UNIVERSITI PUTRA MALAYSIA

EFFECT OF SOCIAL MARKETING MIX AND ATTITUDE ON FARMERS' FLOOD PREPAREDNESS BEHAVIOR IN THE EAST COAST OF MALAYSIA

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By

UMAR MUHAMMAD GAZALI

Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in fulfillment of the Requirements for the Degree of Doctor of Philosophy

May 2018

DEDICATION

I dedicated this study to the memory of my late father Alhaji Umar Muhammad Nata'ala, to my mother Hajia Ummul-Kulthum, my late brother Dalhat Umar and my wife and four children, Hajia Jidda Babayo Muhammad, Muslim, Aisha (Mama), Ummul-Kulthum (Hameeda) and Dalhat (Hanif) for their support and sustained prayer throughout the period of my study in Malaysia.

Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirement for the degree of Doctor of Philosophy

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May 2018

Chairman : Associate Professor Norsida Man, PhD
Faculty : Agriculture

The agricultural sector in Malaysia is exposed to natural disasters such as flood, landslide, drought, thunderstorm and other natural catastrophes. Among these, flood stands to be the most important in East Coast of Malaysia. The 2014/2015 flood in the East Coast of Malaysia caused damages to several properties, lives, livestock and agricultural products such as paddy, vegetables and fruits worth billions of Malaysia ringgit. The most affected are the rural populace who are predominantly smallholder farmers. This affect their livelihood sources and income making life more difficult. The effect of flood on agricultural productivity in the area has been a subject for research for many years. This study has been purposely chosen because of limited research within the area with respect to empirically and theory driven research based on flood disaster preparedness. There is an obvious gap between how theories are recommending on creating awareness and motivating flood preparedness behavior among the smallholder farmers and how preparedness is actually undertaken. Attempts have been made on how to fill this gap between theory and practice. In most of the studies regarding flood preparedness, little emphasis is place on how behavioral theories are actually applied to motivate flood preparedness behavior. There are more focus on how preparedness will work rather than how preparedness is actually carried out. Studies have shown that attitude of farmers towards flood disaster preparedness behavior is found to be low because smallholder farmers lack the proper motivation to take preparedness actions. However, over the years, both the government, researchers and individuals have focused most on ex-post (post disaster) rehabilitation rather than on mitigation activities which reduces losses. Farmers therefore rely on the effort of government for rehabilitation during disaster. It is therefore necessary to conduct study on how social marketing mix will be used to create awareness to motivate the smallholder farmers towards embracing flood preparedness behavior.

The objective of this research is to determine the effect of social marketing mix and attitude to motivate smallholder farmers' flood preparedness behavior and the mediation role of intention in the relationship between farmers' attitude and flood preparedness behavior.

Data collection were done by the use of quantitative method through structured questionnaire using a systematic sampling technique. Four hundred and eighteen (418) smallholder farmers' were selected from the states of Pahang, Kelantan and Terengganu. In each state, six districts were randomly picked. This constitute, Pahang (Kuatan, Pekan, Jerantut, Maran, Temerloh and Muazam), Kelantan (Tumpat, Tanah Merah, Kuala Krai, Pasir Puteh, Machang and Gua Musang) and Terengganu (Dungun, Besut, Setiu, Kuala Terengganu, Hulu Terengganu, and Marang). The respondents' were smallholder farmers affected by the 2014/2015 flood disaster. The statistical package used for the analysis were SPSS version 22.0 and AMOS graphics software Version 22.0. Descriptive Statistic, Binary Logistic Regression, Exploratory Factor Analysis (EFA), Confirmatory Factor Analysis (CFA), Measurement Model and Structural Equation Model (SEM) were tested. The structural equation modeling was used to evaluate the causal model while the confirmatory factor analysis was performed to examine the reliability and validity of the measurement model.

The findings indicates that social marketing (product, price, place, promotion) and attitude significantly influence flood preparedness behavior. However, promotion mix construct was the strongest predictor among the exogenous variables. The study also found that intention partially mediates the relationship between 4Ps, attitude and flood preparedness behavior. The findings finally indicates that past experience of flood disaster and income have a significantly smallholder farmers' flood preparedness behavior.

Policy wise, the study can act as a platform for relevant agencies and policy makers to ensure proper management and development of its flood disaster preparedness activities. It will assist the government in the formulation of disaster management plans, policies and programs that will motivate and create flood preparedness awareness to public based on social marketing approach. The study concluded that the hypothesized model that social marketing mix 4Ps and attitude significantly affect smallholder farmers' flood preparedness behavior in East Coast of Malaysia were supported.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

KESAN CAMPURAN PEMASARAN SOSIAL DAN SIKAP KE ATAS TINGKAH LAKU KESEDIAAN BANJIR PETANI DI PANTAI TIMUR MALAYSIA

Oleh

UMAR MUHAMMAD GAZALI

Mei 2018

Pengerusi : Profesor Madya Norsida Man, PhD
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Sektor pertanian di Malaysia terdedah pada bencana semula jadi seperti banjir, tanah runtuh, kemarau, ribut petir dan malapetaka semula jadi lain. Antara bencana tersebut, banjir merupakan malapetaka yang paling ketara di Pantai Timur Malaysia. Banjir 2014/2015 di Pantai Timur Malaysia telah menyebabkan kemusnahan kepada banyak harta benda, nyawa, ternakan, dan produk pertanian seperti padi, sayur-sayuran dan buah-buahan yang bernilai jutaan ringgit Malaysia. Yang paling terkesan ialah penduduk luar bandar yang rata-ratanya ialah petani berskala kecil. Ini memberikan kesan kepada sumber kehidupan dan pendapatan mereka dan menyebabkan hidup mereka menjadi lebih sukar. Kesan banjir ke atas produktiviti pertanian di kawasan tersebut sering menjadi subjek penyelidikan sejak bertahun-tahun. Kajian ini sengaja dipilih disebabkan kajian yang terhad mengenai perkara tersebut, terutama yang dijalankan secara empirikal dan penyelidikan berasaskan teori mengenai kesediaan bencana banjir. Terdapat jurang yang ketara antara bagaimana teori mengesyorkan pembinaan kesedaran dan memotivasikan tingkah laku kesediaan banjir dalam kalangan petani berskala kecil dan bagaimana sebenarnya ia dilaksanakan. Percubaan telah dilaksanakan mengenai bagaimana untuk mengisi jurang antara teori dan amalan. Dalam kebanyakan kajian mengenai kesediaan banjir sedikit perhatian telah dibuat mengenai bagaimana teori tingkah laku sebenarnya diaplikasi bagi memotivasikan tingkah laku kesediaan banjir. Terdapat lebih banyak fokus mengenai bagaimana kesediaan akan dilaksanakan berbanding dengan bagaimana sebenarnya kesediaan dilaksanakan. Sikap petani terhadap tingkah laku kesediaan banjir didapati rendah kerana petani berskala kecil kurang motivasi wajar bagi mengambil tindakan mengenai kesediaan. Walau bagaimanapun, sejak bertahun-tahun, kedua-dua kerajaan, penyelidik dan individu telah memfokuskan kebanyakan rehabilitasi ex post (pascabencana) berbanding dengan aktiviti mitigasi yang mengurangkan kerugian. Petani oleh itu bergantung

pada usaha kerajaan bagi rehabilitasi ketika bencana. Oleh sebab itu adalah perlu untuk menjalankan kajian mengenai bagaimana campuran pemasaran sosial akan digunakan untuk membina kesedaran bagi memotivasikan mereka terhadap kesediaan banjir.

Objektif penyelidikan ini adalah untuk menentukan kesan campuran pemasaran sosial dan sikap ke atas tingkah laku kesediaan banjir petani dan peranan mediasi niat dari segi hubungan antara sikap petani dengan tingkah laku kesediaan banjir petani.

Pengumpulan data telah dijalankan dengan menggunakan kaedah kuantitatif melalui soal selidik berstruktur menggunakan teknik persampelan sistematik kluster. Empat ratus lapan belas (418) orang petani berskala kecil telah dipilih dari negeri Pahang, Kelantan dan Terengganu. Dalam setiap negeri, enam daerah secara rawak telah dipilih. Ini merangkumi, Pahang (Kuantan, Pekan, Jerantut, Maran, Temerloh dan Muazam), Kelantan (Tumpat, Tanah Merah, Kuala Krai, Pasir Puteh, Machang dan Gua Musang) and Terengganu (Dungun, Besut, Setiu, Kuala Terengganu, Hulu Terengganu, and Marang). Responden merupakan petani berskala kecil yang terlibat dengan bencana banjir tahun 2014/2015. Pakej statistikal yang digunakan untuk analisis ialah SPSS Versi 22.0 dan perisian grafik AMOS Versi 22.0. Statistik Deskriptif, Regresi Logistik Binari, Analisis Faktor Eksploratori (EFA), Analisis Faktor Konfirmatori (CFA), Model Pengukuran dan Model Persamaan Struktural (SEM) telah diuji. Model persamaan struktural telah digunakan bagi menilai model kausal manakala analisis faktor konfirmatori telah dilaksanakan untuk menentukan reliabiliti dan validiti model pengukuran.

Dapatan menunjukkan bahawa pengalaman lampau mengenai bencana banjir dan pendapatan mempunyai kesan positif yang signifikan ke atas tinglah laku kesediaan petani berskala kecil. Dapatan juga memperlihatkan bahawa 4P pemasaran sosial (produk, harga, tempat, promosi) dan sikap mempunyai hubungan kausal signifikan yang langsung dengan tingkah laku kesediaan banjir. Walau bagaimanapun, konstruk campuran promosi merupakan prediktor paling besar dalam kalangan pemboleh ubah eksogen. Akhirnya, kajian ini mendapati bahawa niat menjadi pengantara sebahagiannya hubungan antara sikap dan tingkah laku kesediaan banjir.

Dari segi polisi, kajian ini bertindak sebagai platform untuk agensi yang relevan dan penggubal polisi memastikan pengurusan dan pembangunan yang wajar bagi jabatan kesediaan bencana banjir. Kajian ini juga dapat membantu kerajaan dalam memformulasikan rancangan, polisi dan program pengurusan bencana yang dapat menggalakkan dan membina kesedaran kesediaan banjir kepada awam berdasarkan pendekatan pemasaran sosial. Kajian ini menyimpulkan bahawa model yang dihipotesiskan bahawa 4P campuran pemasaran sosial dan sikap yang secara signifikan mempengaruhi tingkah laku kesediaan banjir petani berskala kecil di Pantai Timur Malaysia telah disokong.

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This thesis was submitted to the Senate of the Universiti Putra Malaysia and has been accepted as fulfillment of the requirement for the degree of Doctor of Philosophy. The members of the Supervisory Committee were as follows:

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LIST OF ABBREVIATIONS

AASM	Australian Association of Social Marketing
AGFI	Adjusted Fitness index
AIDS	Acquired Immune Deficiency Syndrome
AMOS	Analysis of Moment Structures
ANOVA	Analysis of Variance
ARC	American Red Cross
ATD	Attitude Construct
AVE	Average Variance Extracted
CFA	Confirmatory Factor Analysis
CFI	Conformed Fit Index
CMIN/DF	Chi Square/ Degree of Freedom Ratio
CR	Critical Ratio
CRED	Centre for Research on the Epidemiology of Disaster
DID	Department of Irrigation and Drainage
DM	Department of Metrology
NDMRC	National Disaster Management and Relief Committee
DRR	Disaster Risk Reduction
DV	Dependent Variable
ECM	East Coast Malaysia
ESMA	European Social Marketing Association
FAO	Food and Agriculture Organization
FDP	Flood Disaster Preparedness
FEMA	Federal Emergency Management Agency
FPB	Flood Preparedness Behavior

GDP	Gross Domestic Product
GFI	Goodness of Fit Index
GLM	General Linear Model
GOF	Goodness of Fit
HIV	Human Immunodeficiency Virus
ICT	Information Communication Technology
IFI	Informed Fit Index
IFRCRCS	International Federation of Red Cross and Red Crescent Societies
INT	Intention Construct
ISMA	International Social Marketing Association
IRBM	International River Basin Management
IV	Independent Variable
KMO	Keiser-Meyer-Olkin
MI	Modification Indices
ML	Maximum Likelihood
MOE	Ministry of Education Malaysia
MOH	Ministry of Health Malaysia
MRSA	Malaysia Remote Sensing Agency
MYR	Malaysia Ringgit
NFI	Normed Fit Index
NGO	Non-Governmental Organization
NSC	National Security Council
OLS	Ordinary Least Square
PADM	Protection Action Decision Model
PCA	Principal Component Analysis

PLC	Place Construct
PMT	Protection Motivation Theory
PrE	Person Relative to Event Theory
PRI	Price Construct
PRM	Promotion Construct
PRO	Product Construct
Q-Q	Quartile-Quartile
RM	Ringgit Malaysia
RMR	Root Mean Square Residual
RMSEA	Root Mean Square Error of Approximation
SCPM	Social Cognitive Preparation Model
SD	Standard Deviation
SE	Standard Estimate
SEM	Structural Equation Model
SHF	Smallholder Farmers
SMART	Storm Water Management Band Road Tunnel
SMM	Social Marketing Mix
SMT	Social Marketing Theory
SPSS	Statistical Package for Social Sciences
STI	Sexually Transmitted Infections
SWOT	Strength, Weakness, Opportunity and Threat
TACT	Target, Action, Context and Time
SMM	Social Marketing Mix
TMBC	Trans-theoretical Model of Behavior Change
TPB	Theory of Planned Behavior
TRA	Theory of Reasoned Action

TLI	Tucker-Lewis Index
UN	United Nations
UNISDR	United Nations International Strategy for Disaster Reduction
USA	United States of America
WDR	World Disaster Report

CHAPTER 1

INTRODUCTION

The summary of this chapter discusses the Malaysian agriculture and natural disasters and how flood affects smallholder farmers' agricultural productivity and livelihood in East Coast of Malaysia. It also discusses on how social marketing mix and attitude motivate smallholder farmers towards engagement in flood preparedness behavior. Finally, the last section discusses the problem of the statement, questions on research, objectives, and significance associated with the study as well as the organization of the thesis.

1.1 Background of the Study

The world has experienced a substantial worldwide growth in the severity and occurrence of extreme climate events such as floods, droughts, and tropical storms, which are anticipated to rise even further in forthcoming years (Field et al., 2012). Ever since 1975, the overall of stated disaster events has increased further than threefold: from 65 reported incidents in 1975 to 344 in 2014. In the year 2014 alone, disasters caused extensive damage of US$ 98.43 billion with more than 140 million persons affected (Centre for Research on the Epidemiology of Disasters, 2015; EM-DAT, 2015). A total of 324 disasters happened in 2014 only, which affected approximately 141 million people worldwide. Worldwide, among 324 natural disasters that happened in the year 2014, the hydrological disasters (flood, landslide and wave action) accounted for the most significant segment of 153 events (47.2%) out of which 65 events were testified to occur in continent Asia. In the same year, the whole victims affected by the influence of hydrological disasters Worldwide was totaled to be 42.28 million out of which 37.10 million affected consist of people from the Asia continent. Likewise, the projected financial loss (US $ billion) instigated by the hydrological extreme events globally in the year 2014, was projected to be 37.39 US $ billion and the continent Asia accounted for 29.42 US $ billion.

Table 1.1 : Natural Disaster Occurrence and Impacts

The Regional Figures about the Occurrence of Natural Disasters for the Year 2014 and Average 2004-2013						
No. of Natural Disasters	**Africa**	**America**	**Asia**	**Europe**	**Oceania**	**Global**
Climatological 2014	5	9	5	1	1	21
Average 2014 - 2013	13	9	5	4	1	32
Geographical 2014	4	8	17	2	1	32
Average 2014 - 2013	2	6	21	2	2	33
Hydrological 2014	24	31	65	29	4	153
Average 2014 - 2013	45	38	83	20	5	192
Meteorological 2014	6	28	57	22	5	118
Average 2014 - 2013	9	38	47	28	6	127
Total 2014	39	76	144	54	11	324
Average 2014 - 2013	69	91	156	54	14	384
The Regional Figures about the People Affected by Natural Disasters for the Year 2014 and Average 2004-2013						
No. of Victims (Millions)	**Africa**	**America**	**Asia**	**Europe**	**Oceania**	**Global**
Climatological 2014	6.61	29.73	31.73	0.00	0.00	68.06
Average 2014 - 2013	24.24	1.84	26.83	0.12	0.00	53.03
Geographical 2014	0.01	0.62	2.65	0.08	0.00	3.36
Average 2014 - 2013	0.05	0.94	7.51	0.02	0.07	8.59
Hydrological 2014	0.98	1.44	37.10	0.68	0.08	42.28
Average 2014 - 2013	3.23	4.48	86.07	0.32	0.08	94.19
Meteorological 2014	0.13	0.37	26.33	0.11	0.09	27.03
Average 2014 - 2013	0.35	2.56	40.30	0.19	0.04	43.43
Total 2014	7.74	32.16	97.80	2.87	0.17	140.74
Average 2014 - 2013	27.86	9.82	160.71	0.64	0.19	199.23
The Regional Figures about the Damages Caused by Natural Disasters for the Year 2014 and Average 2004-2013						
Damages (2014 US $ Billions)	**Africa**	**America**	**Asia**	**Europe**	**Oceania**	**Global**
Climatological 2014	0.00	7.43	3.71	0.15	0.03	11.31
Average 2014 - 2013	0.05	4.40	1.12	1.74	0.29	7.60
Geographical 2014	0.00	0.80	5.93	0.63	0.00	7.36
Average 2014 - 2013	0.08	4.48	40.93	2.00	2.62	50.12
Hydrological 2014	0.12	2.31	29.42	5.52	0.02	37.39
Average 2014 - 2013	0.35	5.11	19.32	5.19	1.32	31.32
Meteorological 2014	0.39	15.21	25.03	1.48	1.03	43.14
Average 2014 - 2013	0.09	53.98	13.87	4.52	1.03	73.48
Total 2014	0.51	25.76	64.08	7.77	1.08	99.20
Average 2014 - 2013	0.58	67.97	75.27	13.45	5.26	162.53

(Source : Shah et.al, 2017)

Floods disaster causes serious and devastating economic and social effect on the livelihoods of its victims especially smallholder farmers living along coastal areas (Armah, Yawson, Yengoh, Odoi, & Afrifa, 2010). One-third of the annual natural disasters worldwide is flood related, accompanied by direct economic losses and disruption of well-being of the affected communities (Ashikin et al., 2014). The direct physical effect of flood in rural communities is greatly on agricultural production, with a serious implications of lowering productivity in terms of losses in crops, livestock and agricultural assets (D/iya et al., 2014; D/iya, Gasim, Toriman, and Abdullahi, 2014; Meena, Meena, and Sankhala, 2016). According to FAO

(2015b) floods affect agriculture (crop) sector more than all other natural hazards as it account for an average percentage of 59.6% damages and loss to Crops against all other natural disasters in developing countries.

The projected area susceptible to flood disaster in Malaysia is roughly 29,800 Km^2 or 9% of the whole part and having effect to almost 4.82 million persons accounting about 22% of the entire populace (Department of Irrigation and Drainage Malaysia (DID), 2010). According to analysis of Global Risk Data Platform published by UNISDR and CRED (2015) which indicates the worldwide flood vulnerability, Malaysia is projected to have yearly exposure of 25,000 people and the total victims and economic losses due to flood is projected near to USD 60 million per annum. Floods occurrence causes appalling effects on individuals by disrupting their regular undertakings and the effects often precede a week or further subject to the severity.

It is certain that, reducing disaster risk is an important constituent of economic and development. This is important towards ensuring sustainability of growth in the forthcoming years. Consequently, one of the crucial objectives of Goal 13 of the recently approved Sustainable Development Goals (SDGs) is to reinforce the capacity and resilience of people to climate-related hazards, which fundamentally comprise decreasing disaster risks (UNISDR and CRED, 2015). Certainly, the investment of governments' in structural mitigation for large structures or infrastructure, early warning implementation systems, planned evacuation routes and housings are effective in reducing loss of lives (Obeta and Hanif, 2014; Shultz et al., 2013). However, DRR actions nationwide alone are not adequate to safeguard homes from the shocking effects of a disaster. During extreme events like flood and some natural disasters, specialists commends the ''72 Hour Rule" in which it is essential to individuals to be self-supporting for a minimum of three days after disaster event (Heide, 2004; Levac, Sullivan, and O'Sullivan, 2012). Since governments usually delay before they can organize resources to areas that are affected. Hence, preparedness actions like having a first aid kit at home, stockpiling of food and water, or having a family evacuation plan by individual can safeguard individuals and make them to be proactive towards natural hazards. Particularly, this is more important in countries of low and middle income where managing disaster risk is comparatively weak. Protective actions embark by individuals prior to the occurrence of disaster can decrease the risk of damage to lives and also reduce loss to the farm produce and farm assets (Kreibich et al., 2015; Noorhashirin, Faiza and Farhan 2016).

