FACTORS INFLUENCING THE INTENTION DECISION TO ADOPT BUSINESS CONTINUITY MANAGEMENT OF PUBLIC LISTED COMPANIES IN MALAYSIA

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TABLE OF CONTENTS

LIST OF TABLES

Page

LIST OF FIGURES

Page

LIST OF ABBREVIATIONS

AML	Anti-money laundering
BAU	Business as usual
BCM	Business Continuity Management
BCP	Business Continuity Planning
BIA	Business Impact Analysis
CNCO	National Operational Control Center
COBIT	Control objective for information and related technology
CRED	Centre for Research on the Epidemiology of Disaster
CSR	Corporate Social Responsibility
DoI	Diffusion of Innovation
DRI	Disaster Recovery Institute
DRP	Disaster Recovery Plan
EARTH	Emergency and Rescue Team Hyogo
ISO	International Standard Organisation
IT	Information Technology
ITSM	Information Technology Service Management
JIT	Just In Time
LBCP	Logistic Business Continuity Planning
LMS	Learning Management System
MHI	Major Hazard Installation
NGO	Non-government organisations
OECD	Organisation for Economic Cooperation and Development
PLC	Public Listed Companies
PLS	Partial Least Squares
SAP	Sustainable Agriculture Practises
SEM	Structural Equation Model
SNS	Social Networking Sites
SPSS	Statistical Packages for Social Sciences

LIST OF APPENDICES

FAKTOR – FAKTOR YANG MEMPENGARUHI NIAT KEPUTUSAN PENGAMALAN PENGURUSAN KESINAMBUNGAN PERNIAGAAN SYARIKAT TERSENARAI AWAM DI MALAYSIA

ABSTRAK

Pengurusan Kesinambungan Perniagaan (BCM) adalah amalan pengurusan yang holistik untuk membantu syarikat mendepani pelbagai bencana dan meneruskan kelangsungan perniagaan. Kajian ini memberi tumpuan kepada keputusan untuk menerima BCM dari bukan pengamal BCM dari segi persepsi dan struktur organisasi. Ini adalah untuk lebih memahami faktor-faktor yang menghalang penerimaan BCM di kalangan PLC Malaysia. Dua bahagian teori dari Diffusion of Innovation (DoI) telah digunakan sebagai faktor yang boleh mempengaruhi keputusan untuk menerima BCM. Dalam persepsi ciri-ciri inovasi (perceived characteristic of innovation), didapati bahawa pematuhan (observability) dan keserasian (compatibility) mempunyai kesan yang positif terhadap keputusan untuk menerima pengamalan BCM. Selain itu, kelebihan (relative advantages) dan kerumitan (complexity) didapati tidak mempengaruhi keputusan untuk menerima pengamalan BCM. Bahagian kedua teori ini mengukur struktur organisasi dalaman (internal characteristics of organisation structure) keputusannya, organisasi dengan struktur pusat (Centralisation) akan menentang penerimaan BCM. Sementara itu, pengkhususan (Specialisation) dan saling berkaitan (Interconnectedness) dapat mempengaruhi penerimaan BCM di kalangan bukan pengamal. Seterusnya, industry tergolong dalam sensitif alam sekitar digunakan sebagai pembolehubah penyederhana antara hubungan ciri-ciri inovasi dan ciri-ciri dalaman struktur organisasi terhadap keputusan untuk menerima pakai BCM. Industri sensitif alam sekitar digunakan untuk menguji saling kaitan dengan syarikat

yang berisiko tinggi dan sensitif kemungkinan mempunyai niat untuk menerima BCM. Keputusan pembolehubah penyederhana adalah tidak ketara kerana responden berasal dari organisasi yang belum menerima BCM. Di negara Malaysia tiada sebarang penekanan untuk industri sensitif menerima BCM. Kajian ini menyumbang secara teori kepada rangka kerja DoI dan praktikal kepada BCM.

FACTORS INFLUENCING THE INTENTION DECISION TO ADOPT BUSINESS CONTINUITY MANAGEMENT OF PUBLIC LISTED COMPANIES IN MALAYSIA

ABSTRACT

Business Continuity Management (BCM) is a holistic management practice to face various disasters and safeguard businesses. This study focuses on the perception and organisation structure of non-adopters' decision to adopt BCM. It is to further understand the factors that hinder the adoption among non-adopters' in PLC Malaysia. Two sections of Diffusion of Innovation (DoI) theory have been utilised as factors that may influence the decision to adopt BCM. In perceived characteristics of innovation, it found that observability and compatibility have a positive significant effect on the decision to adopt BCM. While relative advantages and complexity does not influence the decision to adopt BCM. The second section measuring the internal organisation structure notices that organisation with centralisation structure will hinder the adoption. Specialisation and interconnectedness in the organisation can foster adoption behaviour among non-adopters. Besides, environmentally sensitive industries are used to moderate the relationship of perceived characteristics of innovation and internal characteristics of organisation structure against the decision to adopt BCM. The environmental sensitive industry is to find any connectivity of companies in high risk and sensitive may have intention to adopt BCM. The moderator tested is not significant highly due to the respondents being organisations that have not adopted BCM. In Malaysia there is no emphasis for sensitive industries to adopt BCM. This study contributes theoretically to the framework of DoI and practically to BCM.

