



UNIVERSITI PUTRA MALAYSIA

***INFLUENCE OF PERSONAL, COMMUNITY AND AGENCY FACTORS ON
INTENTION TO PREPARE FOR TSUNAMI IN PENANG, MALAYSIA***

SYAKURA A RAHIM

FEM 2016 2



**INFLUENCE OF PERSONAL, COMMUNITY AND AGENCY FACTORS ON
INTENTION TO PREPARE FOR TSUNAMI IN PENANG, MALAYSIA**

By

SYAKURA BINTI A RAHIM

**Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in
Fulfillment of the Requirements for the Degree of Master of Science**

May 2016

COPYRIGHT

All material contained within the thesis, including without limitation text, logos, icons, photographs and all other artwork, is copyright material of Universiti Putra Malaysia unless otherwise stated. Use may be made of any material contained within the thesis for non-commercial purposes from the copyright holder. Commercial use of material may only be made with the express, prior, written permission of Universiti Putra Malaysia.

Copyright © Universiti Putra Malaysia



Abstract of the thesis presented to the Senate of Universiti Putra Malaysia in fulfillment of the requirement for the Degree of Master of Science

INFLUENCE OF PERSONAL, COMMUNITY AND AGENCY FACTORS ON INTENTION TO PREPARE FOR TSUNAMI IN PENANG, MALAYSIA

By

SYAKURA BINTI A RAHIM

May 2016

Chairman : Associate Professor Aini Mat Said, PhD
Faculty : Human Ecology

Tsunami 2004 was an unforeseeable event that caught Malaysia of guard resulting with 68 losses of lives and with an estimated economic loss of about RM236.5 million. Scientists predict that if the earthquake epicentre originates from the Andaman-Nicobar region, the coastal population of Langkawi, Kedah and Penang will have about 30 minutes to evacuate to safety. Following the United Nation Consumer Guideline emphasizing on the principal objective of consumer protection, it is apparent to be prepared for tsunami disaster aligned with the eight consumer rights and responsibilities for the right to safety, satisfaction of basic needs and right to a healthy environment. Thus it is vital for the affected consumers to be prepared for future tsunami disaster. This study therefore aimed to examine the factors influencing intention to prepare for future tsunami among the coastal residence located in tsunami risk areas. The aims of this study were to determine the influence of positive outcome expectancy, subjective norm, risk perception, sense of community, and trust towards the intention to prepare for future tsunami disasters among consumers in Batu Ferringhi and Balik Pulau area. The differences in the level of intention to prepare for future were examined between those who experience and did not experience the 2004 tsunami.

This study utilized a cross-sectional research design using a survey method. A total of 503 respondents were chosen systematically and data gathered were analysed using SPSS version 22. Both genders, male and female were equally represented with a mean age of 44 years with and had an average household income of RM2222.00. Data indicated that the level of intention to prepare for tsunami disaster was moderate ($M=3.72$) from a scale of 1 (low) to 5 (high) with no significant difference in intention to prepare between those who experienced and did not experienced the 2004 tsunami. Subsequently, results from a multiple regression statistical analysis performed found that sense of community to be the most influential factor followed by subjective norm, trust, positive outcome expectancy and risk perception, explaining the 57% variance in intention to prepare. Sense of community, subjective norm and trust in agencies reflect the influence of the collectivistic culture whereby households plus communities have a central role in supporting and encouraging each other.

The importance of community-based activities in forming the intention to prepare for tsunami is evident from the results obtained. In addition, consumers ought to be made aware of the risk of tsunami and that early preparedness can reduce the consequences of tsunami impacts. It is imperative to educate them on the importance of adopting protective measures such as acknowledging tsunami risk, knowing tsunami safe routes and evacuation zones, familiarization with tsunami warning messages and good emergency financial management through the involvement of household members, neighbours, community leaders and local agencies. Consequently, this also highlights the potential of adopting a community based disaster risk management as recommended by the United Nations International Strategy Disaster Reduction (UNISDR) which encompasses the cooperation between the local community and relevant stakeholders in preparing for future tsunami disaster.



Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk Ijazah Master of Sains

**FAKTOR INDIVIDU, MASYARAKAT DAN AGENSI YANG
MEMPENGARUHI NIAT UNTUK BERSIAPSIAGA BAGI MENGHADAPI
TSUNAMI DI PULAU PINANG, MALAYSIA**

Oleh

SYAKURA BINTI A RAHIM

Mei 2016

Pengerusi : Professor Madya Aini Mat Said, PhD
Fakulti : Ekologi Manusia

Tsunami yang berlaku pada tahun 2004 adalah satu peristiwa diluar jangkaan yang melanda Malaysia dan mengakibatkan kehilangan 68 nyawa serta kerugian ekonomi sekitar RM236.5 juta. Para saintis meramalkan sekiranya gempa bumi terjadi berpusat di kawasan Andaman-Nicobar, penduduk di kawasan pantai Langkawi, Kedah dan Pulau Pinang akan mempunyai hanya lebih kurang 30 minit sahaja untuk berpindah ke kawasan yang lebih selamat. Garis Panduan Pengguna Bangsa Bangsa Bersatu telah memberi penekanan kepada hak-hak pengguna yang selari dengan kesiapsiagaan pengguna bagi menghadapi bencana tsunami iaitu hak untuk keselamatan, hak untuk keperluan asas dan hak kesejahteraan di dalam persekitaran yang sihat. Oleh sebab itu, adalah penting bagi pengguna untuk bersiap sedia bagi menghadapi bencana tsunami pada masa akan datang. Kajian ini menfokuskan kepada faktor yang mempengaruhi niat pengguna untuk bersiapsiaga di kawasan yang terdedah kepada risiko bencana tsunami. Matlamat kajian ini ialah untuk mengenalpasti perkaitan antara jangkaan hasil positif, norma subjektif, persepsi terhadap risiko, perasaan kemasyarakatan terhadap komuniti dan kepercayaan terhadap agensi dengan niat pengguna di kawasan Batu Ferringi dan Balik Pulau untuk bersiapsiaga menghadapi bencana tsunami yang mungkin terjadi pada masa akan datang. Perbezaan dalam niat ini juga dikaji antara mereka yang telah mengalami tsunami 2004 secara langsung atau tidak.

Kajian ini menggunakan rekaan kajian keratan rentas melalui kaedah tinjauan. Seramai 503 responden dipilih secara sistematik dan data yang diperolehi dianalisis menggunakan SPSS versi 22. Responden lelaki dan perempuan diwakili secara sama rata dengan purata umur 44 tahun, dengan purata pendapatan keluarga sebanyak RM2222.00. Data menunjukkan bahawa tahap niat untuk bersiapsiaga menghadapi bencana tsunami adalah sederhana ($M=3.72$) dari skala 1 (rendah) hingga 5 (tinggi) tanpa sebarang perbezaan ketara antara mereka yang pernah menghadapi bencana tersebut pada tahun 2004 dan pada mereka yang tidak mengalaminya. Seterusnya, hasil dari analisis statistik regresi pelbagai menunjukkan bahawa rasa kemasyarakatan dalam komuniti merupakan faktor yang paling berpengaruh diikuti dengan norma subjektif,

kepercayaan kepada agensi, jangkaan keputusan positif dan persepsi terhadap risiko. Gabungan kesemua faktor ini menjelaskan varians niat kesiapsiagaan untuk menghadapi tsunami sebanyak 57%. Rasa kemasyarakatan dalam komuniti, norma subjektif dan kepercayaan pada agensi mencerminkan pengaruh budaya kolektivisme dimana keluarga dan komuniti memainkan peranan utama memberi motivasi dan menggalakkan antara satu sama lain untuk membuat persediaan.

Kepentingan aktiviti kemasyarakatan dalam membentuk niat untuk bersiap-siaga bagi menghadapi tsunami adalah sejajar dengan keputusan yang diperolehi. Di samping itu, pengguna harus diberi kesedaran berkenaan risiko tsunami dan kepentingan persediaan awal boleh mengurangkan impak tsunami. Adalah penting mendidik pengguna melalui penglibatan ahli keluarga, jiran, pemimpin masyarakat dan agensi tempatan akan kepentingan menerima pakai langkah perlindungan seperti mengenali risiko tsunami, mengetahui laluan selamat tsunami, zon selamat tsunami dan mengenali mesej amaran tsunami. Selain itu, hasil kajian ini juga menggariskan potensi pelaksanaan *community based disaster risk management* seperti yang digalakkan oleh *United Nations International Strategy Disaster Reduction* (UNISDR) yang merangkumi kerjasama antara masyarakat setempat dan pihak lain yang berkepentingan dalam bersiap-siaga menghadapi bencana tsunami pada masa akan datang.

ACKNOWLEDGEMENTS

In the name of Allah, the Most Gracious, the Most Merciful.

I would like to thank my supervisor Associate Professor. Aini Mat Said for her sheer guidance, assistance and never ending support. Not forgetting my committee members Dr. Elistina Abu Bakar and Dr. Norhasmah Sulaiman for their continuous aid throughout my dissertation writing journey and help in ways I never knew possible

My heartfelt gratitude goes to Ministry of Science, Technology and Innovation for giving me the opportunity to use the data as part of my research and be a part of the team also to my families and friends, who have supported me throughout my postgraduate journey.

Finally, I would also like to thank the participants of this study for spending their time to fill out the survey forms distributed and to all who have helped me one way or another during the course of my research.