Table 1.2 : Flood Loss Estimates for Selected Flood Events in Malaysia from Year 1967 to 2014

Year	Place	Damage(RM Million, 1993 Prices)	No. of Death	People Evacuated
1967	Kelantan R. Basin	199.3	38	320,000
1967	Perak R. Basin	154.5	0	280,000
1967	Terengganu R. Basin	40.2	17	78,000
1971	Pahang R Basin	93.1	24	153,000
1971	Kuala Lumpur	84.7	24	NA
1979	Peninsular Malaysia	NA	7	23,898
1982	Peninsular Malaysia	NA	18	9,893
1983	Peninsular Malaysia	NA	14	60,807
1984	Batu Pahat R. Basin	20.3	0	8,400
1986	Peninsular Malaysia	NA	0	40,698
1988	Peninsular Malaysia	NA	37	100,755
1988	Kelantan R. Basin	33.0	19	36,800
1988	Sabah	NA	1	NA
1991	Peninsular Malaysia	NA	11	NA
1992	Peninsular Malaysia	NA	12	NA
1993	Peninsular Malaysia	NA	22	17,000
1995	Peninsular Malaysia	NA	0	14,900
1996	Sabah (June)	NA	1	9,000
1996	Sabah (December)	13.0	200	15,000
1997	Kedah,Terenganu	NA	5	5,321
1999	Kedah, Pulau Pinang, Perak Utara	NA	1	15,500
2000	Terengganu, Kelantan	7.1	NA	NA
2001	Pahang, Johor	NA	15	13,195
2002	Kuala Lumpur	NA	NA	NA
2003	Kuala Lumpur, Pulau Pinang, Kedah	NA	%	31,046
2004	Kelantan, Terengganu	NA	17	17,080
2005	Kedah, Perlis, Kelantan, Terengganu	240.1	14	99,405
2006	Johor, Negeri Sembilan, Melaka	NA	15	107,000
2007	Pahang, Kelantan, Johor, Kedah,	316.1	22	36,143
2007	Kuala Lumpur	NA	17	NA
Year	**Place**	**Damage (USD)**	**No. of Deaths**	**People Evacuated**
2007	Johor	489	18	104,000
2008	Johor	21.19	28	9,000
2010	Kedah and Perlis	8.48	4	39,512
2011/12	La Nina	NA	NA	24,000
2014/15	Kelantan, Terengganu, Pahang	273	21	200,000

(Source : Shah, et. al, 2017)

Within a decade, Malaysia experienced heavy rain which caused severe inundations. The floods were as a result of heavy rain coupled with the monsoon which caused severe damages and losses involving people in different areas of the nation. Flood occurrence fluctuates by place and period of happenings (Musairah, 2015). The December 2014/15 flood is significant. It disrupted activities in areas of Kelantan, Terengganu and Pahang causing to severe infrastructural destruction totaling about MYR2.9 Billion and causing about 400, 000 people to be affected (CRED, 2015). Approximately twenty one person's lost their lives in the floods disaster while eight got missing (CRED, 2015). In addition, crops and livestock projected to about millions of Malaysian ringgits were also lost to the flood. This made the life of the inhabitance mostly smallholder farmers who rely on agriculture for their livelihood difficult. This has resulted to decrease in productivity particularly on short term crops such as paddy, fruits and vegetables. It also resulted on annual increase in budget for mitigation activities on the part of the Malaysian government. This can be testified based on the increase in annual budget on mitigation measures that are particularly taken in the country. As can be seen in the Table1.3 below.

Table 1.3 : Flood Mitigation Expenditure in Malaysia

Period	Malaysian Ringgit	Remarks
1971 - 1975	14 million	2nd Malaysia plan
1976 – 1980	56 million	3rd Malaysia plan
1981 – 1985	141 million	4th Malaysia plan
1986 – 1990	155 million	5th Malaysia plan
1991 – 1995	431 million	6th Malaysia plan
1996 - 2000	845 million	7th Malaysia plan
2001 -2005	1.8 billion	8th Malaysia plan
2006 -2010	4.0 billion	9th Malaysia plan
2011 - 2015	5.0 billion	10th Malaysia plan

(Source : DID Malaysia, 2015)

Notwithstanding the significance of specific preparedness, numerous studies reported comparatively little disaster preparedness among people even in areas where disaster is prone (Abdul Rahman, 2014b; Eisenmanet al., 2009; Mohammad-pajooh and Ab. Aziz, 2014). Motivating individuals on protective activities without or little disaster experience has been an important problem often asked by researchers of risk investigation and risk information (Dorasamy etal., 2013). Therefore, in areas prone to disaster, national, local governments and NGOs have gathered more courage to conduct programs on awareness creation and emergency trainings to motivate and promote resiliency. Although some of the awareness activities can enhance preparedness actions sometimes (Mishra and Suar, 2012a; Wood et al., 2011). Several studies have also acknowledged the inability of these movements in prompting protective actions (Baker, 2011; Paton and Johnston, 2001). Promoting individual disaster resilience, is consequently critical to appreciating the fundamental issues elucidating the implementation of preparedness actions. Nevertheless, there are comparatively limited empirical studies on factors motivating disaster preparedness in developing countries (Hoffmann and Muttarak, 2017). To this end, this study focuses on how to apply social marketing mix and

attitude to further motivate and raise awareness on flood preparedness among smallholder farmers in East Coast of Malaysia.

1.2 Malaysian Agriculture

The contribution of agriculture in the early post-independence is over 50% of Malaysia's Gross Domestic Product (GDP). Today, agriculture hardly contribute 8.9% of the GDP by the year 2016 (Umar et al., 2017). The decline apart from being partly due to the industrialization of the country and rise in the manufacturing and services industry is also due to climate related natural disasters like flood, drought, and landslides. This has an adverse consequence on smallholder farmers in terms of economic, food security, social and psychological stability, which decreases efficient and effective agricultural productivity (Ghadikolaei, Vaghefi, Shamsudin, & Abdullah, 2011; Vaghefi, Shamsudin, Radam, and Rahim, 2015). In line with the Statistics Department of Malaysia Portal 2017, agriculture sector contributed 8.15% or RM89.5 billion to the (GDP). Oil palm was a major contributor to the GDP of agriculture sector at 43.1%, followed by other agriculture (19.5%), livestock (11.6%), fishing (11.5%), forestry and logging (7.2%) and rubber (7.1%). In 2016, export and import of agricultural sector amounted to RM115, 844 million and RM84, 673 million respectively with a balance of trade at RM31, 172 million. Export of inputs increased by 5.4% and .9% as compared to 2015. In the crop sector Paddy increased by 28.2% in 2016 as compared to 2015, while the livestock sector recorded decrease with exception of chicken which increase by 6.4%.There is need for some adaptations and mitigation strategies to overcome the adverse effect of climate events which result to increased flood disaster on agricultural production (Ghadikolaei et al., 2011). Therefore this shows that until today, the sector is still very significant in terms of economy which deserve attention particularly with regards to areas such as flood disaster which interferes with social, economic, psychological as well as agricultural productivity of the smallholder farmer.

1.3 Flood Natural Disaster

Among the natural disasters which affect agriculture in the East Coast of Malaysia is flood natural disaster induced by climate change, which is a serious environmental phenomenon affecting mankind globally (Siwar, 2011; Allen, 2006; Pomering, 2017). The percentage rise in affected population globally has increased by 14%, while the rate of death due to disaster has also increased by 39 % (International Federation of Red Cross and Red Crescent Societies, 2012). Xu et al., (2015) mention that in 2014 alone, across the globe, about 210 million people got affected by disasters from Asia. Other countries in Asia that are often affected by disasters are Japan, Thailand, Pakistan, Indonesia, India and Philippines. Likewise, Malaysia is one of the countries greatly hit within Asia during the 2014/2015 flood disaster as a result of heavy rainfall and the monsoon. Flood disaster equally has some social, economic and psychological influence on individuals in the agricultural sub-sector (Lawal, Matori, Hashim, Yusof, and Chandio, 2012). Flood is the chief prospective

danger to attaining food self-sufficiency since its impact is felt for many years. The share of agricultural productivity has declined from 7.58% in 2010 to 7.0% in 2014 (Dardak, 2015). According to a study conducted in East Coast of Malaysia Kelantan where a survey using 344 smallholder farmers' was conducted to examine the level of damages in agricultural products due to flood with respect to oil palm, paddy, rubber, fruits and vegetables, the results showed that all were significantly affected at 5% ($p<0.01$) with the exception of fruits. Similarly on some selected livestock and farm assets, the results indicated that goats, fishes and chicken were significantly affected ($p=0.013$; 0.000; 0.003 respectively) whereas cattle and sheep were not significantly. Likewise farm shed and farm tools were also significantly affected as indicated in Table 1.4.

Table 1.4 : Agricultural Losses due to Flood Disaster in East Coast of Malaysia, 2014/2015

Variable	Timeframe	Mean	S.D	t- stat	t critical two tailed	p-value two tailed
Average value of crop output before and after flood (RM)						
Value of paddy	Before flood	25292.4	18316.3	4.5	1.99	0.000***
	After flood	22912.4	18320.1			
Value of vegetables	Before flood	12195.2	13382	3.31	1.99	0.001***
	After flood	89809	10486.7			
Value of fruits	Before flood	13927.2	14595.7	1.5	2.07	0.144
	After flood	10900.9	12911.4			
Value of rubber	Before flood	13092	11704.9	5.4	1.9	0.000***
	After flood	10958.5	11508.6			
Value of oil palm	Before flood	50803.6	49222.5	2.9	2.2	0.001***
	After flood	31270.9	32121.3			
Average value of some selected livestock and fishery before and after flood (RM)						
Value of cattle	Before flood	19181.6	12865.4	0.3	2.01	0.747
	After flood	18716.3	13728.1			
Value of sheep	Before flood	5513.3	5684.3	1.7	2.1	0.09*
	After flood	4413.3	4750.6			
Value of goat	Before flood	7308.3	4235.8	2.9	2.2	0.013**
	After flood	4233.3	4192.7			
Value of Chicken	Before flood	342	298.9	3.25	2.07	0003
	After flood	133.3	175.6			
Value of fishery	Before flood	21096.2	18369.2	4.09	2.07	0.000***
	After flood	15494.8	14707.1			
Average value of some farm assets before and after flood (RM)						
Value of farm shed	Before flood	227.5	228.9	6.5	2.02	0.000***
	After flood	130	261.8			
Value of simple farm tools	Before flood	98.3	79.06	7.1	1.99	0.000***
	After flood	28.5	59.5			

Note*** significant at 5%, ** significant at 10% and RM = Malaysian Ringgit
(Source : Jega et. al, 2018)

1.4 Flood Disaster Preparedness in Malaysia

Flood disaster is mostly the commonest form of disaster affecting most people in Malaysia. The rate of the disaster tend to increase due to climate change effect. However, concern is high about inhabitant's level of preparedness of flood disasters. According to a study on ICT and disaster preparedness in Malaysia comprising 346 residents in Malaysia to evaluate their attitudes and opinions towards flood catastrophe preparedness. The results shows that, at the superficial level, there seems to be a high level of confidence with respect to flood preparations. This is because respondents claim to be aware and responsive of flood hazard matters and have the capacity to employ several of the appropriate protection approaches to safeguard their farms and homes. Contrarily, a deeper assessment of the respondents shows that they are deficient in the appropriate knowledge and understanding of the phenomena (Chan, 2012a, 2015; Leman et al., 2016a; Magiswary et al., 2010; Osti, Hishinuma, Miyake, and Inomata, 2011).

Although the precise forecast of natural hazard still remains a great challenge to science and technology even with the greatest sophisticated scientific equipment's, research has indicated that nations that are well prepared are typically in for a slighter general damages (Bradford et al., 2012; Islam and Siwar, 2012; Islam et al., 2016).

In recent times, due to technological advancement such as Global Disaster Alerts and Coordination System (GDACS) and Remote Sensing (RS), areas with high probability of disasters can be recognized in advance and thus, it has become much easier for countries to be better prepared for natural disasters such as flood, landslides, earthquakes hazards etc. in their farms, homes, community or individual level. Although, disasters also take place in the developed nations, developing and underdeveloped countries stand a higher risk due to factors such as lack of infrastructure, financial limitations and absence of awareness (Kellens et al., 2013; Komolafe, Adegboyega, and Akinluyi, 2015; Neil, Molino, and Paramata, 2015; Padli, Habibullah, and Baharom, 2013).

For disaster response to be effective, numerous harmonized actions of governments, agencies, non-governmental organizations and local inhabitants such as warnings and evacuations, search and rescue operations assessing damages etc. need to be coordinated to reduce the effect. Flood readiness and initial support from immediate inhabitants are important towards reducing the number of deaths and affected people (Robinson, 2010). Several activities on the efficacy of skilled reaction to disaster actions have been conducted (Crowell et al., 2010). Lack of proper awareness and motivation coupled with inability to make necessary preparations result to inadequate response. In order to tackle this issue, this study aims to determine how the 4Ps in social marketing could be used to motivate smallholder farmers towards influence their behavior.

Conclusions of this investigation will offer evidence in support of development of effective farming community flood preparedness awareness, communication and education campaigns. This will be achieved by applying the Social Marketing Theory and Theory of Planned Behavior as will later be seen in the conceptual framework.

1.5 Foundation Theories for the Research

Despite the fact that there are numerous preparedness and behavioral theories that could be suitable for this this study, such as Theory of Planned Behavior (TPB) (Ajzen, 1991; Borges et al., 2014a; López-marrero and Tschakert, 2011; Najafi, 2015; Najafi et al., 2017), Social Marketing Theory (SMT) (Kotler and Zaltman 1971; Boora and Saini, 2013; Guion et al., 2007; Jones, 2013; Kiyani, 2014; Raggio, Folse, Anne and Folse, 2011), Protection Motivation Theory (PMT) (Grothmann and Patt, 2005; Nurse et al., 2014; Poussin, Botzen and Aerts, 2014), Protective Action Decision Model (PADM) (Lindell and Perry, 2012; Mishra, Mazumdar and Suar, 2010; Mishra and Suar, 2012a; Teun Terpstra and Lindell, 2013). The fundamental theories underpinning this study are the Social Marketing Theory (SMT) and Theory of Planned Behavior (TPB). These theories were preferred to the others particularly on the ability of the SMT to use the 4Ps to motivate flood disaster preparedness just like in commercial marketing. Social marketing is viewed as a voluntary form of persuasion and is held to be well-matched with, or a natural associate of behavioral economics (MacAskill et al., 2008; Rundle-Thiele, 2015a). Throughout the last period, there was a significant advancement in investigation examining the impact and efficacy of social marketing and the area is now recognized as "empirically well-supported" (Corner & Randall, 2011). Even though, predominantly dedicated on health-related issues originally, it has extended to contain a varied range of issues and behaviour. Table 1.5 offers an overview rather than an exhaustive list of issues for which social marketing methodologies have been effective.

Table 1.5 : Indicative List of Social Marketing Interventions and Studies Examining Impact

Issue/Behavior Targeted
Health/wellbeing
Reduction in domestic violence
Education on drugs
Physical activity/ Exercise
Testing of genes to reduce the incidence of inherited diseases
Immunization
Cancer and cholesterol screening etc.
Control of malaria
Mental health
Obesity and nutrition
Responsible drinking/alcohol consumption reduction
Responsible driving
Anti-speeding
Use of contraceptives/condom for safe sex
Use of seatbelt
Smoking cessation
Sun protection/skin cancer awareness
Workplace health
Environmental issues
Agricultural/natural resource management
Water and energy and conservation
Reduction in pollution
Recycling
Other community disengagement/dissociation
Disaster management and preparedness e.g. flood, earthquake, volcanic eruptions
Education participation
Volunteering

(Source : Dahl, 2010; Lynne Eagle, 2016)

Marketing has also turn out to be a key factor, not only to motivate and influence price decisions for profit, but also used today to resolve problems allied to social grounds. Several studies have been conducted relating social marketing to flood mitigation particularly on flood disaster preparedness (Aydin, 2016; Boora and Saini, 2013; Corner and Randall, 2011; Farmacia, 2005; Guion, Scammon, and Borders, 2007; Kiyani, 2014). Other areas also include agriculture, environment and natural disasters (Andreasen, 2011; Aras, 2011; Garoufallou, Siatri, Zafeiriou, & Balampanidou, 2013; Kiyani, 2014; Lefebvre, 2013a; Musairah, 2015; Pérez-Escamilla, 2012). Present day social marketing began when Kotler and Zaltman opined that, marketing principles applied to trade goods and services of value to consumers mainly for profit purposes, could equally be used to trade thoughts, attitudes, behaviors and beliefs that is intended at accomplishing social goals (Mahesh, 1987).

Even though the use of marketing methods to sell goods and services to make profit is date back to many decades. But in today's world, social and global components are also prominent. Issues about environment such as disasters management could also be tackled using social marketing approach. (Guion et al., 2007). Boora and

Saini (2013) attempted to comprehend emergency preparedness and management along social marketing framework. She found that social marketing is a practical implement for actual message of emergency awareness and that preparedness and management programs would have better effect when customized in accordance with the audience targeted and marketed using social marketing approach.

Theory of Planned Behavior is a socio-psychological theory that is very necessary in the assessment of attitude and behavior which is advanced by (Ajzen, 1991a). Based on TPB, individual's behavior results from their intentions, which are also determined by three (3) major psychological constructs (Ajzen, 2012; Borges et al., 2014a; Rezai et al., 2016). These are attitudes, perceived behavioral control (PBC) and subjective norm all of which are outcomes of beliefs. Therefore, the extent of smallholder farmers' intentions to engage in flood disaster preparedness can be assessed using the three main constructs of the TPB as a framework. These theories therefore, are relevant and suitable to study the research questions on disaster management. This is because there are limited consideration amongst the publics on the worthiness of their specific influences that can improve the likelihood of positive consequences within the society (Rahman, 2014a; Dorasamy et al., 2013).

1.6 Flood Preparedness Issues in Malaysia

Malaysia experienced succession of flood disaster in the previous decade. Flood happened in 1996, 2006, 2007, 2010, 2011, 2014/2015 and even 2017. The flood in 1996 which took place in Sabah resulted to loss of about 241 people which lead to damages estimated for about MYR 300 million. In the year 2000, another similar event triggered by substantial rains cause the death of 15 individuals and rendered about 10,000 people in Kelantan and Terengganu states homeless. Similarly, during the December 2006/January 2007 the state of Johor was flooded with water causing 18 deaths and property worth about MYR 1.5 billion damage. Likewise in 2008, similar event took place in the same state resulting to the death of 28 persons and damages projected at about RM65 million. In 2010, several activities such as transportation and other activities were disrupted in the state of Kelantan and Pahang resulting to rail shut down, road close in North South Express way affecting agricultural and other business activities. An estimated 1,000's of hectares of rice farmland was destroyed in the region causing huge loss to the smallholder farmers. Four people lost their lives with over 50,000 displaced. In Perlis, the floods inundated over two-thirds of the state's land.

The 2014/2015 is historic and labelled as Tsunami due to the devastating effect it had on lives, agriculture and the economy at large particularly the East Coast states of Pahang, Terengganu and Kelantan. Averagely, Malaysia rainfall is about 2,500 mm per annum, this made the country among the list of nations with a heavy rainfall globally. Additionally, most individuals in the area are not well motivated on flood preparedness issues because they believe it is something recurrent and insignificant matter that could be handled by concern authorities. As a result, they rely on

government to be the ultimate supplier of flood protection when flood disaster takes place (Khalid and Shafiai, 2015a). The combination of post disaster and pre-disaster responses are the most appropriate adaptation practices to employ during disaster events (Ernawati, Man,Yassin, D'Silva and Shaffril, 2013). Conspicuously, getting ready by means of using any of the four option to either protect, accommodate, retreat or do nothing.

