THE CAPABILITY UPON DISASTER PREPAREDNESS AMONGST MALAYSIAN HOSPITALS

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THE CAPABILITY UPON DISASTER PREPAREDNESS AMONGST MALAYSIAN HOSPITALS

by

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In the Name of ALLAH, the Most Beneficent, the Most Merciful

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LIST OF ABBREVIATIONS

ACLS	Advanced Cardiac Life Support
ATM	Armed Forces of Malaysia
ADPC	Asian Disaster Preparedness Center
BLS	Basic Life Support
CCSCA	Command and Control, Safety, Communication, and Assessment
CICU	Critical Intensive Care Unit
DBKL	Kuala Lumpur City Hall
DHS	Department of Homeland Security
DMAT	Disaster Medical Assistant Team
DOSH	Department of Occupational Safety and Health
DRR	Disaster Risk Management
EMS	Emergency Medical Services
FAM	Factories and Machinery Act
FEMA	Federal Emergency Management Agency
GEJET	Great East Japan Earthquake and Tsunami
HPP	Hospital Preparedness Program
HUSM	Hospital Sains Malaysia
ICU	Intensive Care Unit
IFRC	International Federation of Red Cross
JCAHO	Joint Commission on Accreditation of Healthcare Organisations
MIMMS	Major Incident Medical Management System
NDRMRC	National Disaster Management Relief Committee
NSC	National Security Council
OEM	Office of Emergency Management
OSHA	Occupational Safety and Health Act
PAHO	Pan American Health Organization
PALS	Paediatric Advanced Life Support
PHCW	Primary Health Care Workers
PDRM	Royal Malaysian Police
SDMRC	State Disaster Management and Relief Committee
SMART	Special Disaster Assistance and Rescue Team
START	Simple Triage and Rapid Treatment (START)

UNISDR	United Nations International Strategy for Disaster Reduction
US	United States
USAID	United States Agency for International Development
WHO	World Health Organization

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TAHAP KEUPAYAAN KESIAGAAN TERHADAP BENCANA DALAM KALANGAN HOSPITAL AWAM DI MALAYSIA

ABSTRAK

Kajian ini dijangka akan menyumbang kepada keseluruhan proses dan pemahaman tentang bencana yang perlu diuruskan oleh pihak hospital. Bidang ini memerlukan kajian yang teliti dalam konteks teori institusi dan keupayaan pembelajaran institusi dalam menilai faktor-faktor penyumbang kepada kesiapsediaan hospital ke arah pengurusan bencana kerana terdapat beberapa hal yang memerlukan penjelasan dan kerja-kerja tambahan. Kajian ini secara khususnya meneliti elemen-elemen institusi yang berkaitan dengan kesiapsediaan hospital dalam menguruskan bencana. Pemboleh ubah penjelas dimodelkan daripada teori institusi dengan elemen-elemennya dikelaskan sebagai tekanan paksaan, ajukan, dan normatif serta keupayaan pembelajaran institusi dengan elemen-elemennya dikelaskan sebagai kejelasan misi dan tujuan, pemerkasaan dan komitmen pucuk pimpinan, ganjaran dan eksperimen, pemindahan pengetahuan, dan kerjasama berpasukan dan penyelesaian masalah kumpulan. Kajian ini menggunakan pendekatan kuantitatif dengan reka bentuk kajian hubung kait untuk menjawab objektif kajian, soalan penyelidikan, dan hipotesis yang telah ditetapkan dalam kajian. Sejumlah 100 hospital kerajaan di Malaysia telah dinilai bagi memahami tahap kesiapsedian mereka terhadap kejadian bencana. SmartPLS digunakan untuk menilai hubungan antara faktor-faktor tersebut dan kesiapsiagaan bencana di hospital. Hasil kajian menunjukkan hospital awam di Malaysia berada dalam kategori B yang memerlukan campur tangan untuk membolehkan hospital berfungsi ketika dan selepas bencana. Hasil kajian juga menunjukkan tekanan institusi dan keupayaan pembelajaran organisasi boleh mempengaruhi kesiapsiagaan bencana

di hospital. Sementara itu, kesan saiz hospital adalah penting dalam kajian ini. Saiz hospital merupakan moderator yang signifikan dalam hubungan antara tekanan institusi, keupayaan pembelajaran organisasi, dan kesiapsiagaan bencana di hospital. Secara keseluruhannya, kajian ini menyumbang keapda pengetahuan tentang kesiapsiagaan bencana di hospital. Hasil kajian ini diharapkan akan memberikan nilai tambahan kepada kajian literatur sedia ada. Ia juga diharapkan akan menjadi pendorong kepada semua hospital untuk meningkatkan persediaan mereka dalam pengurusan bencana supaya dapat menyediakan perkhidmatan yang lebih baik kepada orang ramai di samping mengekalkan perlindungan kepada semua kakitangan hospital.

