beta or R^2 values. Therefore, CMV was not an issue in this study since this outcome has supplied further evidence of its insignificance.

Table 2
Comparison of R^2 value between baseline model and marker included the model

	INT	FPB
R^2 without Marker Variable	0.352	0.496
R^2 with Marker Variable	0.373	0.522

Note. INT: Flood preparedness intention, FPB: Flood preparedness behavior
Source: Authors' work

Measurement Model

Convergent and discriminant validity are prerequisites for a reliable and accurate measurement model. If the loading is at least 0.50, the AVE is at least 0.5, and the composite reliability is at least 0.7, convergent validity has been demonstrated (Hair et al., 2019). Table 3 demonstrates no problem with the study's convergent validity because the outer loading, AVE, and CR are

more than the threshold values. When that condition was met, the model's discriminant validity was examined.

The test has discriminant validity if the HTMT values are less than 0.85 (Franke & Sarstedt, 2019). Table 4 shows that all the values were less than the intended 0.85; hence, the study passed the HTMT criterion. This study's findings demonstrated that the model had enough discriminant validity for the constructs and items included in the analysis.

Structural Model

This study successfully addressed the CMV issue, as depicted in Table 2, enabling the

Table 3
Convergent validity

Construct	Indicator	Outer Loading	CR	AVE
FPB	FPB1	0.750	0.899	0.640
	FPB2	0.850		
	FPB3	0.755		
	FPB4	0.838		
	FPB5	0.801		
INT	INT1	0.944	0.965	0.902
	INT2	0.959		
	INT3	0.946		
SN	SN1	0.909	0.842	0.651
	SN2	0.913		
	SN3	0.541		
TPP	TPP1	0.883	0.940	0.798
	TPP2	0.925		
	TPP3	0.882		
	TPP4	0.882		

Note. FPB: Flood preparedness behavior, INT: Flood preparedness intention, SN: Subjective Norms, TPP: Trust in public protection
Source: Authors' work

Table 4
Heterotrait–monotrait (HTMT)

	FPB	INT	SN	TPP
FPB				
INT	0.768			
SN	0.792	0.635		
TPP	0.417	0.313	0.408	

Note. FPB: Flood preparedness behavior, INT: Flood preparedness intention, SN: Subjective Norms, TPP: Trust in public protection
Source: Authors' work

researchers to test the study hypotheses. The bootstrapping method was then used to test the hypotheses. The results of the direct path coefficient are presented in Table 5, while the research framework of the study is depicted in Figure 1. Subjective norms (SN) were hypothesized to have a positive connection with flood preparedness intentions (INT), and the results corroborated this hypothesis (β = 0.434, t = 5.455, LL = 0.303, UL = 0.564, p < 0.001). It lends credence to H1. For H2, it was hypothesized that a positive correlation existed between flood preparedness intention (INT) and flood preparedness behavior (FPB), and the results corroborated this (β = 0.687, t = 9.639: LL = 0.566, UL = 0.781, p < 0.001). It lends credence to H2.

Table 6 shows that trust in public protection (TPP) negatively moderated the relationship between SN and INT (β = -0.150, t = 2.488: LL = -0.235, UL = -0.043, p < 0.005). Therefore, H3 was supported. Figure 2 illustrates the plot for the moderation result.

Table 5
Direct path coefficient

Paths	Beta (β)	SE	t-value	p-value	f^2	VIF	LL	UL
SN -> INT	0.434	0.080	5.455	0.000	0.222	1.308	0.303	0.564
INT -> FPB	0.687	0.071	9.639	0.000	0.916	1.024	0.566	0.781

Note. FPB: Flood preparedness behavior, INT: Flood preparedness intention, SN: Subjective Norms
Source: Authors' work