1.7 Malaysian Government Agencies and Flood Preparedness

Malaysia's had experienced several disaster in the last decades. This caused for the urgent decision to reconsider the disaster mitigation issues and guarantee that disaster rescue mechanisms were implemented in an effective and efficient way (Leman et al., 2016b; Mohit and Sellu, 2013). The goal was to decrease the emotion of worries between the people in the country and similarly to avert the excessive cost of lives and destruction to individual and nationwide properties (Inglesby, 2011; Roosli, O'Keefe, and Mydin, 2013).

Therefore, the Prime Minister's Department under the National Security Division (NSD) is answerable for the organization of all actions connected to disaster. The National Security Council (NSC) Directive 20 came to existence to offer course of action on the administration and management of disasters to comprise the tasks and functions of the different agencies involved (Badruddin, 2012; Chan, 2012b).

Various stakeholders take part in the flood disaster relief mechanism in Malaysia (Chan, 2012b; Leman et al., 2016b). The National Security Council (NSC), National Disaster Management and Relief Committee (NDMRC) at every level, Department of Irrigation and Drainage (DID), Department of Meteorology (DM) and Malaysian Remote Sensing Agency (MRSA) are regarded as the main actors in founding the disaster preparedness. Further actors are Non-Governmental Organization, Public Work Department, Malaysian Armed Forces, Firefighter and others. Each of the agencies has its peculiar roles and responsibility. For example, the DID is responsible in early warning system, structural measures and non-structural measures of the mitigation planning, Department of Metrology obligation is to provide weather reports, predictions, and adequate warnings prior to the flood disaster including earthquake, tsunami alert, strong wind and rough sea and heavy rain. While MRSA develop applications of remote sensing and allied technologies for usage in operational agencies for more effective management of agricultural production, environment, disaster, security natural resources, and land improvement of the country (Leman et al., 2016b; Mohit and Sellu, 2013).

Though, there are various problems that can be seen, example is the inability of state and district level bodies to meet before the monsoon season to coordinate flood preparedness. This has result in action been taken in the temporary manners and no proper management particularly in relation to the post flood disaster management

involving the recovery and rehabilitation of the victims and the properties. Most of the measures taken were reactionary, rather than preventive (Badruddin, 2012; Noorhashirin, Faiza and Farhan, 2016). Inadequate members of NSC and NDMRC in preparation would lead to not focusing to improve flood relief mechanics and responses, nor coordination involving various agencies. Current mechanism functions in any disaster management is on a top-down approach, nonetheless depend on on its on-site district agencies to convey real-time data to the NSD before the NDMRC is activated. This has resulted in inaccuracy in willingness especially absence of materials used for relief.

As in the flood disaster in December 2014, the national committee was waiting for the district level to give the feedback on the disaster level of the floods before any action can be taken. The lack of knowledge and awareness among NDMRC at the district causes late in announcement of the disaster level (Noorhashirin, Faiza, and Farhan , 2016). After the announcement to the state, the crisis center will be initiated before further action taken. This leads to another setback on the aiding time for the flood victims. Therefore, government and other establishments need to improve the delivery system of the flood for effective recovery to decrease losses due to flood and provide early warning of the likelihood of inundating.

1.8 Problem Statement

Malaysia is predisposed to disasters such as landslide, flood, drought, thunderstorm etc. Amongst these, flood positions as the utmost important in East Coast of Malaysia. The most affected are the rural population who are primarily smallholder farmers. Flood causes damages to numerous assets worth about 1 billion Malaysian Ringgit and destruction of about 21 lives in the 2014/2015 flood disaster apart from destroying agricultural products such as paddy, vegetables, and fruits. In situation of prolonged submersion in water, the oil palm may also be tampered with due to rain interference with pollination and lower oil extraction rate (OER) from water logged fruits. According to the Agriculture and Agro-Based Industry (2015), RM194 million was lost as a result of damage to agriculture produce, RM99.5 million as a result to damage to infrastructure and RM5.5 million due to assets. Pahang State recorded losses equivalent to RM68.28 million, out of which, RM54.4 million was agricultural produce loss, RM790, 000 cost of damage to assets and RM13.04 million cost of damage due to infrastructure. Similarly, farmers numbered about 15,403, comprising fishermen and livestock breeders were affected by the floods on agricultural land equivalent to 16,342 hectares. Also, out of the total 1.02 million hectares of land estimated in December 2013, 842 hectares mature and harvested in 2014, flooding affected 18% of total planted oil palm. According to the USDA commodity intelligence report in Malaysia the total palm oil production in the area declined by 23,000 tons in December 2014 compared to the same period in 2013. Equally, flood fishery production decline by about 1.7% from 1,482,899 tons in 2013 to 1458,126 tons in 2014 (FAO, 2016).

According to Yazid et al (2017) lack of awareness of the standard operating process to bear when natural disaster happens, preparedness problems, attitude, behavior and communication problems are part of the persistent issues of flood risk mitigation in East Coast of Malaysia. Likewise, additional investigation shows that floods have developed to be an yearly disaster in Malaysia and the nation is far behind on flood preparedness (Kamarulzaman, Vaiappuri, Ismail, and Mydin, 2016). These situations among others highlighted the fact that there are enough studies that provided the knowledge on flood preparedness but it is the attitude and behavior of the smallholder farmers that hinders them to practice to improve on the level of preparedness. Behavioral theories could help to predict factors that could motivate preparedness. In spite of this prevalence of knowledge in the area, till today, smallholder farmers have lack enough motivation to practice flood preparedness. Therefore, there is gap between the knowledge and the practice. It is therefore necessary to conduct study on identifying factors that can motivate smallholder farmers to engage in flood preparedness to increase their level of resilience and to also decrease losses during flood disaster.

Several measures have been taken by the Malaysian Government both structural and non-structural to improve awareness and resiliency of the people. For instance, the Malaysian Meteorological Services (MMS), National Disaster Relief Fund (NDRF), Malaysian Meteorological Department (MMD), Department of Irrigation and Drainage (DID), Malaysian Red Crescent Society (MRCS) were all involved to reduce the effect of flood disaster on people. Although, the focus is more on the structural measures and also based on top-bottom approach. However, recently there is shift in the focus from structural to non-structural mitigation measures such as flood preparedness. Therefore, this study intends to consider the use of the social marketing mix (4Ps) and attitude as (endogenous constructs) and intention as (mediator) to predict flood preparedness behavior, aiming at promoting awareness among smallholder farmers towards engaging in flood preparedness behavior.

Based on the studies underlined earlier, there is a significant gap between how theories are recommending on creating awareness to motivate flood preparedness among the smallholder farmers and how it is actually done in reality. Efforts have been made on how to fill this gap between theory and practice. In several studies regarding flood preparedness emphasis is dwelled on how behavioral theories could be applied to influence flood preparedness behavior. There is more focus on how preparedness will work rather than how preparedness is actually carried out. The gap in literature will not only circumvent a complete undertaking and motivation of flood disaster preparedness practice in the East Coast Malaysia but will as well hinder the advancement of strategies and programs aimed through flood disaster prone areas in Malaysia.

Theoretically, campaigns and programs which are supported by theory and grounded on comprehensive realistic indication, will assist in changing the attitude and behavior of smallholder farmers in the area to embrace preparedness. Yet, there is no strong indication based on information of the essential process through which

preparedness education is converted into a resulting change in behavior. Practically, the rate of increase in losses due to flood lead to enquiring on the achievement and disappointment of flood awareness to motivate preparedness all the more urgent. Academically, previous studies used analytical techniques such as qualitative analysis, descriptive or multivariate analysis such as regression. Moreover, most of the studies conducted were on factors influencing flood preparedness such as experience, perceived threat, location, income but limited studies were done on factors that will motivate flood preparedness behavior.

It is against this background, this research intend to adopt Theory of Planned Behavior and Social Marketing Theory through the constructs of social marketing mix (4Ps) and attitude and intention from TPB to predict flood preparedness behavior. In an attempt to achieve this, the study is intended to answer the following research questions.

1.9 Research Questions

1) How does the social marketing mix (4Ps) affect smallholder farmers' flood preparedness behavior?
2) What is the mediating role of intention in the relationship between attitude and flood preparedness behavior among smallholder farmers'?
3) What are the factors that influence smallholder farmers' flood preparedness behavior?

1.10 Objectives of the Study

1.10.1 General Objective

The general objective is to determine the influence of social marketing mix 4Ps (product, price, place and promotion) on smallholder farmers' flood preparedness behavior in East Coast of Malaysia.

1.10.2 Specific Objectives

The specific objectives are:

1) To determine the influence of social marketing mix (4Ps) and attitude on smallholder farmers' flood preparedness behavior.
2) To determine the mediation role of intention on the relationship between smallholder farmers' attitude and flood preparedness behavior.
3) To determine the factors that influence smallholder farmers' flood preparedness behavior.

1.11 Scope of the Research

The scope of the study is limited and focuses only on the 4Ps of social marketing mix elements, attitude and intention to predict smallholder farmers. The need to study the smallholder farmers is because, the impact of flood disaster is more severe on the smallholder farmers (Ashikin et al., 2014; Mohammad-pajooh and Ab. Aziz, 2014; Shaari, Zaini, Karim, and Basri, 2016a). Although, there are several variables that could be used to predict smallholder farmer's preparedness behavior, only some were measured. There are similar variables that can impact smallholder farmers' preparedness actions, which could have been possibly neglected. The study also take into consideration of only smallholder farmers although, commercial farmers also face similar problem of flood disaster preparedness challenges although their approaches might differ.

1.12 Significance of the Study

The study will add to the current body of knowledge relating to the over-all idea of practices of flood disaster management and implementation. The study also contribute to research literature by coming up with a new empirical evidence and framework for flood disaster preparedness among smallholder farmers' in East Coast of Malaysia.

Theoretically, previous farmer's knowledge and flood preparedness awareness were never design using the social marketing mix. The application of Social Marketing Mix (4Ps) elements were known to influencing behavior change and has proved effective over decades. This study will also benefit in the design of policies and programs by the Government that will improve/sell flood preparedness based on this social marketing approach.

The practical significance of the research is that, it will benefit smallholder farmers by motivating, enlighten and creating more awareness on issues prevailing in flood disaster in the area through taking risk reduction initiatives to reduce the impact. It will also assist in influencing smallholder farmers to adapt and change their attitude and behavior from being less prepared to becomes more prepared against flood disaster. It will support assist the smallholder farmer in making decisions concerning flood mitigation especially flood preparedness. Furthermore, embracing flood preparedness behavior will eventually save the government large amount of money allocated annually for rehabilitation of affected people in an event of flood disaster.

The study will also serve as a blueprint for Government Agencies, Non-governmental organizations (NGOs), and Communities in designing policies and action plan to address the current flood preparedness challenges that is faces most of the rural and urban areas in Malaysia.

1.13 Definition of Variables

1) Social Marketing

This is the integration of marketing ideas and principles with other methods with the aim of influencing behavior of individuals to achieve a social goal (Yadav, de Valck, Hennig-Thurau, Hoffman, and Spann, 2013). Andreasen (1994) defined it as "improving individuals and society's social life through the application of the principles of marketing and technologies to examine, plan, execute and evaluate programs that are aimed in changing behavior of target audience voluntarily".

2) Social Marketing Mix

This consist of the 4Ps of which include price, place, product and promotion used in natural disaster domain (Thackeray, Neiger, and Keller, 2012).

3) Product

In this study, product refers to benefits associated with the desired behavior change (preparedness) (Thackeray et al., 2012). Smallholder farmers tend to engage in the desired behavior (preparedness) based on associated benefits they derive from it.

4) Price

Price consist the barriers, difficulties and cost expended for the product or service in social marketing (Luca and Suggs, 2010a; Perez, 2012; Pomering, 2017). In this study for instance, smallholder farmers difficulty in learning evacuation guidelines, the time wasted to engage in the practice, effort exhausted during practice, psychological cost such as emotional disturbances, physical cost such as getting tired while making preparations, opportunity cost which is the activity to be tolerated to execute flood disaster preparedness and social cost (the doubt and negative perceptions from peers due to not following the norms of the social group) which is demonstrating that they are not part of the group etc.

5) Place

Place is concern with how products and services could be accessed (Kotler & Lee, 2008). Research has been used to identify the smallholder farmers *"life path points"*, the common places that are frequently visited (Grier, Bryant, and Grier, 2005). Place constitutes media channels and their convenience by which behavioral change is promoted, and the areas in which change is promoted and reinforced (Thackeray et al., 2012). Place in this study entails the media channel for distribution of the product (preparedness behavior) so that they are available and accessible to the target group at convenience.

6) Promotion

Promotion activity constitute effort geared toward ensuring the creation of awareness among individual and communities using various means such as internet, social media, Facebook, Radio, Television and other publicity gadgets to promote behavior change (Andreasen, 1994, 2012; Kiyani, 2014; Kotler and Lee, 2008; Peattie and Peattie, 2009a). Promotion are means by which behavioral change is promoted to the audience targeted upon (Thackeray et al., 2012). It likewise encompass the campaigns that is done to influence the target audience to know, believe or adopt using different communication channels such as media channels, public relations, event, sponsorship, emails, websites, etc**.**

7) Attitude

Attitude, according Ajzen et al., (2002) towards the intention to perform behavior is referred to as a person or an individual's general assessment of two separate components. It constitute two constituents that work collectively: beliefs about consequences of the behavior and the conforming positive or negative judgments about each feature of the behavior. In this study attitude is used as the respondent's belief about the consequences or outcomes of flood preparedness behavior and the resultant positive and negative judgment about each characteristic of the preparedness behavior.

8) Intention

In the TPB, behavior of individual comes from his intentions, subsequently, which is influenced by three (3) fundamental mental constructs: subjective norm, attitude, and perceived behavioral control (Ajzen, 1991a). Intention is used in this study to measure the probability of respondent's engaging in flood preparedness behavior activities. The construct play both the role of independent and dependent variable. It served as dependent variable to attitude while at the same time serving as independent variable to flood preparedness behavior, considering its role as mediator. Four (4) items were used to measure intention.

9) Flood Preparedness Behavior

These are the activities that are actually undertaken by the respondents in anticipation of flood disaster (Najafi, 2015). The construct served as the overall dependent variable for the study. Flood preparedness behavior was measured with nine (9) items.

1.14 Organization of the Thesis

This thesis is divided in five chapters. The first chapter dwelled on the introduction to back ground of the study, issues in flood disaster preparedness in Malaysia, problem statement, research questions, objectives of the study, definition of terms and significance of the research. Chapter two discusses on the overview of flood disaster in Malaysia, flood disaster management in Malaysia, flood preparedness in East Coast Malaysia, structural and nonstructural measures of disaster risk reduction, flood disaster preparedness, factors influencing flood preparedness behavior, concept of social marketing and other theories of flood preparedness behavior.

Chapter three emphasized on the methodology, analytical techniques, research design, population of interest, sampling method, data collection procedure, conceptual frame work and data analysis technique. Chapter four discussed on the analysis and findings of the study. Lastly, chapter five focused on the summary, conclusion and recommendations as well as limitations, justification, strength and further research.

REFERENCES

Abdul Rahman, H. (2014a). An overview of environmental disaster in Malaysia and preparedness strategies. *Iranian Journal of Public Health*, *43*, 17–24.

Abdul Rahman, H. (2014b). An overview of environmental disaster in Malaysia and preparedness strategies. *Iranian Journal of Public Health*, *43*(3), 17–24.

Adriana Keating, Karen Campbell, Reinhard Mechler, Erwann Michel- Kerjan, J., Mochizuki, Howard Kunreuther, JoAnne Bayer, Susanne Hanger, Ian McCallum, L. S. K., Williges, Ajita Atreya, Wouter Botzen, Ben Collier, Jeff Czajkowski, Stefan Hochrainer, C., & Egan. (2014). Operationalizing Resilience Against Natural Disaster Risk : Opportunities , Barriers and A Way Forward. *Zurich Insurance , IIASA and Wharton*, (2014), 1–73. Retrieved from http://www.iiasa.ac.at/web/home/research/researchPrograms/RiskPolicyandVulnerability/whitepaper.pdf

Aghaei, M., Vahedi, E., Kahreh, M. S., & Pirooz, M. (2014). An Examination of the Relationship between Services Marketing Mix and Brand Equity Dimensions. *Procedia - Social and Behavioral Sciences*, *109*, 865–869. https://doi.org/10.1016/j.sbspro.2013.12.555

Aguilera, A. M., Escabias, M., & Valderrama, M. J. (2006). Using principal components for estimating logistic regression with high-dimensional multicollinear data. *Computational Statistics and Data Analysis*, *50*(8), 1905–1924. https://doi.org/10.1016/j.csda.2005.03.011

Ahayalimudin, N. A., & Osman, N. N. S. (2016). Disaster management: Emergency nursing and medical personnel's knowledge, attitude and practices of the East Coast region hospitals of Malaysia. *Australasian Emergency Nursing Journal*, *19*(4), 203–209. https://doi.org/10.1016/j.aenj.2016.08.001

Ahmad, M., Zani, N. M., & Hashim, K. F. (2015). Knowledge sharing behavior among flood victims in Malaysia. *ARPN Journal of Engineering and Applied Sciences*, *10*(3), 968–976.

Ahmadabadi, M. R., Mousavi, S. R., Yazdi, A. F., & Saadati, Z. (2014). Journal of Applied Science and Agriculture The relationship between corporate governance and the restatements of the firms listed on the Tehran Stock Exchange using Logistic regression, *9*(May), 2556–2565.

Ainuddin, S., & Routray, J. K. (2012). Institutional framework, key stakeholders and community preparedness for earthquake induced disaster management in Balochistan. *Disaster Prevention and Management: An International Journal*, *21*(1), 22–36. https://doi.org/10.1108/09653561211202683

Ajzen, I. (1980). The theory of planned behavior. In *Handbook of theories of social psychology* (Vol. 1, pp. 438–359). https://doi.org/10.1016/0749-

5978(91)90020-T

Ajzen, I. (1991a). Ajzen, I. (1991). The theory of planned behavior. Organizational Behavior and Human Decision Processes.The theory of planned behavior. *Organizational Behavior and Human Decision Processes*.

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, *50*(2), 179–211. https://doi.org/10.1016/0749-5978(91)90020-T

Ajzen, I. (1991b). The Theory of Planned Behavior. *Organizational Behaviour and Human Decision Processes*, *50*, 179–211. https://doi.org/http://dx.doi.org/10.1016/0749-5978(91)90020-t

Ajzen, I. (2012). The theory of planned behavior. In *Handbook of theories of social psychology* (Vol. 1, pp. 438–359). https://doi.org/10.1016/0749-5978(91)90020-T

Ajzen, I. (2012). Theory of planned behavior / reasoned action. Retrieved from http://www.utwente.nl/cw/theorieenoverzicht/Theory clusters/Health Communication/theory_planned_behavior.doc/

Ajzen, I. (2015). Consumer attitudes and behavior : the theory of planned behavior applied to food consumption decisions, 121–138. https://doi.org/10.13128/REA-18003

Ajzen, I., & Albarracin, D. (2007). Predicting and changing behavior: A reasoned action approach. *Prediction and Change of Health Behavior: Applying the Reasoned Action Approach*, (February), 3–21. https://doi.org/10.4324/9780203838020

Ajzen, I., & Fishbein, M. (1988). Theory of reasoned action/Theory of planned behavior. *University of South Florida*, *2007*, 67–98.

Ajzen, I., Fishbein, M., Atomic, I., Agency, E., Federal, T., & Commission, T. (1980). Theory of Reasoned Action / Theory of Planned Behavior. *Social Psychology*, *2007*, 67–98. https://doi.org/10.5771/9783845260341_1

Ajzen, I., Fishbein, M., Atomic, I., Agency, E., Federal, T., & Commission, T. (2002). Theory of Reasoned Action / Theory of Planned Behavior. In *Social Psychology* (Vol. 2007, pp. 67–98).

Ajzen, I., & Sheikh, S. (2013). Action versus inaction: Anticipated affect in the theory of planned behavior. *Journal of Applied Social Psychology*, *43*(1), 155–162. https://doi.org/10.1111/j.1559-1816.2012.00989.x

Al-Amin, A. Q., Leal, W., Trinxeria, J. M., Jaafar, A. H., & Ghani, Z. A. (2011). Assessing the Impacts of Climate Change in the Malaysian Agriculture Sector and its Influences in Investment Decision Faculty of Life Sciences , Hamburg

University of Applied Sciences , Hamburg , Faculty of Business and Economics , Universiti Kebangsaan M. *Middle-East Journal of Scientific Research*, *7*(2), 225–234.