CHAPTER 1

INTRODUCTION

1.1 Introduction

This chapter gives an introduction to this study. It begins with a depiction of the research's background, on various disasters and threats organisations encounter daily. Practitioners have discovered an innovative solution: business continuity management (BCM) to tackle this situation. Besides that, organisations adopt BCM to protect the stakeholders by reducing the operational, financial, and legal losses, decreasing insurance policy premiums while increasing the stock price and other benefits. A further and in-depth discussion shall see BCM as an innovative management practice. The problem statement examines the difficulties faced by the BCM adopters, thus deriving the research's objectives. Research questions are designed in accordance with the research's objectives to assess the problems. The significance of this study is brushing up on the theoretical and practical contributions. Key terms definition is essential for understanding the study and lastly, a conclusion.

1.2 Background of the study

The history of our planet's disasters such as famine, drought, flood, and epidemic are known natural catastrophes that have claimed millions of lives. Science and technology may have the solution to most disasters, nonetheless the creator of new disasters such as nuclear attacks and other chemical weapons. Therefore, there is a need to find an innovative solution to offset these disastrous impacts while benefiting humankind. With the increasing world population, technology revolution on food has benefited the human as the amount of human died of hunger has decreased each year. Scientists work round the clock for a clue to every new epidemic that arises, where

preventive measures are offered widely on the internet and antidotes available in hospitals. In fact, not every disaster can be controlled, especially when humans choose to adopt the wrong ideology like terrorism.

Terrorist attacks contribute to a high fatality rate, particularly in a crowded area, for example, the airport or subway. In 2016, Ataturk airport in Istanbul, Turkey and Brussels airport (Zaventem), Belgium, was attacked, resulting in human fatalities and injuries. More than a decade ago, on 30 June 2007, Glasgow airport was attacked when a terrorist drove into the main terminal and set the place ablaze. However, the Glasgow airport managed to regain track, and operation resumed as normal in less than 24 hours. Credit was given to business continuity management (BCM), an integrated emergency plan that brings police and airport staff together to restore normality in the shortest period. Their effort of having a BCM in their organisation has led them to win the award for business continuity in 2008 (Crichton, 2010) .

BCM is considered an innovation to tackle disaster in organisations. It involves the combination of technology systems as well as human capital to make it successful. This innovation can find a balance to the organisation in sustaining and protecting their business for the long term. As organisations around the globe are moving in the era of resilience, BCM is the key for the organisation to achieve this objective. The following sections will further discuss the organisation's purpose in adopting BCM.

1.2.1 Business Continuity Management

According to the Disaster Recovery Institute (DRI, 2017b), "*BCM is a holistic management process that identifies potential threats to an organization and the impacts to business operations those threats, if realized, might cause, and which provides a framework for building organizational resilience with the capability of an*

effective response that safeguards the interests of its key stakeholders, reputation, brand and value-creating activities". It means that BCM acts as a blanket that covers the whole organisation's critical business and is able to resuscitate the organisation after a disaster.

Most organisations are interested in adopting BCM to avoid or minimise the risk of losing their business to disasters (Asgary, 2016). All employees in Bank of New York and Morgan Stanley, located in the World Trade Centre, manage to escape the 11 September terrorist attack. It is due to the banking industry adopting Business Continuity Planning (BCP) earlier compared to other industries; thus, they are capable of managing this disaster. The advantages of this practise is the bankers resume to work within three days (Ernest-Jones, 2005; Herbane, Elliott, & Swartz, 2004) in a new location. The bank's proactive adoption of BCM saves thousands of precious employee's lives that very fateful day.

BCM is not limited to protecting the organisation, it extended to the stakeholders too (Alves & Gomes de Almeida, 2015; DRI, 2017b). In planning the BCM, there is a list that ranks the most essential resources to the organisation. Employees rank the top in sustaining business, as no organisation can survive without employees. Customers come second because any disruption in the organisation should not disturb the customers. The best is that no customers notice any disruption in the organisations. It is then followed by non-human resources the facilities, assets and records (Devargas, 1999). Besides that, the welfare of stakeholders is influential to any business environment, without their support, no business exists.

