

Partial Test of Social Marketing Strategy on Smallholder Farmers' Flood Preparedness Behavior in East Coast Malaysia

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Abstract: Flood is the most frequent among natural disasters in East Coast Malaysia. It causes loss of lives destruction of farm crops, livestock and properties. These affect productivity, income and livelihood. For flood impact to be reduced, disaster risk reduction measures are highly imperative. Disaster risk reduction measures are divided in to post-disaster and pre-disaster. Despite the fact that the latter proved to be more effective, government and individuals emphasized less on it. Farmers mostly rely on government for rehabilitations after disasters. Although disaster cannot be prevented but its effect could be reduced through preparedness. Preparedness decisions are based on past experience in the area which often fail. Attitude and behavior towards preparedness is low. How could this be changed? Behavioral theories such as Social Marketing Theory and Theory of Planned behavior have the capacity to influence behavior. The objective of this study is to partially test social marketing strategy on farmers' preparedness behavior. A multistage sampling technique was employed to select four hundred and twenty two respondents from Pahang, Kelantan and Terengganu. Structural Equation Model analysis was conducted. The overall hypothesis was tested on individual path regression weights. The results revealed that promotion mix was the strongest predictor of flood preparedness behavior. Intention was also found to mediate the relationship between attitude and flood preparedness behavior. In conclusion, the study found that the hypothesized model that social marketing strategy significantly affect farmers flood preparedness behavior were supported. It is recommended that government should include social marketing strategies in its design of policies and programs on flood preparedness in the future.

Keywords: Social marketing, flood preparedness, behavior, smallholder farmer, Malaysia.

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I. Introduction

In the past years, agriculture was considered the most dominant source of national income to most developing nations particularly Africa and some Asian countries (1). Today, the contribution of the sector in terms of GDP is mostly threatened by several natural and man-made disasters. Flood is the major natural disaster affecting agriculture in most developing nations. The percentage rise in affected population globally has increased by 14%, while the rate of death due to disaster has also increased by 39 % (2). It is facilitated by climate change, which is a serious environmental phenomenon affecting mankind globally (3–6). Malaysia has been experiencing incessant flood events which affected several people in the country. Recently, East Coast of Malaysia experienced flood disaster in 2014/2015, as a result of north east monsoon which affects the states of Kelantan, Terengganu and Pahang and the west coast state of Perak, causing loss of about 21 lives, farm crops and properties worth about 1 Billion Ringgits and disruption of agro supply chain. Smallholder farmers are the primary victims of this flood disaster, especially those living along the East Coastal area of Kelantan, Pahang and Terengganu (7). The effect of the flood on farmer's crops, animals and farm properties led to low productivity and low income which affected farmers sources of livelihood (8–11). A disaster could be defined as "serious disruption to the functioning of a community or a society which causes widespread human, material, economic or environmental losses which exceed the ability of the affected community or society to cope using its own resources" (12). Although flood disaster cannot be prevented, its effect can be minimized by ensuring that necessary disaster risk reduction (DRR) measures such as flood preparedness are in place before disasters

strike (13–20). Flood disaster preparedness is defined as proactive actions that ensures resources necessary and effective response are made available for the farm and farm family before the occurrence flood disaster or can be mobilized promptly when needed. In terms of flood disaster management, studies have revealed that government and individuals pay more attention to post disaster activities such as rehabilitation of the victims rather than pre-disaster activities. This is despite the fact that, the latter proved more effective (21,22). Farmer's knowledge, awareness and behavior towards flood preparedness is low (23–25). Unless there is change in both attitude and behavior, the impact of the flood on people will continue to escalate.

Social marketing had its origin from the discipline of commercial marketing. Wiebe, in 1952 posed a question 'Why brotherhood can't be sold like soap?' He concluded that applying commercial marketing techniques could benefit society's aspirations (26,27). In the quest for a broader based effort of behavioral change to influence small holder farmers, Social Marketing Theory (SMT) and Theory of Planned Behavior (TPB) were identified due to their ability to influence behavior (28–37). Marketing approaches are beyond customers only, they constitute social and global. The attention of social marketing in the society is building a positive behaviour changes. Social marketing involves design, practice and control. Apart from design and practice of thought, its adoption by the society is the most important element(38). Therefore, it must be controlled. Generally, social marketing is based on the benefit of the society. People's attitude about issues that shape the society all together have been thoroughly studied by marketers in the arena of social marketing. Social marketing employs marketing principles and techniques such as the social marketing mix (4 P s) to influence target audience to embrace, reject or disregard a behavior voluntarily for the benefit of people who live in the society (31,39–41). Various governments have used social marketing to address health issues, environment and community development (42–45). Till now, the East-Coast Malaysia lack existing study on the application of social marketing theories and strategies to sensitize and create preparedness behavior change among smallholder farmers. Just like commercial marketing, it can be applied to influence flood preparedness behavior.

Through the application of behavioral change theory such as (SMT) and (TPB), farmer's preparedness behavior can be predicted based on the hypothesized model. This will enable the government channel its resources effectively in terms of programs and campaign to influence behavior change.