Al Buloshi, A. ., & Ramadan, E. (2015). Climate Change Awareness and Perception amongst the Inhabitants of Muscat Governorate, Oman. *American Journal of Climate Change*, *4*(04), 330. https://doi.org/10.4236/ajcc.2015.44026

Al Khalaileh, M. A. A., Bond, A. E., Beckstrand, R. L., & Al-Talafha, A. (2010). The Disaster Preparedness Evaluation Tool??;: Psychometric testing of the Classical Arabic version. *Journal of Advanced Nursing*, *66*(3), 664–672. https://doi.org/10.1111/j.1365-2648.2009.05208.x

Alam, M., Siwar, C., Murad, M. W., & Toriman, M. I. (2011). Farm level assessment of climate change, agriculture and food security issues in malaysia. *World Applied Sciences Journal*.

Alam, M. M., Siwar, C., Md Wahid Murad, Molla, R. I., & Toriman, M. E. Bin. (2010). Socioeconomic Profile of Farmer in Malaysia: Study on Integrated Agricultural Development Area in North-West Selangor. *Agricultural Economics and Rural Development New Series*, *7*(2), 249–265. Retrieved from ftp://www.ipe.ro/RePEc/iag/iag_pdf/AERD1013_249-265.pdf

Aldrich, D. P. (2015). *Resilience and Recovery in Asian Disasters*. https://doi.org/10.1007/978-4-431-55022-8

Ali, M. (2011). A Survey on the Role of Gender Differences in Leadership Style Selection and its leading to Organizational Crisis-preparedness or Crisis-proneness, *1*(March), 42–47.

Alim, S., Kawabata, M., & Nakazawa, M. (2015). Evaluation of disaster preparedness training and disaster drill for nursing students. *Nurse Education Today*, *35*(1), 25–31. https://doi.org/10.1016/j.nedt.2014.04.016

Aliyu, A. A., Bello, M. U., Kasim, R., & Martin, D. (2014). Positivist and Non-Positivist Paradigm in Social Science Research : Conflicting Paradigms or Perfect Partners ?, *4*(3), 79–95. https://doi.org/10.5539/jms.v4n3p79

Allen, K. M. (2006). Community-based disaster preparedness and climate adaptation: Local capacity-building in the Philippines. *Disasters*, *30*(1), 81–101. https://doi.org/10.1111/j.1467-9523.2006.00308.x

Almadhoun, N. M., Dominic, P. D. D., & Woon, L. F. (2011). Social media as a promotional tool in higher education in Malaysia. In *2011 National Postgraduate Conference - Energy and Sustainability: Exploring the Innovative Minds, NPC 2011*. https://doi.org/10.1109/NatPC.2011.6136267

Alsughayir, A., Imam, A., & Islamic, S. (n.d.). Examining a theory of reasoned action (TRA) in internet banking using SEM among Saudi consumer.

Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin*, *103*(3), 411–423. https://doi.org/10.1037/0033-2909.103.3.411

Andreasen, A. R. (1994). Social Marketing: Its definition and domain. *Journal of Public Policy & Marketing*, *13*(1), 108–114. https://doi.org/10.2307/30000176

Andreasen, A. R. (2002a). Commercial Marketing and Social Change. *Social Marketing Quarterly*, *8*(2), 41–45. https://doi.org/10.1080/15245000212552

Andreasen, A. R. (2002b). Marketing Social Marketing in the Social Change Marketplace. *Journal of Public Policy & Marketing*, *21*(1), 3–13. https://doi.org/10.1509/jppm.21.1.3.17602

Andreasen, A. R. (2011). Marketing Social Marketing in the Social Change Marketplace. *Journal of Public Policy & Marketing*, *21*(1), 3–13. https://doi.org/10.1509/jppm.21.1.3.17602

Andreasen, A. R. (2012). Rethinking the Relationship Between Social/Nonprofit Marketing and Commercial Marketing. *Journal of Public Policy & Marketing*, *31*(1), 36–41. https://doi.org/10.1509/jppm.09.035

Andreasen, A. R., Adreasen, A. R., & Andreasen, A. R. (2002). Marketing Social Marketing in the Social Change Marketplace. *Journal of Public Policy & Marketing*, *21*(1), 3–13. https://doi.org/10.1509/jppm.21.1.3.17602

Aras, R. (2011). Social marketing in healthcare. *Australasian Medical Journal*. https://doi.org/10.4066/AMJ.2011.626

Arbuckle, J. G., Morton, L. W., & Hobbs, J. (2015). Understanding Farmer Perspectives on Climate Change Adaptation and Mitigation. *Environment and Behavior*, *47*(2), 205–234. https://doi.org/10.1177/0013916513503832

Ardalan, A. (2015). and Emergency Health Preparedness : A Sci - Hub, 1–31. https://doi.org/10.1371/currents.dis.31a8995ced321301466db400f1357829.Authors

Ardalan, A., Naieni, K. H., Mahmoodi, M., Zanganeh, A.-M., Keshtkar, A.-A., Honarvar, M.-R., & Kabir, M.-J. (2006). Flash flood preparedness in Golestan province of Iran: a community intervention trial. *American Journal of Disaster Medicine*, *5*(4), 197–214. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/20884519

Armah, F. a., Yawson, D. O., Yengoh, G. T., Odoi, J. O., & Afrifa, E. K. a. (2010). Impact of Floods on Livelihoods and Vulnerability of Natural Resource Dependent Communities in Northern Ghana. *Water*, *2*(2), 120–139. https://doi.org/10.3390/w2020120

Armitage, C. J., Conner, M., Bash, E., Bashirian, S., Hidarnia, A.R., Allahverdipour, H., & Hajizadeh, E., Deirdre, C., Darker, D., … Abideen, A. (2011). Theory of Planned Behaviour Questionnaire. *African Journal of Business Management*, *1*(1), 1146–1151. https://doi.org/10.1017/CBO9781107415324.004

Ashikin, N., Shaari, B., Muchtar, A., Bahar, A., Adriansyah, D., Nazaruddin, B., … Hayashi, T. (2014). Flood Impact Assessment in Kota Bharu, Malaysia: A Statistical Analysis. *World Applied Sciences Journa*, *32*(4), 626–634. https://doi.org/10.5829/idosi.wasj.2014.32.04.422

Asian Disaster Preparedness Center. (n.d.). Public Awareness and Social Marketing. *Asian Disaster Preparedness Center*, 8.

Asmara, T. a T., & Ludin, a N. M. (2014). Mapping Perception of Community Preparedness towards Flood in Muar River, Johor Malaysia. *IOP Conference Series: Earth and Environmental Science*, *18*, 012126. https://doi.org/10.1088/1755-1315/18/1/012126

Asyraf, W. M., & Afthanorhan, B. W. (2013). A comparison of partial least square structural equation modeling (PLS-SEM) and covariance based structural equation modeling (CB-SEM) for confirmatory factor analysis. *International Journal of Engineering Science and Innovative Technology (IJESIT)*, *2*(5), 198–205.

Austin, D. W. (2012). Preparedness Clusters: A Research Note on the Disaster Readiness of Community-Based Organizations. *Sociological Perspectives*, *55*(2), 383–393. https://doi.org/10.1525/sop.2012.55.2.383

Awang, Z. (2012). Chapter 6: Analyzing the Mediating Variable in a Model. *A Handbook on SEM*, (November), 101–133. https://doi.org/10.13140/2.1.4267.2321

Awang, Z. (2015). *SEM Made Simple*. Kuala Lumpur: MPWS Rich Publication.

Aydin, G. (2016a). Social Marketing Analysis of Attitude Toward Compulsory Earthquake Insurance in Turkey, (September). https://doi.org/10.18657/yecbu.81769

Aydin, G. (2016b). Social Marketing Analysis of Attitude Toward Compulsory Earthquake Insurance in Turkey, 81769.

Azman, A., D'Silva, J. L., Samah, B. A., Man, N., & Shaffril, H. A. M. (2013). Relationship between attitude, knowledge, and support towards the acceptance of sustainable agriculture among contract farmers in Malaysia. *Asian Social Science*, *9*(2), 99–105. https://doi.org/10.5539/ass.v9n2p99

Azzadina, I., Huda, A. N., Pamatang, C., & Sianipar, M. (2012). Understanding Relationship between Personality Types, Marketing-mix Factors, and Purchasing Decisions. *Procedia -Social and Behavioral Sciences International*

Congress on Interdisciplinary Business and Social Science Irna Azzadina et Al. Procedia -Social and Behavioral Sciences, *65*(65), 352–357. https://doi.org/10.1016/j.sbspro.2012.11.133

Bacon, L. D., & Ph, D. (1997). Using Amos for structural equation modeling in market research. *Structural Equation Modeling*, 1–18. Retrieved from http://www.mendeley.com/research/using-amos-for-structural-equation-modeling-in-market-research/

Badruddin, A. R. (2012). Issues of Disaster Management Preparedness : A Case Study of Directive 20 of National Security Council Malaysia. *Int. Journal of Business and Social Science*, *3*(5), 85–92.

Bagozzi, R. P., & Yi, Y. (2012). Specification, evaluation, and interpretation of structural equation models. *Journal of the Academy of Marketing Science*, *40*(1), 8–34. https://doi.org/10.1007/s11747-011-0278-x

Baharuddin, K. A., Wahab, S. F. A., Rahman, N. H. N. A., Mohamad, N. A. N., Kamauzaman, T. H. T., Yazid Md Noh, A., & Majid, M. R. A. (2015). The record-setting flood of 2014 in kelantan: Challenges and recommendations from an emergency medicine perspective and why the medical campus stood dry. *Malaysian Journal of Medical Sciences*, *22*(2), 1–7.

Bakar, B. B. (2009). The Malaysian Agricultural Industry in the New Millennium – Issues and Challenges, (c), 337–356.

Baker, E. J. (2011). Household preparedness for the Aftermath of Hurricanes in Florida. *Applied Geography*, *31*(1), 46–52. https://doi.org/10.1016/j.apgeog.2010.05.002

Baker, S. M. (2009). Vulnerability and Resilience in Natural Disasters: A Marketing and Public Policy Perspective. *Journal of Public Policy & Marketing*, *28*(1), 114–123. https://doi.org/10.1509/jppm.28.1.114

Bamiduro, J. a., & Gbadeyan, R. A. (2011). Small Scale Farming and Agricultural Products Marketing for Sustainable Poverty Alleviation in Nigeria. *Canadian Social Science*, *7*(3), 125–132. https://doi.org/10.3968/j.css.1923669720110703.020

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. *PrenticeHall series in social learning theory* (Vol. 1).

Bandura, A. (1999). Social cognitive theory of personality, 154–196.

Banerjee, M. M., Gillespie, D. F. (1994). Strategy and Organizational Disaster Preparedness. *Disasters*, *18*(4), 344–354. https://doi.org/10.1111/j.1467-7717.1994.tb00321.x

Baraldi, A. N., & Enders, C. K. (2010). An introduction to modern missing data analyses. *Journal of School Psychology*, *48*(1), 5–37. https://doi.org/10.1016/j.jsp.2009.10.001

Barrett, J. A., Siegel, J. A., & Goodpaster, J. V. (2011). Forensic Discrimination of Dyed Hair Color: II. Multivariate Statistical Analysis. *Journal of Forensic Sciences*, *56*(1), 95–101. https://doi.org/10.1111/j.1556-4029.2010.01567.x

Barrutia, J. M., & Echebarria, C. (2013). Networks: a social marketing tool. *European Journal of Marketing*, *47*(1–2), 324–343. https://doi.org/Doi 10.1108/03090561311285574

Beall, T., Wayman, J., D'Agostino, H., Liang, A., & Perellis, C. (2012). Social marketing at a critical turning point. *Journal of Social Marketing*, *2*(2), 103–117. https://doi.org/10.1108/20426761211243946

Becker, J. S. (2012). Increasing household preparedness for earthquakes :, 1–416.

Becker, J. S., Paton, D., Johnston, D. M., Ronan, K. R., & Mcclure, J. (2017). International Journal of Disaster Risk Reduction The role of prior experience in informing and motivating earthquake preparedness. *International Journal of Disaster Risk Reduction*, *22*(July 2016), 179–193. https://doi.org/10.1016/j.ijdrr.2017.03.006

Beckstead, J. W. (2013). On measurements and their quality: Paper 1: Reliability - History, issues and procedures. *International Journal of Nursing Studies*. https://doi.org/10.1016/j.ijnurstu.2013.04.005

Bergevoet, R. H. M., Ondersteijn, C. J. M., & Saatkamp, H. W. (2004). Entrepreneurial behaviour of dutch dairy farmers under a milk quota system : goals , objectives and attitudes, *80*, 2003–2005. https://doi.org/10.1016/j.agsy.2003.05.001

Berry, T. (2008). Pre-Test Assessment, *1*(1), 19–22.

Bijani, M., Ghazani, E., Valizadeh, N., & Fallah, N. (2017). International Soil and Water Conservation Research Pro-environmental analysis of farmers ' concerns and behaviors towards soil conservation in central district of Sari County , Iran ☆. *International Soil and Water Conservation Research*, *5*(1), 43–49. https://doi.org/10.1016/j.iswcr.2017.03.001

Billa, L., Mansor, S., & Mahmud, A. R. (2004). Spatial information technology in flood early warning systems: an overview of theory, application and latest developments in Malaysia. *Disaster Prevention and Management*, *13*, 356–363. https://doi.org/10.1108/09653560410568471

Billa, L., Shattri, M., Mahmud, A. R., & Ghazali, A. H. (2006). Comprehensive planning and the role of SDSS in flood disaster management in Malaysia. *Disaster Prevention and Management*, *15*(2), 233–240.

https://doi.org/10.1108/09653560610659775

Bird, D. K. (2009). The use of questionnaires for acquiring information on public perception of natural hazards and risk mitigation – a review of current knowledge and practice. *Natural Hazards and Earth System Sciences*, *9*(4), 1307–1325. https://doi.org/10.5194/nhess-9-1307-2009

Boora, L., & Saini, G. K. (2013). Infusing Disaster Management Through Social Marketing: A Case Study of New Delhi, India. *Asian Journal of Environment and Disaster Management Vol.*, *5*(1), 1–23. https://doi.org/10.3850/S179392402013001981

Borges, J. A. R., Oude Lansink, A. G. J. M., Marques Ribeiro, C., & Lutke, V. (2014a). Understanding farmers' intention to adopt improved natural grassland using the theory of planned behavior. *Livestock Science*, *169*(C), 163–174. https://doi.org/10.1016/j.livsci.2014.09.014

Borges, J. A. R., Oude Lansink, A. G. J. M., Marques Ribeiro, C., & Lutke, V. (2014b). Understanding farmers' intention to adopt improved natural grassland using the theory of planned behavior. *Livestock Science*, *169*(C), 163–174. https://doi.org/10.1016/j.livsci.2014.09.014

Bostrom, R. (2002). R easoned A ction T heory, (1998), 826–828.

Bourque, L. B., Mileti, D. S., Kano, M., & Wood, M. M. (2012). Who Prepares for Terrorism? *Environment and Behavior*, *44*(3), 374–409. https://doi.org/10.1177/0013916510390318

Bourque, L. B., Siegel, J. M., Kano, M., & Wood, M. M. (2007). Morbidity and Mortality Associated with Disasters. *Handbook of Disaster Research*, 97–112. https://doi.org/10.1007/978-0-387-32353-4_6

Bradford, R. A., O'Sullivan, J. J., Van Der Craats, I. M., Krywkow, J., Rotko, P., Aaltonen, J., … Schelfaut, K. (2012). Risk perception - Issues for flood management in Europe. *Natural Hazards and Earth System Science*, *12*(7), 2299–2309. https://doi.org/10.5194/nhess-12-2299-2012

Brenkert, G. G. (2002). Ethical Challenges of Social Marketing. *Journal of Public Policy & Marketing*, *21*(1), 14–25. https://doi.org/10.1509/jppm.21.1.14.17601

Brønn, P. S., & Vrioni, A. B. (2001). Corporate social responsibility and cause-related marketing: an overview. *International Journal of Advertising*, *20*(2), 207–222. https://doi.org/10.1080/02650487.2001.11104887

Burke, S., Bethel, J. W., & Britt, A. F. (2012). Assessing disaster preparedness among latino migrant and seasonal farmworkers in eastern North Carolina. *International Journal of Environmental Research and Public Health*, *9*(9), 3115–3133. https://doi.org/10.3390/ijerph9093115

Bursac, Z., Gauss, C. H., Williams, D. K., & Hosmer, D. W. (2008). Purposeful selection of variables in logistic regression. *Source Code for Biology and Medicine*, *3*(1), 17. https://doi.org/10.1186/1751-0473-3-17

Byrne, B. M. (1999). Book Review Structural Equation Modeling With LISREL, PRELIS, and SIMPLIS: Basic Concepts, Applications, and Programming. *Applied Psychological Measurement*, *23*(2), 179–182.

Byrne, B. M. (2001). *Structural Equation Modeling: Present & Future*. *Multivariate Applications Series* (Vol. 1). Retrieved from http://www.amazon.ca/exec/obidos/redirect?tag=citeulike09-20&path=ASIN/0894980491

Byrne, B. M. (2002). Barbara M. Byrne: Award for Distinguished Contributions to Education and Training in Psychology. *American Psychologist*, *57*(11), 896–897. https://doi.org/10.1037/0003-066X.57.11.896

Byrne, B. M. (2010). *Structural Equation Modelling with AMOS: Basic Concepts, Applications, and Programming, 2nd Edition*. *Routledge, Taylor and Francis Group, New York*.

Byrne, B. M. (2012). *Structural equation modeling with Mplus : basic concepts, applications, and programming*. *Multivariate applications series*.

Carr, R. H. (2012). Community Identity and Actionable Risk Communication: A Theoretical Framework for Motivating Flood Preparedness. Retrieved from http://preserve.lehigh.edu/etd/1147/

Center for Excellence in Disaster Management & Humanitarian Assistance. (n.d.).

Chan, E. Y. Y., Kim, J. H., Lin, C., Cheung, E. Y. L., & Lee, P. P. Y. (2014). Is previous disaster experience a good predictor for disaster preparedness in extreme poverty households in remote muslim minority based community in China? *Journal of Immigrant and Minority Health*, *16*(3), 466–472. https://doi.org/10.1007/s10903-012-9761-9

Chan, N. W. (2012a). Impacts of disasters and disasters risk management in Malaysia: The case of floods. *Economic and Welfare Impacts of Disasters in East Asia and Policy Responses.*, (December), 503–551. https://doi.org/10.1007/978-4-431-55022-8

Chan, N. W. (2012b). *Impacts of disasters and disasters risk management in Malaysia: The case of floods*. *Economic and Welfare Impacts of Disasters in East Asia and Policy Responses.* https://doi.org/10.1007/978-4-431-55022-8

Chan, N. W. (2015a). Impacts of disasters and disaster risk management in malaysia: The case of floods. In *Resilience and Recovery in Asian Disasters: Community Ties, Market Mechanisms, and Governance* (pp. 239–265). https://doi.org/10.1007/9784431550228_12

Chan, N. W. (2015b). Increasing Flood Risk in Malaysia : Causes and Solutions, (July). https://doi.org/10.1108/09653569710164035

Chan, N. W., & Parker, D. J. (1996). Response to dynamic flood hazard factors in peninsular Malaysia. *The Geographical Journal*, *162*(3), 313–325. https://doi.org/10.2307/3059653

Chapagain, T., & Raizada, M. N. (2017). Impacts of natural disasters on smallholder farmers : gaps and recommendations. *Agriculture & Food Security*, 1–16. https://doi.org/10.1186/s40066-017-0116-6

Chaudron, R., & Carlier, K. (2014). The Advantages of Random Sampling versus Cutting-of-the- Tail : the Application of a Stratified Sample Design for the Collection of Data on Special Financial Institutions in the, (2013), 1–11.