I certify that a Thesis Examination Committee has met on 03 May 2016 to conduct the final examination of Syakura binti A Rahim on her thesis entitled "Influence of Personal, Community and Agency Factors on Intention to Prepare For Tsunami in Penang, Malaysia" in accordance with the Universities and University Colleges Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U.(A) 106] 15 March 1998. The Committee recommends that the student be awarded the Master of Science.

Members of the Thesis Examination Committee were as follows:

Rumaya bt Juhari, PhD

Associate Professor
Faculty of Human Ecology
Universiti Putra Malaysia
(Chairman)

Syuhaily bt Osman, PhD

Senior Lecturer
Faculty of Human Ecology
Universiti Putra Malaysia
(Internal Examiner)

Doris Padmini a/p S. Selvaratnam, PhD

Associate Professor
Faculty of Economics and Management
Universiti Kebangsaan Malaysia
(External Examiner)



ZULKARNAIN ZAINAL, PhD

Professor and Deputy Dean
School of Graduate Studies
Universiti Putra Malaysia

Date: 26 July 2016

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

Aini Mat Said, PhD

Associate Professor
Faculty of Human Ecology
Universiti Putra Malaysia
(Chairman)

Elistina Abu Bakar, PhD

Senior Lecturer
Faculty of Human Ecology
Universiti Putra Malaysia
(Member)

Norhasmah Sulaiman, PhD

Associate Professor
Faculty of Medicine and Health Science
Universiti Putra Malaysia
(Member)

BUJANG BIN KIM HUAT, PhD

Professor and Dean
School of Graduate Studies
Universiti Putra Malaysia

Date:

Declaration by graduate student

I hereby confirm that:

- this thesis is my original work;
- quotations, illustrations and citations have been duly referenced;
- this thesis has not been submitted previously or concurrently for any other degree at any institutions;
- intellectual property from the thesis and copyright of thesis are fully-owned by Universiti Putra Malaysia, as according to the Universiti Putra Malaysia (Research) Rules 2012;
- written permission must be obtained from supervisor and the office of Deputy Vice-Chancellor (Research and innovation) before thesis is published (in the form of written, printed or in electronic form) including books, journals, modules, proceedings, popular writings, seminar papers, manuscripts, posters, reports, lecture notes, learning modules or any other materials as stated in the Universiti Putra Malaysia (Research) Rules 2012;
- there is no plagiarism or data falsification/fabrication in the thesis, and scholarly integrity is upheld as according to the Universiti Putra Malaysia (Graduate Studies) Rules 2003 (Revision 2012-2013) and the Universiti Putra Malaysia (Research) Rules 2012. The thesis has undergone plagiarism detection software

Signature: _____ Date: _____

Name and Matric No.: Syakura Binti A Rahim, GS3582

Declaration by Members of Supervisory Committee

This is to confirm that:

- the research conducted and the writing of this thesis was under our supervision;
- supervision responsibilities as stated in the Universiti Putra Malaysia (Graduate Studies) Rules 2003 (Revision 2012-2013) were adhered to.

Signature: _____

Name of Chairman
of Supervisory
Committee:

Associate Professor Dr. Aini Mat Said

Signature: _____

Name of Member
of Supervisory
Committee:

Dr. Elistina Abu Bakar

Signature: _____

Name of Member
of Supervisory
Committee:

Associate Professor Dr. Norhasmah Sulaiman

TABLE OF CONTENTS

	Page
ABSTRACT	i
ABSTRAK	iii
ACKNOWLEDGEMENTS	v
APPROVAL	vi
DECLARATION	viii
LIST OF TABLES	xiii
LIST OF FIGURES	xiv
CHAPTER	
1 INTRODUCTION	1
1.1 Background of the study	1
1.2 Problem statement	3
1.3 Research questions	5
1.4 Research objectives	6
1.4.1 General objective	6
1.4.2 Specific objectives	6
1.5 Research hypotheses	6
1.6 Scope of the study	6
1.7 Limitations of study	7
1.8 Significance of the research	7
1.8.1 Significance to the theoretical body of knowledge	7
1.8.2 Significance to policy makers	7
1.8.3 Practical significance	7
1.9 Definition of terminologies	8
1.9.1 Intention to prepare for tsunami	8
1.9.2 Positive outcome expectancy	8
1.9.3 Subjective norm	8
1.9.4 Risk perception	9
1.9.5 Trust in civic agencies	9
1.9.6 Sense of community	9
1.10 Summary and organization of the thesis	10
2 LITERATURE REVIEW	11
2.1 Introduction	11
2.2 Overview of tsunami disaster	11
2.3 Intention to prepare for tsunami	18
2.4 Theoretical perspective of the study	19
2.5 Outcome expectancy	24
2.6 Subjective norm	25
2.7 Sense of community	26
2.8 Trust	28
2.9 Risk perception	30
2.10 Conceptual framework	32
2.11 Summary	33

3	METHODOLOGY	35
3.1	Introduction	35
3.2	Study description	35
3.3	Background of study location	35
3.4	Research design	38
3.5	Data collection	39
3.6	Population and sampling	39
3.7	Sampling procedure	40
3.8	Instrumentation	41
	3.8.1 Demographic characteristic	42
	3.8.2 Intention to prepare for tsunami	42
	3.8.3 Positive outcome expectancy	45
	3.8.4 Subjective norm	45
	3.8.5 Risk perception	45
	3.8.6 Agencies trust	45
	3.8.7 Sense of community	46
3.9	Pre-test	46
3.10	Validity and reliability of the questionnaire	46
	3.10.1 Validity	47
	3.10.2 Reliability	47
3.11	Exploratory data analysis	48
	3.11.1 Homoscedasticity	48
	3.11.2 Outliers	49
	3.11.3 Linearity	49
	3.11.4 Multicollinearity	49
	3.11.5 Data normality	49
3.12	Statistical analysis procedures	50
	3.12.1 Descriptive analysis	50
	3.12.2 T-test	50
	3.12.3 Multiple regression	51
3.13	Summary	52
4	FINDINGS AND DISCUSSION	53
4.1	Introduction	53
4.2	Socio-demographics of the respondents	53
4.3	Positive outcome expectancy	55
4.4	Subjective norm	56
4.5	Risk perception	57
4.6	Trust towards agencies	58
4.7	Sense of community	59
4.8	Level of intention to prepare for tsunami hazard	60
4.9	Hypotheses testing	62
	4.9.1 Experience and intention to prepare for tsunami	63
	4.9.2 Significant factors to intention to prepare for tsunami	64
4.10	Summary	66
5	SUMMARY, CONCLUSION AND RECOMMENDATION	67
5.1	Introduction	67
5.2	Summary	67
5.3	Conclusion	68

5.3.1	The differences between households who have direct experience and households without direct experiences to tsunami with intention to prepare.	68
5.3.2	The level of intention to prepare, positive outcome expectancy, subjective norm, risk perception, sense of community and trust among household in tsunami risk area.	69
5.3.3	The relationship between positive outcome expectancy, subjective norm, risk perception, sense of community and trust towards intention to prepare.	71
5.3.4	Influential factors of intention to prepare for tsunami among households in Penang tsunami risk area.	71
5.4	Implications	71
5.4.1	Implications on practical application	72
5.4.2	Policy implications	74
5.4.3	Theoretical implications	75
5.5	Recommendations for future studies	75
	REFERENCES	77
	APPENDICES	90
	BIODATA OF STUDENT	118
	LIST OF PUBLICATIONS	119

LIST OF TABLES

Table		Page
2.1	List of past tsunami events (1900-present)	12
2.2	Impacts to the states in Malaysia	15
2.3	Evolution of Paton's model on intention to prepare	20
3.1	List of district, sub-district, village and population of the area	39
3.2	List of respondents from area of the study, household, respondents and system size	41
3.3	Factor loadings for the dimensions of intention to prepare for tsunami	44
3.4	List of variables and source of adaptation	46
3.5	List of variables, dimension and reliability	48
3.6	Variables Tolerance and VIF value	49
3.7	Results from the Normality Test	50
3.8	Correlation between independent variables and intention to prepare for tsunami	51
4.1	The demographic characteristic of the respondents (n=503)	54
4.2	Items of positive outcome expectancy	55
4.3	Score for items in subjective norm	56
4.4	Mean score for the social agents of subjective norm	57
4.5	Mean scores for items measuring risk perception	58
4.6	Mean score for item measuring trust in agencies.	59
4.7	Mean score for items measuring sense of community	60
4.8	Mean score for items measuring intention to prepare for tsunami	62
4.9	T-test for individuals directly involved in the 2004 tsunami and intention to prepare.	63
4.10	Multiple regression analysis	64

LIST OF FIGURES

Figure		Page
2.1	Paton's Model 2005	21
2.2	Paton's Model 2006	22
2.3	Paton's Model, 2007	23
2.4	Paton's Model, 2008	23
2.5	Conceptual framework for intention to prepare for tsunami.	33
3.1	Map of Penang	36
3.2	Inundation area for Batu Ferringhi	37
3.3	Inundation area for Balik Pulau	38
3.4	Scree Plot for intention to prepare for tsunami factor analysis.	43

CHAPTER 1

INTRODUCTION

1.1 Background of the study

The United Nations Assembly adopted the United Nation Consumer guideline in 1985 emphasizing on consumers economic interest, safety and quality of goods and services relating to education, basic necessities and sustainable consumption that has been used by its members as a reference that have been passed as legislation in countries under the United Nation (Harland, 1987). The principal objective of consumer protection act is to guard consumer safety and well-being. Primarily the consumer's rights and responsibilities are clustered into eight categories which are the right to safety, the right to be informed, the right to choose, the right to be heard, the right to satisfy basic needs, the right to redress, the right to consumer education and the right to a healthy environment (Brown, 2012). The right to safety refers to the right to be protected against hazards to health or life. As a consumer, an individual have the right to protect oneself from property damage and threatens against well-being that can jeopardize quality of life and safety (Fazli, 2012). The recent climate change has changed the patterns of natural disaster exponentially.

