

**AN ASSESSMENT OF THE RELATIONSHIP BETWEEN THE  
VOLUNTARY ORGANISATIONS SERVICE DELIVERY  
AND THE FLOOD AFFECTED COMMUNITY  
SATISFACTION IN KELANTAN**

**AZUDDIN BIN BAHARI**

**ASIA e UNIVERSITY  
2015**



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**A Thesis Submitted to Asia e University in  
Fulfilment of the Requirements for the  
Degree of Doctor of Philosophy**



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## ABSTRACT

On 24 December 2012, massive floods occurred in Kelantan in the districts of Jeli, Kota Bharu, Kuala Krai, Machang, Pasir Mas, Pasir Puteh, Tanah Merah, and Tumpat. This disaster affected 7,127 people. They were accommodated at various flood relief evacuation centres. A research was conducted in Kelantan to identify the flood-affected community satisfaction towards the voluntary organisations' service delivery, whether gender, age, and race of the flood-affected communities affect satisfaction of the voluntary organisations performance and whether service quality dimensions act as a moderator towards the relationship between service delivery and flood-affected community satisfaction. SERVQUAL model and disaster management model were used in this research. Disaster management model was used to identify the service delivery activities. SERVQUAL model was used to measure satisfaction and the moderating relationship between service delivery and flood-affected community satisfaction. The research was performed using questionnaires. The samples for this study were 400 flood-affected communities. Eight hypotheses were tested using ANOVA, Tukey Test, *t* test, and SEM-AMOS depending on its appropriateness. The results indicate that to study flood-affected community satisfactions, three interconnected elements must be present, namely indicators, measurement instrument, and database. Indicators refer to the dimensions of performance: availability, timely, quick, responsive, skilful, and competence. Measurement instruments refer to the questionnaires and the Likert scale used in the questionnaire survey. Database refers to the data used to produce information to make decisions. The outcomes from the amalgamation of the three elements indicate that the flood-affected communities were satisfied with the service delivery and age, and gender influences satisfaction while race does not. Service quality dimension

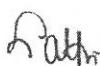
does not act as a moderator affecting the relationship between service delivery and flood-affected community satisfaction. Simultaneously, this study revealed that disaster model and SERVQUAL model can be amalgamated to study customer satisfaction. The research also unveiled a comprehensive questionnaire for measuring flood-affected community satisfaction, which can be applied in any other research to study customer satisfaction in a particular disaster scenario. Likewise, an innovative hypothetical framework was also unveiled from this research.

**Keywords:** Disaster management, SERVQUAL, satisfaction, service quality, service delivery



## APPROVAL PAGE

I certify that I have supervised/read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in quality and scope, as a thesis for the fulfillment of the requirements for the degree of Doctor of Philosophy.



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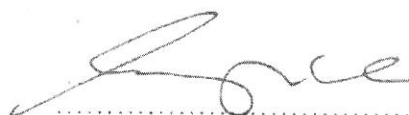
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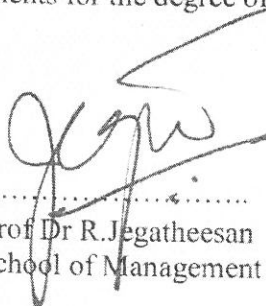


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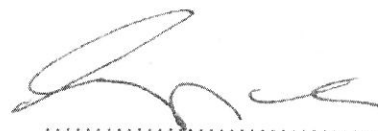


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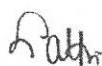
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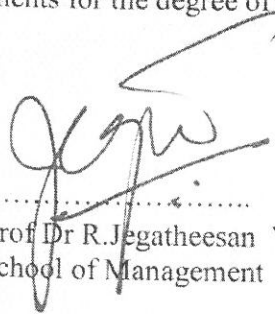


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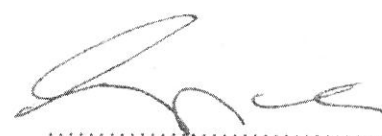


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## DECLARATION

I hereby declare that the thesis is submitted in fulfilment of the PhD degree is my own work and that all contributions for any other persons or sources are properly and duly cited. I further declare that the material has not been submitted either in whole or in part, for a degree at this or any other university. In making this declaration, I understand and acknowledge any breaches in this declaration constitute academic misconduct, which may result in my expulsion from the programme and/or exclusion from the award of the degree.