Che Omar, A. R., Ishak, S., Abd. Moen, J., & Mohd Arshad, M. M. A. (2013). Sufficient and sustainable livelihood via community economy: Case of natural farming program in East Malaysia. *Asian Social Science*, *9*(5), 110–117. https://doi.org/10.5539/ass.v9n5p110

Chmura, H., Kiernan, M., Essex, M., & Kupfer, D. J. (2008). How and why criteria defining moderators and mediators differ between the Baron & Kenny and MacArthur approaches. *Health Psychology*, *27*(2, Suppl), S101–S108. https://doi.org/10.1037/0278-6133.27.2(Suppl.).S101

Churchill, J. (2000). Marketing: Criando Valor para os Clientes. *Saraiva São Paulo*, 7.

Clock, Malaysia Population available at: http://www.statistics.gov.my/portal/index.php?option= com_content&view=article&id=213&lang=en, 2011. (2011). Natural Disaster Statistics.

Cole, D. A., & Maxwell, S. E. (2003). Testing Mediational Models With Longitudinal Data: Questions and Tips in the Use of Structural Equation Modeling. *Journal of Abnormal Psychology*, *112*(4), 558–577. https://doi.org/10.1037/0021-843X.112.4.558

Coninx, I. (2009). Exploring social flood impacts, (May).

Conner, M., & Armitage, C. J. (1998). Extending the Theory of Planned Behavior: A Review and Avenues for Further Research. *Journal of Applied Social Psychology*, *28*, 1429–1464. https://doi.org/10.1111/j.1559-1816.1998.tb01685.x

Conroy, R. M. (2016). The RCSI Sample size handbook, *0*(May), 57. Retrieved from http://www.rcsi.ie/files/research/docs/20160811111051_Sample size 2016.pdf

Cooke, R., & Sheeran, P. (2004). Moderation of cognition-intention and cognition-behaviour relations: a meta-analysis of properties of variables from the theory of planned behaviour. *The British Journal of Social Psychology / the British Psychological Society*, *43*(Pt 2), 159–186. https://doi.org/10.1348/0144666041501688

Coppola, D. P. (2011). *Introduction to International Disaster Management*. *Introduction to International Disaster Management*. https://doi.org/10.1016/C2009-0-64027-7

Corner, A., & Randall, A. (2011). Selling climate change? The limitations of social marketing as a strategy for climate change public engagement. *Global Environmental Change*, *21*(3), 1005–1014. https://doi.org/10.1016/j.gloenvcha.2011.05.002

Corrigan, E., & Samrasinghe, I. (2012). Disaster Preparedness in an Australian Urban Trauma Center: Staff Knowledge and Perceptions. *Prehospital and Disaster Medicine*. https://doi.org/10.1017/S1049023X12001045

Costello, A. B., & Osborne, J. W. (2005a). Best Practices in Exploratory Factor Analysis : Four Recommendations for Getting the Most From Your Analysis.

Costello, A. B., & Osborne, J. W. (2005b). Best Practices in Exploratory Factor Analysis : Four Recommendations for Getting the Most From Your Analysis. *Practical Assessment, Research & Education*, *10*, 1–9. https://doi.org/10.1.1.110.9154

Courneya, K. S., & Bobick, T. M. (2000). Integrating the theory of planned behavior with the processes and stages of change in the exercise domain. *Psychology of Sport and Exercise*, *1*, 41–56. https://doi.org/10.1016/S1469-0292(00)00006-6

Crowell, M., Coulton, K., Johnson, C., Westcott, J., Bellomo, D., Edelman, S., & Hirsch, E. (2010). An Estimate of the U.S. Population Living in 100-Year Coastal Flood Hazard Areas. *Journal of Coastal Research*, *262*(June 2009), 201–211. https://doi.org/10.2112/JCOASTRES-D-09-00076.1

D/iya, S. G., Gasim, M. B., Toriman, M. E., & Abdullahi, M. G. (2014). Floods in Malaysia: Historical Reviews, Causes, Effects and Mtigations Approach. *International Journal of Interdisciplinary Research and Innovations*, *2*(4), 59–65. https://doi.org/10.5897/AJBx10.009

D/iya, S., Gasim, M., Toriman, M., Abdullahi, M., Jenol, M. A., Ibrahim, M. F., … Brown, R. C. (2014). FAO statistical year book. *BioResources*, *9*(3), 1–187. https://doi.org/10.5897/AJBx10.009

Dahl, S. (2010). Current Themes in Social Marketing Research: Text-Mining the Past Five Years. *Social Marketing Quarterly*, *16*(2), 128–136. https://doi.org/10.1080/15245001003746790

Dardak, R. A. (2015). Transformation of Agricultural Sector in Malaysia Through Agricultural Policy. *FFTC Agricultural Policy Database*, *237*, 2–5. Retrieved from http://ap.fftc.agnet.org/files/ap_policy/386/386_1.pdf

Davies, M., Guenther, B., Leavy, J., Mitchell, T., & Tanner, T. (2009). Climate Change Adaptation , Disaster Risk Reduction and Social Protection : Complementary Roles in Agriculture and Rural Growth ?, (February), 1–37.

de Hoop, T., & Ruben, R. (2010). Insuring against earthquakes: Simulating the cost-effectiveness of disaster preparedness. *Disasters*, *34*(2), 509–523. https://doi.org/10.1111/j.1467-7717.2009.01140.x

de Leeuw, A., Valois, P., Ajzen, I., & Schmidt, P. (2015). Using the theory of planned behavior to identify key beliefs underlying pro-environmental behavior in high-school students: Implications for educational interventions. *Journal of Environmental Psychology*, *42*, 128–138. https://doi.org/10.1016/j.jenvp.2015.03.005

Dekens, J. (2007). Local Knowledge for Disaster Preparedness. A literature Review, 85. Retrieved from http://www.preventionweb.net/files/2693_icimod8fc84ee621cad6e77e083486ba6f9cdb.pdf

Department of Irrigation and Drainage Malaysia. (2017). Managing The Flood Problem In Malaysia. *Http://Www.Water.Gov.My/Images/Pdf/Managing_Flood.Pdf*, 1–11.

Department of Irrigation and Drainage Malaysia (DID). (2010). Mitigation and Management of Flood Disasters in Malaysia. *Asian Disaster Reduction Center-Total Disaster Risk Management-Good Practices (Chapter 3)*, 80–81.

Details, A. (2017). Pahang Flood Disaster : The Potential Flood Drivers Malaysian Journal of Geosciences, *1*(1), 34–37.

Diamantopolous, A., and Siguaw, J. A. (2000). *Introducing LISREL*. London: Sage Publications.

Digian, S. (2005). Socio-economic Variables as Indicators of Preparedness Level in Cyclone Events, (November).

Dikko, M. (2016). Establishing Construct Validity and Reliability: Pilot Testing of a Qualitative Interview for Research in Takaful (Islamic Insurance). *Qualitative Report*, *21*(3), 521–528. Retrieved from http://nsuworks.nova.edu/tqr

Dong, Y., & Peng, C.-Y. J. (2013). Principled missing data methods for researchers. *SpringerPlus*, *2*(1), 222. https://doi.org/10.1186/2193-1801-2-222

Donovan, R. J., & Owen, N. (1994). Social marketing and population interventions. In *Advances in exercise adherence*.

Dorasamy, .M. (2010). Disaster Preparedness in Malaysia : An Exploratory Study. *Proceedings of 4th WSEAS Marketing and Management Conference*, 19–30. https://doi.org/1790-2769

Dorasamy, M., Raman, M., Marimuthu, M., & Kaliannan, M. (2013). Disaster preparedness: an investigation on motivation and barriers. *Journal of Emergency Management*, *11*(6), 433–446. https://doi.org/10.5055/jem.2013.0156

Ec.europa.eu. (2003). *Best Practices on Flood Prevention , Protection*. *Ec.Europa.Eu*. Retrieved from http://ec.europa.eu/environment/water/flood_risk/pdf/flooding_bestpractice.pdf

Eisenman, D. P., Glik, D., Maranon, R., Gonzales, L., & Asch, S. (2009). Developing a disaster preparedness campaign targeting low-income Latino immigrants: focus group results for project PREP. *Journal of Health Care for the Poor and Underserved*, *20*(310), 330–345. https://doi.org/10.1353/hpu.0.0129

Elo F, Zubek L, Hargitai Z, I. Z. (2014). Prevention of tracheal cartilage injury with modified Griggs technique during percutaneous tracheostomy – Randomized controlled cadaver study. *Indian J Crit Care Med.*, *18*, 778–782. https://doi.org/10.1556/IMAS.4.2012.1.1

Elsayir, H. A. (2014). Comparison of precision of systematic sampling with some other probability samplings, *3*(4), 111–116. https://doi.org/10.11648/j.ajtas.20140304.16

Erdil, T. S., & Özdemir, O. (2016). The Determinants of Relationship between Marketing Mix Strategy and Drivers of Export Performance in Foreign Markets: An Application on Turkish Clothing Industry. *Procedia - Social and Behavioral Sciences*, *235*, 546–556. https://doi.org/10.1016/j.sbspro.2016.11.067

Ernawati, M., Man, N., Md Yassin, S., Lawrence D'Silva, J., & Mohamed Shaffril, H. A. (2013). Farmers' adaptive capacity towards the impacts of global warming: A review. *Asian Social Science*, *9*(13), 177–184. https://doi.org/10.5539/ass.v9n13p177

Espina, E., & Teng-Calleja, M. (2015). A Social Cognitive Approach to Disaster Preparedness. *Philippine Journal of Psychology*, *48*(2), 161–174.

Ezemonye, M. N., & Emeribe, C. N. (2014). Flooding and Household Preparedness in Benin City, Nigeria. *Mediterranean Journal of Social Sciences*, *5*(1), 547–553. https://doi.org/10.5901/mjss.2014.v5n1p547

Fan, S., Lau, R. Y. K., & Zhao, J. L. (2015). Demystifying Big Data Analytics for Business Intelligence Through the Lens of Marketing Mix. *Big Data Research*. https://doi.org/10.1016/j.bdr.2015.02.006

FAO. (2015a). The impact of disasters on agriculture and food security, 76. https://doi.org/F0134/EN

FAO. (2015b). *The State of Food and Agriculture 2015. Social Protection and Agriculture: Breaking the Cycle of Rural Poverty*. *Sofa*. Retrieved from http://www.fao.org/documents/card/en/c/ab825d80-c277-4f12-be11-fb4b384cee35/

Farmacia, B. (2005). r P Fo r R ev iew On r P Fo ee r R iew On ly.

Fielding, K. S., McDonald, R., & Louis, W. R. (2008). Theory of planned behaviour, identity and intentions to engage in environmental activism. *Journal of Environmental Psychology*, *28*(4), 318–326. https://doi.org/10.1016/j.jenvp.2008.03.003

Fishbein, M., & Ajzen, I. (1975). Belief, Attitude, Intention and Behaviour: An Introduction to Theory and Research. *Reading MA AddisonWesley*, (August), 480. https://doi.org/10.2307/2065853

Fothergill, a, Maestas, E. G. M., & Darlington, J. D. (1999). Race, ethnicity and disasters in the United States: A review of the literature. *Disasters*. https://doi.org/10.1111/1467-7717.00111

Fox, K. F., & Kotler, P. (1980). The marketing of social causes: the first 10 years. *Journal of Marketing*, *44*, 24–33. https://doi.org/10.2307/1251226

Francis, A. J. J., Eccles, M. P. M., Johnston, M., Walker, A., Grimshaw, J., Foy, R., … Francis, J. (2004). C*onstructing questionnaires based on the theory of planned behaviour a manual for health services researcher*. *Direct*. https://doi.org/0-9540161-5-7

Franklin, J. C., Ribeiro, J. D., Fox, K. R., Bentley, K. H., Kleiman, E. M., Jaroszewski, A. C., … Nock, M. K. (2017). Risk Factors for Suicidal Thoughts and Behaviors : A Meta-Analysis of 50 Years of Research, *143*(2), 187–232.

Garoufallou, E., Siatri, R., Zafeiriou, G., & Balampanidou, E. (2013). The use of marketing concepts in library services: a literature review. *Library Review*, *62*(4/5), 312–334. https://doi.org/10.1108/LR-06-2012-0061

Gerdan, S. (2014). Determination of Disaster Awareness , Attitude Levels and Individual Priorities at Kocaeli University Suggested Citation :, (55), 159–176.

Ghadikolaei, M. B., Vaghefi, N., Shamsudin, M. N., & Abdullah, A. M. (2011). The Economic Impacts of Climate Change on the Rice Production in Malaysia, (January). https://doi.org/10.3923/ijar.2011.67.74

Ghadikolaei, M. B., Vaghefi, N., Shamsudin, M. N., Abdullah, A. M., Different, S., & Scenarios, P. (2011). The Economic Impacts of Climate Change on the Rice Production in Malaysia, (March 2014). https://doi.org/10.3923/ijar.2011.67.74

Gilson, L. L., Goldberg, C. B., Baron, R. M., & Kenny, D. a. (1986). The Moderator-Mediator Variable Distinction in Social The Moderator-Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations. *Journal of Personality and Social Psychology*, *51*(6), 1173–1182. https://doi.org/10.1037/0022-3514.51.6.1173

Golafshani, N. (2003). Understanding reliability and validity in qualitative research. *The Qualitative Report*, *8*(4), 597–607. https://doi.org/10.3367/UFNr.0180.201012c.1305

Goldkuhl, G. (2012). Pragmatism vs interpretivism in qualitative information systems research, (21), 135–146.

Gordon, R. (2011). Critical social marketing: definition, application and domain. *Journal of Social Marketing*, *1*(2), 82–99. https://doi.org/10.1108/20426761111141850

Gordon, R., McDermott, L., Stead, M., & Angus, K. (2006). The effectiveness of social marketing interventions for health improvement: What's the evidence? *Public Health*, *120*(12), 1133–1139. https://doi.org/10.1016/j.puhe.2006.10.008

Grace, A., & Janet, W. (2014). Emergency Preparedness and Response to Ibadan Flood Disaster 2011: Implications for Wellbeing. *Mediterranean Journal of Social Sciences*, *5*(8), 500–511. https://doi.org/10.5901/mjss.2014.v5n8p500

Greener, S. (2008). Multivariate Data Analysis : *Bussiness Research Method*, 335–388.

Grier, S., Bryant, C. A., & Grier, S. (2005). Social Marketing in Public Health. *Annual Review of Public Health*, *26*(9), 319–339. https://doi.org/10.1146/annurev.publhealth.26.021304.144610

Griffith, D. A. (2013). Establishing Qualitative Geographic Sample Size in the Presence of Spatial Autocorrelation. *Annals of the Association of American Geographers*, *103*(5), 1107–1122. https://doi.org/10.1080/00045608.2013.776884

Gronroos, C. (1994). From Marketing Mix to Relationship Marketing: Towards a Paradigm Shift in Marketing. *Asia-Australia Marketing Journal*, *2*(1), 9–29. https://doi.org/10.1016/S1320-1646(94)70275-6

Grothmann, T., & Patt, A. (2005). Adaptive capacity and human cognition: The process of individual adaptation to climate change. *Global Environmental Change*, *15*(3), 199–213. https://doi.org/10.1016/j.gloenvcha.2005.01.002

Guha-Sapir, D., Rodriguez-Llanes, J. M., & Jakubicka, T. (2011). Using disaster footprints, population databases and GIS to overcome persistent problems for human impact assessment in flood events. *Natural Hazards*, *58*(3), 845–852. https://doi.org/10.1007/s11069-011-9775-y

Guion, D. T., Scammon, D. L., & Borders, A. L. (2007). Weathering the Storm: A Social Marketing Perspective on Disaster Preparedness and Response with Lessons from Hurricane Katrina. *Journal of Public Policy & Marketing*, *26*(1), 20–32. https://doi.org/10.1509/jppm.26.1.20

Hair, J.F., Anderson, R.E., Tatham, R.L. and Black, W. C. (2010). *Multivariate Data Analysis: A Global Perspective (7th Edition)*. *Pearson Prentice Hall, New Jersey*.

Hair, J. F., Anderson, R. E., Tatham, R. L., & Black, W. C. (1995). *Multivariate data analysis: with readings*. *Journal of the Royal Statistical Society Series A Statistics in Society* (Vol. 151). https://doi.org/10.2307/2983017

Hair, J. F., Anderson, R. E., Tatham, R. L., & Black, W. C. (2010). *Multivariate Data Analysis (7th Edition)*. *Uppersaddle River, New Jersey: Pearson Education International*. https://doi.org/10.1016/j.ijpharm.2011.02.019

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2006a). *Multivariate Data Analysis (6th ed.)*. *Analysis*.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2006b). Multivariate Data Analysis (6th ed.). *Analysis*, 4–4.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010a). *Multivariate data analysis: A global perspective*. *Pearson Education*.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010b). Multivariate data analysis: A global perspective. *Basim, PearsonEducationInc*.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010c). *Multivariate Data Analysis: A global perspective*. *Analysis*.

Hair, J. F. J., Black, W. C., Babin, B. J., & Anderson, R. E. (2009). SEM Basics: A Supplement to Multivariate Data Analysis. In *Multivariate Data Analysis* (pp. 1–35). https://doi.org/10.1080/19447013008687143

Hair, J. F., Ringle, C. M., & Sarstedt, M. (2012). Partial Least Squares: The Better Approach to Structural Equation Modeling? *Long Range Planning*, *45*(5–6), 312–319. https://doi.org/10.1016/j.lrp.2012.09.011

Hansen, T., Jensen, J. M., & Solgaard, H. S. (2004). Predicting online grocery buying intention: A comparison of the theory of reasoned action and the theory of planned behavior. In *International Journal of Information Management* (Vol. 24, pp. 539–550). https://doi.org/10.1016/j.ijinfomgt.2004.08.004

Haque, C. E. (2000). Risk Assessment, Emergency Preparedness and Response to Hazards: The Case of the 1997 Red River Valley Flood, Canada. *Natural Hazards*, *21*, 225–245. https://doi.org/10.1023/A:1008108208545

Hastings, G. (2003). Relational Paradigms in Social Marketing. *Journal of Macromarketing*, *23*(1), 6–15. https://doi.org/10.1177/0276146703023001006

Hayes, A. F. (2009). Beyond Baron and Kenny: Statistical mediation analysis in the new millennium. *Communication Monographs*, *76*(4), 408–420. https://doi.org/10.1080/03637750903310360

Hayes, A. F., Gentry, W. A., Gilmore, D. C., Shuffler, M. L., Leslie, J. B., Gandz, J., … Liverpool, P. R. (2009). Beyond Baron and Kenny: Statistical Mediation Analysis in the New Millennium. *Communication Monographs*, *76*(4), 408–420. https://doi.org/10.1080/03637750903310360

Heide, E. A. Der. (2004). *Common Misconceptions about disasters: Panic, the "Disaster Syndrome," and Looting*. *The First 72 Hours: A Community Approach to Disaster Preparedness*.

Hellevik, O. (2009). Linear versus logistic regression when the dependent variable is a dichotomy. *Quality and Quantity*, *43*(1), 59–74. https://doi.org/10.1007/s11135-007-9077-3

Heryanti, D. N. (2012). Community Based Approach To Assess Flood Risk Perception and Coping Mechanism Along Code River , Yogyakarta Municipality.

Hoecker, a., Speckmayer, P., Stelzer, J., Therhaag, J., von Toerne, E., Voss, H., … Zemla, a. (2007). TMVA - Toolkit for Multivariate Data Analysis. *Statistics*, 135. Retrieved from http://arxiv.org/abs/physics/0703039

Hoek, J., & Jones, S. C. (2011). Regulation, public health and social marketing: a behaviour change trinity. *Journal of Social Marketing*, *1*(1), 32–44. https://doi.org/10.1108/20426761111104419

Hoffmann, R., & Muttarak, R. (2017). Learn from the Past, Prepare for the Future: Impacts of Education and Experience on Disaster Preparedness in the Philippines and Thailand. *World Development*, *96*, 32–51. https://doi.org/10.1016/j.worlddev.2017.02.016

Hopkins, J., & Warburton, J. (2015). Local perception of infrequent, extreme upland flash flooding: prisoners of experience? *Disasters*, *39*(3), 546–569. https://doi.org/10.1111/disa.12120

Hospital, N. (2015). Probability Sampling - A Guideline for Quantitative Health Care Research, *12*(2), 95–99.