Over the past few decades until the 90's, the occurrence of natural disasters has not only doubled globally from 200 to about 400 cases per year (UNISDR/OCHA, 2008), but also quadrupled between 2001 to 2010 and is predicted to continue increase (Gaiha, Hill, Thapa, & Kulkarni, 2015). The alarming increase in frequency is the outcome of global warming, a contributing factor of climate change that has drastically changed weather patterns and the intensity of natural disasters (UNISDR/OCHA, 2008). Since 1971, two thirds of intense natural disasters experienced globally were of hydro-meteorological type, some of which were triggered by geographical hazards like tsunami that has dominated the collateral effects of hydrological and geological disaster.

Earthquake and tsunami have been occurring constantly changing the surface of the earth interminably. Large earthquakes are often associated with the Pacific Ocean in particular the "Ring of Fire", a series of volcanoes and active fault. Tsunamis, which often travel through the ocean leaving a trail of devastation, are often generated by oceanic earthquake, underwater landslide or volcanic eruptions adjacent to the oceans that generate ripple of waves through the movement of the sea bed mainly in the Pacific basin and the Indian Ocean. Tsunamis are giant waves that can travel at the speed of a jet (up to 950km/h) over deep waters crossing continents. The speed of tsunami wave depends on the depth of the sea rather than the distance from source of the wave. The waves build in height and force whilst travelling inland as the depth of the seabed decreases. Tsunami waves come in a few series where the second wave is normally bigger than the first.

Without prior warning or preparation, there will be an extensive loss of lives and properties. In the last couple of decades, the frequencies of tsunami disaster with astounding impacts have increased alarmingly. Since the year 2,000 the death toll implicated by tsunamis exceeded 300,000 lives with property damage amounting to more than USD3 billion (EM-DAT, 2015). The 2004 Indian Ocean Tsunami which occurred 155km from North Sumatra off the Sumatran Coast with a focal point of 30km in depth is the deadliest tsunami ever recorded affecting 19 countries, causing deaths in 12 countries including Malaysia (Lay et al., 2005). Approximately more than 250,000 death toll was reported, 51,000 were missing and around 1.5 million others were displaced by the sheer force of the disaster. Properties and economic damages were estimated to be more than 4.4 billion (RM 18.92 billion) (EM-DAT, 2015).

It is clear that Malaysia is no longer in the comfort zone, safe from tsunami disasters. Consequently, the Malaysian government allocated a research grant worth RM4 million (USD930,232) to conduct seismic and tsunami hazards study. Among the findings identified was that if the earthquake epicentre originates from the Andaman-Nicobar sea region, tsunami wave is expected to reach the shorelines of Langkawi, Penang and Kedah in about 30 minutes (Teh, Koh, Liu, Ismail, & Lee, 2009). Tsunami, unlike other natural hazards, is a chain reaction induced by mostly earthquake and it is therefore unpredictable. However, when a sudden movement of water bodies triggering a tsunami is detected, it is possible to calculate and predict the direction of the tsunami wave and the estimated time of arrival. Individuals living in tsunami-exposed area can have as little as less than ten minutes to evacuate to safety (McAdoo, Dengler, Prasetya, & Titov, 2006).

Tsunami has tremendous effects on the lives of individuals as consumers. Disasters not only affect local consumers but also global consumers, linking the international community chain by supply and demand. Local consumers are in jeopardy of losing family, home, properties and livelihood as a direct effect of the disaster, while the resources supply (export) by the commodity chain will be disrupted indirectly. A fine example of the magnitude of tsunami impacts to consumer is the recent 2011 Tohoku tsunami which led to a nuclear disaster. Shortly after the event, countries like America and UK banned perishable goods from Japan while Asian countries like Malaysia, Hong Kong, Philippines and Singapore increased the monitoring of incoming goods (Kajitani, Chang, & Tatano, 2013). Business entities were forced to find other suppliers or close down. One of the dramatic impacts was the temporary shutdown of twelve automakers in Japan to conserve electricity which ultimately led to the stall in car manufacturing/assembling in America. The tsunami incident drew attention to how the world economy works and how it is connected in terms of financial flow (Herod, 2011). Significantly there is a growing recognition on the importance of consumers as an end-user and business entity to participate in a sustainable risk reduction plan and be prepared for future disasters.

Disaster management to reduce disaster risk has direct connotation to human safety and well-being (Shaw, 2014). One of the strategies for disaster risk reduction identified by United Nations International Strategy Disaster Reduction (UNISDR) is to enhance community preparedness through community based disaster risk management

(CBDRM) with the core fundamental of developing a resilient community against disasters (Shaw, 2012). CBDRM is a proactive disaster management approach that comprises of activities and significant role playing between the consumers as a community, local authorities and the responding agencies. CBDRM implements both top-down and bottom-up approach that includes all stakeholders from ground zero to national level. Strong involvement and cooperation among relevant sectors followed by constant follow-up help disseminate lessons learnt and best practices of CBDRM, such as instilling awareness throughout generations and building an independent community via knowledge of tsunami risk, tsunami safe route and evacuation area, familiarization with type of tsunami warning messages and emergency responses. Such practice focuses on preparedness rather than response to reduce or alleviate impact of disasters. Lessons learnt and experiences can be shared by consistently conducting a series of training with modules tailored specifically for the vulnerable groups like consumers in the community. These groups become resilient by preparing themselves better to respond to disasters and recover in a timely manner, returning their life to normalcy (Tong, Nguyen, Shaw, & Tran, 2014).

Preparedness is defined as actions taken prior to an emergency to develop operational capabilities with the aim to facilitate effective contingent responses upon the occurrence of an emergency (Aini, Fakhru'l-Razi, Ahmad Rodzi, & Fuad, 2011). Disaster preparedness saves lives, minimize property damage and reduce financial loss. Creating awareness by educating at-risk population on tsunami preparedness, mitigation, evacuation route, and strengthening infrastructures can aid populations on low-lying coastal strip to relocate safely.

Knowing what to do during emergency helps a person react appropriately, in addition to reducing panic and chaos. Disaster preparedness increases the ability to predict, respond and cope with the impacts of a disaster. Preparedness is the essence of CBDRM to form a resilient community, a vital criteria before, during and post-disaster (Kafle & Murshed, 2006). Being prepared is aligned with consumer's right to safety, right to information, right to basic needs and the right to a healthy environment. Therefore, based on the grounded findings by previous researches on the importance of disaster preparedness, this study attempted to investigate the factors that influence preparedness to tsunami disaster.

1.2 Problem statement

The first wave of the 2004 Indian Ocean Tsunami hit Langkawi Island between 12.00pm and 12.30pm followed by mainland Kedah, Penang Island and Perak around 1.00pm, six hours after Aceh was hit. The unprecedented event claimed 68 lives, injured 367 and left 10,564 homeless (Aini et al., 2011). The losses due to the tsunami were felt greatly in rural coastline villages where fishing boats, aquaculture farm and fishing docks were destroyed or damaged. The fishing and aquaculture industry suffered the most as 7,721 fisherman and 232 fish farmers were affected, with 3,626 boats worth more than RM73.1 million (USD17 million) in total were damaged (Ibrahim & Mazlan, 2006). According to Ibrahim and Mazlan, (2006) the average loss per house destroyed is estimated to be around RM 55,900 to RM64,500 (USD13,000 to USD 15,000). Many

household livelihood that relied on the sea for source of income were disrupted causing psychological (Asmawi & Ibrahim, 2013) and socio-economic impacts (Chamhuri, Ibrahim, Haslina, & Roslina, 2006).

Penang Island reported the highest casualties at 54 deaths, the highest properties damage (which was estimated at USD14.3 million) and an economic loss amounting to around USD55 million (Ibrahim & Mazlan, 2006). The 2004 tsunami was a testament to the vulnerability of Penang Island as a high-risk tsunami zone. The tsunami struck the northern part of Penang consisting of Batu Ferringhi, Tanjung Bungah, Tanjung Tokong, Pantai Miami and Teluk Bahang) and southern district comprising of Kampung Perlis, Kuala Jalan Baru, Kuala Sungai Pinang, Kampung Pantai Malindo, Kampung Permatang Damar Laut, Kampung Pulau Betong, Kampung Aceh, Kampung Sungai Batu, Kampung Teluk Kumbar and Pantai Pasir Panjang.

Most of the casualties were beach goers and picnickers enjoying recreational beach activities, oblivious to the natural signs of tsunami and the necessary actions to take in the event of a tsunami disaster. Responding agencies and local authority reported a lot of confusion on the roles of respective agencies and the chain of command that led to many miscommunications and ineffective coordination during the search and rescue stage (Badruddin, 2012; Roosli & O'Keefe, 2013). Due to the absence of a standard operating procedure for tsunami disasters, there was a lack of coordination among responding agencies to mitigate, response and provide relief to the victims of the disaster, particularly since Malaysia was thought to be free of tsunami hazard prior to 2004.