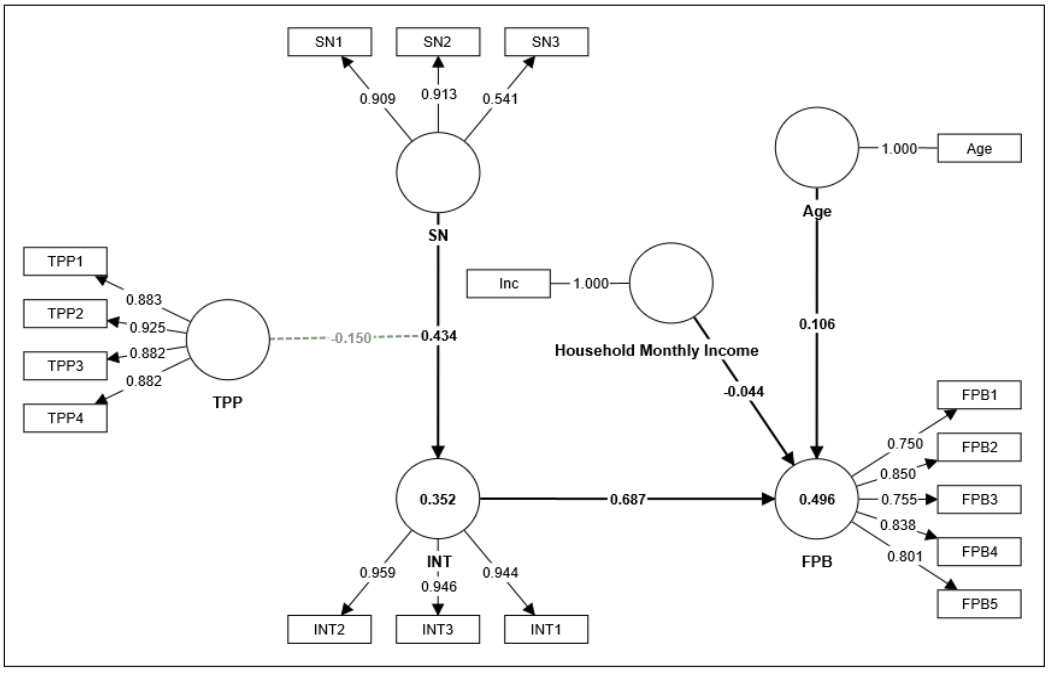

Figure 1. Research framework
Source: Authors' work

Table 6
Assessment of moderation analysis

Paths	Beta ((β)	SE	t-values	p-values	f^2	VIF	LL	UL
TPP x SN -> INT	-0.150	0.060	2.495	0.006	0.048	1.173	-0.235	-0.044

Note. INT: Flood preparedness intention, SN: Subjective Norms, TPP: Trust in public protection
Source: Authors' work

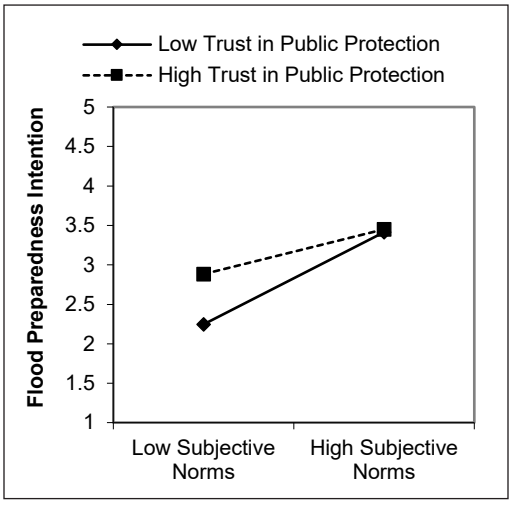

Figure 2. Dawson's interaction plot
Source: Authors' work

PLS-predict

It is essential to evaluate the predictive power of a statistical model (Shmueli et al., 2019). Shmueli et al. (2016) developed PLS predict, a holdout-sample-based approach that creates case-level predictions on an item or construct level to gain the advantages of predictive model assessment in PLS-SEM. The prediction ability of a model outside of the training data set can be evaluated with PLS prediction. Researchers need to check the prediction power by calculating each construct's PLS - LM value of all items. As depicted in Table 7, PLS-SEM analysis revealed that the flood preparedness behavior construct has medium predictive power. In contrast, the flood preparedness intention construct has high predictive power, as measured by the root-mean-squared error (RMSE).

DISCUSSION

In summary, the first hypothesis of the study was supported. Results showed a positive link between subjective norms and flood preparedness intention. Consistent with previous research by Wang and Tsai (2022) and Ong et al. (2021), this finding supports the studies above. According to Cai et al. (2023), individuals are likely to exhibit preparedness in response to social pressure in the face of disaster threats. Sheeran (2003) stated that the strength of individuals' subjective norms significantly impacts the robustness of their intentions to engage in a specific behavior. Geber and Hefner (2019) argue that the anticipation of communication with referent persons and the expectation of group members monitoring one's behavior reflects the relationship between subjective norms and flood preparedness intention.