On top of that, most organisations are very sensitive to bad news. Therefore, the failure to continue their business after a disruption will result in tarnished reputation, incurred financial and legal risk (Gibb & Buchanan, 2006). According to

Ernest-Jones (2005), information technology availability must be prioritised to decrease the likelihood of reputation damage and stock price plummet. Besides, a huge disaster can affect one's country economy hence, careful planning is required, it is advisable to upgrade BCP to BCM (Baba, Watanabe, Nagaishi, & Matsumoto, 2014). Having BCM to secure the organisation from such risk is similar to steering the organisation's direction from bankruptcy to survival (Orlando, 2007).

Insurance companies suffered huge losses after the 11 September attack. They have become more sensitive to organisations that are not protecting themselves against any risk (Gallagher, 2003). Organisations that wish to purchase insurance must first submit a well-designed BCP to the ideal insurance company to be reviewed by their auditors before the insurance company’s approval to underwrite the risk (Ernest-Jones, 2005). Most of the organisations' purchase insurance, hoping to eliminate their frustration to deal with a disaster. They later found that monetary resources take months to arrive and, in most cases, it cover only 60% of their actual losses without taking in business interruption and loss of profits (Hiles, 2008). With the complication of getting insurance, the lack of losses coverage, organisations still choose to purchase as their last resources to brace against unforeseen circumstances.

Insurance policy has evolved organisations that are able to provide good business continuity and disaster management (BCDM) plans can save around 20 to 25 per cent on their insurance policies and business interruption insurance. The percentage of savings is depending on the risk reduction model prepared by the organisations. Privileges is given to any organisations when their plan is attractive that able to warrant them to recover in the shortest period. BCDM is considered a living document in reducing the cost of recovery, securing corporate earnings, economy, and employees. A study by Oxford Metrica mentioned that stock prices for organisations

with recovery planning are 22 per cent higher than those organisations that have no plan (Guidry, Vaughn, Anderson, & Flores, 2015).

As BCM is an on-going process, every department's participation is crucial to make it successful. Thus, a charter is created from the top down, each employee contributes in building reference documentation to serve as guidelines for all employees in the event of disruption (Alves & Gomes de Almeida, 2015). BCM is a living document that needs continuous emendation in training, testing (Mohamed Shaluf & Ahamadun, 2008) and spreading awareness. Failure to commit to the living plan can lead to a major disaster such as Piper Alpha (Mohamed Shaluf & Ahamadun, 2008), and history repeats itself in the incident of Deepwater Horizon (Reader & O'Connor, 2014), both oil rigs exploded due to human error. Therefore, proper adoption of BCM should not be taken lightly as it can change the fate of employees going home alive or sent home dead.

Firms that started emphasising BCM are mainly from developed countries with objectives to manage their disaster risks. In summary, BCM provides the benefits for disaster avoidance (Asgary, 2016), to protect stakeholders (Alves & Gomes de Almeida, 2015), decrease cost of dealing with disasters (Guidry et al., 2015) and improve organisation communication (Mohamed Shaluf & Ahamadun, 2008). BCM is widely accepted nowadays compared to one or two decades ago. It became an essential management practice to deal with disasters and other threats such as fraud, reputation management (Gallagher, 2003), and protest (Folkers, 2017). In the view that BCM advantages kept expanding, this study intends to focus on Malaysia's organisations, especially the public listed companies (PLC), on their decision to adopt BCM.

1.2.2 Innovation

Innovation is considered a new idea, product or process adopted (Calantone, Cavusgil, & Zhao, 2002) in an organisation. There are three types of innovations: radical versus incremental, administrative versus technical and product versus process. BCM in the context of management; thus, the focus is on administrative versus technical innovation. Administrative innovation focuses on changes in management where it relates to the fundamental work. Technical innovation is regarding the technology that relates to products, processes and services. Adopting both innovations is opposite in the sense that low professionalism, high formalisation, and high centralisation foster administrative innovation (Damanpour, 1991).

Instead of falling on one side, BCM consists of both administrative and technical innovation; on the administrative side, it concerns changes in organisational structure and processes. Technical innovation is about information technology, continuous availability, and security on data protection (Damanpour, 1991). Past studies conducted on 134 banks prove that it is possible to have innovativeness in both areas (Han, Kim, & Srivastava, 1998) as every organisation has people and systems. Therefore, BCM has the ability to innovate the administrative and technical section in a sophisticated design to assist organisations in fighting various disasters.

1.3 Problem Statement

Disasters are inevitable, numerous disasters occurring around the world yearly. Looking at the data from the Annual Statistical Review 2020, there are 389 natural disasters reported around the globe. These disasters have claimed more than fifteen thousand lives and affected more than ninety-eight million people with accumulated

economic damages of USD 171.3 billion, besides this record is excluding the record of pandemic, the Covid-19 (UNDRR, 2021).