Economically, consumers were affected by the increase of price due the disruption of marine goods' supply like fish and aquaculture products (Chamhuri et al., 2006). The following year, landing of marine fishes dropped by 9.16 per cent compared to 2004 as a direct result of the tsunami which caused the destruction of many fishing vessels, adversely affecting the fishing industry throughout the year (DOF, 2005). While it is without a doubt that the death toll was partly due to the absence of a warning system, the impacts of the disaster can be reduced by being aware of tsunami characteristics, taking safety measures and being prepared (Muttarak & Pothisiri, 2013).

The primary experience and knowledge gained from the 2004 tsunami act as a learning platform for local communities, responding agencies, government organizations and non-government organizations to be proactive and prepare for future tsunami. Unlike other disasters, there is a time lag between the earthquake and the generation of tsunami waves before it reaches the coastline. Therefore, awareness on tsunami evacuation routes and tsunami safe zones are essential for effective tsunami preparedness to be achieved. On the contrary, failure to learn from the past events will lead to the failure of the system to mitigate for future disaster (Bird & Dominey-Howes, 2006). Vulnerable coastal communities must be able to respond appropriately in a timely manner upon the issuance of tsunami warning (Aini et al., 2011; Paton, 2013).

The first 72 hours after any disaster relief is most critical to save lives known as “golden 72 hours” (Zhang & Ansari, 2012). Though responding agencies and rescuers have a thorough rescuing plan, they will take time to activate the procedures and get to the victims especially in large scale disasters such as tsunami. As an individual, one has to be self-reliant during the first 72 hours until assistance arrives to ensure survival. Subsequently, it is essential for families to plan ahead and be self-sufficient with basic supplies such as food, water and medicines since basic necessities and infrastructures such as electricity, water and telecommunication are often disrupted following a disaster (Kohn et al., 2012). Lack of awareness on surrounding hazards and the inability to co-exist have been associated as underlying factors to the loss of lives and disruption of livelihood (Samaddar, Chatterjee, Misra, & Tatano, 2014). Although inconsistent, previous studies have found that those who have faced a disaster to be more prepared, and have adapted and learned from prior experience making them better prepared, as they adapt the attitude of preparing early for disasters (Donahue, Eckel, & Wilson, 2013). Direct experience can shift risk perception motivating people to manage their risk and willing to adopt hazard mitigation strategies, triggering preparedness (Paton, 2003). If people were aware of the nature and impact of tsunami, earlier preparation can be made to reduce death toll, casualties and property damage.

Building a tsunami resilient community through community preparedness is a challenging task, especially in cases where tsunami has only occurred once (or rare) and the communities at-risk might feel complacent to take actions to be prepared, perceiving future tsunami as low risk and unlikely to happen again anytime soon (Shaw, 2014). In this context, preparedness takes into account adopting tsunami protective measures, activities to protect the neighbourhood as well as communication and seeking information on tsunami related issues (Becker, McBride & Paton, 2013a).

Studies have shown intention to prepare for a disaster will lead to preparedness (Becker, McBride, & Paton, 2013a). It is therefore important to identify level of intention to prepare and investigate the influencing factors that can enhance individual’s intention to prepare. Studies have shown that preparedness consists of three levels namely individual level, community level and societal/agencies level (Paton, Miller & Johnston, 2001; Becker, McBride & Paton, 2013a). Individual level comprising of positive outcome expectancy, subjective norm and risk perception was found to influence intention to prepare (Paton, 2003). Sense of community, which reflects the feeling or sense of belonging, importance and shared belief within the group that represents community, was found to be one of the key determinants in intention to prepare (Paton, Kelly, Burgelt & Doherty, 2006a). Similarly, trust towards civic agencies was also found to be a significant predictor in the intention to prepare for tsunami (Paton et al., 2010a). Present, no such study focusing on factors influencing intention to prepare for disaster or disaster preparedness has been conducted in Malaysia. As such, this study would like to examine whether the above mentioned variables are determinant of intention to prepare for tsunami among households in Penang.

1.3 Research questions

From the review of the problem statement, a few questions arise in regard to intention to prepare for tsunami.

1. What is the demographic background of respondents?
2. Is there any difference between households with direct experience to tsunami and household without direct experiences in intention to prepare for tsunami?
3. What are the level of intention to prepare, positive outcome expectancy, subjective norm, risk perception, sense of community and trust among households in Penang tsunami risk area?
4. Are there any relationship between intention to prepare for tsunami and positive outcome expectancy, subjective norm, risk perception, trust and sense of community?
5. Which the best predictors of intention to prepare for tsunami among households in Penang tsunami risk area: positive outcome expectancy, subjective norm, risk perception, trust or sense of community?

1.4 Research objectives

1.4.1 General objective

The general objective of this study is to identify the factors influencing intention to prepare for tsunami among households in tsunami risk areas in Penang.

1.4.2 Specific objectives

1. To identify the social-demographic background of the households residing along the shoreline of the tsunami risk area.
2. To examine the differences between households who have direct experience and those without direct experiences to tsunami 2004 in intention to prepare for tsunami.
3. To determine the level of intention to prepare, positive outcome expectancy, subjective norm, risk perception, sense of community and trust among the households in Penang tsunami risk area.
4. To investigate the relationship between positive outcome expectancy, subjective norm, risk perception, sense of community and trust towards intention to prepare.
5. To determine which factor has the strongest influence towards intention to prepare for tsunami among households in Penang tsunami risk area.

1.5 Research hypotheses

H₀1: There is no significant difference between household with direct experience to tsunami and household without direct experiences in intention to prepare for tsunami.

H₀ 2: With controlled variables in the model there are no dominant factors that significantly influence intention to prepare for tsunami.

1.6 Scope of the study

The study focuses on households in tsunami risk zone identified through tsunami modelling which are 1km to 2km from the shoreline namely Balik Pulau and Batu Ferringhi in Penang Island as they reside in tsunami risk hazard zone. Each household was represented by the head of family or spouse who acts as a decision maker or can influence the decision maker.

1.7 Limitations of study

The 2004 tsunami affected Kedah (Langkawi and Kuala Muda), Penang, Perak and Selangor but the research was limited to Penang Island, where the highest death toll and property damages were recorded.

1.8 Significance of the research

The result of the study contributed in three aspects namely theoretical, policy and practical. The information gathered can aid other researchers, students, policy makers and consumers to address the issues of creating a more prepared society against tsunami hazard.

1.8.1 Significance to the theoretical body of knowledge

This study has theoretically merged Theory of Reasoned Action and risk perception (individual level), sense of community (community level) and trust (societal/agencies level), all of which represent indicators of preparedness to disasters. The subject matter of intention to prepare for tsunami has been investigated in other countries with different cultural background (individualism and collectivism) (Paton, Sagala & Okada, 2013b), however there is an absence of empirical research studying intention to prepare for tsunami in Malaysia. This study could fill the theoretical gap by providing theoretical justifications for the conceptualization of the relationship between intention to prepare for tsunami and the influencing factors among coastal consumers in tsunami risk area in Malaysia.

Findings show the suitability of the theories and model applied in Malaysia and similarities in the output, if any. The influencing factors may assist other scholars in researching the concept of being prepared for a tsunami hazard.

1.8.2 Significance to policy makers

Findings of the study highlight areas of mitigation, preparedness and recovery that need policy amendment or consideration in order to restore the economy in a short period of time, to uphold socioeconomic balance among households and to reinstate financial stability. Agencies and organization such as the National Security Council, Malaysian Meteorological Department and responding agencies can benefit by amending current policies if necessary to accommodate current needs, implementing programme to create

public awareness and absorbing disaster preparedness into education curriculum at schools and higher learning institutions.

1.8.3 Practical significance

For practical contribution, findings provide beneficial input that acts as a guideline of methods for consumers to become prepared. Consumers can make housing plan in advance taking into consideration the safety aspects of the housing area. Stakeholders and business owners will have the opportunity to protect their interest and the interest of the consumers, especially by taking precautions to keep the chain of supply intact. Areas that need improvement or to be focused on will be highlighted like developing problem solving skills, instilling the belief that actions can be taken to mitigate effects of disasters and encouraging positive beliefs. The framework acts as a concrete reference for non-governmental organizations and community leaders to conduct training, disaster drills, public activities as well as seminars to create awareness among the public on tsunami hazard to create a resilient community.

1.9 Definition of terminologies

The terms used in the context of the study were defined as follows.

1.9.1 Intention to prepare for tsunami

Conceptual

Behavioural intention indicates a person's motivation or willingness to act or perform a set of behaviour (Paton, Smith & Johnston, 2005).

Operational

Intention to prepare refers to the likelihood to adopt protective measure to reduce the impact of tsunami to self, family, property and neighbourhood stability. The construct were adopted from Paton, Smith and Johnston (2005). A total of 21 items were included in the measurement quantified using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

1.9.2 Positive outcome expectancy

Conceptual

A positive behavioural belief associated with performing a behaviour with a positive outcome (Fishbein & Ajzen, 2011).

Operational

The nature of a person's beliefs to mitigate consequences of tsunami through an individual's action in which they believe the recommended action can be implemented. The constructs were adopted from McIvor and Paton (2005) consisting of four

statements measured using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

1.9.3 Subjective norm

Conceptual

Subjective norm refers to perceptions concerning what should or ought to be done with respect to performing a given behaviour by social agents (Fishbein & Ajzen, 2011).