According to Bubeck et al. (2018), people are more inclined to take preventative actions (such as buying flood insurance) if they see their peers, coworkers, and family members doing the same. According to Deutsch and Gerard (1955), social norms can cause people to act predictably because

Table 7
Predictive power

	PLS-SEM_RMSE	LM_RMSE	PLS-LM	Q²predict	Result
FPB1	1.349	1.331	0.018	0.200	Medium Predictive Power
FPB2	1.140	1.149	-0.009	0.244	
FPB3	1.424	1.434	-0.010	0.197	
FPB4	1.033	1.012	0.021	0.327	
FPB5	1.277	1.296	-0.019	0.242	
INT1	1.300	1.379	-0.079	0.274	High Predictive Power
INT2	1.352	1.423	-0.071	0.250	
INT3	1.252	1.288	-0.036	0.325	

Note. FPB – Flood preparedness behavior, INT – Flood preparedness intention
Source: Authors' work

people naturally tend to conform to the expectations of others around them. After all, doing otherwise might have negative emotional consequences.

The concept of pluralistic ignorance is related to the positive correlation between subjective norms and the aim to be flood-ready. According to Katz et al. (1931), pluralistic ignorance is "the habit of using other people's reactions or behavior as a guide for one's own." Research on pluralistic ignorance suggests that people may incorrectly assume their perspectives are unique. So, even if it goes against their beliefs, they may act in ways that reflect society's consensus (Miller & McFarland, 1987). Gao et al. (2017) contend that people participate in a waiting and observing procedure of other people's attitudes and actions. They then imitate these behaviors to reduce the possibility of feeling socially isolated while making choices.

Besides that, this study also predicted that household renters' intention to prepare for the flood would be positively associated with their flood preparedness behavior. Becker et al. (2013) found that intention to prepare for the flood significantly predicted actual preparedness behavior for tsunamis, floods, bushfires, and volcanic disasters. Preparation for natural disasters can be predicted by people's intentions, as shown by research by Paton et al. (2008). Those intending to prepare are more likely to follow through and take safety precautions, as Paton et al. (2008) discussed further. Gerend and Shepherd (2012) found that participants' intention to uptake vaccines was positively related to vaccine uptake. Besides that, Najafi et al. (2017), in their study on intention to prepare for disasters, revealed that Tehran inhabitants' intention to prepare for disasters was positively associated with the actual disaster preparedness behavior. Arendt et al. (2013) identified behavioral intention as the primary factor determining an individual's action.

The third hypothesis of the study posited that trust in public protection would negatively moderate the relationship between

subjective norms and flood preparedness intention. As explained previously, this hypothesis was supported. This study reveals that the relationship between subjective norms and flood preparedness weakens when trust in public protection is high (Figure 2). In their study, Wang et al. (2022) found that individuals with higher trust in public protection may reduce their intention to prepare for floods since their perception of flood risk is diminished. Social norms are unique, creative, and crucial in intensifying societal risk perception (Lo, 2013). However, when individuals have high trust in public protection, their intention to prepare for floods may diminish as their perception of flood risk diminishes. Poussin et al. (2014) argue that trust in public flood protection instills a sense of security, possibly explaining residents' reluctance to take preventive measures. Therefore, the influence of subjective norms on the intention to engage in flood preparedness weakens because individuals may prioritize their trust in public protection over social pressures or expectations from peers and family members.

Other European studies (Hanger et al., 2018; Terpstra, 2011) found that people's flood-mitigation intentions and perceived risk decrease when they have faith in public flood protection. Therefore, relying on public safety nets or private insurance may dampen people's desire to take precautions. According to the research presented by Zhang et al. (2021), citizens who have faith in their government and the public structural measures in place may feel safe and, as a result, be less likely to form their flood preparation intentions.

The study's results imply that the strength of the positive association between subjective norms and flood preparedness intention may decline when individuals have a higher level of trust in public protection mechanisms. When people trust the government's ability to keep them safe, they may feel less of a need to take precautions themselves. In this scenario, even though they might feel the pressure of subjective norms encouraging them to be prepared for floods, their trust in public protection might lead them to believe their efforts are redundant or unnecessary.