Howe, L. C., & Krosnick, J. A. (n.d.). Attitude Strength. https://doi.org/10.1146/annurev-psych-122414-033600

Howe, P. D. (2011). Hurricane preparedness as anticipatory adaptation: A case study of community businesses. *Global Environmental Change*, *21*(2), 711–720.

https://doi.org/10.1016/j.gloenvcha.2011.02.001

Hoyle, Rick, H. (1995). *Structural Equation Modelinh: Concepts issues and Applications*. SAGE Publications. International Education and Professional Publisher. Thousand Oaks London New Delhi.

Huang, Q., & Xiao, Y. (2015). Geographic Situational Awareness: Mining Tweets for Disaster Preparedness, Emergency Response, Impact, and Recovery. *ISPRS International Journal of Geo-Information*, *4*(3), 1549–1568. https://doi.org/10.3390/ijgi4031549

Hussain, T. P. R. S., Nor, A. R. M., & Ismail, H. (2014). The level of satisfaction towards flood management system in Kelantan, Malaysia. *Pertanika Journal of Social Science and Humanities*, *22*(1), 257–269. https://doi.org/10.5901/mjss.2015.v6n3s2p340

Ibrahim, W., & Ahmad, W. (2015). Kelantan Flood 2014 : Reflections from Relief Aid Mission to Kampung Kemubu , Kelantan, *6*(3), 340–344. https://doi.org/10.5901/mjss.2015.v6n3s2p340

Idm-rand, & Reach. (2015). A Study on Knowledge, Attitudes and Practices for Disaster Risk Reduction in Northern Rakhine State.

Inglesby, T. V. (2011). Progress in Disaster Planning and Preparedness Since 2001. *JAMA: The Journal of the American Medical Association*, *306*(12), 1372. https://doi.org/10.1001/jama.2011.1359

International Federation of Red Cross and Red Crescent Societies. (2012). *Focus on forced migration and displacement*. (R. Zetter, Ed.), *World Disasters Report*. Geneva. Retrieved from www.ifrc.org

Islam, R., Kamaruddin, R., Ahmad, S. A., Jan, J., Anuar, A. R., Rabiul, I., … Abdul Rahim, A. (2016). International Review of Management and Marketing A Review on Mechanism of Flood Disaster Management in Asia. *International Review of Management and Marketing*, *6*(1), 29–52. Retrieved from http:%5Cnwww.econjournals.com

Islam, R., Kamaruddin, R., Ahmad, S. A., Jan, S. J., & Anuar, A. R. (2016). A review on mechanism of flood disaster management in Asia. *International Review of Management and Marketing*, *6*(1), 29–52. Retrieved from http://www.scopus.com/inward/record.url?eid=2-s2.0-84955313066&partnerID=40&md5=aaf12d768436b8783ba887dce094a34e

Islam, R., Kamaruddin, R., Ahmad, S. A., Jan, S. J., & Anuar, A. R. (2016). A Review on Mechanism of Flood Disaster Management in Asia. *International Review of Management and Marketing*, *6*(1), 29–52.

Islam, R., & Siwar, C. (2012). The analysis of urban agriculture development in Malaysia. *Advances in Environmental Biology*.

Jain, V. (2014). 3D Model of Attitude. *International Journal of Advanced Research in Management and Social Sciences*, *3*(3), 1–12.

Jamal, K., Kamarulzaman, N. H., Abdullah, a. M., Ismail, M. M., & Hashim, M. (2014). Adoption of Fragrant Rice Farming: The Case of Paddy Farmers in the East Coast Malaysia. *UMK Procedia*, *1*(October 2013), 8–17. https://doi.org/10.1016/j.umkpro.2014.07.002

Janssen, M. M., Mathijssen, J. J. P., van Bon-Martens, M. J. H., van Oers, H. a M., & Garretsen, H. F. L. (2013). Effectiveness of alcohol prevention interventions based on the principles of social marketing: a systematic review. *Substance Abuse Treatment, Prevention, and Policy*, *8*(18), 1–11. https://doi.org/10.1186/1747-597X-8-18

Johanson, G. A., & Brooks, G. P. (2010). Initial Scale Development: Sample Size for Pilot Studies. *Educational and Psychological Measurement*, *70*(3), 394–400. https://doi.org/10.1177/0013164409355692

Johnson & Christensen. (2003). Quantiative, Qualitative and Mixed Researh, 1–12. Retrieved from http://stu.westga.edu/~bthibau1/MEDT 8484-Baylen/C2_Lecture_Notes%5B1%5D.pdf

Jones, A.-M. (2013). Use of fear and threat-based messages to motivate preparedness: costs, consequences and other choices. Part Two. *Journal of Business Continuity & Emergency Planning*, *6*(3), 198–209. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/23615060

Jung, S. (2013). Exploratory factor analysis with small sample sizes: A comparison of three approaches. *Behavioural Processes*, *97*, 90–95. https://doi.org/10.1016/j.beproc.2012.11.016

Jusoh, M. S., Bahari, A., & Md Isa, E. V. (2007). Managing Disaster Preparedness for Institution of Higher Learning: An Exploratory Study in Perlis. In *Universiti Utara Malaysia* (pp. 1–15). https://doi.org/10.1073/pnas.0703993104

Kamarulzaman, N. H., Vaiappuri, S. A. L. K. N., Ismail, N. A., & Mydin, M. A. O. (2016). Local knowledge of flood preparedness: Current phenomena to future action. *Jurnal Teknologi*, *78*(5), 85–89. https://doi.org/10.11113/jt.v78.8246

Kangabam, R. Das, Panda, P. C., & Kangabam, M. (2012). Disaster Preparedness among the Resident Community- A Case Study of, *2*(3), 1632–1642. https://doi.org/10.6088/ijes.00202030048

Karanci, A. N., Aksit, B., & Dirik, G. (2005). Impact of a community disaster awareness training program in turkey: does it influence hazard-related cognitions and preparedness behaviors. *Social Behavior and Personality: An International Journal*, *33*(3), 243–258. https://doi.org/10.2224/sbp.2005.33.3.243

Karanci, P. N. (2007). Psychological A spects of D isaster R isk M anagement.

Kargun, M. (2015). The Effect of Social Marketing on Increasing Sport Consciousness. *International Journal of Science Culture and Sport*, *3*(13), 18–18. https://doi.org/10.14486/IntJSCS426

Kazuya Nakayachi1, and K. N. (2016). The Effects of the Passage of Time from the 2011 Tohoku Earthquake on the Public's Anxiety about a Variety of Hazards. *International Journal of Enviromental Research and Public Health*, *13*(9), 866.

Kellens, W., Terpstra, T., De Maeyer, P., Maeyer, D., Kellens, W., Terpstra, T., & De Maeyer, P. (2013). Perception and Communication of Flood Risks: A Systematic Review of Empirical Research. *Risk Analysis*, *33*(1), 24–49. https://doi.org/10.1111/j.1539-6924.2012.01844.x

Kelley, H., & Science, F. (2014). Spatial Dependence in the Adoption of Organic Drystock Farming in Ireland Spatial Dependence in the Adoption of Organic Drystock Farming in Ireland, 1–12.

Khalid, M. S. Bin, & Shafiai, S. B. (2015a). Flood Disaster Management in Malaysia: An Evaluation of the Effectiveness Flood Delivery System. *International Journal of Social Science and Humanity*, *5*(4), 398–402. https://doi.org/10.7763/IJSSH.2015.V5.488

Khalid, M. S. Bin, & Shafiai, S. B. (2015b). Flood Disaster Management in Malaysia: An Evaluation of the Effectiveness Flood Delivery System. *International Journal of Social Science and Humanity*, *5*(4), 398–402. https://doi.org/10.7763/IJSSH.2015.V5.488

Khalid, M. S., & Shafiai, S. (2015c). Flood Disaster Management in Malaysia: An Evaluation of the Effectiveness Flood Delivery System. *International Journal of Social Science and Humanity*, *5*(4), 398–402. https://doi.org/10.7763/IJSSH.2015.V5.488

Kiyani, S. A. (2014). " A Social Marketing Framework for the Development of Public Awareness Programs " - Pakistan ' s Perspective Sarfraz Ali Kiyani. In *International Conference on Marketing*.

Klijn, F., Bruijn, K. De, Ölfert, A., Penning-rowsell, E., Simm, J., & Wallis, M. (2009). Flood risk assessment and flood risk management: An introduction and guidance based on experiences and findings of flood site (an EU-funded Integrated project). *Flood Site Deltares, Delft Hydraulics, Delft, the Netherlands*, 143. https://doi.org/978 90 814067 1 0

Kline, R. B. (2010). *Principles and Practice of Structural Equation Modelling. Structural Equation Modeling* (Vol. 156). https://doi.org/10.1038/156278a0

Kline, R. B. (2011). *Pstructural equation modelingrinciples and practice of. Structural Equation Modeling* (Vol. 156). https://doi.org/10.1038/156278a0

Komolafe, A. A., Adegboyega, S. A. A., & Akinluyi, F. O. (2015). A review of flood risk analysis in Nigeria. *American Journal of Environmental Sciences*, *11*(3), 157–166. https://doi.org/10.3844/ajessp.2015.157.166

Kotler, P., Armstrong, G., Cunningham, P. . (2005). Marketing strategy | Marketing mix: product, price, place & promotion | Entrepreneur's Toolkit. Retrieved from http://www.marsdd.com/mars-library/the-marketing-mix-in-marketing-strategy-product-price-place-and-promotion/

Kotler, P., & Lee, N. R. (2008). Social Marketing - Influencing Behaviors For Good. *Changes*, *3*, 444. https://doi.org/10.1080/15245004.1996.9960974

Kotler, P., & Zaltman, G. (1971). Social Marketing: An Approach to Planned Social Change. *Journal of Marketing*, *35*(3), 3–12. https://doi.org/10.2307/1249783

Kreibich, H., Bubeck, P., Van Vliet, M., & De Moel, H. (2015). A review of damage-reducing measures to manage fluvial flood risks in a changing climate. *Mitigation and Adaptation Strategies for Global Change*, *20*(6), 967–989. https://doi.org/10.1007/s11027-014-9629-5

Krejcie, R. V, & Morgan, D. W. (1970). Determining Sample Size for Research Activities Robert. *Educational and Psychological Measurement*, *38*(1), 607–610. https://doi.org/10.1177/001316447003000308

Kumar, A. (2012). *Managing marketing mix and communications in a digital era: The role of traditional and new media in a multichannel environment*. *ProQuest Dissertations and Theses*. Retrieved from http://login.library.sheridanc.on.ca/login?url=http://search.proquest.com/docview/1112071177?accountid=3455

Lalonde, T. L., Nguyen, A. Q., Yin, J., Irimata, K., & Wilson, J. R. (2013). Modeling correlated binary outcomes with time-dependent covariates. *Journal of Data Science*, *11*, 715–738. Retrieved from http://www.jds-online.com/file_download/419/JDS-1195.pdf

Latif, S. A., Bidin, Y. H., & Awang, Z. (2013). Towards the Realization of Green Cities: The Moderating Role of the Residents' Education Level. *Procedia - Social and Behavioral Sciences*, *85*, 646–652. https://doi.org/10.1016/j.sbspro.2013.08.392

Lawal, D. U., Matori, A., Hashim, A. M., Yusof, K. W., & Chandio, A. (2012). Natural Flood Influencing Factors : A Case Study of Perlis, Malaysia. *International Conference on Civil, Offshore and Environmental Engineering (ICCOEE 2012)*, 1–6.

Lawther, S., Hastings, G. B., & Lowry, R. (1997). De-marketing: Putting Kotler and Levy's Ideas into Practice. *Journal of Marketing Management*, *13*(4), 315–325. https://doi.org/10.1080/0267257X.1997.9964475

Lee, J. W., Jones, P. S., Mineyama, Y., & Zhang, X. E. (2002). Cultural differences in responses to a likert scale. *Research in Nursing & Health*, *25*(4), 295–306. https://doi.org/10.1002/nur.10041

Lee, N., & Kotler, P. (2012). Influencing Behaviors for Good, (Sage 2011), 2011–2012.

Lefebvre, R. C. (2000). Theories and Models in Social Marketing. *Handbook of Marketing and Society*, 27.

Lefebvre, R. C. (2011). An integrative model for social marketing. *Journal of Social Marketing*, *1*(1), 54–72. https://doi.org/10.1108/20426761111104437

Lefebvre, R. C. (2013a). An integrative model for social marketing. *Journal of Social Marketing*, *1*(1), 54–72. https://doi.org/10.1108/20426761111104437

Lefebvre, R. C. (2013b). An integrative model for social marketing. *Journal of Social Marketing*, *1*(1), 54–72. https://doi.org/10.1108/20426761111104437

Lefebvre, R. C., Flora, J. A., Craig Lefebvre, R., & Flora, J. A. (1988). Social Marketing and Public Health Intervention. *Health Education Quarterly*, *15*(3), 299–315. https://doi.org/10.1177/109019818801500305

Lei, P.-W., & Wu, Q. (2007). Introduction to Structural Equation Modeling: Issues and Practical Considerations. *Educational Measurement: Issues and Practice*, *26*(3), 33–43. https://doi.org/10.1111/j.1745-3992.2007.00099.x

Leman, A. M., Rahman, K. A., Salleh, M. N. M., Baba, I., Feriyanto, D., Johnson, L. S. C., & Hidayah, S. N. (2016a). A review of flood catastrophic management in Malaysia. *ARPN Journal of Engineering and Applied Sciences*, *11*(14), 8738–8742.

Leman, A. M., Rahman, K. A., Salleh, M. N. M., Baba, I., Feriyanto, D., Johnson, L. S. C., & Hidayah, S. N. (2016b). A review of flood catastrophic management in Malaysia. *ARPN Journal of Engineering and Applied Sciences*, *11*(14), 8738–8742.

Lenth, R. V. (2001). Some Practical Guidelines for Effective Sample Size Determination. *The American Statistician*, *55*(3), 187–193. https://doi.org/10.1198/000313001317098149

Levac, J., Toal-Sullivan, D., & O'Sullivan, T. L. (2012). Household emergency preparedness: A literature review. *Journal of Community Health*. https://doi.org/10.1007/s10900-011-9488-x

Levit, T., Cismaru, M., & Zederayko, A. (2016). Application of the Transtheoretical Model and Social Marketing to Antidepression Campaign Websites. *Social Marketing Quarterly*, *22*(1), 54–77. https://doi.org/10.1177/1524500415620138

Li, H. (2003). The Resolution of Some Paradoxes Related to Reliability and Validity. *Journal of Educational and Behavioral Statistics*, *28*(2), 89–95. https://doi.org/10.3102/10769986028002089

Lindell, M. K. (2013a). Disaster studies. *Current Sociology*, *61*(5–6), 797–825. https://doi.org/10.1177/0011392113484456

Lindell, M. K. (2013b). Disaster studies. *Current Sociology*, *61*(5–6), 797–825. https://doi.org/10.1177/0011392113484456

Lindell, M. K., & Perry, R. W. (2012). The Protective Action Decision Model : Theoretical Modifications and Additional Evidence, (January). https://doi.org/10.1111/j.1539-6924.2011.01647.x

Liobikiene, G., Mandravickaite, J., & Bernatoniene, J. (2016). Theory of planned behavior approach to understand the green purchasing behavior in the EU: A cross-cultural study. *Ecological Economics*, *125*, 38–46. https://doi.org/10.1016/j.ecolecon.2016.02.008

Little, T. D., Jorgensen, T. D., Lang, K. M., & Moore, E. W. G. (2014). On the joys of missing data. *Journal of Pediatric Psychology*, *39*(2), 151–162. https://doi.org/10.1093/jpepsy/jst048

Lloyd, J. (2005). Square Peg, Round Hole? Can Marketing-Based Concepts Such as the 'Product' and the 'Marketing Mix' Have a Useful Role in the Political Arena? *Journal of Nonprofit & Public Sector Marketing*, *14*(1–2), 27–46. https://doi.org/10.1300/J054v14n01_03

López-marrero, T., & Tschakert, P. (2011). From theory to practice : building more resilient communities in flood-prone areas, *23*(1), 229–249. https://doi.org/10.1177/0956247810396055

Luca, N. R., & Suggs, L. S. (2010a). Strategies for the social marketing mix: A systematic review. *Social Marketing Quarterly*, *16*(4), 122–149. https://doi.org/10.1080/15245004.2010.522767

Luca, N. R., & Suggs, L. S. (2010b). Strategies for the Social Marketing Mix: A Systematic Review. *Social Marketing Quarterly*, *16*(4), 122–149. https://doi.org/10.1080/15245004.2010.522767

Luca, N. R., & Suggs, L. S. (2012). Theory and model use in social marketing health interventions. *Journal of Health Communication*, *0730*(January), 1–21. https://doi.org/10.1080/10810730.2012.688243

Luchman, J. N. (2014). Relative Importance Analysis With Multicategory Dependent Variables:: An Extension and Review of Best Practices. *Organizational Research Methods*, *17*(4), 452–471. https://doi.org/10.1177/1094428114544509

Lynne Eagle, R. H. and M. F. (2016). *Harnessing the science of social marketing and behaviour change for improved water quality in the GBR: Background review of literature*.

MacAskill, S., Lindridge, A., Stead, M., Eadie, D., Hayton, P., & Braham, M. (2008). Social marketing with challenging target groups: Smoking cessation in prisons in England and Wales. [References]. *International Journal of Nonprofit and Voluntary Sector Marketing*. https://doi.org/10.1002/nvsm.327

MacCallum, R. C., Widaman, K. F., Zhang, S. B., & Hong, S. H. (1999). Sample Size in Factor Analysis. *Psychological Methods*, *4*(1), 84–99. https://doi.org/10.1037/1082-989x.4.1.84

Madan, A., & Routray, J. K. (2015). Institutional framework for preparedness and response of disaster management institutions from national to local level in India with focus on Delhi. *International Journal of Disaster Risk Reduction*, *14*, 545–555. https://doi.org/10.1016/j.ijdrr.2015.10.004

Magiswary, D., Murali, R., Saravanan, M., & Maniam, K. (2010). ICT and disaster preparedness in Malaysia: An exploratory study. *WSEAS Transactions on Information Science and Applications*, *7*(5), 735–748.

Mah, M. W., Deshpande, S., & Rothschild, M. L. (2006). Social marketing: A behavior change technology for infection control. *American Journal of Infection Control*, *34*(7), 452–457. https://doi.org/10.1016/j.ajic.2005.12.015

Mahesh, M. P. (1987). Social Marketing : A Communication Tool For Development.

Maidl, E., Buchecker, M., Maidl, E., & Buchecker, M. (2015). Raising risk preparedness by flood risk communication. *Natural Hazards and Earth System Science*, *15*(7), 1577–1595. https://doi.org/10.5194/nhess-15-1577-2015

Mamogale, H. M. (2011). Assessing disaster preparedness of learners and educators in Soshanguve North schools, 123.

Margarian, A. (2009). Farmers ' conservative behaviour and adapted strategies : 1 Aim of the study. *Paper Submitted for the EAEPE Conference 2009 in Amsterdam*, (1995), 1–26.

Markus, K. a. (2012). Principles and Practice of Structural Equation Modeling by Rex B. Kline. *Structural Equation Modeling: A Multidisciplinary Journal*, *19*(February), 509–512. https://doi.org/10.1080/10705511.2012.687667

Martel, L. D., & Mueller, C. W. (2011). The Effect of Anticipated Service Interruptions on Disaster Preparedness Intentions. *Journal of Applied Social Psychology*, *41*(2), 298–311. https://doi.org/10.1111/j.1559-1816.2010.00714.x

Martens, T., Garrelts, H., Grunenberg, H., & Lange, H. (2009). Taking the heterogeneity of citizens into account: flood risk communication in coastal

cities – a case study of Bremen. *Natural Hazards and Earth System Science*, *9*(6), 1931–1940. https://doi.org/10.5194/nhess-9-1931-2009

Maruful Islam, K., Rahman, T., Kumar, N., Akter, H., & H. (2011). *Women Leadership in Disaster Risk Management*. Oxfam - GB.

Mccarthy, E. J. (1964). Basic Marketing: A Managerial Approach. *Academy of Marketing Science*. https://doi.org/http://permalink.obvsg.at/wuw/AC00839164

Mcintosh, C., Povell, F., & Sadoulet, E. (2015). Utility, Risk, and Demand for Incomplete Insurance: Lab Experiments with Guatemalan Cooperatives *.