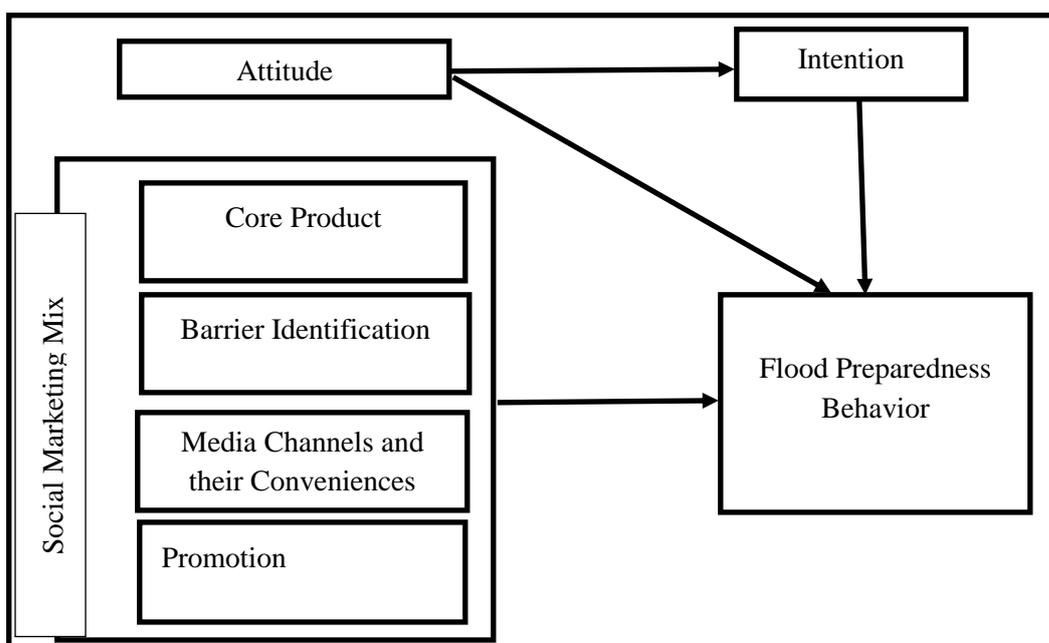


Figure 1. Framework for the Study.

Just like any other behavior change initiatives, preparedness marketers surely believed that it is not an easy task to influence people to change the way they conduct or feel about things in life. However, effort focused on influencing flood preparedness behavior can save lives farm crops, livestock and properties in developing countries and have a tremendous impact on respondent's livelihood. This is the central challenge of several social marketing programs to confront an extremely held belief or rooted habit and challenge the status quo.

The ultimate bottom line is not just to heighten awareness or change attitude towards an issue but to persuade and enable people to take the desired behavior. To that end, social marketing tends to create a distinction between having an initial impact and everlasting impact on the target audience.

The operationalization of the Social Marketing Mix (SMM) comprises a strategic mix of the right kind of the core product and its associated benefits, barrier identification, using the right media channel and their conveniences and supported by the right kind of promotion activities. McCarthy named it 4 'P's. (46). When social marketing is used for flood disaster management, the context of each 'P' revolves around the dynamics of flood disaster management and target group's (smallholder farmers). The researcher now discuss the 4 P's of social marketing in the context of this study.

The core product is the associated benefits derived from the desired behavior change. The core product is the safety of the public and a better prepared society for a disaster. The actual product is the sum of different actions that people need to take to be prepared for a crisis. This can be in the form of preparing a farmers safety kit at home and farm, preparedness plan, awareness of dialing Malaysian Disaster Management Authorities number in case of a disaster, suitable knowledge of "what", "how", "when", "where" and "why" of necessary actions and steps during emergency situation etc. The augmented products constitute tangible objects like pamphlets, magazine, hoardings, flyers, movies, events, advertisement in television, newspaper, etc. that actually become the 'face' of disaster management to people and influence people to change to the desired behavior. Respondents' will adopt the desired behavior, that is, preparedness if they are satisfied with the associated benefits. The product could be tangible or intangible, but social marketing is more concern with the intangible products.

Price constitute the barriers identified to hinder preparedness (Physical, social, emotional and psychological) that the target individual associates with adopting the new behavior(47). Example include lack of proper preparedness information, lack of augmented products due to lack of enough fund to purchase, time consumed to engage in the practice, effort exhausted during practice, psychological cost such as emotional disturbance, physical cost such as tiredness, opportunity cost which is the activity to be endured to perform flood disaster preparedness and social cost, the doubt and negative perceptions from peers due to not following the norms of the social group demonstrating that they are not part of the group.

Place in this study refers to the media channels and their convenience. It is concern with where and when the target market will perform the desired behavior and receive any associated services (39). Generally, two important strategies in the place mix for the flood and natural disaster preparedness behavior are accessibility of information about flood natural disaster preparedness which is commonly known as the distribution channel. The surrounding environment that help to facilitate the changed behavior while promotion in social marketing are the campaigns that is embarked upon in order to convince the target audience to know, believe or adopt using various communication channels, media channels, public relations, event, sponsorship, emails, websites, etc.