THE CAPABILITY UPON DISASTER PREPAREDNESS AMONGST MALAYSIAN HOSPITALS

ABSTRACT

This study is hoped to contribute to the whole process and understanding of disasters that hospitals are called upon to manage. This area requires careful study within the context of institutional theory and organisational learning capability in assessing the factors contributing to hospital preparedness towards disasters as some areas require clarification and further work. This study specifically examined the institutional elements associated with hospital preparedness to manage disasters. The explanatory variables are modelled from the institutional theory where the elements are classified as coercive, mimetic, and normative pressure; and organisational learning capability where the elements are classified as clarity of purpose and mission, leadership commitment and empowerment, experimentation and rewards, transfer of knowledge, and teamwork and group problem-solving. This study used a quantitative approach with correlation research design to answer the research objectives, research questions, and hypotheses stipulated in the study. A total of 100 government hospitals in Malaysia were assessed to understand their level of disaster preparedness during the event of a disaster. SmartPLS was then applied to assess the relationship between the explanatory factors and hospital disaster preparedness. The findings reveal that Malaysian public hospitals are in category B, which requires intervention measures for hospitals to function during and after disasters. The findings also indicate that institutional pressure and organisational learning capability influence hospital disaster preparedness. Moreover, the effect of hospital size is significant in this study. Hospital size significantly moderates the relationships between institutional pressure,

organisational learning capability, and hospital disaster preparedness. Overall, this study contributes to the body of knowledge on hospital disaster preparedness. It is hoped that the results of this study will provide a valuable addition to the existing literature and an impetus for all hospitals to improve their preparation for the management of disasters in providing improved services to the public while maintaining protection to all hospital staff. Both institutional forces and internal pressures help in explaining the hospital disaster preparedness in Malaysia.

CHAPTER 1

INTRODUCTION

1.1 Background of the Study

The United Nations International Strategy for Disaster Reduction (UNISDR) 2009 defines a disaster as:

> *"a serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources."*
> *(UNISDR, 2009, p. 9)*

Disasters often result in loss of lives, property damage, and financial loss. Disasters also cause long-term emotional and mental stress to those involved, including the victims' families, the respond and rescue team, and other civilians (Ben-Ezra et al., 2013; Norris, Friedman, & Watson, 2002; Oldham, 2013). Swiss Re (2017) reported that in 2016, 327 disasters occurred worldwide, of which 191 were natural and 136 were human-made disasters. These disasters caused 11,000 deaths and damage estimated at up to USD175 billion, with flood disasters remaining as the most frequent among all the disasters with 149 reported incidents (Swiss Re, 2017).

The 2014 World Disaster Report of the International Federation of Red Cross and Red Crescent Societies [IFRC] (2014) highlighted that Tropical Cyclone Nargis and the Haiti earthquake which occurred on 2 May 2008 and 12 January 2010, respectively, have provided perspectives on the current challenges in disaster management. The infamous 9/11 attack that took place on 11 September 2001 and the destruction caused by the tsunami that occurred in the Indian Ocean in 2004 resulted in more than 220,000 deaths and caused damages amounting to USD9.2 billion. These

incidents bring new perspectives on the importance of disaster preparedness (Smith, 2012).

Formerly, emergency response was the primary focus in disaster management instead of mitigation of disaster losses and potential damages through prevention and disaster preparedness (Turoff, Hiltz, Bañuls, & Van Den Eede, 2013). Apart from that, the United Nations had organised three world conferences focusing on disaster risk reduction in Yokohama (1994), Hyogo (2005), and Sendai (2015). These conferences played a crucial role in the evolution of disaster management from emergency response to emergency preparedness. The themes of disaster management changed from the initial "prevention, preparedness, and mitigation" to "disaster reduction", and more recently to "disaster risk reduction" with a vision to safeguard human life, reduce economic loss, and contribute to sustainable development (Chatterjee, Shiwaku, Gupta, Nakano, & Shaw, 2015). These initiatives signify a shift from a purely reactive response to disasters to a preventative approach, which can save lives and prevent damage to property and infrastructure, thereby reducing the negative effect of disasters on development and facilitating sustainable development (Schipper & Pelling, 2006; Twigg, 2004; White et al., 2004). An increased resilience will reduce the exposure of disaster risks to people, infrastructure, and other assets, in line with the sustainable development idea to reduce the vulnerability of hospitals by enhancing adaptive capacity and increasing resilience.

Malaysia is exposed to various types of disasters ranging from biological-based disasters to explosions, structural collapse, landslides, and events relating to hydrometeorology. Towards the end of 2014, the above-average rainfall had culminated in the worst flooding ever to occur in the past three decades in Malaysia (Al-Zaquan Amer Hamzah, 2014). This flood disaster claimed the lives of 21 people

and demonstrates that Malaysia still has much to do to ensure that the loss and damage from similar disasters will not cause a similarly negative impact to the country in the future (AFP, 2014). These incidents have opened the eyes of many people to the importance of total preparedness towards disasters. Moreover, the earthquake that hit Sabah in June 2015, which claimed 18 lives, proves that Malaysia is also vulnerable to earthquakes (Mohd Izham Hashim, 2015). The Malaysian Meteorological Department (2015) reported the earthquake's magnitude to be 5.9 Ms. Before this, Malaysia had always been in the safe zone from earthquakes. However, with the occurrence of the earthquake, Malaysia should now consider earthquakes as one out of the many recurrent hazards that may in the future cause destructions of greater magnitudes (Beng, 2015). All these unexpected incidents have shocked many parties and proven that Malaysia is vulnerable to various forms of mass casualty disasters that may happen in the future (Beng, 2015). Thus, Malaysia should take proactive actions to minimise disaster losses by strengthening the level of preparedness, just as other countries have been doing all this while.