Operational

Subjective norms refer to influence towards individuals and perception of social agents (family, friends, colleagues and neighbourhood) on taking tsunami protective measure. The construct was adopted from McIvor and Paton (2007) using sixteen items measured using a 5-point Likert-type scale ranging from 1 (very unlikely) to 5 (very likely).

1.9.4 Risk perception

Conceptual

Risk is conceptualized as the likelihood of the hazard occurring and the impact from extreme environmental event (Lindell & Perry, 2012).

Operational

Risk perception refers to the perception of tsunami threats and the impact of tsunami from three components, namely individual's safety, severity of tsunami and future threats. The construct was adopted from Frandsen (2010) comprising of nine items quantified using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

1.9.5 Trust in civic agencies

Conceptual

Trust means believing that a person(s) representing the organization or organization(s) can be relied upon to accomplish their objectives because they are competent and possess values and intentions that are consistent with those of the individual (Greenberg, 2014).

Operational

Trust in civic agencies refers to the level of faith and confidence towards civic agencies, viz. local authorities and responding agencies (Malaysia Meteorological Department, Police, Fire and Rescue, Civil Defence Department etc.), with regards to the agencies being concerned with public welfare and well versed in tsunami hazard, as well as being able to provide information on protective measure to the general public. The construct was adopted from Frandsen (2012) consisting of nine items measured using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

1.9.6 Sense of community

Conceptual

A feeling of belonging among members, and a feeling that members matter to one another and to the group, with a shared faith that members' needs will be met by their commitment to be together (McMillan, 2011).

Operational

Sense of community refers to residents' feeling of belonging, the feeling of being important to each other, and a shared belief that residents' needs will be met by their commitment to each other. The construct was adopted from Frandsen (2012) consisted of 18 items where respondents were to rate the question using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

1.10 Summary and organization of the thesis

Chapter 1 provides an introduction and an outline of the study that includes background description, problem statement and research objectives. The scope of the study is outlined in limitations followed by contribution of the study highlighted through the significance of the research. The chapter ends with the definition of terminologies explaining terms used in the study.

Chapter 2 presents the direction of the study through a perspective of theoretical framework and models, summarized through literature review. The chapter describes the relationship between dependent variables and independent variables in the study derived through the body of literature. A brief description will be on the gap in literature review.

Chapter 3 explains research designs, the methodology involved in the research as well as reliability and validity of the instruments. The assessment of pre-test, sampling procedure, EDA and statistical analysis procedure to analyse the data were also discussed.

Chapter 4 highlights the finding of the research and the interpretation of data gathered. Discussion involves peeling social demographic background of the respondents followed by descriptive analysis to describe the findings and inferential analysis to test hypothesis and meet the research objectives.

Chapter 5 concludes hypotheses proposed in the study, elaborate major findings, and overall research implications and recommendations. The chapter ends with limitations and recommendations for future study.

REFERENCES

- Aakre, S., Banaszak, I., Mechler, R., Rübberke, D., Wreford, A., & Kalirai, H. (2010). Financial adaptation to disaster risk in the European Union. *Mitigation and Adaptation Strategies for Global Change*, 15(7), 721-736.
- Aini, M. S., Fakhru'l-Razi, A., Ahmad Rodzi, M., & Fuad, A. (2011). Community preparedness for tsunami disaster: a case study. *Disaster Prevention and Management*, 20(3), 266-280.
- Aini, M. S., Fakhru'l-Razi, A., Ahmad Rodzi, M., & Fuad, A. (2015a). *Tsunami Emergency Response Plan, Balik Pulau*. Serdang, Malaysia: Universiti Putra Malaysia.
- Aini, M. S., Fakhru'l-Razi, A., Ahmad Rodzi, M., & Fuad, A. (2015b). *Tsunami Emergency Response Plan, Batu Ferringhi*. Serdang, Malaysia: Universiti Putra Malaysia.
- Ajzen, I. (1998). Models of human social behavior and their application to health psychology. *Psychological Health*, 13(4), 735-739.
- Ajzen, I. (2012). Martin Fishbein's Legacy: The Reasoned Action Approach. *The ANNALS of the American Academy of Political and Social Science*, 640(1), 11-27.
- Ajzen, I. & Klobas, J. (2013). Fertility intentions. *Demographic Research*, 29, 203-232.
- Alongi, D. M. (2008). Mangrove forests: Resilience, protection from tsunamis, and responses to global climate change. *Estuarine, Coastal and Shelf Science*, 76(1), 1-13.
- Asmawi, M. Z. & Ibrahim, A. N. (2013). The impacts of tsunami on the well-being of the affected community in Kuala Muda, Kedah, Malaysia. *Journal of Clean Energy Technologies*, 1(3), 246-250.
- Athukorala, P.-c. & Resosudarmo, B. P. (2006). The Indian Ocean tsunami - economic impact, disaster management and lessons. *Asian Economic Papers*, 4(1), 1-39.
- Badruddin, A. R. (2012). Issues of disaster management preparedness: A case study of Directive 20 of National Security Council Malaysia. *International Journal of Business and Social Science*, 3(5), 85-92.
- Baker, E. J. (2011). Household preparedness for the aftermath of hurricanes in Florida. *Applied Geography*, 31(1), 46-52.
- Barton, C. C. (2009). Disaster Preparedness and Management. In P. J. B. Hakkinen, A. Mohapatra & S. G. G. Gilbert (Eds.), *Information Resources in Toxicology*. United States: Academic Press.

- Beaton, D. E., Bombardier, C., Guillemin, F., & Ferraz, M. B. (2000). Guidelines for the Process of Cross-Cultural Adaptation of Self-Report Measures. *Spine*, 25(24), 3186-3191.
- Becker, J., Paton, D., Johnston, D. M., & Ronan, K. R. (2012). A model of household preparedness for earthquakes: how individuals make meaning of earthquake information and how this influences preparedness. *Natural Hazards*, 64(1), 107-137.
- Becker, J., McBride, S., & Paton, D. (2013a). Improving community resilience in the Hawke's Bay: A review of resilience research, and current public education, communication and resilience strategies. *GNS Science Report*, 2012(38), 1-82.
- Becker, J., Paton, D., Johnston, D. M., & Ronan, K. R. (2013b). Salient beliefs about earthquake hazards and household preparedness. *Risk Analysis*, 33(9), 1710-1727.
- Bhattacherjee, A. (2012). *Social Science Research Principles, Methods, and Practices (2nd ed.)*: United States: Scholar Commons.
- Bihari, M., & Ryan, R. (2012). Influence of social capital on community preparedness for wildfires. *Landscape and Urban Planning*, 106(3), 253-261.
- Bird, D., & Dominey-Howes, D. (2006). Tsunami risk mitigation and the issue of public awareness. *The Australian Journal of Emergency Management*, 21(4), 29-35.
- Bock, G.-W., Lee, J.-N., Zmud, R. W., & Kim, Y.-G. (2005). Behavioral Intention Formation in Knowledge Sharing: Examining the Role of Extrinsic Motivators, Social-Psychological Forces, and Organizational Climate. *MIS Quarterly*, 29(1), 87-111.
- Boone, H. N., & Boone, D. A. (2012). Analyzing Likert Data. *Journal of Extension*, 50(2), 1-5.
- Botterill, L., & Mazur, N. (2004). Risk & risk perception: A literature review *Project No.BRR-8A*. Kingston, Australia: Rural Industries Research and Development Corporation.
- Bourque, L. B., Regan, R., Kelley, M. M., Wood, M. M., Kano, M., & Mileti, D. S. (2012). An Examination of the Effect of Perceived Risk on Preparedness Behavior. *Environment and Behavior*, 45(5), 615-649.
- Boyd, N. M., & Nowell, B. (2014). Psychological Sense of Community: A New Construct for the Field of Management. *Journal of Management Inquiry*, 23(2), 107-122.
- Branzei, O., Vertinsky, I., & Camp, R. D. (2007). Culture-contingent signs of trust in emergent relationships. *Organizational behavior and human decision processes*, 104(1), 61-82.

- Brown, R. (2012). United Nations guidelines for consumer protection: Making them work in developing countries *Consumers in the information society*. Kuala Lumpur: Consumers International.
- Bryant, E. (2014). *Tsunami - The Underrated Hazard* (3rd ed.). Chichester, UK: Springer & Praxis.
- Chamhuri, S., Ibrahim, M. Z., Haslina, S. M. H., & Roslina, K. (2006). *Impact of Tsunami On Fishing, Aquaculture and Coastal Communities In Malaysia*. Paper presented at the Prosiding Persidangan Antarabangsa Pembangunan Aceh, Universiti Kebangsaan Malaysia, Bangi.
- Chavis, D., & Wandersman, A. (1990). Sense of Community in the Urban Environment: A Catalyst for Participation and Community Development. *American Journal of Community Psychology*, Vol. 18, No. 1, 1990, 18(1), 55-81.
- Coppola, D. P. (2015). *Preparedness: Introduction to International Disaster Management* (pp. 275-320). United States: Elsevier.
- Creswell, J. W. (2011). *Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research* (4th ed.). United States of America: Pearson.
- Cutter, S. L., Ahearn, J. A., Amadei, B., Crawford, P., Eide, E. A., Galloway, G. E., Zoback, M. L. (2013). Disaster Resilience: A National Imperative. *Environment: Science and Policy for Sustainable Development*, 55(2), 25-29.
- Dietz, G., Gillespie, N., & Chao, G. T. (2010). Unravelling the complexities of trust and culture. *Organizational trust: A cultural perspective*, 3-41.
- Dimitrov, D. M. (2010). Testing for factorial invariance in the context of construct validation. *Measurement and Evaluation in Counseling and Development*, 43(2), 121-149.
- DOF. (2005). Annual Fisheries Statistics 2005 (Vol. 2). Kuala Lumpur, Malaysia: Ministry of Agriculture & Agro-Based Industry Malaysia.
- Donahue, A. K., Eckel, C. C., & Wilson, R. K. (2013). Ready or not? How citizens and public officials perceive risk and preparedness. *The American Review of Public Administration*, 44(4S), 89S-111S.
- Drost, E. A. (2011). Validity and Reliability in Social Science Research. *Education Research and Perspectives*, 38(1), 105-123.
- Dufty, N. (2012). *Learning for disaster resilience*. Paper presented at the Earth: Fire and Rain, Australian & New Zealand Disaster and Emergency Management Conference, Brisbane, Australia.