Since the outbreak of Covid-19 in China, millions of humans around the world have suffered due to the fast-spreading of this virus. To date, the virus has claimed more than 4 million lives, infecting 190 million people over a year. In Malaysia alone, the pandemic has infected more than a million people and few thousands has lost their lives. The Malaysian government has initiated several major lockdowns to control the situation despite that, the daily cases continue to climb. The pandemic has affected businesses financially, they suffer losses of up to a trillion dollars (UNDRR, 2021) and an increase in the unemployment rate. Businesses that fail to prepare for this situation face a huge risk of bankruptcy if such a situation persists.

Besides natural disasters, the earth is vulnerable to man-made disasters as well. Man-made disasters are disasters that arise from human action that destroys human lives or result in accidents. In March 2019, authorities discovered that an irresponsible chemical factory in Johor, Malaysia dumped a huge amount of chemical waste over the years in the Kim Kim River. As the river is located near schools, the education ministry has to close more than a hundred schools around the affected area. The first victim was a student; it has then affected many students, including the ambulance driver who drove the students to the hospital. Those who inhaled the chemicals showed symptoms of breathing difficulty, while some fainted and were under the surveillance of intensive care unit (ICU). As a summary, this disaster has affected a few thousand people in the Pasir Gudang Industrial zone.

Any disasters will affect businesses that operate around that area. The matter escalate when destruction involves cutting the supply of water, power, sewerage, and suppliers; as it hinders the recovery in a short period (Hinson & Slade, 2011). On

telecommunication suppliers, a disruption caused much more inconvenience to organisations than society. A halt in communication infrastructure will lead to organisations suffering major losses (Orhan, 2014). Therefore, major disasters have taken an organisation longer period to recover, or in the worst-case scenario, some organisations never recover.

Major disasters such as Hurricane Katrina and Rita in the United States have affected both the workers and students in the university. It led to the decline in education businesses, most students choose to drop out rather than continue their studies after a disaster (Orlando, 2007; Saravara III, 2007). Earthquakes in Christchurch, New Zealand and Sendai, Japan have resulted in the organisation losing its premises. Many employees are haunted by bad memories, thus unable to come back to work immediately (Hinson & Slade, 2011). As a consequence of chemical pollution in Johor, Malaysia, 700 factories around the area closed down because their workers are unwell and unable to work. Factories owners claim that they suffer millions of ringgit losses (Shah, Musa, & Devi, 2019).

Hence despite the importance of BCM, there is still a lack of adoption among companies. A study investigating BCM in construction businesses in Hong Kong, China and Singapore indicated that lack of professional personnel, awareness and no regulations required are reasons for not adopting BCM (Low, Liu, & Mohan, 2010). In Thailand, the study investigates SMEs on BCM practises and found that their preparedness for BCM is limited and low. The main reasons provided are limited knowledge and understanding (Kato & Charoenrat, 2017). Besides that, most organisations in emerging markets are unable to accept new technology or culture change as it is perceived that this would drain out their existing resources. Having this mind-set makes it harder for the organisation to accept BCM as they are afraid of losing

their financial resources and human capital (I. Sawalha & Anchor, 2012). Malaysia, located in Asia and an emerging market, having the same fate as other Asia countries when it comes to decision to adopt BCM.

BCM is quite new to most organisations; nevertheless it is an innovative way to help them prepare for disaster. Various studies in the past had examined factors that contribute to the adoption of one innovation. However, the findings are still mixed. In this realm, attempts to understand how much one innovation is adopted are renewed. Particularly in the context of where innovation (i.e. BCM) is considered a highly important mechanism for one company to face the uncertainty of mother nature due to the increasing complexity of sustainability problems.

The diffusion of innovation theory is widely used to measure the rate of adoption. The most common variable used to measure this rate of adoption is perceived attributes of innovation. Perceived attributes of innovation manage to explain 49% to 87% of the rate of adoption (Rogers, 2003). Besides, internal characteristics of organisational structure are also part of the diffusion of innovation theory to measure the organisation's innovativeness.

Perceived attributes of innovation and internal characteristics of organisational structure are used to measure the adoption of BCM. Perceived attributes of innovation are a well-known measurement of innovation adoption for products and services. At the same time, an internal characteristic of organisational structure is focused on an in-depth understanding of the current organisational structure to the degree that influences the rate of adoption of particular management practices. Both are named by Rogers to group certain variables.

Different organisation structures may produce a different decision on BCM adoption. Therefore, this theory is compatible with the investigation of BCM on the

perceived benefits and internal organisational structure of any organisation. Furthermore, organisations that are categories as sensitive to the environment are ought to have clearer disclosure when producing their products. These organisations have high likelihood to adopt BCM to secure themselves in the event of any disruption. Thus, the moderator of environmental sensitive industry provokes the relationship of the independent variables against the decision to adopt BCM. The research objectives and research questions are the foundation for this investigation. The study aims to benefit society, businesses, and the government on the crucial of BCM adoption.