In the event of disasters, hospitals play an important role in providing protection and proper treatment to the disaster victims, including critical and non-critical cases (Board on Health Care Services, 2007; Pan American Health Organization & World Health Organization, 2008). Although hospitals are only one of the components of a regional programme for disaster management, they represent a critical link in the system (Niska & Shimizu, 2011). In Malaysia, Directive No. 20 issued by the National Security Council (NSC) (1997a) outlines the roles of hospitals in supporting the Emergency Medical Services during disasters. For example, Queen Elizabeth Hospital was turned into a disaster centre to treat casualties from the earthquake that hit Sabah in 2015 (Olivia, 2015). Given the crucial roles of hospitals

in disaster management, hospitals must be able to withstand hazards and remain functioning during and after a disaster (Pan American Health Organization & World Health Organization, 2008; United Nations, 2009). The World Health Organization (World Health Oorganization, 2015) stresses that a hospital's facility and services should remain accessible, functioning at maximum capacity, and having all the necessary infrastructure. The failure of hospitals to be equipped with these kinds of facilities and services has incurred higher costs when faced with disasters in comparison to the lower costs of fully equipping the hospitals to face disasters. This notion has been proven by the 2014 flood incident, which caused an estimated loss of RM281 million to hospitals and clinics (Utusan, 2015), thus highlighting the importance of investments for disaster preparedness (Weeks, 2006).

The awareness of the need to enhance hospitals' preparedness for disasters has led to the launch of several initiatives across the world, such as the Hyogo Framework for Action 2005–2015 (United Nations, 2005), 2008–2009 World Disaster Reduction Campaign (United Nations, 2009), Sendai Framework for Disaster Risk Reduction 2015–2030 (United Nations, 2015), and the WHO's document, Safe Hospitals Initiative: Comprehensive Safe Hospital Framework (WHO, 2015). As for Malaysia, the "Melaka Declaration on Disaster Risk Reduction in Malaysia 2011" called upon national, state, and local stakeholders to advocate, lead, and champion actions and mainstream the disaster reduction risk to keep hospitals safe from disasters (Southeast Asia Disaster Prevention Research Initiative, 2011).

The Southeast Asia Earthquake and Indian Ocean Tsunami in 2004 that destroyed 42 hospitals and 195 healthcare facilities in the impacted region highlight the importance of hospital survival during and after a disaster (United Nations, 2009). Another notable incident is the 2001 earthquake in Gujarat, India, which caused

devastation to 227 healthcare facilities (United Nations, 2009). Besides that, the Hurricane Ivan incident has also been reported to have caused severe damage to several hospitals in Grenada, Jamaica, and the Cayman Islands. Moreover, the 2011 Great East Japan Earthquake and Tsunami (GEJET) destroyed 80 per cent of hospitals in Fukushima, Miyagi, and Iware, Japan and caused the services of 11 hospitals to collapse, while another 200 hospitals experienced partial services collapses in Tohoku, Japan. In the United States (US), six hospitals were affected by the Midwest flood that struck Des Moines, the capital city of Iowa in 1993.

Hospitals in Malaysia have had their share of facing disasters. For example, some hospitals were severely affected by the flood in 2014. States that were affected by the 2014 flood were Kelantan, Terengganu, Pahang, Perak, Perlis, and Sabah, involving 45,737 victims from 12,370 families who were resettled in 284 evacuation centres. Kelantan was the worst affected state with 26,721 evacuees from 7,633 families placed in 115 evacuation centres. The 2014 flood hit several hospitals in Kelantan, rendering them unable to provide optimal services. The four severely affected hospitals were Hospital Kuala Krai, Hospital Tanah Merah, Hospital Pasir Mas, and Hospital Raja Perempuan Zainab II. These hospitals were severely affected as the floodwaters that entered into the hospitals disabled various service facilities of these hospitals.

The four hospitals were unable to provide optimal services during the 2014 floods. Patients that were in critical conditions were transferred to the only hospital that was still functioning, Hospital Universiti Sains Malaysia (HUSM), which is located in Kubang Kerian, Kelantan. It reached a point where even HUSM itself was no longer able to accommodate all the patients seeking medical attention. In previous flood disasters, HUSM only received patients from the maternity ward and critical

cases from Hospital Raja Perempuan Zainab II. However, during the 2014 flood, the hospital received patients from all district hospitals in Kelantan, as other hospitals were incapable of providing full services. The situation in HUSM became even more severe when the hospital experienced blood bank shortages due to overwhelming demand.