In the contextual of disaster preparedness, the precise kind of promotion along with mix of other three P's could help people realize the real barriers of the desired behavior. For example, appropriate message and channel used can tell people that preparedness supplies and constant consultation are freely available and simply accessible to them. Media channels and public relations could be used to disseminate information and motivate people towards desired behavior.

Research Objectives

The aim of this study is to examine the contribution of social marketing strategy (core product, barrier identification, media channel and their conveniences and promotion) and farmer's attitude on intention to engage in flood preparedness behavior in East Coast Malaysia. This objective is tested via the following hypothesis:

1. H1: Core product has significant effect on farmer's intention to engage in flood preparedness behavior
2. H2: Barrier identification has significant effect on and respondents' flood preparedness behavior
3. H3: Media channel and their conveniences has significant effect on and respondents' flood preparedness behavior
4. H4: Promotion has significant effect on and respondents' flood preparedness behavior
5. H5: Attitude has a significant positive effect on respondents' flood preparedness behavior
6. H6: Attitude has a significant positive effect on respondents' intention
7. H7: Intention has a direct relationship with respondents flood preparedness behavior
8. H8: Intention mediates the relationship between attitude and respondents' flood preparedness behavior

II. Research Methodology

This research was of a survey design which employs the use of questionnaire as a main tool to collect data. Questionnaire included close-ended questions to measure constructs used in study and specific questions to measure the demographic characteristics of respondents.

Questionnaire Design: A structured questionnaire was developed based on literature and Focus group discussion was held by the researcher with the assistance of enumerators due to language barrier on the 12th of February, 2016 and presented by enumerators. Also, relevant studies and guidelines from (48), (49), (50), (51) were used. Disaster reduction guidelines and brochures obtained from fema.gov were also consulted. Questionnaire was constructed in English but translated to Malay language by expect for easy understanding.

Social marketing strategy constructs were measured by core product, barrier identification, media channel and their conveniences and promotion with 8 items each. Intention was measured with 7 items while attitude and flood disaster preparedness were measured with 5 and 9 items respectively. A five point Likert-type scale, ranking from (1) for 'Strongly Disagree' to (5) for 'Strongly Agree' was used to measure the scales,

Pilot Test:

In order to attain efficiency in the data collection process, a pre-test was conducted between the periods of 6th of April to 28th of May, 2016. The main purpose of conducting the pilot study is to test the goodness of measure. The pilot study is important in order to check the reliability and validity of items for the six main constructs and to also test the effectiveness of the questionnaire in terms of the simplicity and the understanding by the farmer's respondents. With the assistance of three enumerators, fifty eight questionnaires were administered using multistage sampling technique. This constitute more than 10% of the sample for the main study as recommended by (52).

Descriptive analysis (mean and standard deviation), Cronbach's alpha Coefficients and Bartlett's test of Sphericity were tested to assess internal consistency, reliability and validity of instruments. The results revealed that the items used to measure the constructs have Cronbach's alpha greater than 0.7.

Population and Sample size

The research population constitute smallholder farmers from East Coast Malaysia within states of Kelantan, Terengganu and Pahang. The actual data for analysis was collected between the periods of 6th August to 31st October 2016. A sample size of 422 was chosen from a population of about 119, 000 smallholder farmers based on (53). According to (54), sample size not less than 200 and not greater than 400 is enough for carrying SEM statistical analysis. Sample size of more than 400 will yield result that is difficult to interpret.

Method of data collection and Sampling Technique

Multi-stage sampling technique were employed to select 422 respondents. From the 422 questionnaires, only 403 were retrieved. The remaining data were keyed in SPSS version 22.0. Descriptive output such as frequency, mean and standard deviation were selected to check if the data had been correctly entered. Normality was tested using kurtosis and skewness. Missing data, outliers and multicollinearity were also checked. This resulted in retaining 384 questionnaires.

Reliability Analysis

Table 1 shows the reliability analysis which was conducted to test the consistency and stability of the instruments. Cronbach's alpha was applied. The reliability and mean of the exogenous constructs of social marketing mix (core product, barrier identification, media channel & convenience and promotion), attitude, intention and endogenous constructs of flood preparedness behavior were tested. According to (55) less than 0.6 Cronbach's alpha coefficients indicates a problem of internal consistency. However, (56) viewed that 0.60 is still considered accepted. In this study, the reliability coefficient of 0.70 was used. Higher Cronbach's alpha ensures higher reliability due to the value of correlation coefficient between variables. The result of Cronbach's alpha indicated that all constructs have a value more than .70. This mean it was acceptable for further analysis.