Name: Azuddin bin Bahari

A handwritten signature in black ink, appearing to read 'Azuddin bin Bahari', is written over a horizontal line.

Signature of Candidate:

Date: 5 August 2015





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## LIST OF ABBREVIATIONS

Abbreviations	Abbreviations Terms
ADRC	Asian Disaster Research Centre
AIPA	ASEAN Inter-Parliamentary Assembly
ATM	Malaysian Armed Forces
API	Air Pollution Index
BKN	State Operation Room
CRED	Centre for Research on the Epidemiology (CRED)
PKTK	Control Post on Scene (PKTK)
DID	Malaysian Department of Irrigation and Drainage
DOE	Department of Environment
PKOB	Disaster Operation Controlling Centre (PKOB)
DRR	Disaster Risk Reduction (DRR)
FRIM	Forest Research Institute Malaysia
JPBBD	District Disaster Management and Relief Committee
JPBBP	Disaster Management and Relief Committee (JPBBP)
HFA	Hyogo Framework for Action (HFA)
ISDR	International Strategy for Disaster Reduction
IAM	Islamic Aid Malaysia
NSC	National Security Council
NGOs	Non-Governmental Organisations
NADDI	National Disaster Data and Information Management System
MACRES	Malaysian Centre for Remote Sensing
MMD	Malaysian Meteorological Department
MOSTI	Ministry of Science, Technology and Innovation
MTU	Master Telemetry Unit
RELA	Malaysian People Voluntary Alliance
SMS	Short Messaging System
JPBBN	State Disaster Management and Relief Committee
ROS	Registrar of Societies
SMART	Special Malaysia Disaster Assistance and Rescue Team
SERVQUAL	Service Quality

## CHAPTER ONE

### INTRODUCTION

#### 1.1 General

This section seeks to provide an overview of the disaster scenario in Malaysia leading to the theoretical framework and the formulation of hypothesis. This section too will discuss the problem statement, research objectives, research questions, and operational definitions.

Disasters such as droughts, cyclones, earthquakes, floods, volcanoes eruptions, and tornadoes are presently a worldwide phenomenon and acknowledged for their disastrous brunt on the country, especially on the community life, economic system, and environment (Oloruntoba, 2005; Oloruntoba & Gray, 2003; Perry 2007; Petitt & Beresford 2005). The numbers as well as the impact of disasters on the population at the international and national scenarios have been rising.

Global warming associated with climate change affects the weather condition. The effect is weather uncertainty. Every time there is climate change, phenomena akin to floods, tsunami, and earthquakes crop up causing disastrous consequences to the world we live in. The scenario that will be faced by the populace is the prospect of badly damaged infrastructures, including losing their houses, livestock, and workplaces. The most unpleasant part is that they will encounter the possibility that these calamities will reoccur in their localities again and again.



## 1.2 Disaster Scenarios in Malaysia

Within the last 10 years, Malaysia has been hit with many man-made and natural disasters. Disasters that take place in Malaysia are not significant but the damage by climate-related disasters; in particular floods are increasing (Izumi & Shaw, 2011). The International Disaster Database by Centre for Research on the Epidemiology (CRED) indicates that from 2000 to 2009, there were 34 disaster occurrences which consist of floods, tsunami, earthquakes, droughts, fires, and haze that strike Malaysia (Izumi & Shaw, 2011).

The climate change will increase the occurrence of natural and human-made disasters. Subsequently, it is anticipated that the occurrence of disasters would increase by fivefold in the future (Thomas & Kopczak, 2005, cited in Maon, Lindgreen, & Vanhamme, 2009); hence, it necessitates for an efficient disaster relief system to be in place (Maon, Lindgreen, & Vanhamme, 2009).

In the past Malaysia has endured a variety of major natural disasters such as landslides, floods, droughts, and monsoon. The diversity of disasters varies from small and localised to large-scale devastation. In all the natural disasters, flood is the most frequent disaster involving thousands of flood-affected communities.