The 2014 flood incident demonstrates the inadequate capacity and capability of hospitals to deal with sudden and unexpected disasters. Therefore, it is crucial for the hospital management to realise that there are rooms for improvement concerning hospital preparedness towards disaster management. The hospital management can learn from best practices and experiences of hospitals in other countries in dealing with disasters.

The Midwest flood that struck Des Moines, the capital city of Iowa, the US, in 1993 can be compared to the Kelantan flood. In the case of the Midwest flood, six hospitals experienced power loss and communication failure. To make matters worse, these hospitals also encountered water shortage for 19 days (Peters, 1996). Despite all the challenges, these hospitals were able to respond to the mass flood disaster successfully and overcome the initial crisis, sustain primary services, and ensure the continued quality of patient services through effective emergency preparedness.

In another case, Oakwood Hospital-Dearborn, a hospital in the US with a 632-bed capacity sustained heavy damage to its emergency department kitchen, radiation oncology, radiology, inpatient pharmacy, and medical supply storage due to flooding caused by a storm. Fortunately, this hospital had carried out a pre-hazard vulnerability assessment to rate the potential hazards of floods (Hounsell, 2015). This assessment helped the hospital in dealing with the disaster, during which the hospital managed to

relocate patients from the emergency department to the second floor very quickly (Dan Hounsell, 2015).

Disasters, such as the 2014 flood, have proven that hospital preparedness in Malaysia should be strengthened. In Malaysia, floods are recurring disasters that are influenced by wind conditions and also geographical factors since Malaysia is located in the north of the equator. Besides that, rainfalls in Malaysia have a distinctive pattern, allowing the rainfalls throughout the year to be easily predicted; the rainfall period usually lasts from October to December every year. Furthermore, the maximum rainfall that happens from October to December can generally cause either controlled or uncontrolled flooding.

Indeed, climate change and disaster risk are closely linked. In a climate-changing world, the warm period will be warmer and the wet period will be wetter. The periodicity of the monsoon cannot be predicted, and more and altered water mass distribution may alter crustal disturbances in the form of earthquakes and tsunamis. Increased extreme weather events in the future are likely to increase the number and scale of disasters. Hence, the situation of the 2014 flood will occur again if hospital preparedness is not strengthened. Consequently, Malaysia needs to allocate a sufficient budget for recovery during and after a flood, since the lives of citizens are involved and other damages might be incurred.

Additionally, at the end of 2019, a health problem caused by a novel coronavirus known as severe acute respiratory syndrome coronavirus 2 or the coronavirus disease 2019 (COVID-19) occurred as a sudden, unexpected event to the world. Initially, the virus was identified in the wake of the respiratory illness outbreak in Wuhan City, Hubei Province, China. It was then reported to the WHO on 31

December 2019 and consequently declared as a global pandemic on 30 January 2020 (Gallegos, 2020). Since then, the virus has spread to more than 200 countries and caused millions of deaths. Throughout the world, the epidemic curve of each nation reportedly varies from exponentially uncontrolled outbreak (Italy) to slowly rising and adequately controlled (Singapore), with Malaysia lying in between (Altahir et al., 2020).

When the outbreak began in Malaysia, the NSC commanded and rallied responses at the national level with technical guidance from the Ministry of Health (MOH). On 18 March 2020, a movement control order (MCO) was executed and then revised in gradual phases based on risk assessment (Institute for Health Systems Research, 2020). To date, the Malaysian government has been taking public health actions to control the outbreak and sustain the healthcare system. Malaysia has also been strengthening its testing capacity from approximately 1,000 tests daily in January 2020 to more than 38,000 tests per day presently. The COVID-19 cases were also contained by isolating all symptomatic and asymptomatic patients in hospitals for free without due thought of citizenship. While some government hospitals were changed to full or partial COVID-19 hospitals, quarantine centres were also provided in addition to the use of existing training institutes, non-specialist hospitals, nursing dormitories, and hotels (Institute for Health Systems Research, 2020).

As early preparations for the next COVID-19 wave, the MOH has prepared assistance such as logistics, protective gear, ventilators, hospital beds, and human resources (Codeblue, 2020). Besides, over 2,000 contract health workers have been additionally recruited since the outbreak to cater to the potential increase of COVID-19 patients (Codeblue, 2020). The Malaysian government has also prepared 7,364 beds for COVID-19 patients, consisting of 5,500 beds in 40 public hospitals and two

university hospitals as well as 1,864 beds in 26 quarantine and treatment centres for COVID-19 patients with mild symptoms, which are considered low-risk and stable (Codeblue, 2020). Because of the increasing number of COVID-19 cases, the government of Malaysia has taken all possible measures to combat the virus.