Table 1: Results for Reliability Test

Construct	Items	Cronbach's alpha	Mean	Std. Dev.
FPB1	I have safeguard the most important farm records	.943	4.22	.494
FPB2	I monitor my planting and harvesting period to avoid flood disaster		4.22	.494
FPB3	I ensure selling my farm produce before the peak of rainfall (monsoon)		4.21	.520
FPB4	I have made plans to protect my crops/animals against flood and natural disaster		4.22	.503

FPB5	I ensure preservation of enough feed for my livestock for at least three days		4.21	.523
FPB6	I can do anything to reduce flood and natural disasters damage		4.20	.522
FPB7	I have functional radio to monitor flood warnings		4.22	.487
FPB8	I have 72 hour food and water in case of flood natural disaster		4.18	.552
FPB9	I have phone contacts in case of flood natural disaster		4.00	.534
MCC1	I receive flood and natural disaster information through Radio	.962	4.2	.546
MCC2	I receive flood and natural disaster preparedness information via Television		4.23	.559
MCC3	Receiving flood and natural disaster preparedness information in my farm motivates me for a behavior change		4.22	.564
MCC4	I receive flood and natural disaster preparedness information through mobile phone text		4.21	.568
MCC5	Receiving flood and natural disaster preparedness information at convenient time motivates me for a behavior change towards it		4.21	.597
MCC6	The location of my farm/ agribusiness makes it easy to receive information on flood and natural disaster preparedness behavior		4.22	.585
PRM1	Advertisement on television, radio and billboards increase my knowledge and influence me to prepare for flood and natural disaster	.958	4.21	.511
PRM2	Information from public relations such as press release and letters to the editors can influence me to prepare for flood and natural disaster		4.21	.521
PRM3	Information from social media such as twitter, social networks motivates me for flood and natural disaster preparedness behavior		4.20	.538
PRM4	Information from agricultural shows		4.19	.526
PRM5	Information from entertainments such as drama, songs motivates my practice of flood and natural disaster preparedness		4.18	.545
PRM6	Information from special events such as concerts, health fairs motivates me for practicing flood and natural disaster preparedness behavior		4.16	.550
PRM7	Information from extension agents creates awareness and motivates me for flood preparedness behavior		4.16	.634
ATD1	I think adopting flood disaster preparedness is useful to me	.958	4.27	.508
ATD2	I think flood disaster preparedness is good for my farming activities		4.29	.497
ATD3	I think adopting flood disaster preparedness is pleasant to me		4.25	.520
ATD4	I believe flood disaster preparedness can improve my farm productivity		4.25	.555
ATD5	I think flood disaster preparedness prevents me from injury		4.25	.538
ATD6	I Think my livestock will be safe if I practice flood disaster preparedness		4.24	.528
CPR1	Engaging in flood and natural disaster preparedness behavior is healthy to my environment		4.13	.651
CPR2	Practicing flood and natural disaster preparedness behavior can save my livestock		4.12	.659
CPR3	Practicing flood and natural disaster preparedness behavior can reduce damage to my crops		4.12	.655
CPR4	I feel Practicing flood and natural disaster preparedness behavior save my livestock		4.09	.666
CPR5	I believe my engaging in flood and natural disaster preparedness behavior is healthy to my environment		4.10	.657
CPR6	My involvement in flood and natural disaster preparedness behavior reduces damages to farm properties		4.09	.687
CPR7	Involving in flood and natural disaster preparedness behavior reduce damage to my crops		4.08	.684
CPR8	I believe preparing for flood and natural disaster protect my vital documents		4.70	.677
BRI1	Time is consumed while preparing for flood and natural disaster	.968	.423	.573
BRI2	I get tired while preparing for flood and natural disaster		4.22	.574
BRI3	Much effort is exhausted in preparing for flood and natural disaster.		4.22	.584
BRI4	I sacrificed other important things to prepare for flood and natural disaster.		4.22	.590
BRI5	My peers perceived me as different for engaging in flood and natural disaster preparedness behavior		4.22	.568
BRI6	I am emotionally disturbed for engaging in flood and natural disaster preparedness behavior		4.19	.644

INT1	I have high intention to prepare for flood and natural disaster	.970	4.26	.606
INT2	I plan to prepare for flood and natural disaster in the future		4.26	.596
INT3	I will consider to prepare for flood disaster in the future		4.22	.693
INT4	I will prepare for flood disaster in the future		4.24	.602

III. Results

The analysis of the measurement model indicated that the assumption of construct and discriminant validity requirement of AVE greater than 0.5, CR greater than 0.6 and correlation between each pair of latent exogenous variable to be less than 0.85 were all achieved. Fitness index such as Goodness of Fit Index, Absolute Fit Index and Parsimonious Fit index were all above the minimum cut off 0.9. (NFI = 0.94, IFI = 0.96, TLI = 0.95, CFI = 0.96, RMSEA = 0.77 CMIN/DF = 3.018). The overall hypothesis was tested on individual path regression weights and coefficient of determination. The hypothesized model that social marketing strategy significantly affect farmers flood preparedness behavior were supported.