**1.2.1 Tsunami.** The probability of a tsunami to take place in Malaysia was never in the vocabulary of the Malaysian disaster scenarios. Nonetheless, tsunami did take place at 12.45 p.m. on 26 December 2004. The first waves of a tsunami hit Malaysia through the northern access of the Malacca Straits. The tsunami that took place on the sad day was in the form of a tidal gush (Utusan, Dec 27, 2004).

The tsunami hit the states of Perak, Penang, Perlis, and Kedah. In Kedah, the tsunami hit the shorelines of Tanjung Dawai, Kuala Muda, and the western shores of Langkawi. Tidal disruption in the form of rising and falling tides was observed at the beach in Perlis. Houses, vehicles, and crops were destroyed. It is estimated that the damages caused by the tsunami was about RM15 million (Abdullah, Tan, & Ghazali, 2005). The damage was severe in Kuala Muda, Kedah. The total number of death listed was 68 with 54 death registered in Penang. Will tsunami happen again?

**1.2.2 Droughts.** In 1998, due to the El Nino Southern Oscillation (ENSO); Penang, Kedah, Kelantan, Selangor and Federal Territory, Sarawak, and Sabah were hit by droughts which resulted in water rationing (The Star, 1998). Other than that, the Northern States of Peninsula Malaysia did not experience severe droughts condition.

The Durian Tunggal Dam dried out in 1991 that caused Melaka to experience a worse drought situation. Water rationing had to be implemented in most parts of Melaka. This is a well-remembered incidence. Emergency measures were taken. This witnessed the transfer of raw water from the adjacent Muar River and the movement of water tankers, which ferried drinking water to relieve the distressed water shortage problem in the state (Abul Quasem Al-Amin et al., 2011).

In February 2014, Selangor was exposed to dry spell and drought condition due to the El Nino weather phenomenon. During that period, Selangor River Dam was down to 57.6% while the Klang Gates Dam was down to 58%, the lowest levels ever in the last 10 years. The dry spell forced the authorities to ration water supply to Selangor and the Klang Valley (Yuen et al., 2014). The National Water Commission

indicated that over 300,000 households in Kuala Lumpur and nearby Selangor have experienced cuts for the whole of March, after a two-month dry spell depleted reservoirs. Additionally, in Selangor some 60,000 households were affected by water rationing (ABC Online, 2014). Water rations in Selangor ended in the first week of May 2014. This was announced by Energy, Green Technology and Water Minister, Dr. Maximus Ongkilin (Astroawani, 2014).

**1.2.3 Major Landslides.** Landslides are regular natural disasters in Malaysia which happen at the hillsides. Events of major landslides from 2002 until 2013 are as shown in Table 1.1.

Table 1.1

*Major Landslides from 2002-2013*

No.	Landslides
a.	On 20 November 2002, a bungalow belonging to General Tan Sri Ismail Omar (Retired), Chairman of the Affin Bank, caved in resulting in landslide in Taman Hill View, Ulu Klang, Selangor.
b.	In December 2003, the falling of rock in the New Klang Valley Expressway (NKVE) close to the Bukit Lanjan junction had resulted in the expressway to be shut for a period of more than six months.
c.	On 31 May 2006, a landslide at Kampung Pasir, Ulu Klang, Selangor killed four persons.
d.	On 26 December 2007, a major landslide in Lorong 1, Kampung Baru Cina, Kapit, Sarawak, destroyed nine wooden houses and two villagers were buried alive.
e.	On 6 December 2008 at about 3.30am, landslide took place at Bukit Antarabangsa, Selangor. The landslide claimed four lives and 14 houses were destroyed. The landslide too cut off the access road to the residential area, trapped hundreds of people at Bukit Antarabangsa.
f.	On 12 February 2009, a landslide at the construction site for a 43-storey condominium in Bukit Ceylon, Kuala Lumpur killed one contract worker.
g.	On 21 May 2011, a landslide which was caused by heavy rains at the Children's Hidayah Madrasah Al-Taqwa orphanage in FELCRA Semungkis, Hulu Langat, Selangor, killed 16 people consisting of a caretaker of an orphanage and 15 children.