Hospitals that are fully prepared for disasters will ensure that they are adequately equipped and know what to do during disasters as well as in handling the aftermath of a particular disaster. This scenario has stimulated researchers' interest to examine the factors that drive hospital disaster preparedness practices. Therefore, the purpose of this study is to investigate the institutional pressure and organisational learning capability affecting hospitals' preparation for disaster management within the Malaysian context. Institutional isomorphism pressure, namely, coercive, mimetic, and normative pressures from DiMaggio and Powell's (1983) work and the variables from organisational learning capability, namely, "clarity of purpose and mission", "leadership commitment and empowerment", "experimentation and rewards", "transfer of knowledge", and "teamwork and group problem solving" developed by Goh and Richards (1997) are used as a foundation for this study to explain the contributing factors for hospitals to prepare for disaster management since hospital preparedness for disasters is crucial for the country.

This study makes a significant contribution to the body of knowledge by exploring the institutional context (institutional pressure and organisational learning capability) that previously had not been of concern in hospital preparedness towards disaster management. In addition, the existing literature related to this field was reviewed extensively, with the focus being given to existing theories and models. With that, a carefully designed questionnaire was used to achieve the research objectives

and answer the research questions. Figure 1.1 summarises the relationships and focus of this study.

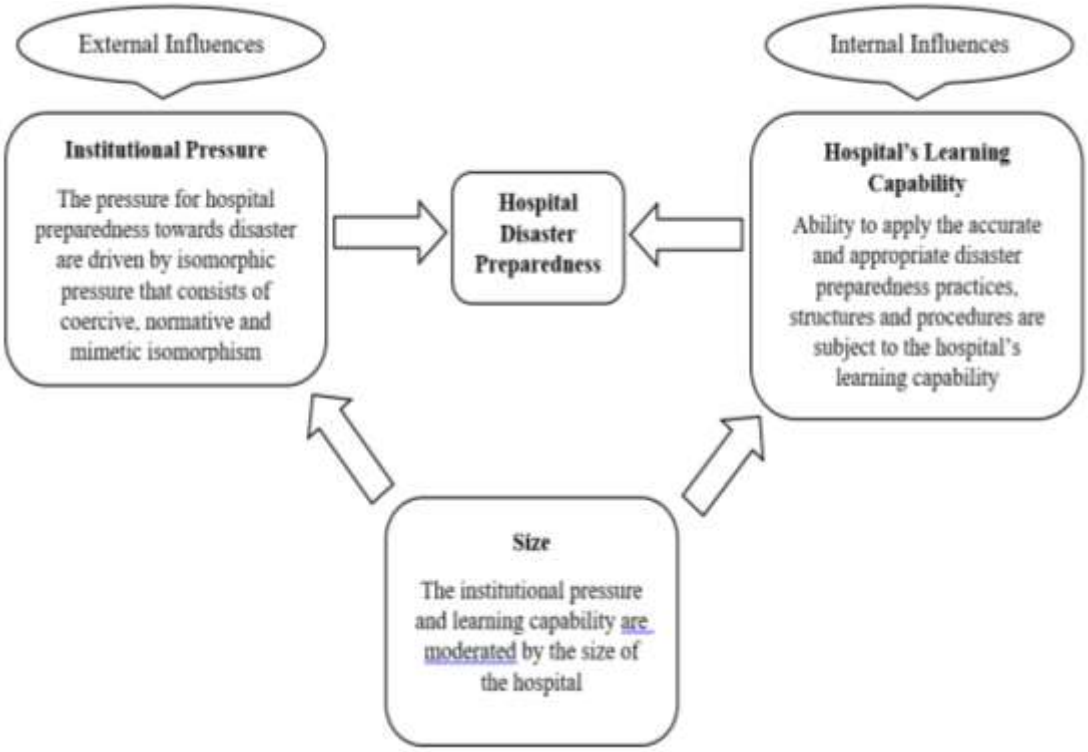

Figure 1.1 Focus of the research

1.2 Problem Statement

Natural and human-made disasters have been increasing in prevalence in recent years. Between 2000 and 2015, disasters have caused economic damage of approximately USD1.3 trillion dollars, resulted in 1.1 million deaths, and affected 2.7 billion people (UNEP, 2016). Figure 1.2 summarises the research gaps of this study.

Figure 1.2 Research gaps

Due to the prevalence of disasters, hospital stakeholders have emphasised on the crucial need for hospital preparedness, describing hospital preparedness as an urgent public health issue (Fink, 2014). Several initiatives to stress the importance of hospital disaster preparedness were set up with the formulation of the Hyogo Framework for Action 2005–2015 (United Nations, 2005), 2008–2009 World Disaster Reduction Campaign (United Nations, 2009), and Sendai Framework for Disaster Risk Reduction 2015–2030 (United Nations, 2015). Furthermore, a document titled Safe Hospitals Initiative: Comprehensive Safe Hospital Framework outlined by the World Health Organization (2015) validates the importance of hospital preparedness towards disasters. In addition, the "Melaka Declaration on Disaster Risk Reduction in Malaysia 2011" confirms that the Malaysian government shows tremendous commitment towards this issue (Southeast Asia Disaster Prevention Research Initiative, 2011).