1.4 Research Objective

The objectives of this study are:

a) To examine the effect of Perceived Characteristics of Innovation on the decision to adopt business continuity management.
b) To examine the effect of Internal Characteristics of Organisation Structure on the decision to adopt business continuity management.
c) To examine the moderating role of environmental sensitive industry between the relationship of Perceived Characteristics of Innovation and Internal Characteristics of organisation structure on the decision to adopt business continuity management.

1.5 Research Questions

This study intends to examine the adoption of business continuity management in public listed companies in Malaysia; thus, it intends to find out:

a) Does the Perceived Characteristics of Innovation affect the decision to adopt business continuity management?

b) Does the Internal Characteristics of Organisation Structure affect the decision to adopt business continuity management?

c) Does the environmental sensitive industry moderate the relationship between perceived characteristics of innovation and internal characteristics of organisation structure on the decision to adopt business continuity management?

1.6 Significant of the study

This study has the potential to make significant contributions to theory and practice in the area of Diffusion of Innovation (DoI) theory and Business Continuity Management in Malaysia.

In Diffusion of Innovation (DoI) theory, the theoretical contributions are mainly in two different areas, the perceived characteristics of innovation and internal characteristics of organisation structure. The combination of these two areas to measure a management practice is adding additional usage to this theory. The nature of the Perceived Characteristics of Innovation theory is to measure the adoption rate of products and services. This study intends to measure a different spectrum, the decision to adopt management practices. Besides, there is still a lack of research on the area of perceived characteristics of innovation in literature. Karjaluoto, Tapaninen, Seppänen, and Mäkinen (2009) mentioned that only about 7% of research in DoI uses Perceived Characteristics of Innovation. The variables selected in Perceived Characteristics of Innovation can contribute to better understanding of non-adopter's perspectives on BCM practices.

Internal Characteristics of Organisation Structure is a branch of DoI theory that measures the organisation's innovativeness. This study is interested to further understand the variables in internal organisation structure that can affect the adoption

of BCM for non-adopters. On top of that, this study included a moderator: the environmental sensitive industry. Moderator was chosen after much literature review; previous researchers have not included this variable as moderator. The knowledge gained from this study will contribute to the DoI theory on the decision to adopt BCM in Malaysian public listed companies.

The practical contributions are for the benefit of the practitioners and a huge part of society. In the time of uncertainty, organisation required a sustainable management practice for business continuity. BCM could benefits the organisation during uncertain time. This study attempts to identify elements that hinder organisations in Malaysia from adopting BCM. As a result, organisations can have a greater understanding of the factors that effected their adoption of BCM. Besides that, it can assist employees and managers in understanding the gap and initiate a bridge to foster the decision to adopt BCM. Furthermore, data collected from different sectors in public listed companies could benefit the government of Malaysia by knowing their progress in BCM adoption. Therefore, to enhance the acceptability of BCM, the government could play a supporting role.

1.7 Definitions of Key Terms

Below is the definition for some of the important key terms used in this study: -

a) Business Continuity Management (BCM)

   BCM is a blanket of plans that has the ability to cover all different types of organisation risk that will affect the business operation. In moving towards a sustainable organisation, careful planning is required to manage disaster risk (DRI, 2017b).

b) Decision to adopt BCM

In decision stages of the five stages of Innovation-Decision Process model, are referring to the process of adoption or rejection on a particular innovation by the decision-making unit (Frambach & Schillewaert, 2002; Rogers, 2003) This decision to adopt BCM are regards to the option of the organisation whether to adopt or reject BCM.

c) Business Continuity Planning (BCP)

BCP refers to identifying and protecting critical processes and resources required to maintain an acceptable level of business, protecting such resources, and preparing procedures to ensure the organisation's survival in times of business disruptions (Gallagher, 2003).

d) Disaster Recovery Planning (DRP)

DRP is a document designed to assist an organisation to recover lost data and restore. It should be a proactive document, not regarding the task but an action plan to identify policies, procedures, and resources used to monitor and maintain corporate information technology (IT) before, during, and after a disaster (El-Temtamy, Majdalawieh, & Pumphrey, 2016).

e) Relative advantage

Relative advantages refer to the level innovation is perceived as being superior compared to the current practices. Economics and social, play a role in adopting relative advantages; when adopting an innovation, cost, social status, time, and effort will be considered (Rogers, 2003).

f) Compatibility

Compatibility is a level where innovation is perceived as similar to their lifestyles, such as value and beliefs, needs and previous experience. Adoption is likely to

happen when an innovation has compatibility with its current situation (Rogers, 2003).

g) Complexity

Complexity is a level when innovation is perceived as hard to understand and requires complex processes and procedures. Complexity usually drives away potential adopters (Rogers, 2003).

h) Observability

Observability is a level of concern about the result of an innovation that others can see. Adopters are keen to practice an innovation that people can notice (Rogers, 2003).