CONCLUSION

Previous research has demonstrated that preparedness efforts can help mitigate the negative consequences of floods for the population and the government. The findings of this study indicate a positive correlation between subjective norms and the intention to prepare for floods. This decision implies that renters living in the East Coast Region, Malaysia, will be motivated to engage in flood preparedness actions when they witness their neighbors, family members, friends, and others who prioritize such behaviors. Besides that, sharing information through social media platforms like WhatsApp groups can contribute to renters' interest and awareness in preparing for floods. Moreover, this study also revealed that renters who intend to undertake flood preparedness activities are likely to follow through with their

intentions. Despite the favorable correlation between subjective norms and the purpose of flood-proofing one's home, the presence of trust in public protection dampens this correlation.

Theoretical and Practical Contributions

This study's adoption of social norms theory offers theoretical and practical contributions. In terms of theoretical implications, this study contributes to the body of knowledge regarding disaster risk reduction studies in the Malaysian context. The notion of social norms is applied here to understand how individual norms affect people's actions in the face of flooding. In the context of disaster preparation, Vinnell et al. (2018) contend that several social psychological concepts remain relatively untested. Ng (2022) also claimed that most past studies on disaster preparedness behavior lacked underpinned theory. This assertion highlights a critical gap in the existing literature, signaling the need for empirical investigation into the role of these concepts in shaping individuals' behaviors and responses to disaster preparedness. Based on this insight, the current study aims to contribute to the field by examining and validating the applicability of social norms theory in the context of flood preparedness behavior.

This study makes a theoretical contribution by incorporating the moderating role of trust in public protection. As discussed previously, the relationship between subjective norms and flood preparedness intention was inconsistent. Baron and Kenny (1986) suggest that researchers include a moderator variable when an unexpectedly tenuous or incongruous association exists between a predictor variable and a criterion variable. While past studies (Maidl & Buchecker, 2015; Terpstra, 2011) treated trust in public protection as the predictor of the study, this study advances the literature by recognizing its critical role as a moderator. Notably, the findings of this study reveal that this variable plays a crucial role as a negative moderator in the relationship between subjective norms and flood preparedness intention. This novel insight expands scholars' understanding of the complex interaction between social influences, trust, and flood-related behaviors, contributing to the theoretical framework within disaster preparedness.

Past studies related to flood preparedness were carried out by employing several behavioral theories that suited the research objectives. However, the present study utilized social norms theory, which is aligned with the research objective and well-suited to the Malaysian context, where a collectivistic culture is more prevalent. This study provides first-hand information on the predictors of flood preparedness behavior among household renters in the East Coast Region of Peninsular Malaysia. It offers valuable insights into household renters in the East Coast region of Malaysia concerning flood preparedness intention and behavior—a field of study that remains largely untouched in developing countries, including Malaysia. Therefore, the research

model developed in this study has the potential to be expanded and adjusted to assess the effectiveness of flood disaster response in other regions or countries prone to natural disasters.

From a practical perspective, government agencies can benefit from this study, especially the National Disaster Management Agency (NADMA) and the Fire and Rescue Department of Malaysia. They can utilize the findings to design a specific public campaign highlighting the importance of cooperation in mitigating the impact of floods. Since this study suggests that high trust in public protection weakens the relationship between subjective norms and flood preparedness intention, the government needs to educate people, especially renters, about the importance of social influence in encouraging their neighbors, peers, and family members to prepare for floods. The government and homeowners must intensify their efforts in emphasizing that flood preparedness is a collective responsibility. Government agencies should strongly encourage the participation of the entire community in risk response and emphasize that community-level construction of resilience to flood risk requires the engagement of all people (Wang et al., 2022).

The residential association, homeowners, and NGOs should encourage people to talk to their friends and neighbors about reducing the risk of natural disasters. In addition, they should encourage community members to join forces in undertaking mitigating measures. Besides that, homeowners also need to provide a clear explanation to the renters on the evacuation procedures in the event of a flood, such as safe evacuation routes, emergency shelters, the history of flooding in the area, and emergency contact numbers.

Limitations and Direction for Future Research

This study only focused on household renters residing in the East Coast Region of Malaysia. Thus, future studies should examine factors influencing flood preparedness among household renters in other regions of Malaysia to extend the model's applicability and transferability. Besides that, the data collection for the study was conducted within a month; hence, it may not capture seasonal variations or long-term changes in participants' experiences with floods. Future research should consider examining changes and the evolution of renters' perceptions and flood-related behaviors over time by extending the study duration and adopting a longitudinal study.

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