Table 2 indicates the summary for construct reliability and average variance extracted. The assessment of unidimensionality, validity and reliability is required prior to modelling the structural model. The requirement for unidimensionality was achieved through the item deletion for low factor loadings until the fitness indexes achieve the required level. The results revealed that convergent validity was achieved because all the AVE values ranged between 0.783 and 0.871. Which is above the cut-off point of 0.5. Construct reliability was also achieved because the GOF indices have been satisfied. Likewise, redundant indicators were deleted to comply with the assumption for discriminant validity. Finally, the results revealed that composite reliability was achieved because all the critical ratio values ranged between 0.96 and 0.982 since it exceeded 0.6

Table 2: Summary of CFA Results for Measurement Model

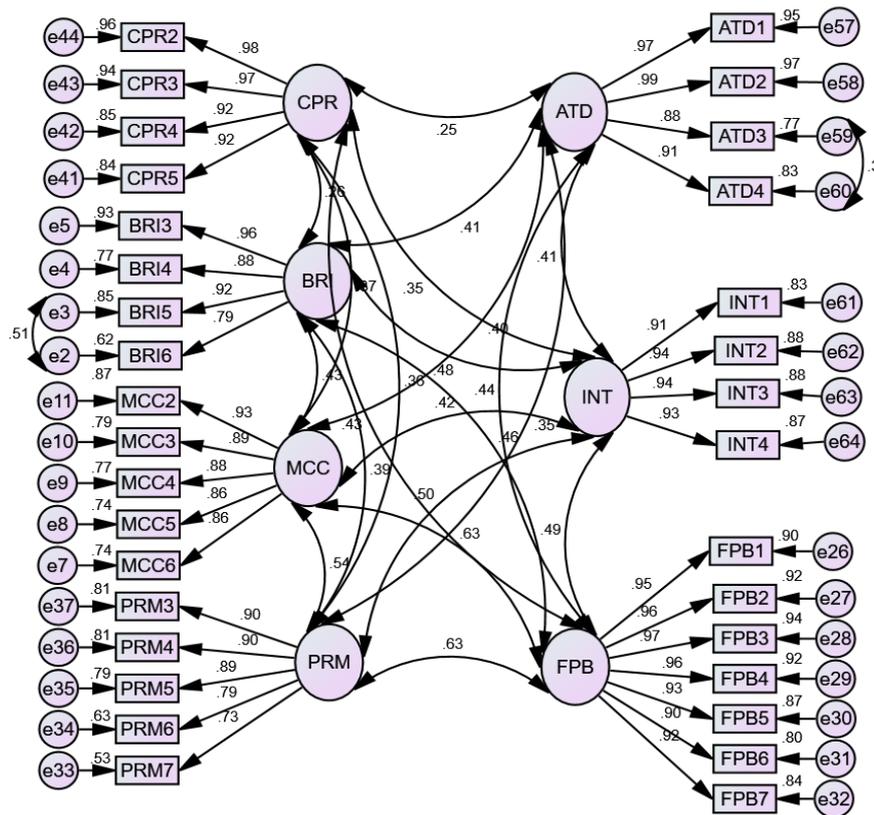
Construct	Item	Factor Loading	CR (above 0.6)	AVE (above0.5)
Core Product	CPR2	.98	0.972	0.897
	CPR3	.97		
	CPR4	.92		
	CPR5	.92		
Barrier Identification	BRI3	.96	0.939	0.795
	BRI4	.88		
	BRI5	.92		
	BRI6	.79		
Media Channel and Convenience	MCC2	.93	0.947	0.781
	MCC3	.89		
	MCC4	.88		
	MCC5	.86		
	MCC6	.86		
Promotion	PRM1	.90	0.925	0.713
	PRM2	.90		
	PRM3	.89		
	PRM4	.79		
	PRM5	.73		
Attitude	ATD1	.97	0.967	0.881
	ATD2	.99		
	ATD3	.88		
	ATD4	.91		
Intention	INT1	.91	0.963	0.866
	INT2	.94		
	INT3	.94		
	INT4	.93		
Flood Preparedness Behavior	FPB1	.95	0.982	0.885
	FPB2	.96		
	FPB3	.97		
	FPB4	.96		
	FPB5	.93		
	FPB6	.90		
	FPB7	.92		

Based on Table 3, it can be seen that the values of all the constructs ranged between 0.845 and 0.947 and the diagonal values in bold were higher than their corresponding values in rows and columns. This shows that the discriminant validity is said to be achieved and fell within the acceptable threshold.

Table 3: Results for Discriminant Validity Index for all Construct

Construct.	ATD	BRI	MCC	FPB	PRM	CPR	INT
ATD	0.938						
BRI	0.406	0.891					
MCC	0.400	0.433	0.884				
FPB	0.445	0.458	0.630	0.941			
PRM	0.353	0.3910	0.542	0.632	0.845		
CPR	0.250	0.258	0.371	0.433	0.561	0.947	
INT	0.408	0.477	0.421	0.491	0.498	0.351	0.931

The CFA measurement model was analyzed by rechecking the whole model fit. Figure 2 shows that, the measurement model for the whole construct included seven latent variables along with relevant indicators. As illustrated, Ovals or circles represent latent variables (unobserved variables). On the other hand, squares and rectangles represent measured variables (observed variables). The arrows showed the construct coefficients for standardized regression scores of observed indicators into an unobserved latent variable. The results from figure 2 indicates that, the correlation between the exogenous construct is less than 0.85 as highlighted by (57). The problem of multi-collinearity is manifested when a correlation among constructs is greater than 0.85