i) Centralisation

Centralisation refers to the level of authority, and usually, this power falls under the control of a group of people. According to Damanpour (1991) meta-analysis, it is found that the centralisation type of organisation is unable to accept innovation. Nevertheless, innovation is easily adopted if it is in favour of them and the opposite applies if they find it not favourable (Glisson & Martin, 1980; Rogers, 2003; Zeffane, 1989).

j) Formalisation

Formalisation is the level where organisations follow strict rules and procedures (Rogers, 2003). This organisational structure discourages the adoption of innovation (Damanpour, 1991). Despite that, when this type of organisation is required to adopt an innovation the successful rate is higher (Frambach & Schillewaert, 2002).

k) Specialisation

Specialisation is the level that measures expertise in the division of labour and task among employees. It enables the employees to understand their work in-depth and be an expert in their area (Olson, Slater, & Hult, 2005).

l) Interconnectedness

Interconnectedness is when each department or division is connected within the organisation by an interpersonal network (Rogers, 2003). It is positively related to the adoption of an innovation.

m) Environmental Sensitivity Industry

Environmental sensitivity industries refer to organisations prone to environmental disaster in developing their product (Bowman & Haire, 1975; Cowen, Ferreri, & Parker, 1987; Ness & Mirza, 1991).

1.8 Scope of the Study

This study investigates the adoption of BCM by using the Diffusion of Innovation (DoI) theory. The focus is on non-adopters from the public listed companies in Malaysia. Various factors from the theory are being tested to determine the relationship of BCM adoption. Statistical software such as SPSS and PLS are utilise to analyse the data.

This study consists of six chapters discussing different topics. Chapter one covered a brief introduction of the whole study that path the way for other subsequent chapters. Next, chapter two is the literature review of the past studies regarding BCM and factors that influence the adoption. Continue by chapter three the theoretical framework, on discussion of the appropriate theory selected, hypotheses development before derives of the theoretical framework for this study.

Chapter four is the research method, where various method of research is tabulated. Here the appropriate method was selected and being elaborated. After data collection, this study moves on to chapter five for data analysis and finding. This chapter analyse the data using the statistical software and provide finding based on the hypotheses proposed. Finally, the last chapter for this study is chapter six, discussion and conclusion. It discusses on the findings of the relationship between the independent and dependent variables and different contribution of this study.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter intends to understand the categories of disasters that an organisation will face before interpreting disaster definition and further drilling into disaster management. Then, elaboration of the BCM journey that came into existence with other plans and tools, one after another collaborating into powerful management practice. This study discusses the main plan and tools of BCM; there are DRP, BCP and BIA. Besides that, it looks deeper into the adoption of BCM, the review of the important elements that bring on the decision to adopt BCM. BCM is not new, so this study also glances through the evolution of BCM and the progress in Malaysia. BCM is considered an innovation that is available for organisations to save themselves during and after disasters. Lastly, this study focuses on the factors related to BCM and factors that lead to the adoption of BCM. Every chapter ends with a conclusion.

2.2 Definition of disaster

Most of the time, disasters are defined according to the term that the author decides to discuss; therefore there is no universal definition of disasters (Mohamed Shaluf, 2007a). According to Centre of Research on the Epidemiology of Disasters (CRED) collected and published the yearly statistic of natural and technology disaster worldwide, disaster is *"a situation or event that overwhelms local capacity, necessitating a request at the national or international level for external assistance; an unforeseen and often sudden event that causes great damage, destruction and human suffering"* (CRED, 2018). On top of that, CRED has set certain criteria for countries to justify a threat as a disaster.

In an organisation, numerous disasters can affect daily business; some threats are unavoidable while some are manageable. Most manageable threats are managed under the risk management department. Organisations adopted BCM to reduce operational risk that is located in the heart of the business (Herbane, 2010). In risk management, there are two types of operational risk: internal and external risks. Internal risk is risk that occurs in the organisation, such as disruption in the disbursement of service or product. At the same time, external risk involves a risk beyond the organisation's control, such as natural disasters (Singh, Mishra, Jain, & Khurana, 2012). The operational risk is a disaster for organisations who fail to oversee these threats. Thus, organisations divided disasters into few categories to have better control in managing operational risk.

Hinson and Slade (2011) indicated four types of disaster scenarios, natural, man-made, supply chain, and technological disaster, to consider when designing for BCM practice. Natural disasters are beyond human beings' control and are commonly referred to as an “Act of God” (Mohamed Shaluf, 2007a). Landslides, floods, earthquakes, volcanic eruptions, and others are classified as natural disasters (Guha-Sapir, Hoyois, & Below, 2016; Hinson & Slade, 2011; Mohamed Shaluf, 2007a; Zeng & Zio, 2017). On man-made disasters, it can occur out of sudden or in the long term due to human, technical and operation error (Mohamed Shaluf, 2007a). Terrorist attacks, arson, major fraud, incompetence, or accidents are known as man-made disasters (Hinson & Slade, 2011; Mohamed Shaluf, 2007a; Zeng & Zio, 2017). Then supply chain disasters are failure or delay of the supplier, business partner, and customer payment (Hinson & Slade, 2011). According to Zeng and Zio (2017), their supply chain disaster is classified as social disruption, which lumps together with other man-made disasters. Lastly, technological disasters include failure of information technology (IT) or network

systems, major hack, lack of capacity and others (Hinson & Slade, 2011; Zeng & Zio, 2017).