Despite clear information about the importance and benefits of hospital disaster preparedness, several studies have revealed that hospitals in many countries such as in the US (Dunnick, Olympia, Wilkinson, & Brady, 2016), Canada (Kollek & Cwinn, 2011), Japan (Bissel, Pinet, Nelson, & Levy, 2004), Israel (Schreiber et al., 2004), and China (Zhong, Clark, Hou, Zang, & Fitzgerald, 2014) have low levels of disaster preparedness. Thus, a good understanding of the determinants of disaster preparedness and the practices, especially in hospitals, is crucial as a preliminary point in emphasising the necessary motivations to overcome these issues. In Malaysia, a report by the National Security Council (2013) revealed that hospitals in Malaysia have relatively low levels of disaster preparedness and are particularly vulnerable to disasters. This report is useful to justify the need for the identification of the determinants that drive Malaysian hospitals to practise disaster preparedness activities by prioritising preparedness activities and maximising hospitals' response capabilities.

In response to the growing initiatives from institutions like the UNISDR, United Nations and WHO to strengthen hospitals' preparedness for disasters, there has been an increasing number of published literature works on hospital disaster preparedness (Asefzadeh, Varyani, & Gholami, 2016). However, an extensive review of the literature on disaster preparedness returned a small number of studies that assessed the factors influencing hospital preparedness towards disasters, although hospital preparedness has been examined in various contexts (John, 2015). Most of these studies discussed the factors influencing individuals in hospitals such as nurses (Davidson et al., 2009) or emergency department personnel (Robert & Daily, 2010) to prepare for disasters without considering hospitals as a unit or organisation. Using similar arguments, Ejeta, Ardalan, & Paton (2015) stressed that since there are deficiencies in hospital disaster preparedness studies within the organisational context,

some actions are thus required to be carried out in this sector. It is predicted that an understanding of the organisational internal and external factors may serve as a good foundation in considering enhancements to hospital disaster preparedness (Azuddin Bahari, Hanum Hassan, & Razli Ahmad, 2011).

Ricardo Chiva (2008) and Goh & Richards (1997) proposed that understanding the ability to learn in an organisation will help improve their ability to cope with external demand and pressure successfully. Therefore, this study suggests that considering the role of hospital learning capability will enable hospitals to understand the determinants of the ability to absorb pressure in practising hospital disaster preparedness. Hence, it is believed that internal learning capability may influence hospitals' preparation towards disasters that eventually will lead to practices of disaster preparedness in hospitals. Thus, this study aims to fill the gap in hospital disaster preparedness by integrating institutional theory and organisational learning capability.

Despite the numerous discussions on hospital disaster preparedness, none of the studies on hospital disaster preparedness reported the use of a theoretical base or a model. The literature revealed that health belief model, extended parallel process model, theory of planned behaviour, and social cognitive theories have been widely used in disaster studies. However, these theories have not dealt with disaster preparedness within the hospital context. Adding to the literature with the use of a theory or model associated with hospital disaster preparedness can help scholars to better understand, explain, and predict hospital disaster preparedness. This study aims to address the hospital disaster preparedness gap, by integrating institutional theory and organisational learning capability theory to construct a research model to explain the determinants of disaster preparedness practices among Malaysian hospitals.

1.3 Research Objectives

The primary objective of this study is to investigate the determinants of disaster preparedness among Malaysian hospitals through the application of the institutional theory and organisational learning capability theory.

The principal research question is "How can the researcher theoretically and empirically determine and explain the factors influencing disaster preparedness among hospitals in Malaysia?" More specifically, this study is guided by four research objectives, four research questions, and nine hypotheses.

Research objective 1: To determine the level of disaster preparedness among Malaysian hospitals.

Research objective 2: To investigate the effect of institutional pressure on hospitals' preparation towards disaster management.

Research objective 3: To investigate the effect of organisational learning capability on hospitals' preparation towards disaster management.

Research objective 4: To investigate the effect of institutional pressure and organisational learning capability on hospitals' preparation towards disaster management moderated by hospital size.

1.4 Research Questions

Based on research objectives, the following research questions were applied.

Research question 1: To what extent are Malaysian hospitals prepared in handling disasters?

Research question 2: How does institutional pressure affect disaster preparedness at hospitals?

Research question 3: How does organisational learning capability affect disaster preparedness at hospitals?

Research question 4: Are the relationships of institutional pressure and organisational learning capability with hospital disaster preparedness moderated by hospital size?

1.5 Research Hypotheses

Lastly, the following research hypotheses were developed for this study:

H1a Coercive pressure influences the disaster preparedness at hospitals in Malaysia.

H1b Mimetic pressure influences the disaster preparedness at hospitals in Malaysia.

H1c Normative pressure influences the disaster preparedness at hospitals in Malaysia.

H2a Purpose and mission influence the disaster preparedness at hospitals in Malaysia.

H2b Leadership commitment and empowerment influence the disaster preparedness at hospitals in Malaysia.

H2c Experimentation and rewards influence the disaster preparedness at hospitals in Malaysia.

H2d Transfer of knowledge influences the disaster preparedness at hospitals in Malaysia.

H2e Teamwork and group problem-solving influence the disaster preparedness at hospitals in Malaysia.