McKenzie-Mohr, D. (2000). Fostering sustainable behavior through community-based social marketing. *American Psychologist*, *55*(5), 531–537. https://doi.org/10.1037//0003-066X.55.5.531

Md. Mahmudul Alam, Chamhuri Siwar, M. W. M. and mohd E. bin T. (2011). farm level assesment of climate change agriculture and food security issues in malaysia.

Meena, H. R., Meena, B. S., & Sankhala, G. (2016). Disaster preparedness in himalayan region: Flood disaster victim perspective. *Indian Journal of Agricultural Research*, *50*(6), 594–598. https://doi.org/10.18805/ijare.v0iOF.3760

Menegaki, A. N. (2012). A social marketing mix for renewable energy in Europe based on consumer stated preference surveys. *Renewable Energy*, *39*(1), 30–39. https://doi.org/10.1016/j.renene.2011.08.042

Miceli, R., Sotgiu, I., & Settanni, M. (2008). Disaster preparedness and perception of flood risk: A study in an alpine valley in Italy. *Journal of Environmental Psychology*, *28*(2), 164–173. https://doi.org/10.1016/j.jenvp.2007.10.006

Middelburg, Ostend, T. (2013). Raising Flood Awareness and Self- Efficacy. *Flood Aware*, 1–89.

Miller, C. H., Adame, B. J., & Moore, S. D. (2013). Vested Interest theory and disaster preparedness. *Disasters*, *37*(1), 1–27. https://doi.org/10.1111/j.1467-7717.2012.01290.x

Mishra, S., Mazumdar, S., & Suar, D. (2010). Place attachment and flood preparedness. *Journal of Environmental Psychology*, *30*(2), 187–197. https://doi.org/10.1016/j.jenvp.2009.11.005

Mishra, S., & Suar, D. (2007). Do Lessons People Learn Determine Disaster Cognition and Preparedness? *Psychology & Developing Societies*, *19*(2), 143–159. https://doi.org/10.1177/097133360701900201

Mishra, S., & Suar, D. (2012a). Effects of Anxiety, Disaster Education, and

Resources on Disaster Preparedness Behavior. *Journal of Applied Social Psychology*, *42*(5), 1069–1087. https://doi.org/10.1111/j.1559-1816.2011.00853.x

Mishra, S., & Suar, D. (2012b). Effects of Anxiety, Disaster Education, and Resources on Disaster Preparedness Behavior. *Journal of Applied Social Psychology*, *42*(5), 1069–1087. https://doi.org/10.1111/j.1559-1816.2011.00853.x

Mishra, S., Suar, D., & Paton, D. (2009). Is Externality a Mediator of Experience–Behaviour and Information–Action Hypothesis in Disaster Preparedness? *Journal of Pacific Rim …*, *3*(1), 11–19. https://doi.org/10.1375/prp.3.1.11

Moe, T. L., & Pathranarakul, P. (2006). An integrated approach to natural disaster management Public project management and its critical. https://doi.org/10.1108/09653560610669882

Mohamad, W., Bin, A., & Afthanorhan, W. (2014). Pooled Confirmatory Factor Analysis (PCFA) Using Structural Equation Modeling On Volunteerism Program: A Step By Step Approach. *International Journal of Asian Social Science*, *4*(5), 642–653.

Mohammad-pajooh, E., & Ab. Aziz, K. (2014). Investigating factors for disaster preparedness among residents of Kuala Lumpur. *Natural Hazards and Earth System Sciences Discussions*, *2*(5), 3683–3709. https://doi.org/10.5194/nhessd-2-3683-2014

Mohammad-pajooh, E., Ab. Aziz, K., & Muhammad-Pajoor and K. Ab. Aziz. (2014). Investigating factors for disaster preparedness among residents of Kuala Lumpur. *Natural Hazards and Earth System Sciences Discussions*, *2*(5), 3683–3709. https://doi.org/10.5194/nhessd-2-3683-2014

Mohit, M. A., & Sellu, G. M. (2013). Mitigation of Climate Change Effects through Non-structural Flood Disaster Management in Pekan Town, Malaysia. *Procedia - Social and Behavioral Sciences*, *85*, 564–573. https://doi.org/10.1016/j.sbspro.2013.08.385

Moore, S., Daniel, M., Linnan, L., Campbell, M., Benedict, S., & Meier, A. (2004). After Hurricane Floyd passed: investigating the social determinants of disaster preparedness and recovery. *Fam Community Health*, *27*(3), 204–217. Retrieved from http://graphics.tx.ovid.com/ovftpdfs/FPDDNCMCOBLCFF00/fs046/ovft/live/gv023/00003727/00003727-200407000-00007.pdf

Moorthy, M. K., Tan, A., Choo, C., Wei, C. S., Tan, J., Ping, Y., & Leong, T. K. (2012). A Study on Factors Affecting the Performance of SMEs in Malaysia. *International Journal of Academic Research in Business and Social Sciences*, *2*(4), 224–239. https://doi.org/ISSN: 2222 - 6990

Motoyoshi, T. (2006). Public perception of flood risk and community-based disaster preparedness. *A Better Integrated Management of Disaster Risks: Toward Resilient Society to Emerging Disaster Risks in Mega-Cities*, 121–134.

Motoyoshi, T. (2016). Public Perception of Flood Risk and Social Impact Assessment, (25), 121–134. Retrieved from http://www.terrapub.co.jp/e-library/nied/pdf/121.pdf

Mueller, R., Ralph, O., Hancock, G. R. (2008). Best practices in structural equation modeling. In *Best practices in quantitative methods* (pp. 488–510). https://doi.org/10.4135/9781412995627

Mulilis, T. S. D. J. (2006). A Person- Relative- to- Event (PrE) Approach to Negative Threat Appeals and Earthquake Preparedness: A Field Study. *Journalof Applied Social Psychology*, *29*(3,), 495–516.

Musairah, S. K. (2015). Mediation and Moderation Analysis from the Perspective of Behavioral Science. *Jurnal Intelk*, *10*, 1–11.

Muttarak, R., & Pothisiri, W. (2013). The role of education on disaster preparedness: Case study of 2012 Indian Ocean earthquakes on Thailand's Andaman coast. *Ecology and Society*, *18*(4). https://doi.org/10.5751/ES-06101-180451

Myresten, E. (2015). Theory of Reasoned Action & the role of external factors in organic food purchase.

Najafi, M. (2015). Demographic Determinants of Disaster Preparedness Behaavior among Tehran InhabitantsNajafi, M. (2015). Demographic Determinants of Disaster Preparedness Behaavior among Tehran Inhabitants.

Najafi, M., Ardalan, A., Akbarisari, A., Noorbala, A. A., & Elmi, H. (2017). The Theory of Planned Behavior and Disaster Preparedness, (Figure 1), 1–9. https://doi.org/10.1371/currents.dis.4da18e0f1479bf6c0a94b29e0dbf4a72.Abstract

Najim, A., Amin, M. R., Karimand, S. M. R., & Mei, S. J. (2015). Small holder cattle farming in East Coast Economic Region (ECER), Malaysia : Farmers' perception on type, breed and crosses. *Journal of Dynamics in Agriculture Research*, *2*(4), 40–45.

Nakagawa, K., & Yamamoto, M. (2015). A Study on Factors Related to Earthquake Preparedness by Family of Non-institutionalized Individuals with Severe Motor and Intellectual Disabilities, *55*(5), 1–12.

Nakamura, R. (2008). Malaysia , a Racialized Nation : Study of the Concept of Race in Malaysia. *School of International Studies Universiti Utara Malaysia*, 134–142.

Nash, M. S., & Bradford, D. F. (2001). Parametric and Nonparametric Logistic Regressions for Prediction of Presence / Absence of an Amphibian. *October*, 40.

Nazli, N. N. N. N., Sipon, S., Zumrah, A. R., & Abdullah, S. (2015). The Factors that Influence the Transfer of Training in Disaster Preparedness Training: A Review. *Procedia - Social and Behavioral Sciences*, *192*, 54–58. https://doi.org/10.1016/j.sbspro.2015.06.008

Ncube, M., Madubula, N., Ngwenya, H., Zinyengere, N., Zhou, L., Francis, J., … Madzivhandila, T. (2016). Climate change, household vulnerability and smart agriculture: The case of two South African provinces. *Jàmbá: Journal of Disaster Risk Studies*, *8*(2). https://doi.org/10.4102/jamba.v8i2.182

Neil, D., Molino, S., Paramata, N. S. W. (2015). Prepared for the Global Assessment. Report on Disaster Risk Reduction 2015 A Review of the Value of Social Media in Countrywide Disaster Risk Table of Contents, (March 2014).

Nepal, V., Banerjee, D., Perry, M., & Scott, D. (2012). Disaster Preparedness of Linguistically Isolated Populations: Practical Issues for Planners. *Health Promotion Practice*, *13*(2), 265–271. https://doi.org/10.1177/1524839910384932

Network, S. A. N. (2015). Damage due to Malaysia Flood Close to 1 Billion Malaysia Ringgit.

News, F. (2011). Disaster Report.

Ng, C., & Drainage, T. (2016). What it means to be a farming smallholder in Malaysia, *2*(1).

Nick, T. G., & Campbell, K. M. (2007). Logistic regression. *Methods Mol Biol*, *404*, 273–301. https://doi.org/10.1007/978-0-387-79054-1

No, I., & Data, D. (2015). Cred crunch, (37), 2014–2015.

Noorhashirin, H., Faiza, T., Farhan R., H. J. (2016). Assessing malaysian disaster preparedness for flood. *International Journal of Public Health and Clinical Sciences*, *3*(2), 1–15.

Norio, O., Ye, T., Kajitani, Y., Shi, P., & Tatano, H. (2011). The 2011 eastern Japan great earthquake disaster: Overview and comments. *International Journal of Disaster Risk Science*, *2*(1), 34–42. https://doi.org/10.1007/s13753-011-0004-9

Nurse, J. R. C., Buckley, O., Legg, P. A., Goldsmith, M., Creese, S., Wright, G. R. T., & Whitty, M. (2014). Understanding insider threat: A framework for characterising attacks. In *Proceedings - IEEE Symposium on Security and Privacy* (Vol. 2014–Janua, pp. 214–228). https://doi.org/10.1109/SPW.2014.38

Nurul, W., Wan, M., Rani, M., Akmar, F., & Nifa, A. (2017). Planning for Post Disaster Recovery : Lesson Learnt from flood events in Kelantan Malaysia, *020143*. https://doi.org/10.1063/1.5005476

Nyakundi, H., Mogere, S., Mwanzo, I., & Yitambe, A. (2010). Community perceptions and response to flood risks in Nyando District, Western Kenya. *Jàmbá: Journal of Disaster Risk Studies*, *3*(1), 346–366. https://doi.org/10.4102/jamba.v3i1.35

Obeta, M. C., & Hanif, M. (2014). Institutional Approach to Flood Disaster Management in Nigeria: Need for a Preparedness Plan. *British Journal of Applied Science & Technology Italy. British Journal of Applied Science & Technology*, *4*(433), 4575–4590. https://doi.org/10.9734/BJAST/2014/11844

Ogunnaike, O. O. (2014). Empirical Analysis of Marketing Mix Strategy and Student Loyalty in Education Marketing. *Mediterranean Journal of Social Sciences*. https://doi.org/10.5901/mjss.2014.v5n23p616

Onuma, H., Shin, K. J., & Managi, S. (2017). Household preparedness for natural disasters: Impact of disaster experience and implications for future disaster risks in Japan. *International Journal of Disaster Risk Reduction*, *21*, 148–158. https://doi.org/10.1016/j.ijdrr.2016.11.004

Osborne, J. W. (2015). What is Rotating in Exploratory Factor Analysis? *Practical Assessment, Research & Evaluation*, *20*(2), 1–7. https://doi.org/10.1037/e558952014-001

Osti, R., Hishinuma, S., Miyake, K., & Inomata, H. (2011). Lessons learned from statistical comparison of flood impact factors among southern and eastern Asian countries. *Journal of Flood Risk Management*, *4*(3), 203–215. https://doi.org/10.1111/j.1753-318X.2011.01107.x

Ostrom, E. (2009). Collective Action Theory. In *The Oxford Handbook of Comparative Politics*. https://doi.org/10.1093/oxfordhb/9780199566020.003.0008

Owomoyela, S., Ola, O., & Oyeniyi, K. (2013). Investigating the impact of marketing mix elements on consumer loyalty: An empirical study on Nigerian Breweries PLC. *Interdisciplinary Business Research*, *4*(11), 485–496.

Ozdemir, O., & Yilmaz, C. (2011). Factors affecting risk mitigation revisited: the case of earthquake in Turkey. *Journal of Risk Research*, *14*(1), 17–46. https://doi.org/10.1080/13669871003782751

Padli, J., Habibullah, M. S., & Baharom, A. H. (2013). Determinants of flood fatalities: Evidence from a panel data of 79 countries. *Pertanika Journal of Social Science and Humanities*, *21*(September), 81–98.

Patel, P. (2009). Introduction to Quantitative Methods Definition of Key Terms. *Empirical Law Seminar*, 1–14.

Paton, D. (2003). Disaster preparedness: a social- cognitive perspective. *Disaster Prevention and Management: An International Journal*, *12*(3), 210–216. https://doi.org/10.1108/09653560310480686

Paton, D., & Johnston, D. (2001). Disasters and communities: vulnerability, resilience and preparedness. *Disaster Prevention and Management*, *10*(4), 270–277. https://doi.org/10.1108/EUM0000000005930

Paton, D., Paton, & Douglas. (2003). Disaster preparedness: a social-cognitive perspective. *Disaster Prevention and Management*, *12*(3), 210–216. https://doi.org/10.1108/09653560310480686

Peattie, K., & Peattie, S. (2009a). Social marketing: A pathway to consumption reduction? *Journal of Business Research*, *62*(2), 260–268. https://doi.org/10.1016/j.jbusres.2008.01.033

Peattie, K., & Peattie, S. (2009b). Social marketing: A pathway to consumption reduction? *Journal of Business Research*, *62*(2), 260–268. https://doi.org/10.1016/j.jbusres.2008.01.033

Pérez-Escamilla, R. (2012). Breastfeeding Social Marketing: Lessons Learned from USDA's "Loving Support" Campaign. *Breastfeeding Medicine*, *7*(5), 358–363. https://doi.org/10.1089/bfm.2012.0063

Perez, E. R. (2012). Breastfeeding social marketing : lessons learned from USDA ' s " Loving Support " campaign . PubMed Commons. *Breastfeed Med. 2012 Oct;7(5):358-63. Epub 2012 Sep 4.*, *7*(5), 358–363. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/?term=Breastfeeding+social+marketin%3A+lessons+learned+from+USDA%27s+%22Loving+Support%22+campaign

Perry, R. W., & Lindell, M. K. (2003). Preparedness for Emergency Response : Guide- lines for the Emergency Planning Process. *Disasters*, *27*(4), 336–350. https://doi.org/10.1111/j.0361-3666.2003.00237.x

Pfefferbaum, B., & Shaw, J. A. (2013). Practice parameter on disaster preparedness. *Journal of the American Academy of Child and Adolescent Psychiatry*, *52*(11), 1224–1238. https://doi.org/10.1016/j.jaac.2013.08.014

Plucker, J. A. (2016). Exploratory and Confirmatory Factor Analysis in Gifted Education : Examples with Self- Concept Data Exploratory and Confirmatory Factor Analysis in Gifted Education : Examples With Self-Concept Data, (June). https://doi.org/10.1177/016235320302700103

Pomering, A. (2017). Marketing for sustainability: Extending the conceptualisation of the marketing mix to drive value for individuals and society at large. *Australasian Marketing Journal*, *25*(2), 157–165.

https://doi.org/10.1016/j.ausmj.2017.04.011

Poussin, J. K., Botzen, W. J. W., & Aerts, J. C. J. H. (2014). Factors of influence on flood damage mitigation behaviour by households. *Environmental Science and Policy*, *40*, 69–77. https://doi.org/10.1016/j.envsci.2014.01.013

Pradhan, B. (2009). Flood susceptible mapping and risk area delineation using logistic regression, GIS and remote sensing. *Journal of Spatial Hydrology*, *9*(2), 1–18. Retrieved from http://www.scopus.com/inward/record.url?eid=2-s2.0-77949579826&partnerID=40&md5=d6351df5157872e89f29889e087b60a7

Prochaska, J. O., & DiClemente, C. C. (1982). Transtheoretical therapy: Toward a more integrative model of change. *Psychotherapy: Theory, Research & Practice*, *19*(3), 276–288. https://doi.org/10.1037/h0088437

Prochaska, J. O., & DiClemente, C. C. (1983). Stages and processes of self-change of smoking: Toward an integrative model of change. *Journal of Consulting and Clinical Psychology*, *51*(3), 390–395. https://doi.org/10.1037/0022-006X.51.3.390

Prochaska, J. O., Norcross, J. C., & DiClemente, C. C. (2013). Applying the stages of change. *Psychotherapy in Australia*, *19*(2), 10–15. https://doi.org/10.1093/med:psych/9780199845491.003.0034

Quinn, E., & Stuart, S. L. (2010). Disaster Preparedness. *Perspectives on Augmentative and Alternative Communication*, *19*(June), 120–123. https://doi.org/10.1044/aac19.4.120

Quinn, G., Keough, M., Models, E. L., & Regression, L. (2001). Generalized Linear Models and Logistic Regression. *Experimental Design and Analysis for Biologists*, (Chapter 14), 435–457.

Raftopoulou, E., & Hogg, M. K. (2010). The political role of government-sponsored social marketing campaigns. *European Journal of Marketing*, *44*(7/8), 1206–1227. https://doi.org/10.1108/03090561011047599

Raggio, R. D., Folse, J. A. G., Anne, J., & Folse, G. (2011). Expressions of Gratitude in Disaster Management : An Economic , Social Marketing , and Public Policy Perspective on Post-Katrina Campaigns. *Journal of Public Policy & Marketing*, *30*(2), 168–174. https://doi.org/10.1509/jppm.30.2.168

Reininger, B. M., Rahbar, M. H., Lee, M. J., Chen, Z., Alam, S. R., Pope, J., & Adams, B. (2013). Social capital and disaster preparedness among low income Mexican Americans in a disaster prone area. *Social Science and Medicine*, *83*, 50–60. https://doi.org/10.1016/j.socscimed.2013.01.037

Rezai, G., Kit, P., Mohamed, Z., & Nasir, M. (2013). Going Green : Survey of Perceptions and Intentions Among Malaysian Consumers. *International Business and Management*, *6*(1), 104–112.

https://doi.org/10.3968/j.ibm.1923842820130601.1125

Rezai, G., Shamsudin, M. N., Mohamed, Z. A., & Ling, T. J. (2016). Can contract marketing motivate farmers to go organic? Measuring the moderation effect of contract marketing. *American Journal of Agricultural and Biological Science*, *11*(1), 29–34. https://doi.org/10.3844/ajabssp.2016.29.34

Rezaie Dollatabady, H., Kazemi, A., & Amiri, F. (2011). Analyzing Social Marketing Influence on Isfahanian local Manager's Beliefs about using new energy resources. *Interdisciplinary Journal of Contemporary Research in Business*, *3*(5), 148–156. Retrieved from http://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,shib&db=buh&AN=67539840&site=ehost-live

Riptanti, E. W., Supardi, S., & Qonita, R. A. (2016). Sustainable Food Security on Farmer Households in Flood Prone Areas, *11*(6), 1435–1450.

Robinson, J. J. A. (2010). Nursing and disaster preparedness. *International Nursing Review*. https://doi.org/10.1111/j.1466-7657.2010.00822.x

Rocha, J. L., & Christoplos, I. (2001). Disaster Mitigation and Preparedness on the Nicaraguan Post-Mitch Agenda. *Disasters*, *25*(3), 240–250. https://doi.org/10.1111/1467-7717.00175

Rodriguez, H. (2007). Handbook of Disaster Research.

Rogers, E. M. (2003). Diffusion of Innovations Theory. *New York: Free Press*, 5th ed. https://doi.org/10.1111/j.1467-9523.1970.tb00071.x

Rogers, E. M., & Everett, M. (n.d.). *Diffusion of innovation. Third Edition*.

Romo-murphy, E. (n.d.). *Developing Disaster Preparedness Education via Broadcast Media and Community Involvement Eila Romo-Murphy Developing Disaster Preparedness Education via Broadcast Media and Community Involvement*.