- h. On 29 December 2012, due to unstable soil condition at the hill slope, 88 residents of bungalows, shop houses, and double-storey terrace houses in Puncak Setiawangsa, Kuala Lumpur were ordered to move out of the area.
- i. On 4 January 2013, there was a mudslide in Subang Jaya, Malaysia which resulted in seven vehicles buried under a mudslide at Persiaran Putra Bahagia, Subang Jaya, Malaysia.
- j. On 25 January 2013, heavy rain caused landslide in Bukit Gasing, Malaysia.
- k. On 27 March 2013, landslide in Puchong, Malaysia has displaced about 300 people.
- l. On 7 May 2013, landslide damaged at least nine cars near the Bukit Nanas monorail station on Jalan Sultan Ismail, Malaysia.
- m. 4 July 2013 - Landslide in Ukay Perdana, Malaysia has claimed lives of three workers and injured one other.
- n. 11 July 2013 - Earthquake shakes Kuala Lumpur, Malaysia. Tremor was well felt across Malaysia including Kuala Lumpur.

*Source:* The Star.

**1.2.4 Floods in Malaysia.** From the time when the 2004 tsunami took place, the weather conditions can no longer be accurately predicted. In the past, everyone could be sure that floods happened in December and were very rare during other months. These days, floods have become a year-round occurrence. The world's climate is definitely changing. Recent years saw the effects of climate change being brought to Malaysia. Devastating monsoon floods hit Malaysia year in and year out. The flood disaster, a result of climate change, is synonymous with the country throughout the year. Accordingly, this paper will bring to light the major floods from 2005–2012 that have caused tremendous damage in Malaysia.

In 2005, severe floods took place in Kedah and Perlis while in 2006, severe floods took place in Johor. Malaysia was hit by a series of floods from 18 December 2006 to 13 January 2007 (The Star, December 21, 2006). The main focuses of the floods were the southern states of Malaysia. Johor, Melaka, Pahang, and Negeri Sembilan were hit by floods on 18 December 2006 (The Star, December 21, 2006;

Utusan Malaysia, December 20, 2006). The massive floods were due to high density of rain brought by the Typhoon Utor (The Star, December 21, 2006). In certain locale incidence of looting was reported to happen when the floodwaters receded (The Star, December 23, 2006).

The second wave of the floods on 10 January 2007 hit several parts of Johor again (Utusan Malaysia, January 11, 2007). The intensity of the second wave was much stronger than the first wave. In the second wave eight districts were underwater and had almost paralysed Johor (Utusan Malaysia, January 14, 2007). Batu Pahat and Kluang were the worst-affected areas caused by the second flood wave. Both of the floods incurred a cost of RM1.5 billion. This disaster was considered as the costliest flood in the Malaysian history (Berita Harian, January 30, 2007). Various areas in Kelantan, Terengganu, Pahang, and Johor were again hit by flash floods in December 2007.

In December 2008, floods hit Terengganu and Pahang. In Terengganu, the total number of evacuees was 1,210 which were placed in various evacuation centres in Kemaman (282), Dungun (577), Kuala Terengganu (310), Marang (25), and Hulu Terengganu (16). The flood has caused the closure of several roads. In Pahang, floods hit Kampung Bukit Palas and Kampung Cherating Baru. The flood victims were placed in Sekolah Kebangsaan Cherating's Hostel (BERNAMA, December 8, 2008).

On 6 November 2009, the east coast states of Malaysia, especially Terengganu and Kelantan were hit by floods. The flood disaster, this time, resulted



in 2,877 people being evacuated to flood relief centres in Besut, Hulu Terengganu, Setiu, and Dungun. Floods in Kampung La, Hulu Besut caused 1,187 villagers to be evacuated while in Setiu 402, and 50 people were evacuated in Dungun. 24 evacuation centres were in operation (BERNAMA, November 6, 2009). In Kelantan, floods hit five districts of Kuala Krai, Pasir Mas, Machang, Jeli, and Tanah Merah. 2558 people have been evacuated: 432 people in Pasir Mas, Kuala Krai (308), Tanah Merah (249), Machang (188), and Jeli (33). The worst flooded areas were Pasir Mas (2190 people), Machang (190), Tanah Merah (75), and Kuala Krai (49).