H3 The relationships of institutional pressure and organisational learning capability with hospital disaster preparedness in Malaysia is moderated by hospital size.

1.6 Significance of the study

This study aims to improve the understanding of the institutional elements and organisational learning capability associated with successful preparedness of hospitals in managing disasters. The application of a combination of institutional theory and organisational learning capability in developing an understanding of the determinants of hospital disaster preparedness elevates the significance of this study. This study is among the first attempts to examine the determinants of hospital disaster preparedness in such a multi-theoretical framework. The model, from the perspective of the determinants, suggests that hospital disaster preparedness is a function of both institutional pressure and organisational learning capability; the disaster preparedness practices depend on each hospital to promote institutional pressure and its learning capability.

This study presents exploratory findings in an area with little evidence; it examines hospital disaster preparedness in Malaysia from a developing country perspective. As hospital disaster preparedness in the country is relatively low (National Security Council, 2012), little evidence about hospital disaster preparedness in Malaysia is available. This study aims to fill this gap by testing a number of hypotheses on the determinants of disaster preparedness among Malaysian hospitals. The findings

of this study would be useful as disaster preparedness issues are important in Malaysia, especially due to the 2014 flood.

For healthcare practitioners, the findings of this study are able to provide benchmarking opportunities, allowing hospitals to assess their strengths, weaknesses, threats, and opportunities in order to make sound decisions towards disaster management. With the in-depth information obtained from this study, hospital management will be able to analyse and report their levels of disaster preparedness. This study is expected to provide some ideas to hospitals on how to improve their level of disaster preparedness and be better prepared for disasters in order to reduce colossal impacts, losses, and damages caused by disasters.

The new research model developed in this study is expected to be a valuable addition to the existing literature and provide an impetus to all hospitals in Malaysia to improve their preparation for the management of disasters so that they will be able to provide improved services to the public. As hospitals increase their disaster preparedness practices, more benefits will accrue to the hospitals' staff, patients, the public, healthcare practitioners, and the government. The proposed research model is believed to be able to be replicated by other researchers who wish to assess the hospitals' preparedness for disaster management results, which eventually will be the basis for targeting specific outcomes and wider community impacts.

1.7 Motivation for The Study

The growing number of disaster occurrences along with the increasing number of deaths have proven the urgency to examine the determinants of hospital disaster preparedness, as these issues have become a global concern nowadays. Also, the 2014

flood incident has opened the eyes of the public, including the researcher, to the importance of total preparedness towards disasters.

In 2014, Malaysia was affected severely by the flood that paralysed many areas in the states of Kelantan, Terengganu, Pahang, Perak, Perlis, and Sabah. Kelantan was the worst hit among the states, rendering many hospitals unable to provide optimal services. In this state, Hospital Kuala Krai, Hospital Tanah Merah, Hospital Pasir Mas, and Hospital Raja Perempuan Zainab II were gravely affected, as the floodwaters that entered into the hospitals disabled various service facilities of these hospitals. Datuk Dr. Noor Hisham bin Abdullah (2014), the Director General of Health of the MOH, reported that three hospitals, namely, Hospital Gua Musang, Hospital Kuala Krai, and Hospital Tanah Merah, had survived throughout the ordeal and operated only by using power generators. This situation had certainly affected some critical care units in the hospitals such as the Intensive Care Unit (ICU), Critical Intensive Care Unit (CICU), and also the operation theatres, as these units use electricity to enable the machines that use oxygen and water pressure to function. Although Hospital Kuala Krai had backup generators, the generators were flooded because they were located at low-lying areas. Hospital Kuala Krai was inaccessible by land, which completely paralysed the hospital's operations. Helicopters were also unable to land due to a lack of landing sites. The only available access to the hospital was by boat. Hospital staff could not report for duty because turbulent waters covered and blocked low-lying areas and closed up major traffic routes that led to the hospital. The situation had forced the hospital to think of alternatives to address the shortage of staff. Furthermore, the communication systems were down and medical supplies and clean water were in short supply in the affected hospitals.

Due to the inability of these hospitals to provide optimal services, critical patients had to be transferred to HUSM, which was the only functioning hospital during the flood. However, HUSM itself could not accommodate all the patients seeking medical attention, as the hospital had to receive patients from all district hospitals in Kelantan. A press release issued by the Ministry of Health Malaysia (2014) on 31 December 2014 outlined the actions taken by the ministry during the 2014 flood. These actions included sending a total of 300 nurses, 100 medical officers, 30 assistant medical officers, and 20 trained medical officers to HUSM to accommodate the increased capacity of the hospital. Subsequently, by orders of the MOH, a total of 425 out of the 1115 haemodialysis patients in Kelantan were referred to HUSM for their dialysis treatments.

The 2014 flood incident demonstrates the lack of capacity and capability of the hospitals in Malaysia to deal with sudden and unexpected disasters. Therefore, hospital authorities need to realise the urgency to improve the hospitals in terms of their disaster management preparedness. Given the possibility of disasters recurring in Malaysia, particularly those that are flood-related, this study is motivated to examine the current state and the determinants of disaster preparedness among the hospitals in Malaysia.