Roosli, R., O'Keefe, P., & Mydin, A. O. (2013). Evolution of disaster planning and housing in Malaysia: A reviews. *World Applied Sciences Journal*, *21*(7), 945–959. https://doi.org/10.5829/idosi.wasj.2013.21.7.2159

Roosli, R., & O'Keefe, P. (2013). Post-disaster housing and management in Malaysia: a literature review. *International Journal of Disaster Resilience in the Built Environment*, *4*(2), 168–181. https://doi.org/10.1108/IJDRBE-06-2011-0022

Rundle-Thiele, S. (2015a). *Ethical and Social Marketing in Asia*. *Ethical and Social Marketing in Asia*. https://doi.org/10.1016/B978-0-08-100097-7.00007-6

Rundle-Thiele, S. (2015b). Social marketing: Singapore, Malaysia and Thailand. In *Ethical and Social Marketing in Asia: Incorporating Fairness Management* (pp. 131–144). https://doi.org/10.1016/B978-0-08-100097-7.00007-6

Samaddar, S., Chatterjee, R., Misra, B., & Tatano, H. (2014). Outcome-expectancy and self-efficacy: Reasons or results of flood preparedness intention? *International Journal of Disaster Risk Reduction*, *8*, 91–99. https://doi.org/10.1016/j.ijdrr.2014.02.002

Samaddar, S., Murase, M., & Okada, N. (2014). Information for Disaster Preparedness: A Social Network Approach to Rainwater Harvesting Technology Dissemination. *International Journal of Disaster Risk Science*, *5*(2), 95–109. https://doi.org/10.1007/s13753-014-0017-2

Sancho, F. M., Miguel, M. J., Aldás, J., & Alda, J. (2011). Factors influencing youth alcohol consumption intention: An approach from consumer socialization theory. *Journal of Social Marketing*, *1*(3), 192–210. https://doi.org/10.1108/20426761111170704

Schildcrout, J. S., Mumford, S. L., Chen, Z., Heagerty, P. J., & Rathouz, P. J. (2012). Outcome-dependent sampling for longitudinal binary response data based on a time-varying auxiliary variable. *Statistics in Medicine*, *31*(22), 2441–2456. https://doi.org/10.1002/sim.4359

Serrat, B. O. (2010). The Future of Social Marketing, (January), 1–10.

Shaari, M. S. M., Zaini, M., Karim, A., & Basri, B. H. (2016a). Flood disaster and gdp growth in malaysia. *European Journal of Business and Social Sciences*, *4*(10), 27–40. Retrieved from http://www.ejbss.com/recent.aspx-/

Shaari, M. S. M., Zaini, M., Karim, A., & Basri, B. H. (2016b). Flood disaster and gdp growth in malaysia, *4*(10), 27–40.

Shafiai, S. (2016). Flood Disaster Management in Malaysia: A Review of Issues of Flood Disaster Relief during and Post-Disaster, (1983), 163–170. https://doi.org/10.15405/epsbs.2016.08.24

Shah Alam Khan, M. (2008). Disaster preparedness for sustainable development in Bangladesh. *Disaster Prevention and Management: An International Journal*, *17*(5), 662–671. https://doi.org/10.1108/09653560810918667

Shah, S. M. H., Mustaffa, Z., & Yusof, K. W. (2017). Disasters Worldwide and Floods in the Malaysian Region: A Brief Review. *Indian Journal of Science and Technology*, *10*(2). https://doi.org/10.17485/ijst/2017/v10i2/110385

Shams, M., Shojaeizadeh, D., Majdzadeh, R., Rashidian, A., & Montazeri, A. (2011). Taxi drivers' views on risky driving behavior in Tehran: A qualitative study using a social marketing approach. *Accident Analysis and Prevention*, *43*(3), 646–651. https://doi.org/10.1016/j.aap.2010.10.007

Sheau-Ting, L., Mohammed, A. H., & Weng-Wai, C. (2013). What is the optimum social marketing mix to market energy conservation behaviour: An empirical study. *Journal of Environmental Management*, *131*, 196–205. https://doi.org/10.1016/j.jenvman.2013.10.001

Shelley, T. (1999). A Person-Relative-to-Event (PrE) Approach to Negative Threat Appeals and Earthquake Preparedness : A Field Study '.

Shiu, E., Hassan, L. M., & Walsh, G. (2009). Demarketing tobacco through governmental policies - The 4Ps revisited. *Journal of Business Research*, *62*(2), 269–278. https://doi.org/10.1016/j.jbusres.2008.01.034

Shreve, C., Fordham, M., Anson, S., Watson, H., Hagen, K., Wadhwa, K., … Karanci, N. (2014). *Report on risk perception and preparedness*. *Tactic*. Retrieved from https://dl.dropboxusercontent.com/content_link/cCuOnjvn5bdOO1oTi630zOwpT0zCcJfEXpk8yQeFIYadxKHLQNdswTOTP99JOim1/file

Shultz, J. M., McLean, A., Herberman Mash, H. B., Rosen, A., Kelly, F., Solo-Gabriele, H. M., … Neria, Y. (2013). Mitigating flood exposure. *Disaster Health*, *1*(1), 30–44. https://doi.org/10.4161/dish.23076

Shumaila, Y., Foxall, G. R., & Pallister, J. G. (2010). Explaining internet banking behavior: Theory of reasoned action, theory of planned behavior, or technology acceptance model? *Journal of Applied Social Psychology*, *40*(5), 1172–1202. https://doi.org/10.1111/j.1559-1816.2010.00615.x

Singh, T., De Grave, W., Ganjiwale, J., Muijtjens, A., & van der Vleuten, C. (2014). Paying Attention to Intention to Transfer in Faculty Development Using the Theory of Planned Behavior. *American Journal of Educational Research*, *2*(6), 361–365. https://doi.org/10.12691/education-2-6-5

Sjakir, M., Abdul Manaf, A., Yusuf Hussain, M., & Ramli, Z. (2039). Learning and Technology Adoption Impacts on Farmer's Productivity Abd Hair Awang 2. *Mediterranean Journal of Social Sciences MCSER Publishing*, *6*(S3), 2039–9340. https://doi.org/10.5901/mjss.2015.v6n4s3p126

Smedescu, D. A. (2014). Using social media marketing in higher education. *Romanian Journal of Marketing*, (1), 77–80. Retrieved from http://search.ebscohost.com/login.aspx?direct=true&db=bth&AN=99032135&site=ehost-live

Smith, E. P. (1997). *Methods of multivariate analysis*. *Journal of Statistical Planning and Inference* (Vol. 59). https://doi.org/10.1016/S0378-3758(96)00098-5

Smith, W. (2006). Social marketing: an overview of approach and effects. *Injury Prevention : Journal of the International Society for Child and Adolescent Injury Prevention*, *12 Suppl 1*, i38–i43. https://doi.org/10.1136/ip.2006.012864

Smith, W. A. (2000). Social marketing: An evolving definition. *American Journal of Health Behavior*, *24*(1), 11–17. https://doi.org/10.5993/AJHB.24.1.3

Stansfield, L. (2012). Ilkka Puumala Applying the theory of social marketing for environmental campaign : Fostering waste separation and recycling in the city of Altea by increasing environmental awareness and influencing behavioural change .

Steelman, T. A., McCaffrey, S. M., Velez, A. L. K., & Briefel, J. A. (2015). What information do people use, trust, and find useful during a disaster? Evidence from five large wildfires. *Natural Hazards*, *76*(1), 615–634. https://doi.org/10.1007/s11069-014-1512-x

Stephenson, R. (2008). Binary Response and Logistic Regression Analysis. *Statistics 415 - Advanced Statistical Methods for Research Workers*, (Ml). Retrieved from http://www.public.iastate.edu/~stat415/%5Cnpapers2://publication/uuid/81EA8EA6-4236-470B-AA46-8EC3953EAA32

Stoltzfus, J. C. (2011). Logistic regression: A brief primer. *Academic Emergency Medicine*, *18*(10), 1099–1104. https://doi.org/10.1111/j.1553-2712.2011.01185.x

Sutton, J., & Tierney, K. (2006). Disaster Preparedness : Concepts , Guidance , and Research Jeannette Sutton and Kathleen Tierney Natural Hazards Center Institute of Behavioral Science University of Colorado Boulder , CO.

Sutton, S. (2014). *Theory of planned behaviour*. *Cambridge Handbook of Psychology, Health and Medicine, Second Edition*. https://doi.org/10.1017/CBO9780511543579.049

Symonette, E. (2014). *Disaster Experience and Self-Efficacy as Factors Influencing Emergency Planning in Community-Dwelling Older Adults*.

Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics*. (S. Hartman & T. Felser, Eds.) (5th ed.). Boston, USA: Pearson Education, Inc.

Takao, K., Motoyoshi, T., Sato, T., Fukuzondo, T., Seo, K., & Ikeda, S. (2004). Factors determining residents' preparedness for floods in modern megalopolises: The case of the Tokai flood disaster in Japan. *Journal of Risk Research*, *7*(7–8), 775–787. https://doi.org/10.1080/1366987031000075996

Terpstra, T. (2011). Emotions, Trust, and Perceived Risk: Affective and Cognitive Routes to Flood Preparedness Behavior. *Risk Analysis*, *31*(10), 1658–1675. https://doi.org/10.1111/j.1539-6924.2011.01616.x

Teun Terpstra, Michael K. Lindell, T. T. (2013). Citizens' Perceptions of Flood Hazard Adjustments An Application of the Protective Action Decision Model. *Journal of Enviroment and Behavior*, *45*(8,).

Thackeray, R., Neiger, B. L., & Keller, H. (2012). Integrating social media and social marketing: a four-step process. *Health Promotion Practice*, *13*(2), 165–168. https://doi.org/10.1177/1524839911432009

Thieken, P. H. (2017). Insights into Flood- Coping Appraisals of Protection Motivation Theory: Empirical Evidence from Germany and France. *Risk Analysis International Journal*, *38*(06), 1239–1257.

Tingsanchali, T. (2012). Urban flood disaster management. In *Procedia Engineering* (Vol. 32, pp. 25–37). https://doi.org/10.1016/j.proeng.2012.01.1233

Security, F., & All, N. F. O. R. (2016). *The state of world fisheries and aquaculture*.

Trafimow, D. (2015). A Case Study of Falsification in Psychology, (August 2009). https://doi.org/10.1177/0959354309336319

Tuladhar, G., Yatabe, R., Dahal, R. K., & Bhandary, N. P. (2013). Knowledge of disaster risk reduction among school students in Nepal. *Geomatics, Natural Hazards and Risk*, *5*(3), 190–207. https://doi.org/10.1080/19475705.2013.809556

Tuswadi. (2014). Doctoral Dissertation Disaster Management and Prevention Education for Volcanic Eruption: A Case of Merapi Area Primary Schools in Java Island, Indonesia.pdf, (September). Retrieved from http://ir.lib.hiroshima-u.ac.jp/files/public/36468/20141203092555139666/k6537_3.pdf

Ullman, J. B., & Bentler, P. M. (2013). Structural Equation Modeling. *Handbook of Psychology*, 30. https://doi.org/10.1002/9781118133880.hop202023

Ullman, J. B., & Bentler, P. M. (2003). *Structural equation modeling*. *Handbook of psychology: Research methods in psychology* (Vol. 2). https://doi.org/10.1002/0471264385.wei0224

Umar, S., Man, N., Mohd, N., & Abd, I. (2017). Core competency requirements among extension workers in peninsular Malaysia : Use of Borich ' s needs assessment model. *Evaluation and Program Planning*, *62*, 9–14. https://doi.org/10.1016/j.evalprogplan.2017.02.001

UN. (2015). *Disaster Preparedness for Effective Response*. *United Nations secretariat of the International Strategy for Disaster Reduction (UN/ISDR) and the United Nations Office for Coordination of Humanitarian Affairs (UN/OCHA)*.

Unido. (2011). *Industrial Value Chain Diagnostics: An Integrated Tool*. *Environment* (Vol. 1). https://doi.org/10.1016/j.envpol.2009.05.005

UNISDR, & CRED. (2015). The human cost of weather-related disasters 1995-2015. *UNISDR Publications*, *1*, 30. https://doi.org/10.1017/CBO9781107415324.004

Vaghefi, N., Shamsudin, M. N., Radam, A., & Rahim, K. A. (2015). adjustments for rice industry Impact of climate change on food security in Malaysia : economic and policy adjustments for rice industry Negin Vaghefi , Mad Nasir Shamsudin , Alias Radam & Khalid Abdul Rahim, (December). https://doi.org/10.1080/1943815X.2015.1112292

Valipur, M. A., Akhlagh, E. M., & Rafiee, A. A. (2014). The Effect of Social Marketing on Development of Ecotourism, *3*(September), 376–381.

Vallerand, R. J., Deshaies, P., Cuerrier, J.-P., Pelletier, L. G., & et al. (1992). Ajzen and Fishbein's theory of reasoned action as applied to moral behavior: A confirmatory analysis. *Journal of Personality and Social Psychology*, *62*(1), 98–109. https://doi.org/10.1037/0022-3514.62.1.98

Walker, B. E. (2005). Increasing Citizen Disaster Preparedness with Social Marketing, (December).

Wan, M. A., Afthanorhan, S. A. (2014). Testing the Mediation Effect using Covariance based Structural Equation Modelling With AMOS. *American International Journal of Research in Humanities, Arts and Social Sciences*, *6*(12), 186–190. https://doi.org/ISSN (Print): 2328-3734, ISSN (Online): 2328-3696, ISSN (CD-ROM): 2328-3688

Wang, Y., Naumann, U., Wright, S. T., & Warton, D. I. (2012). Mvabund- an R package for model-based analysis of multivariate abundance data. *Methods in Ecology and Evolution*, *3*(3), 471–474. https://doi.org/10.1111/j.2041-210X.2012.00190.x

Ware, J. H., Harrington, D., Hunter, D. J., & D'Agostino, R. B. (2012). Missing Data. *New England Journal of Medicine*, *367*(14), 1353–1354. https://doi.org/10.1056/NEJMsm1210043

Warner, L. A. (2014). Enhancing the Capacity to Create Behavior Change : Extension Key Leaders ' Opinions about Social Marketing and Evaluation, *55*(4), 176–190. https://doi.org/10.5032/jae.2014.04176

Wauters, E., Bielders, C., Poesen, J., Govers, G., & Mathijs, E. (2010). Adoption of soil conservation practices in Belgium : An examination of the theory of planned behaviour in the agri-environmental domain Land Use Policy Adoption of soil conservation practices in Belgium : An examination of the theory of planned behaviour , (January). https://doi.org/10.1016/j.landusepol.2009.02.009

Weinberg, B. D., Pehlivan, E., & Street, F. (2011). Social spending: Managing the social media mix. *Business Horizons*, *54*(3), 275–282. https://doi.org/10.1016/j.bushor.2011.01.008

Wells, C. S., & Wollack, J. a. (2003). An Instructor's Guide to Understanding Test Reliability. *Testing and Evaluation Services*, 2–5. https://doi.org/10.1017/CBO9781107415324.004

Wikström, P. O. H. (2010). Situational Action Theory. In *Encyclopedia of Criminological Theories* (pp. 551–553). https://doi.org/10.4135/9781412959193

Williams, M. N., Zealand, N., Alberto, C., Grajales, G., & Rica, P. (2013). Assumptions of Multiple Regression : Correcting Two Misconceptions, *18*(11).

Wood, M. (2008). Applying Commercial Marketing Theory to Social Marketing: A Tale of 4Ps (and a B). *Social Marketing Quarterly*, *14*(1), 76–85. https://doi.org/10.1080/15245000701856877

Wood, M. (2015). Social Marketing for Social Change. *Social Marketing Quarterly*, *22*(October), 1–12. https://doi.org/10.1177/1524500416633429

Wood, M. M., Mileti, D. S., Kano, M., Kelley, M. M., Regan, R., & Bourque, L. B. (2012). Communicating Actionable Risk for Terrorism and Other Hazards. *Risk Analysis*, *32*(4), 601–615. https://doi.org/10.1111/j.1539-6924.2011.01645.x

Wood, M. M., Wood, M. M., Mileti, D. S., Kano, M., Kelley, M. M., Regan, R., & Bourque, L. B. (2011). Communicating Actionable Risk for Terrorism and Other Hazards Communicating Actionable Risk for Terrorism and Other Hazards, (August 2016). https://doi.org/10.1111/j.1539-6924.2011.01645.x

Xia, Y. (2013). Effectiveness of Social Marketing campaigns to Promote Physical Activity in Adults: A Systematic Review.

Xu, L., Ling, M., Lu, Y., & Shen, M. (2017). External in fl uences on forming residents ' waste separation behaviour : Evidence from households in Hangzhou , China. *Habitat International*, *63*, 21–33. https://doi.org/10.1016/j.habitatint.2017.03.009

Xu, W., Hao, Y., Wu, Q., Ning, N., You, J., Liu, C., … Lu, J. (2015a). Community preparedness for emergency : a cross-sectional survey of residents in Heilongjiang of China. *BMJ Open*, *5*(11), e008479. https://doi.org/10.1136/bmjopen-2015-008479

Xu, W., Hao, Y., Wu, Q., Ning, N., You, J., Liu, C., … Lu, J. (2015b). Community preparedness for emergency: a cross-sectional survey of residents in Heilongjiang of China. *BMJ Open*, *5*(11), e008479. https://doi.org/10.1136/bmjopen-2015-008479

Xu, W., Hao, Y., Wu, Q., Ning, N., You, J., Liu, C., … Lu, J. (2015). Community preparedness for emergency: a cross-sectional survey of residents in Heilongjiang of China. *BMJ Open*, *5*(11), e008479–e008479. https://doi.org/10.1136/bmjopen-2015-008479

Yadav, M. S., de Valck, K., Hennig-Thurau, T., Hoffman, D. L., & Spann, M. (2013). Social commerce: A contingency framework for assessing marketing potential. *Journal of Interactive Marketing*, *27*(4), 311–323.

https://doi.org/10.1016/j.intmar.2013.09.001

Yasanallah, P., & Vahid, B. (2012). Studying the Status of Marketing Mix (7Ps) in Consumer Cooperatives at Ilam Province from Members' Perspectives. *American Journal of Industrial and Business Management*, *2*, 194–199. https://doi.org/10.4236/ajibm.2012.24025

Yazid, A. S., Faris, T., Tengku, F., & Abdullah, A. A. (2017). Flood Risk Mitigation : Pressing Issues and Challenges, *7*(1), 157–163.

Yokoyama, S., & Ali, A. K. (2009). Social capital and farmer welfare in Malaysia. *Japan Agricultural Research Quarterly*, *43*(4), 323–328. https://doi.org/10.6090/jarq.43.323

Yong, A. G., & Pearce, S. (2013). A Beginner's Guide to Factor Analysis: Focusing on Exploratory Factor Analysis. *Tutorials in Quantitative Methods for Psychology*, *9*(2), 79–94. https://doi.org/10.20982/tqmp.09.2.p079

Yong, A. G., & Pearce, S. (2013a). A Beginner ' s Guide to Factor Analysis : Focusing on Exploratory Factor Analysis. *Tutorials in Quantitative Methods for Psychology*, *9*(2), 79–94. https://doi.org/10.20982/tqmp.09.2.p079

Yong, A. G., & Pearce, S. (2013b). A Beginner ' s Guide to Factor Analysis : Focusing on Exploratory Factor Analysis, *9*(2), 79–94. https://doi.org/10.20982/tqmp.09.2.p079

Yoo, W., & Health, P. (2017). How To Write Appropriate Statistics Methodology in a manuscript.

Zainal, A., Akasah, S., Doraisamy, S. V. (2015). Flood Impact Assessment in Kota Baru: A Statistical Analysis. *Journal of Scientific Research and Development*, *2*(14), 53–59.

Zainudin, A. & Mahadzirah, M. (2015). The Practical Guide into Writing a Research Proposal, 25–95.

Zainudin, A. (2012). The Second Order Confirmatory Factor Analysis. *A Handbook on SEM*, 163–181.

Zineldin, M., & Philipson, S. (2007). Kotler and Borden are not dead: myth of relationship marketing and truth of the 4Ps. *Journal of Consumer Marketing*, *24*(4), 229–241. https://doi.org/10.1108/07363760710756011