- Ejeta, L. T., Ardalan, A., & Paton, D. (2015). Application of Behavioral Theories to Disaster and Emergency Health Preparedness: A Systematic Review. *PLOS Currents Disasters*, 1(7), 1-27.
- EM-DAT. (2015). Disaster profile 2000-2015 (pp. Disaster profile 2000-2015): EM-DAT: The OFDA/CRED International Disaster Database.
- Eriksen, C., & Prior, T. (2013). Defining the importance of mental preparedness for risk communication and residents well-prepared for wildfire. *International Journal of Disaster Risk Reduction*, 6, 87-97.
- Etkin, D., & Davis, I. (2013). The Search for Principles of Disaster Management. *International Journal of Accounting and Financial Management*, 12(1), 529-555.
- Fang, D., Fang, C. L., Tsai, B. K., Lan, L. C., & Hsu, W. S. (2012). Relationships among trust in messages, risk perception, and risk reduction preferences based upon avian influenza in Taiwan. *International Journal of Environmental Research and Public Health*, 9(8), 2742-2757.
- Fauziah, N., & Kamaruzaman, J. (2010). Individualism-collectivism and job satisfaction between Malaysia and Australia. *International Journal of Educational Management*, 24(2), 159-174.
- Fazli, M. S. (2014). The Development of Consumer Protection Policies in Malaysia. *International Journal of Business and Social Research*, 4(6), 98-108.
- Field, A. (2009). *Discovering statistics using SPSS*: Sage publications.
- Fischer, R., Ferreira, M. C., Assmar, E., Redford, P., Harb, C., Glazer, S., . . . Mustapha, A. (2009). Individualism-collectivism as Descriptive Norms: Development of a Subjective Norm Approach to Culture Measurement. *Journal of Cross-Cultural Psychology*, 40(2), 187-213.
- Fishbein, M. (1963). An Investigation of the Relationships between Beliefs about an Object and the Attitude toward that Object. *Human Relations*, 16(3), 233-239.
- Fishbein, M., & Ajzen, I. (2011). *Predicting and Changing Behavior: The Reasoned Action Approach*: Taylor & Francis.
- Floristella, A. P. d. (2015). Dealing with natural disasters. *The Pacific Review*, 1-23.
- Francis, J., Giles-Corti, B., Wood, L., & Knuiman, M. (2012). Creating sense of community: The role of public space. *Journal of Environmental Psychology*, 32(4), 401-409.
- Frandsen, M. (2012). *Promoting Community Bushfire Preparedness: Bridging the Theory – Practice Divide*. (Doctoral Dissertation), University of Tasmania.

- French, S., Wood, L., Foster, S. A., Giles-Corti, B., Frank, L., & Learnihan, V. (2013). Sense of Community and Its Association With the Neighborhood Built Environment. *Environment and Behavior*, 46(6), 677-697.
- Fritz, H. M., Kongko, W., Moore, A., McAdoo, B., Goff, J., Harbitz, C., Synolakis, C. (2007). Extreme runup from the 17 July 2006 Java tsunami. *Geophysical Research Letters*, 34(12).
- Gaiha, R., Hill, K., Thapa, G., & Kulkarni, V. S. (2015). Have Natural Disasters Become Deadlier? In A. Balisacan, U. Chakravorty & M.-L. Ravago (Eds.), *Sustainable Economic Development*. (pp. 415-444). United States: Elsevier.
- Gaillard, J.-C. (2008). Alternative paradigms of volcanic risk perception: The case of Mt. Pinatubo in the Philippines. *Journal of Volcanology and Geothermal Research*, 172(3-4), 315-328.
- Gaillard, J.-C., & Dibben, C. J. L. (2008). Volcanic risk perception and beyond. *Journal of Volcanology and Geothermal Research*, 172(3-4), 163-169.
- Gielen, A. C., & Sleet, D. (2003). Application of Behavior-Change Theories and Methods to Injury Prevention. *Epidemiologic Reviews*, 25(1), 65-76.
- Godschalk, D. R. (2003). Urban Hazard Mitigation: Creating Resilient Cities. *Natural Hazards Review*, 4(3), 136-143.
- Google. (n.d.). (Google Maps directions for driving from Ingolstadt, Germany, to Geneva, Switzerland). Retrieved January 4, 2015, from <https://goo.gl/maps/@5.365398,100.2053845,12z>
- Gowan, M. E., Kirk, R. C., & Sloan, J. A. (2014). Building resiliency: a cross-sectional study examining relationships among health-related quality of life, well-being, and disaster preparedness. *Health and Quality of Life Outcomes*, 12(1), 1-17.
- Greenberg, M. R. (2014). Energy policy and research: The underappreciation of trust. *Energy Research & Social Science*, 1, 152-160.
- Guha-Sapir, D., Vos, F., Below, R., & Ponserre, S. (2012). Annual Disaster Statistical Review 2011 - The Numbers and Trends. Brussels: CRED.
- Gyles-McDonnough, M., Posarac, A., & Verghis, M. (2013). Inclusiveness. Paper presented at the 11th Malaysia Kick-Off Conference, Port Dickson, Malaysia.
- Haddow, G. D., Bullock, J. A., & Coppola, D. P. (2007). *Introduction to Emergency Management*. Butterworth-Heinemann.
- Harland, D. (1987). United Nations guidelines for consumer protection. *Journal of Consumer Policy*, 10(3), 245-266.
- Hair, F. J. J., Black, C. W., Babin, J. B., & Anderson, E. R. (2010). *Multivariate Data Analysis: A Global Perspective* (7th ed.): Pearson Education.

- Harrison, G. W., Humphrey, S. J., & Verschoor, A. (2010). Choice Under Uncertainty: Evidence From Ethiopia, India And Uganda. *The Economic Journal*, 120(543), 80–104.
- Herod, A. (2011). What does the 2011 Japanese tsunami tell us about the nature of the global economy? *Social & Cultural Geography*, 12(8), 829-837.
- Hochrainer-Stigler, S., Mechler, R., Ranger, N., Kunreuther, H., Michel-Kerjan, E., Vaziri, P., . . . Young, M. (2011). The costs and benefits of reducing risk from natural hazards to residential structures in developing. Philadelphia, United States: Wharton Risk Management and Decision Processes Center.
- Hochrainer, S. (2009). Assessing the Macroeconomic Impacts of Natural Disasters: Are There Any? *World Bank Policy Research Working Paper Series*, 2009(1).
- Husniyah, A. R., & Fazli, M. S. (2014). Malaysian Public Sector Employees Financial Preparedness and Personal Financial Plan Implementation. *Journal of Wealth Management & Financial Planning*, 1(1), 33-42.
- Husrin, S., Kelvin, J., Putra, A., Prihantono, J., Cara, Y., & Hani, A. (2015). Assessment on the Characteristics and the Damping Performance of Coastal Forests in Pangandaran after the 2006 Java Tsunami. *Procedia Earth and Planetary Science*, 12, 20-30.
- Ibrahim, K., & Mazlan, O. (2006). The 26.12.04 Tsunami Disaster In Malaysia : An Environmental, Socio-economic and community well-being impact study. Kuala Lumpur, Malaysia: Institute of Environment and Development (LESTARI) & Academy of Sciences Malaysia.
- IOC. (2008). Tsunami Preparedness - Information Guide For Disaster Planners. In M. Yamamoto & B. Aliaga (Eds.), (Vol. IOC Manuals and Guides No. 49.): Intergovernmental Oceanographic Commission of UNESCO.
- Ishino, T., Seko, M., & Naoi, M. (2012). Earthquake Risk in Japan: Consumers' Risk Mitigation Responses After the Great East Japan Earthquake. *Journal of Economic Issues*, 0(2), 519-530.
- Kafle, S., & Murshed, Z. (2006). Community Based Disaster Risk Management for Local Authorities. Thailand: Asian Disaster Preparedness Center.
- Kajitani, Y., Chang, S. E., & Tatano, H. (2013). Economic Impacts of the 2011 Tohoku-Oki Earthquake and Tsunami. *Earthquake Spectra*, 29(S1), S457-S478.
- Karanci, N. (2013). Facilitating Community Participation in Disaster Risk Management: Risk Perception and Preparedness Behaviours in Turkey. *Advances in Natural and Technological Hazards Research*, 33, 93-108.
- Kieffer, W. S., Barton, P., Chesworth, W., Palmer, R. A., Reitan, P., & Zen, E.-a. (2009). Megascale processes: Natural disasters and human behavior. *The Geological Society of America*, 453(1), 77.