2.3 Disaster in Malaysia

Malaysia, just like other countries, is prone to natural and man-made disasters. The most common disasters in the country are floods, landslides and haze. According to Mohamed Shaluf and Ahmadun (2006), 39 disasters happened from 1968 to 2004, most of the disasters are from natural disasters. Malaysia landed on the top 10 list, with 2.43 million victims affected by natural disasters in 2014. The disasters reported are mainly due to climatological activities and only a small portion of hydrological activities (Guha-Sapir, Hoyois, & Below, 2015). In the hydrological disaster, Malaysia was experiencing the worst flood that hit Kelantan, Terengganu and Pahang. In the meantime, the Selangor water crisis problems are categorised under climatological disasters, which affected millions of people in Selangor and Kuala Lumpur.

Other natural disasters that Malaysians rarely disclose are earthquakes and lightning strikes. Malaysia was not located in the 'Ring of Fire' like their neighbouring countries; therefore, their precaution level was low. There are two types of earthquakes in Malaysia; it is known as far-field and local. Far-field indicated that the original earthquake started in neighbouring countries, either Indonesia or the Philippines. A local earthquake is an earthquake that originated in Malaysia. The country has seven fault lines in Peninsular Malaysia located in Bok Bak, Lebir, Terengganu, Bukit Tinggi, Kuala Lumpur, Lepar and Mersing Fault. Fortunately, this fault zone recorded less than 4.0 on the Richter scale, mostly generated from a far-field earthquake. The local earthquake was stronger in Sabah that reached up to 6.2 magnitudes in Lahad Datu

during 1976. The recent 2015 earthquake in Ranau was 5.9 magnitudes, claiming 18 lives (Clarissa Chung, 2018).

Malaysia is one of the countries frequently hit by lightning compared to other countries around the world. A study in 2016 revealed that Kuala Lumpur has the highest record compared to other cities in Asia for the last 16 years. The lightning strikes have caused 125 fatalities and 157 injuries from 2008 to 2017. Unfortunately, Malaysians still lack awareness and safety measures on this issue. The most frequent hit areas are Kuala Lumpur International Airport, big cities in Subang Jaya, Johor Bahru and Penang (Clarrisa Chung, 2018). In summary, a high possibility of natural disaster tends to occur in Kuala Lumpur, referring to the above discussion on water crisis, earthquake fault line and lightning strikes. Thus, as the capital of the country and home of many organisations, this is not good news.

Besides natural disasters, Malaysia experienced man-made disasters such as the incidents of MH370, MH17 and QZ8501, that caused the aviation industry to suffer huge losses in profit and customers' confidence. Frequent kidnappings on the east coast of Sabah demand huge ransom and ships stolen by pirates worth millions of Ringgit in the value of petrol. On June 28, 2016, an IS grenade attack at a nightspot in Puchong resulted in many wounded.

Pandemic are happening so often nowadays, from the last decade we fought with SARS to Ebola, MERS, Zika, H5N1 and now Covid-19. Besides that, the war of fighting dengue has been going on for many decades. The government has implemented the standard operating procedure (SOP) for the public to curb the spreading of Covid-19. To date, there have been more than 7000 fatalities and affected millions of people in the last 18 months. Medical staffs have work beyond their working hours and hospital

facilities are fully occupied. Others were affected by the impact of this pandemic; they lost their monthly income due to lockdowns or some industries inoperable.

Any disasters that happen will trigger danger to human life. The current technologies on earth were not advanced enough to stop disasters from happening. Therefore, humans usually focus on how to recover after a disaster. Thus, most of the countries with high disaster occurrences have started to make plans for disaster recovery. One of the optimal solutions for the government is by setting up a disaster management team. Their main objective is to save as many human lives as possible. Next, the discussion on disaster management is to understand a particular country' initiatives and efforts to manage disasters.

2.4 Disaster Management

Education plays an important role in disaster prevention and disaster management (Y. Guo & Li, 2016; Johnson, Ronan, Johnston, & Peace, 2014; Shah Alam Khan, 2008; Shiwaku, 2014), building a more resilient and sustainable society after a disaster. Japan, Armenia, New Zealand, and Bangladesh are prone to disasters; therefore, adopting disaster management is crucial to minimise the impact of disasters (Y. Guo & Li, 2016). It indicated that disaster awareness should start in school (Johnson et al., 2014; Shiwaku, 2014) and spread around through informal education (Shah Alam Khan, 2008). Y. Guo and Li (2016) stated that to further improve the strategy and policy of disaster management, feedback is required from the society to the government. Following are initiatives from Armenia, New Zealand and Bangladesh on their disaster management in the education system.