Chi-square (df) = 995.354 (472); P value (≥ 0.05) = .000
 ;Relative Chi-Sq (≤ 5) = 2.109; AGFI (≥ 0.9) = .834
 ;GFI (≥ 0.9) = .860; CFI (≥ 0.9) = .965; IFI (≥ 0.9) = .965; TLI (≥ 0.9) = .961
 ;RMSEA (≤ 0.08) = .057; RMR (≤ 0.08) = .009
 (Standardized estimates)

Figure 2. Measurement Model for the Framework

The factor loadings for all the constructs were adequate since they are greater than 0.7. The GOF for the structural model indicates that χ^2 (CMIN) = 1088.816 (df= 476), relative χ^2 (CMIN/df) = 2.287, AGF = .823. GFI = .850, IFI = .959, TLI = .955, CFI = .959, RMSEA = .062 and RMR = .029. This shows that the standardized path coefficient for the causal effect were consistent with the hypothesis by indicating the significant contribution of the dimension of social marketing strategy and attitude to flood preparedness behavior. The value for R^2 = .55 implying that 55% of the variations in flood preparedness behavior is explained

by the exogenous variables. Thus, it can be concluded that, social marketing constructs (core product, barrier identification, media channel & convenience and promotion) and attitude are important predictors of flood preparedness behavior among farmers in East Coast Malaysia. Figure 3 shows the diagrammatical representation for the structural model.

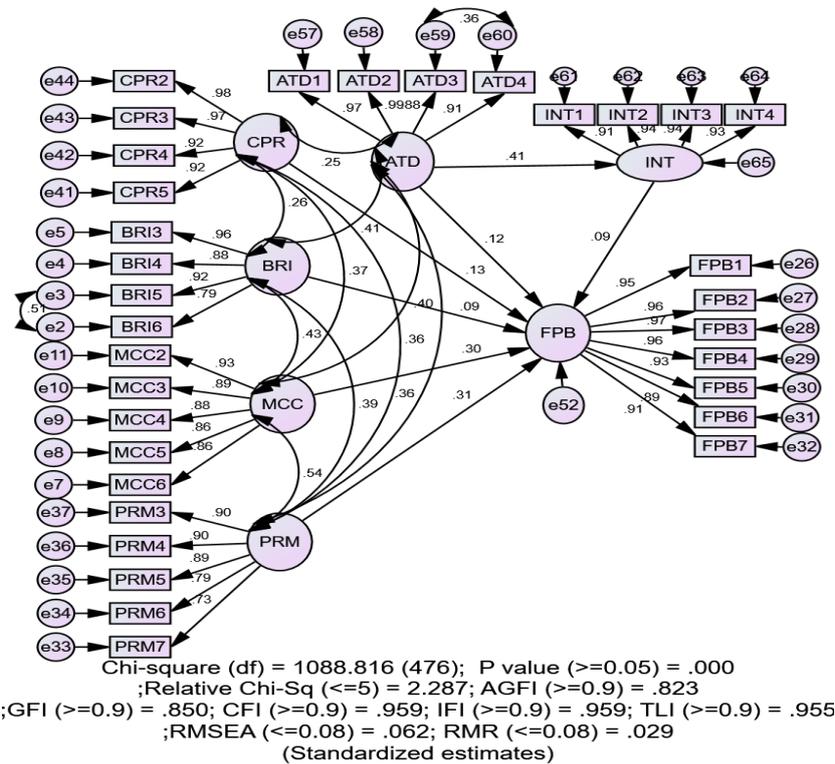


Figure 3. Regression Path Coefficient for every Path in the for the Model

The regression path coefficient and its significance based on the p-value < 0.05 indicates that all the constructs in the model were statistically significant, although barrier identification and intention exhibit a weak significance level as indicated in Table 4.

Table 4: The Regression Path Coefficient and its Significance based on p-value < 0.05

Construct		Construct	β	S.E.	C.R.	P	Result
FPB	<--	CPR	0.134	0.095	3.176	0.001	significant
FPB	<--	BRI	0.093	0.076	2.027	0.043	Significant
FPB	<--	MCC	0.301	0.275	5.805	***	Significant
FPB	<--	PRM	0.314	0.312	5.996	***	Significant
FPB	<--	ATD	0.116	0.090	2.434	0.015	Significant
INT	<--	ATD	0.413	0.290	7.890	***	Significant
FPB	<--	INT	0.086	0.096	2.042	0.041	Significant

Note*** Significant at p < 0.001

The path coefficient of product to flood disaster preparedness is 0.134, this value indicates that for every one unit increase in the standard deviation of product, its effect would contribute 0.134 unit increase in standard deviation of flood preparedness behaviour among respondents and more importantly the effect of product on flood disaster preparedness is significant (p<0.05). Thus the hypothesis that product has a significant and positive effect on flood preparedness behavior among smallholder farmers is supported.

The path coefficient of price to flood preparedness behavior is 0.093, this value reveals that for every one unit increase in standard deviation of price its effect would contribute 0.093 unit increase in standard deviation of flood preparedness behaviour likewise the effect of price on flood preparedness behaviour among smallholder farmers in East Coast Malaysia is significant (p<0.05). Thus the hypothesis that price has a significant and positive effect on flood preparedness behaviour among smallholder farmers is supported. Similarly, the beta coefficient of place to flood preparedness behaviour is 0.301, this value also indicates that if place goes up by one standard deviation its effect would contribute 0.301 unit increase in the

standard deviation of flood preparedness behaviour among smallholder farmers in East Coast Malaysia, and remarkably the influence of place on flood preparedness behaviour is significant ($p < 0.000$). Thus the hypothesis that place has a significant and positive effect on flood preparedness behavior among the respondents is supported.