- Kimberlin, C. L., & Winterstein, A. G. (2008). Validity and reliability of measurement instruments used in research. *American Journal of Health-System Pharmacy*, 65(23), 2276-2284.
- Kohn, S., Eaton, J. L., Feroz, S., Bainbridge, A. A., Hoolachan, J., & Barnett, D. J. (2012). Personal Disaster Preparedness: An Integrative Review of the Literature. *Disaster Medicine and Public Health Preparedness*, 6(2), 217-231.
- Krejcie, R. V., & Morgan, D. W. (1970). Determining Sample Size for Research Activities. *EDUCATIONAL AND PSYCHOLOGICAL MEASUREMENT*, 30(1), 607-610.
- Lall, S. V., & Deichmann, U. (2012). Density and disasters Economics of Urban Hazard Risk. *World Bank Research Observer*, 27(1), 74-105.
- Landahl, M., & Cox, C. (2009). Beyond the Plan: Individual Responder and Family Preparedness in The Resilient Organization. *Homeland Security Affairs*, 5(3), 1-23.
- Lay, T., Kanamori, H., Ammon, C. J., Nettles, M., Ward, S. N., Aster, R. C., . . . Sipkin, S. (2005). The great Sumatra-Andaman earthquake of 26 December 2004. *Science*, 308(5725), 1127-1133.
- Lenzi, M., Vieno, A., Perkins, D. D., Pastore, M., Santinello, M., & Mazzardis, S. (2012). Perceived neighborhood social resources as determinants of prosocial behavior in early adolescence. *American Journal of Community Psychology*, 50(1-2), 37-49.
- Levac, J., Toal-Sullivan, D., & O'Sullivan, T. L. (2012). Household emergency preparedness: a literature review. *Journal of Community Health*, 37(3), 725-733.
- Lindell, M. (2013). Disaster studies. *Current Sociology*, 61(5-6), 797-825.
- Lindell, M., & Hwang, S. (2008). Households' perceived personal risk and responses in a multihazard environment. *Risk Analysis*, 28(2), 539-556.
- Lindell, M., & Perry, R. W. (2012). The protective action decision model: theoretical modifications and additional evidence. *Risk Analysis*, 32(4), 616-632.
- Love, B., Mackert, M., & Silk, K. (2013). Consumer Trust in Information Sources: Testing an Interdisciplinary Model. *SAGE Open*, 3(2), 1-13.
- Mack, S. E., Spotts, D., Hayes, A., & Warner, J. R. (2006). Teaching Emergency Preparedness to Restricted - Budget Families. *Public Health Nursing*, 23(4), 354-360.
- Manen, S. M. (2014). Hazard and risk perception at Turrialba volcano (Costa Rica); implications for disaster risk management. *Applied Geography*, 50 (1), 63-73.

- Mayer, R., Davis, J., & Schoorman, D. (2011). An Integrative Model of Organizational Trust. *The Academy of Management Review*, 20(3), 709-734.
- McAdoo, B. G., Dengler, L., Prasetya, G., & Titov, V. (2006). Smong: How an Oral History Saved Thousands on Indonesia's Simeulue Island during the December 2004 and March 2005 Tsunamis. *Earthquake Spectra*, 22(S3), 661-669.
- McIvor, D., & Paton, D. (2007). Preparing for natural hazards: normative and attitudinal influences. *Disaster Prevention and Management*, 16(1), 79-88.
- McMillan, D. W. (2011). Sense of community, a theory not a value: a response to Nowell and Boyd. *Journal of Community Psychology*, 39(5), 507-519.
- McMillan, D. W., & Chavis, D. M. (1986). Sense of Community: A Definition and Theory. *Journal of Community Psychology*, 14(1), 6-23.
- McNeill, I. M., Dunlop, P. D., Heath, J. B., Skinner, T. C., & Morrison, D. L. (2013). Expecting the unexpected: predicting physiological and psychological wildfire preparedness from perceived risk, responsibility, and obstacles. *Risk Analysis*, 33(10), 1829-1843.
- 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.
- Mishra, S., Mazumdar, S., & Suar, D. (2010). Place attachment and flood preparedness. *Journal of Environmental Psychology*, 30(2), 187-197.
- 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).
- Norman, G. (2010). Likert scales, levels of measurement and the "laws" of statistics. *Adv Health Sci Educ Theory Pract*, 15(5), 625-632.
- Nowell, B., & Boyd, N. (2011). Sense of community as construct and theory: authors' response to McMillan. *Journal of Community Psychology*, 39(8), 889-893.
- Oral, M., Yenel, A., Oral, E., Aydin, N., & Tuncay, T. (2015). Earthquake experience and preparedness in Turkey. *Disaster Prevention and Management: An International Journal*, 24(1), 21-37.
- Pallant, J. (2011). *SPSS Survival Manual*. Australia: McGraw Hill.
- Paton, D., Millar, M., & Johnston, D. (2001). Community Resilience to Volcanic Hazard Consequences. *Natural Hazards*, 24(2), 157-169
- Paton, D. (2003). Disaster preparedness: A social-cognitive perspective. *Disaster Prevention and Management*, 12(3), 210-216.

- Paton, D. (2006a). Building Capacity to Co-Exist With Natural Hazards and Their Consequences *Disaster Resilience* (pp. 3-11). United States: Charles C Thomas.
- Paton, D. (2006b). Promoting Household and Community Preparedness for Bushfires: A review of issues that inform the development and delivery of risk communication strategies (pp. 1-105). Australia: Bushfire Cooperative Research Centre.
- Paton, D. (2007a). Measuring and Monitoring Resilience in Auckland *GNS Science Report* (Vol. 18). New Zealand: Institute of Geological and Nuclear Sciences Limited.
- Paton, D. (2007b). Preparing for natural hazards: the role of community trust. *Disaster Prevention and Management*, 16(3), 370-379.
- Paton, D. (2013). Disaster Resilient Communities: Developing and testing an all-hazards theory. *Journal of Integrated Disaster Risk Management*, 3(1), 1-17.
- Paton, D., Anderson, E., Becker, J., & Petersen, J. (2014). Developing a comprehensive model of hazard preparedness: Lessons from the Christchurch earthquake. *International Journal of Disaster Risk Reduction*.
- Paton, D., Frandsen, M., & Johnston, D. (2010a). Confronting unfamiliar hazard: Tsunami preparedness in Tasmania. *The Australian Journal of Emergency Management*, 25(4), 31-37.
- Paton, D., Sagala, S., Okada, N., Jang, L.-J., Bürgelt, P. T., & Gregg, C. E. (2010b). Making sense of natural hazard mitigation: Personal, social and cultural influences. *Environmental Hazards*, 9(2), 183-196.
- Paton, D., Houghton, B. F., Gregg, C. E., Gill, D. A., Ritchie, L. A., McIvor, D., . . . Johnston, D. M. (2008). Managing tsunami risk in coastal communities: Identifying predictors of preparedness. *The Australian Journal of Emergency Management*, 23(1), 4-9.
- Paton, D., Houghton, B. F., Gregg, C. E., McIvor, D., Johnston, D. M., Bürgelt, P., . . . Horan, J. (2012). Managing Tsunami Risk: Social Context Influences on Preparedness. *Journal of Pacific Rim Psychology*, 3(01), 27-37.
- Paton, D., Kelly, G., Burgelt, P. T., & Doherty, M. (2006a). Preparing for bushfires: understanding intentions. *Disaster Prevention and Management*, 15(4), 566-575.
- Paton, D., McClure, J., & Burgelt, P. T. (2006b). Natural Hazard Resilience: The Role Of Individual And Household Preparedness. *Disaster Resilience: An Integrated Approach*, 105-125.
- Paton, D., Mamula-Seadon, L., & Selway, K. L. (2013a). Community Resilience in Christchurch - Adaptive responses and capacities during earthquake recovery

- GNS Science Report* (Vol. 37): Institute of Geological and Nuclear Sciences Limited.
- Paton, D., Okada, N., & Sagala, S. (2013b). Understanding Preparedness for Natural Hazards: Cross cultural comparison. *Journal of Integrated Disaster Risk Management*, 3(1), 18-35.
- Paton, D., Smith, L., Daly, M., & Johnston, D. (2008). Risk perception and volcanic hazard mitigation: Individual and social perspectives. *Journal of Volcanology and Geothermal Research*, 172(3-4), 179-188.
- Paton, D., Ronan, K., Johnston, D., Smith, L., & Johnston, M. (2003). *Responding to earthquake hazards: promoting household resilience and preparedness*. Paper presented at the 7th Pacific Conference on Earthquake Engineering, New Zealand.
- Paton, D., Smith, L., & Johnston, D. (2005). When good intentions turn bad: promoting natural hazard preparedness. *The Australian Journal of Emergency Management*, 20(1), 25-30.
- Pushpalal, D., Rhyner, J., & Hossini, V. (2013). *The Great Eastern Japan Earthquake 11 March 2011 - Lessons Learned and Research Questions*. Paper presented at the From Vulnerability to Resilience in Disaster Risk Management, Tohoku University.
- Rajeev, M. M. (2014). Sustainability and Community Empowerment in Disaster Management. *International Journal of Social Work and Human Services Practice*, 2(6), 207-212.
- Randall, W., Gravier, M., & Prybutok, V. (2011). Connection, trust, and commitment: dimensions of co-creation? *Journal of Strategic Marketing*, 19(1), 3-24.
- Ricci, T., Barberi, F., Davis, M. S., Isaia, R., & Nave, R. (2013). Volcanic risk perception in the Campi Flegrei area. *Journal of Volcanology and Geothermal Research*, 254, 118-130.
- Richard Eiser, J., Bostrom, A., Burton, I., Johnston, D. M., McClure, J., Paton, D., . . . White, M. P. (2012). Risk interpretation and action: A conceptual framework for responses to natural hazards. *International Journal of Disaster Risk Reduction*, 1, 5-16.
- Rodríguez, H., Quarantelli, E. L., & Dynes, R. (2007). *Handbook of Disaster Research*: Springer Science & Business Media.
- 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.
- Roszkowski, J. M., & Davey, G. (2010). Risk Perception and Risk Tolerance Changes Attributable to the 2008 Economic Crisis - A Subtle but Critical Difference. *Journal Of Financial Service Professionals*, 64(4), 42-53.