In Armenia, the responsibility of disaster management is different according to teachers. Military science teachers are in charge of the disaster management system and drill, while the normal teachers provide education on disasters. The Emergency and Rescue Team conducted by school staff in Hyogo (EARTH) is considered one of Japan's best practices for school disaster management. It only trains a few teachers in the schools, and multiple level exams are required to accelerate the teacher's knowledge. Armenia takes the effort to compare against EARTH to close the remaining gap of their disaster management in schools (Shiwaku, 2014). By comparing and improving the current disaster management plan, the schools in Armenia are now more prepared against disasters.

New Zealand launched “What’s the Plan Stan?” a national disaster education program promoted by the Ministry of Civil Defence and Emergency Management. Their target participants are the primary school from year one to year eight students. Besides the involvement in hard-copy of teaching material, the plan promotes relationships among schools and local government staff (Johnson et al., 2014). It shows that disaster management must be adopted from a young age; fostering good relationships with the society around where the school operates are crucial to enable the success of the whole plan.

In Bangladesh, the "Cyclone Preparedness Program" is a disaster management program diffused to raise awareness in their country. Floods, storms and cyclones are common natural disasters in Bangladesh that cause thousands of fatalities. In order to improve the situation, government and non-government organisations (NGOs) are working hard toward the same mission to strengthen their current disaster management. Thus to prepare the society, the knowledge is channelled through formal and informal education so that everyone in the country gets the same message (Shah Alam Khan,

2008). With the diffusion of this program, society can take preventative steps to save themselves when disasters arrive.

Apart from education, Thailand and Malaysia have come out with tools to solve their problem on flood. A study proposed a balanced scorecard approach to manage natural disaster projects in Thailand as floods are frequent in South Thailand, Hat Yai. Four perspectives were proposed in measuring: donors', target beneficiaries, internal business processes and learning, and innovation. Follow by measuring the five steps of achieving natural disaster management: preparedness, early warning, emergency relief, rehabilitation, and recovery are solutions to prevent flooding. These tools can lead to successful disaster prevention after reviewing and improving the four perspectives and five steps (Lin Moe, Gehbauer, Senitz, & Mueller, 2007).

Floods are common in Malaysia, especially during the rainy season. The decrease in water catchment areas in the interest of rapid urbanisation, such as clearing forests, causes flooding. A spatial decision support system (SDSS) is a system with a combination of a decision support system (DSS) and geographical information system (GIS) that has the ability to detect, forecast and alert people. It is recommended to be implemented in Malaysia to assist managers in decision making to shorten the time to react to flood disasters (Billa, Shattri, Rodzi Mahmud, & Halim Ghazali, 2006). This system was intended to save more lives in the event of a flood.

A case study was conducted by Perry (2007) on the impact of tsunamis on underdeveloped countries. The underdeveloped countries' disaster management was not efficient, leading to huge damage in Sri Lanka, India, and Indonesia after the 2004 tsunami. Hence inefficient disaster management led to chaos in logistics where donor contributions could not reach the victims by reason of the destruction of roads, power supply and telecommunication systems. Therefore, these countries need to have a

holistic disaster management plan by bringing the populations out of poverty. Co-operations among local people, coordination, information sharing among stakeholders, and experts in logistics are ways to respond to disasters effectively.

Politically instability, social unrest, and terrorism in the Middle East post huge risk to Jordan tourism industries. The survey conducted in Jordan on local, regional, and international hotels concludes that international hotels are more proactive in disaster management. In contrast, local hotels do not even have a risk management department. On the other hand, regional hotels have a department but no planning on disaster management. Local and regional hotels in Jordan, still in an infant state of disaster management, have not implemented a warning system, risk analysis, business continuity planning (BCP) or any other emergency and contingency plan. It shows that Jordanian hotels are highly exposed to risk. The finding reveals that organisation culture plays an important role in the adoption of disaster management (Al-Rasheed, 2001). Besides, lack of authority and guidelines in this industry, hence organisations are not aware of their risk.

2.5 Disaster Management in Malaysia

Over in Malaysia, the hospitality and tourism industry are no better than Jordan when it comes to disaster management. These industries are very sensitive to any negative news around the region. Bali bombing and SARS more than a decade ago have caused a drop of 20% in tourist arrivals in Malaysia. The hospitality and tourism industry are not ready for disaster; they claim a lack of resources, their work would not be visible, and they think it is an act from 'God'. There is only a small fraction of the organisation that has a written plan. Fifty per cent of the organisation's written plan is