The path coefficient of promotion to flood disaster preparedness is 0.314, this value also shows that for every one unit increase in standard deviation of promotion its effect would contribute 0.314 unit increase in standard deviation of flood preparedness behavior and more importantly the effect of promotion on flood disaster preparedness is significant ($p < 0.000$). The promotion construct is the second most important predictor of flood preparedness behavior after attitude. This also indicates that the hypothesis that promotion has a significant and positive effect on flood preparedness behavior is supported.

The path coefficient of attitude to intention is 0.413, this value reveals that if product is increased by one standard deviation its effect would contribute 0.413 unit increase in the standard deviation of flood preparedness behavior and notably the effect of product on flood disaster preparedness behavior is significant ($p < 0.000$). Thus the hypothesis that product has a significant and positive effect on flood preparedness behavior is supported.

Furthermore, the path coefficient of attitude to flood disaster preparedness is 0.116, this value indicates that for every one unit increase in standard deviation of farmers attitude its effect would contribute 0.116 unit increase in standard deviation of flood disaster preparedness and more importantly the effect of attitude on flood disaster preparedness is significant ($p < 0.05$). Thus the hypothesis that attitude has a significant and positive effect on flood preparedness behavior is also supported.

The path coefficient of intention to flood disaster preparedness is 0.086, this value indicates that for every one unit increase in intention its effect would contribute 0.086 unit increase in flood disaster preparedness and more importantly the effect of product on flood preparedness behavior is significant ($p < 0.05$). Thus the hypothesis that intention has a significant and positive effect on flood preparedness behavior is therefore supported. The result of every hypothesis is presented in Table 5.

Table 5: Results of Hypothesis for Respected Path and its Conclusion

	Hypothesis statements	Estimate	P-value	Result
H1	Core product has a positive and significant effect on smallholder farmers' intention to engage in flood preparedness behavior	0.134	0.001	Supported
H2	Barrier identification has a significant positive effect on smallholder farmers' intention to engage in flood preparedness behavior	0.093	0.043	Supported
H3	Media channel and their convenience has a significant positive effect on smallholder farmers' intention to engage in flood preparedness behavior	0.301	0.000	Supported
H4	Promotion has a significant positive effect on smallholder farmers' intention to engage in flood preparedness behavior	0.314	0.000	Supported
H5	Attitude has a significant positive effect on smallholder farmers' intention to engage in flood preparedness behavior	0.116	0.015	Supported
H6	Attitude has a significant positive effect on smallholder farmers' intention to engage in flood preparedness behavior	0.413	0.000	Supported
H7	Intention has a significant positive effect on smallholder farmers' in food preparedness behavior	0.086	0.041	Supported

Test for Mediation Effect

Table 6, shows a test for mediation conducted to proffer solution to H8. Intention mediates the relationship between attitude and flood preparedness behavior. Primarily, there are two major task that was considered in the test of mediation before proceeding to the next step. Firstly, the occurrence of full mediation was required to prove that it was better than the indirect model. Whereas, the second step, tests the mediation effects for a specific path. In the first step, the results must meet the decision criteria, the χ^2 value which indicates that if the full mediation model is better, (ATD) has both direct and indirect relationship with flood preparedness. However, if the indirect model was suitable, then it contributed to an indirect relationship between attitude and flood preparedness behavior through intention. The model comparison indicated that the direct model was better and showed a superior fit model.

It is essential to further check for the particular path for the mediation effect. The results indicated that intention mediates the relationship between attitude (ATD) and flood preparedness behavior (FPB). Hence, H8 was acknowledged.

According to (58);

- i) When the constructs estimates for the ATD \rightarrow FPB were decreased but remained significant in the relationship, then partial mediation was supported.
- ii) If the constructs for the ATD \rightarrow FPB were diminished to a particular point wherein it was not

significant when the attitude was mediated in the relationship, then full mediation was supported. In Table 6, the resulting relationships are summarized. Since the outcomes demonstrate that the construct estimates for the ATD → FPB was also significant in the direct relationship, then the role of intention as a mediator between attitude and flood preparedness behavior is supported. Hence, partial mediation role was established.

Table 6: Summarized Results for Hypothesis H8

	Hypothesis path	Standard Coefficient	p-value	Critical Ratio	Results
i.	ATD --> FPB	0.116	0.015**	0.090	Significant
ii.	ATD--> INT	0.413	***	0.290	Significant
iii.	INT--> FPB	0.086	0.041**	0.086	Significant
	Intention mediates the relationship between attitude construct and flood preparedness behavior construct	Indirect effect is confirmed to be tested (Zainuddeen, 2015)			Supported

Note: *** Significant at 0.001level ** Significant at 0.05 level

IV. Discussion

The estimated parameters of the model (see Fig. 3) revealed the relative success of the model at explaining the social marketing constructs (core product, barrier identification, media channel and their conveniences and promotion) and attitude on flood preparedness behavior. The findings supported the proposition of (27) in (59) that all the elements of social marketing (core product, barrier identification, media channel and their conveniences and promotion) are integrated, interrelated and equally important and should be considered at the same time to achieve successful objectives in social marketing.