1.8 Definition of Terms

Given that definitional confusion might be an important concern of any research, a few concepts need to be clarified. The following definitions specify the meanings of the terms used in this study.

1.8.1 Clarity of purpose and mission

The degree to which employees have a clear vision/mission of the organisation and understand how they can contribute to its success and achievement (Goh & Richards, 1997).

1.8.2 Coercive pressure

The pressures from entities that have resources on which an organisation depends (Daddi, Bleischwitz, Todaro, Gusmerotti, & Giacomo, 2020; DiMaggio & Powell, 1983).

1.8.3 Disaster

A serious disruption of the functioning of a community or society at any scale due to hazardous events interacting with conditions of exposure, vulnerability and capacity, leading to one or more of the following: human, material, economic, or environmental losses and impacts (UNISDR, 2009).

1.8.4 Experimentation and rewards

The degree of freedom employees enjoy in pursuit of new ways of getting the job done and the freedom to take risks (Goh & Richards, 1997).

1.8.5 Hospital disaster preparedness

Measures taken by a hospital's stakeholders to prepare for and reduce the effects of a disaster, and ensure effective coordination during incident response (Samsuddin, Takim, Nawawi, Rosman, & SyedAlwee, 2018).

1.8.6 Hospital size

The number of set-ups and staffed beds in a hospital (Seblega, 2010).

1.8.7 Institutional theory

How organisations develop strategic choices of organisational practices as a response to its macro-, meso-, and micro-level contexts (Mariappanadar, 2019).

1.8.8 Leadership commitment and empowerment

The role of leaders in the organisation with respect to helping employees learn and eliciting behaviours that are consistent with an experimenting and changing culture (Goh & Richards, 1997).

1.8.9 Normative pressure

Professional standards and practices established through education and training methods, professional networks, and movements of employees among firms (DiMaggio & Powell, 1983; Garud et al., 2007).

1.8.10 Mimetic pressure

Imitating successful organisations when an organisation is uncertain about which strategy to pursue (Daddi et al., 2020; DiMaggio & Powell, 1983).

1.8.11 Teamwork and group problem solving

The degree of teamwork and problem solving in the organisation to solve problems and generate new and innovative ideas (Goh & Richards, 1997).

1.8.12 Transfer of knowledge

The systems that enable employees to learn from others, from past failure, and from other organisations (Goh & Richards, 1997).

1.8.13 Organisational learning capability

The ability of an organisation to process knowledge; to create, acquire, transfer, and integrate knowledge; and to modify behaviour to reflect the new cognitive situation with the aim of improving organisational performance (Jerez-Gomez, Cespedes-Lorente, & Valle-Cabrera, 2005).

1.9 Organisation of the Thesis

This thesis is organised into six chapters. Chapter One focuses on the introduction to the research with some background knowledge on the subject matter. It also covers the research gaps and limitations of current approaches, research objectives, research questions, the significance of the study, the motivation for the study, and the definition of terms.

Chapter Two explains the context of the study. This chapter starts with an explanation of the definition of a disaster as well as the general concept of a disaster using the disaster pressure and release theory developed by Wisner, Blaikie, Cannon, & Davis (2003). This chapter further explains the disaster management practice in Malaysia, focusing on Directive No. 20 issued by the (National Security Council, 1997a). Then, this chapter elaborates on how the hospitals in Malaysia manage disasters according to the rulings issued by the MOH. This chapter also examines some other actions taken by other countries in preparing their hospitals for disasters. Moreover, this chapter focuses on the literature review with reference to institutional

theory and organisational learning capability theory. It then highlights the three sources of institutional pressure or institutional isomorphism elements as proposed by DiMaggio and Powell (1983), namely coercive pressure, normative pressure, and mimetic pressure.

Chapter Three highlights the research methodology adopted by this study. It provides information on the research design, sampling frame, population, sampling techniques, sample size, unit of analysis, measurement and survey instrument, validity and reliability of the instrument, and data analysis. The researcher introduces the use of Partial Least Square – Structural Equation Modeling (PLS-SEM) as the main approach for analysing the findings of the study. The PLS-SEM is used to assess the reliability and validity of the measurement and structural models of the study. At the end of this chapter, the guidelines on the PLS-SEM procedure in evaluating the analysis of the findings are demonstrated.

Chapter Four is about the result and discussion for the quantitative data. The researcher begins by analysing the characteristics of the data in this study. The chapter reports the missing data, the normality of data, and if there is a tendency of common variance to exist in the study. Subsequently, this chapter also reports the reliability and validity of the research model by evaluating the measurement and structural models. Furthermore, the analysis of the moderating relationship is presented. This chapter also extends the evaluation of PLS-SEM analysis by reporting the collinearity issue, f^2 effect size, and q^2 effect size. The summary results of the overall hypothesis testing of this study are presented at the end of this chapter.

Chapter Five summarises the overall findings of the study and provides a detailed discussion. It also offers some recommendations based on the research findings.