- Rundmo, T., Nordfjærn, T., Iversen, H. H., Olstedal, S., & Jørgensen, S. H. (2011). The role of risk perception and other risk-related judgements in transportation mode use. *Safety Science*, 49(2), 226-235.
- Sagala, S., Okada, N., & Paton, D. (2009). Predictors of Intention to prepare for volcanic risks in Mt Merapi Indonesia. *Journal of Pacific Rim Psychology*, 3(2), 47-54.
- 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.
- Sarkar, D., Mukhopadhyay, A., & Hazra, S. (2013). Characteristics of Tsunami and paleo Tsunami deposits in South Andaman Island, India. *Indian Journal of Geo-Marine Sciences*, 42(7), 839-848.
- Saunders, M. N. K., Skinner, D., Dietz, G., Gillespie, N., & Lewicki, R. J. (2010). *Organizational Trust: A Cultural Perspective*. United State of America: Cambridge University Press.
- Shaw, R. (2012). Community-Based Disaster Risk Reduction. *Environment and Disaster Risk Management*, 10(1), 3-17.
- Shaw, R. (2014). Post Disaster Recovery: Issues and Challenges. In R. Shaw (Ed.), *Disaster Recovery* (pp. 1-13): Springer Japan.
- Shaw, R., Shiwaku, K., Kobayashi, H., & Kobayashi, M. (2004). Linking experience, education, perception and earthquake preparedness. *Disaster Prevention and Management*, 13(1), 39-49.
- Shibayama, T., Esteban, M., Nistor, I., Takagi, H., Nguyen, D. T., Matsumaru, R., . . . Ohira, K. (2013). Classification of Tsunami and Evacuation Areas. *Natural Hazards*, 67(2), 365-386.
- Shikada, M., Than Myint, U., Ko Ko Gyi, U., Nakagawa, Y., & Shaw, R. (2012). Chapter 10 Reaching the Unreachable: Myanmar Experiences of Community-Based Disaster Risk Reduction. *10*, 185-203.
- Shikada, M., Myint, T. U., Gyi, K. K. U., Nakagawa, Y., & Shaw, R. (2012). Reaching the Unreachable: Myanmar Experiences of Community-Based Disaster Risk Reduction. In R. Shaw (Ed.), *Community-Based Disaster Risk Reduction (Community, Environment and Disaster Risk Management)* (Vol. 10, pp. 185-203). United Kingdom: Emerald Group Publishing Limited.
- Siddiqui, K. (2013). Heuristics for Sample Size Determination in Multivariate Statistical Techniques. *World Applied Sciences Journal*, 27(2), 285-287.
- Sjöberg, L. (2007). Emotions and Risk Perception. *Risk Management*, 9(4), 223-237.

- Sjöberg, L., & Wester-Herber, M. (2008). Too much trust in (social) trust? The importance of epistemic concerns and perceived antagonism. *International Journal Global Environmental Issues*, 8(1/2).
- Slovic, P. (2009). *Thinking and Deciding Rationally About Catastrophic Losses of Human Lives*. Paper presented at the The Irrational Economist: Future Directions in Behavioral Economics and Risk Management, Philadelphia, United States.
- Slovic, P., Finucane, M., Peters, E., & Macgregor, D. (2004). Risk as Analysis and Risk as Feelings - Some Thoughts about Affect, Reason, Risk, and Rationality. *Risk Analysis*, 24(2), 311-322.
- Slovic, P., & Västfjäll, D. (2010). Affect, Moral Intuition, and Risk. *Psychological Inquiry*, 21(4), 387-398.
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using Multivariate Statistics*. United States of America: Pearson International.
- Teh, S. Y., Koh, H. L., Liu, P. L. F., Ismail, A. I. M., & Lee, H. L. (2009). Analytical and numerical simulation of tsunami mitigation by mangroves in Penang, Malaysia. *Journal of Asian Earth Sciences*, 36(1), 38-46.
- Tekeli-Yeşil, S., Dedeoğlu, N., Tanner, M., Braun-Fahrlaender, C., & Obrist, B. (2010). Individual preparedness and mitigation actions for a predicted earthquake in Istanbul. *Disasters*, 34(4), 910-930.
- Terpstra, T. (2011). Emotions, trust, and perceived risk: affective and cognitive routes to flood preparedness behavior. *Risk Analysis*, 31(10), 1658-1675.
- Tong, T. M. T., Nguyen, H., Shaw, R., & Tran, P. (2014). Community-Based Disaster Risk Reduction in Vietnam. In R. Shaw (Ed.), *Disaster Recovery: Used or Misused Development Opportunity* (Vol. 10, pp. 255-273). Japan: Springer.
- UNISDR/OCHA. (2008). *Disaster Preparedness for Effective Response: Guidance and Indicator Package for Implementing Priority Five of the Hyogo Framework*. Geneva, Switzerland: United Nations secretariat of the International Strategy for Disaster Reduction (UN/ISDR) and the United Nations Office for Coordination of Humanitarian Affairs (UN/OCHA).
- Wachinger, G., Renn, O., Begg, C., & Kuhlicke, C. (2013). The Risk Perception Paradox - Implications for Governance And Communication Of Natural Hazards. *Risk Analysis*, 33(6), 1049-1065.
- Wächter, J., Babeyko, A., Fleischer, J., Häner, R., Hammitzsch, M., Kloth, A., & Lendholt, M. (2012). Development of tsunami early warning systems and future challenges. *Natural Hazards and Earth System Science*, 12(6), 1923-1935.

- Winter, J. C. F., Dodou, D., & Wieringa, P. A. (2009). Exploratory Factor Analysis With Small Sample Sizes. *Multivariate Behavioral Research*, 44(2), 147-181.
- Wombacher, J., Tagg, S. K., Bürgi, T., & MacBryde, J. (2010). Measuring sense of community in the military: cross-cultural evidence for the validity of the brief sense of community scale and its underlying theory. *Journal of Community Psychology*, 38(6), 671-687.
- Xu, Q., Perkins, D. D., & Chow, J. C.-C. (2010). Sense of community, neighboring, and social capital as predictors of local political participation in China. *Am J Community Psychol*, 45(3-4), 259-271.
- Yan, A. (2009). Assesment of Seismic and Tsunami Threats to Malaysia from Major Earthquakes in Southeast Asian Region & Seismotectonic Map of Malaysia and Fault Line/Zone Study. Paper presented at the Forum on Earthquake and Tsunami Risks in Malaysia (Malaysian Meteorological Department), Putrajaya, Malaysia.
- Yang, B., Watkins, K. E., & Marsick, V. J. (2004). The construct of the learning organization: Dimensions, measurement, and validation. *Human Resource Development Quarterly*, 15(1), 31-55.
- Zaiton, H., Dollard, M. F., & Winefield, A. H. (2010). Work-family conflict in East vs Western Countries. *Cross Cultural Management: An International Journal*, 17(1), 30-49.
- Zhang, J., & Ansari, N. (2012). Extending ONU lifetime beyond 72 hours in EPON for emergency communications. In IEEE (Ed.), *International Conference on Computing, Networking and Communications (ICNC)*, (pp. 287 - 291). Maui, Hawaii: IEEE.
- Zimmer, R., Zschiesche, M., & Holzinger, N. (2009, 18th September 2009). *The Role Of Trust And Familiarity In Risk Communication*. Paper presented at the International Conference on Hydrogen Safety, Ajaccio-Corsica, France.

BIODATA OF STUDENT

The student Syakura A Rahim was in Melaka. She pursued her primary and secondary education in Seri Kembangan, Selangor. She obtained her Bachelor in Computer Science from Universiti Putra Malaysia in 2002. After graduation she kicked start her career by working with EON Berhad as a MIS Executive followed by other reputable multi-national corporation like Wolters Kluwer and Marcus Evans focusing on sustainable policies. In 2013, she pursued her Master of Science in disaster studies focusing on the preparation of consumer household for future disasters.



LIST OF PUBLICATIONS

- Syakura, A. R., Aini, M. S., Elistina, A. B., & Norhasmah, S. (2014). The influence of household income towards tsunami preparedness in Penang Malaysia. Poster presented at the 17th National MACFEA Seminar.
- Syakura, A. R., Aini, M. S., Elistina, A. B., & Norhasmah, S. (2014). The influence of household income towards tsunami preparedness in Penang Malaysia. Paper presented at the 18th National MACFEA Seminar, (2014). *The Emergence of New Consumers: Issues, Challenges & Opportunities*, Palm Garden Hotel, Putrajaya.
- Syakura, A. R., Aini, M. S., Elistina, A. B., Norhasmah, S. & Fakhru'l-Razi A. (2014). Tsunami 2004 preparedness from the perspective of the Penang Community. *Malaysian Journal of Consumer*. 23(1)72-87.