The analysis of structural equation model indicated that the standardized path coefficient were consistent with the hypothesis by indicating the significant contribution of the social marketing strategy constructs on flood disaster preparedness behavior based on the goodness-of-fit indices. The analysis showed that among the constructs, promotion was found to have the most significant effect on respondents' flood preparedness behavior. The presence of promotion mix produced bigger effect size compared to interventions which did not have promotion mix element. The results are consistent with the believe that promotion mix highlights the role of the other three Ps in a persuasive manner (60). This results suggest that social marketers should include promotion mix element in their intervention to ensure that flood preparedness behavior is enhanced. So, in designing flood preparedness behavior campaign, more emphasis should be given to promotion activities such as, promoting preparedness behavior using words of mouth through (friends, neighbors, opinion leaders), online and other mass media.

Media channel and their conveniences was the second strongest predictor of flood preparedness behavior. Making the core product available ensures to get your message through to the target farmers at a time and place they can act on it. (61) found contrary results to the results of this study. Gordon found smaller effect-size for interventions which have presence of media channel and their conveniences.

The core product mix was an important mix in flood preparedness behavior, since it emphasize on the associated benefits of preparedness as revealed by (28). The results revealed that the core product increases the effect size of preparedness behavior. Similar results was found by (62). The results are in line with the study hypothesis and also served as an important insight for future flood preparedness programs.

Flood preparedness behavior is also associated with barrier identification. Every change in behavior has some barriers and cost to bear as suggested by (30). The most important decision is to ensure that farmers understand and identify the cost and barriers of flood preparedness and reduce them to the minimum. It was clear that during the survey, farmers taught that, being prepared entails a lot of cost and barriers such as lack of information, money for buying disaster supply kit, arrangement for evacuating animals with vehicles, use of generators in farm houses in an event of electricity failure etc. This perceived costs is a major barrier to farmers to be prepared. A major task lies in how to convince the farmers that the costs are minimal compared to the benefits. These findings are not in consistent with the findings of (63). Xia found that free access to facilities (interpreted as price P's presence) did not significantly contribute to change physical activity behavior due to lack of audience research. Measuring the accurate cost of changing behavior is more difficult than measuring the cost of any commercial service or product (6,64). It is therefore important to consider various factors such as social class status of subjects while including barrier identification element in social marketing campaign. Comprehensive information in social marketing help in understanding the impact of price mix element in flood preparedness enhancement.

With regards to use of TPB to examine disaster preparedness behavior, attitude was found to have significant effect on intentions. And intention mediates the relationship between attitude and flood preparedness behavior.

V. Limitations

The limitation of the study is based on the fact that, the empirical results found are consistent with the overall belief of the subject matter and the theoretical background. Despite this, the study is limited because it focused on the 4 Ps represented by exogenous constructs such as core product, barrier identification, media channel and their conveniences and promotion. Other important constructs such as people, partnership, positioning, policy and profit which are recently part of marketing mix have not been considered. Problems of self-reported behavioral events is likely to be directed by the beliefs and intentions of the respondents. The intricacy of interrelationships amongst behavioral practices and behavior itself is so evident that it is challenging to include all the variables in the same model. The study apart from being country specific is also restricted to flood disaster. Other natural disasters such as landslide, drought, earthquake and volcano have not been considered. Even though wide variety of actions that comprises dependent variable of farmers' intention to prepare were measured, there are other factors that can impact farmer's preparedness behavior action taking which could have been possibly neglected.

The strength of the study lies in the application of Social Marketing Theory and Theory of Planned Behavior to predict preparedness behavior. Furthermore, the SEM analysis results confirmed that the data fits the model.

VI. Conclusion

In conclusion, the study provide evidence supporting the application of Social Marketing Theory to successfully represent a reliable and predictive model of behavior change. Social marketing strategy constructs (core product, barrier identification, media channel and their communication and promotion) significantly predicted flood preparedness behavior. Intention also mediates the relationship between attitude and flood preparedness behavior. The respondents may have initiated efforts to prepare for flood disaster, but are perhaps not aware and lack adequate knowledge in implementing preparedness activities. However, social marketing strategy ensures that the core product (preparedness) is promoted using the appropriate media channels and convenience and at a least possible social, physical and psychological cost. The study further revealed that in Malaysia, promotion is the strongest predictor of flood preparedness behavior. Hence, should be included in government policies and programs aimed at influencing behavior among respondents. Thus, the findings of this study served as an important benchmark in providing information to the government and agencies particularly the Ministry of Agriculture Malaysia, in their quest to design policies and programs to influence farmer's behavior to adopt flood preparedness. Finally, it is strongly believed that the proposed model will provide a detailed, robust, constructive and executable in-sight on flood preparedness.

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