Meanwhile, in Perlis, 100 residents from more than 20 families in Batu Bertangkup and Titi Panggas Tinggi were evacuated to flood relief centres due to floods in those areas. Simultaneously, Arau, Repoh, Santan, and Alor Arau were also flooded (BERNAMA, November 8, 2009). On 8 November 2009, floods also hit Kedah but on a small scale which affected 579 flood victims. They were housed in 10 evacuation centres.

In November 2010, the states of Kedah and Perlis experienced the worst floods. Various major flood disasters occurring in Malaysia in 2011 were highlighted forthwith. In January 2011, floods took place in Segamat and Mersing, Johor. About 54,165 of the victims were placed at evacuation centres. Flooding in southern Malaysia has killed two people.

Subsequently, in Nov 2011, rising flood waters and swollen rivers in the states of Terengganu and Kelantan caused further floods. Some 3,500 people were evacuated to evacuation relief centres. Apart from that three children were drowned

in Kelantan. Terengganu has been the worst-affected Malaysian state so far, with more than 2,600 people evacuated. Consequently, in Dec 2011, floods struck the states of Sarawak, Sabah, Pahang, and Johor with Sarawak topping the evacuee numbers. In Sarawak, 20 relief centres were temporarily housing 7,592 victims. Over in Sabah, the Sandakan Municipal Council's flood operations room, a spokesman said evacuees at relief centres totalled 351. In Pahang, floods hit Rompin, with 619 people placed at relief centres. In Johor, The National Security Council's website stated that 17 relief centres were opened with eight of which were in Segamat, six in Mersing, and three in Batu Pahat (NST, December 29, 2011; TMI, December 27, 2011). The flood disasters have left thousands of people dispossessed.

In 2012, floods including flash foods, took place in January, February, March, April, May, August, October, and even now (Mazlinda Mahmood, NST, 2012). However, in mid-November 2012, floods hit parts of Perak, Selangor, Melaka, Johor, and Sarawak. As at 11 November 2012, the National Security Council website as cited in NST (2012) showed that 1,045 victims were sheltered in six centres in Kuala Langat and Sepang in Selangor. In Melaka, 76 victims were sheltered at a relief centre in Jasin while in Johor, 756 victims remained at five relief centres around Batu Pahat. However, the attention by the federal government to the small-scale disasters is limited; rather, it is expected that the relief efforts are managed at the local level (Takako & Shaw, 2011).

On 4 November, about 210 people in Batu Pahat, Johor were affected by the floods that hit the area. In early September, the persistent heavy rains caused flash flooding in the surrounding areas of Kajang, Serdang, and the capital city, Kuala

Lumpur. Meanwhile, more than 5,000 pupils and students from eight primary and secondary schools in the Klang Valley were given off when a flash flood hit the area on 20 March 2012. On 9 March 2012, flash floods that hit the district of Hulu Langat was considered to be the worst since 1971; causing damage to hundreds of homes, a number of vehicles, mosques, and “surau”. The East Coast states such as Kelantan, Terengganu, and Pahang were flooded on 24 December 2012 that involved more than 22,000 people being evacuated. At the same time four people were confirmed dead (KOSMO, December 31, 2012; Mazlinda Mahmood, NST, 2012).

Compared with other disasters such as landslides, tsunami, droughts, and monsoon, the most frequent disaster scenarios which affect thousands of people are floods. Hence, this study focuses on the most recent flood disaster in Kelantan where some 7,127 people were flood-affected communities in the districts of Jeli, Kota Bharu, Kuala Krai, Machang, Tumpat, Pasir Mas, Pasir Puteh, and Tanah Merah (<http://ebanjir.kelantan.gov.my/index.php>).

The government in its disaster preparedness for flood disaster earmarked a total of 742 flood relief evacuation centres which can accommodate 149,130 disaster victims. The number of flood relief evacuation centres in each district is shown in Table 1.2. These evacuation centres will be activated once situations warrant it.