THE MODERATING EFFECT OF INFORMATION TECHNOLOGY CAPABILITY ON THE RELATIONSHIP BETWEEN BUSINESS CONTINUITY MANAGEMENT FACTORS AND ORGANIZATIONAL PERFORMANCE

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ABSTRACT

Despite the enormous acknowledgement of the importance of Business Continuity Management (BCM) in sustaining organization survival, very limited studies have focused on the effects of BCM on organizational performance. Hence, the purpose of this study is to provide the empirical evidences that support the relationships that exist between BCM Factors and Organizational Performance with the moderating effects of Information Technology Capability (IT Capability) in organizations from various sectors in Malaysia. Based on the existing literature, BCM Factors are operationalized by Management Support, External Requirement, Organization Preparedness, and Embeddedness of Continuity Practices. A combination of self-administered and mail survey was deployed involving 147 ISO 27001 and ISO 22301 certified organizations representing both public and private sectors. These organizations were selected as they are deemed to possess a considerably higher sense of commitment towards embracing BCM best practices to enhance their business resilience. At the end of the data collection phase, the study managed to obtain 77 usable responses constituting an effective response rate of 55 percent. The findings indicate that BCM Factors namely External Requirement and Embeddedness of Continuity Practices are significantly related to Overall Organizational Performance and Non-Financial Performance. However, only External Requirement is found significantly related to Financial Performance. The results also reveal that fully supported relationships are found between IT Capability and all Organizational Performance dimensions. In addition, the findings show that IT Capability moderates the relationship between BCM Factors and Organizational Performance. These results provide valuable insights to both practitioners and academia for further understanding the effects of BCM Factors and IT Capability on Organizational Performance. Finally, the research limitations are discussed and suggestions on extended area of research are recommended for future researchers.

Keywords: business continuity management, organizational performance, IT capability, ISO 27001, ISO 22301

ABSTRAK

Walaupun semakin banyak pengiktirafan terhadap kepentingan Pengurusan Kesinambungan Perniagaan (PKP) dalam mengekalkan kemandirian sesebuah organisasi, namun kajian yang memberi tumpuan terhadap kesan PKP kepada prestasi organisasi adalah sangat terhad. Oleh itu, kajian ini adalah bertujuan untuk mengemukakan bukti empirikal yang menyokong perhubungan di antara faktor PKP dan Prestasi Organisasi dengan kesan pengantara terhadap Keupayaan Teknologi Maklumat (Keupayaan IT) dalam organisasi daripada pelbagai sektor di Malaysia. Berdasarkan literatur semasa, faktor PKP dioperasikan oleh Sokongan Pengurusan, Keperluan Luaran, Kesediaan Organisasi, dan Penerapan Amalan Kesinambungan. Gabungan dua kaedah kaji selidik iaitu kaedah tadbir kendiri dan mel ini telah melibatkan 147 buah organisasi yang memiliki pengesahan sijil ISO 27001 dan ISO 22301 yang wewakili kedua-dua sektor awam dan swasta. Organisasi ini telah dipilih kerana dianggap memiliki komitmen yang tinggi dalam mengamalkan amalan PKP terbaik untuk meningkatkan daya tahan perniagaan masing-masing. Di akhir fasa pengumpulan data, kajian ini berjaya mendapatkan 77 maklum balas yang boleh diguna pakai untuk mewakili kadar maklum balas efektif sebanyak 55 peratus. Dapatan kajian menunjukkan bahawa faktor PKP seperti Keperluan Luaran dan Penerapan Amalan Kesinambungan mempunyai hubungan yang signifikan dengan Prestasi Keseluruhan Organisasi dan Prestasi Bukan Kewangan. Walau bagaimanapun, hanya Keperluan Luaran sahaja didapati mempunyai hubungan yang signifikan dengan Prestasi Kewangan. Dapatan kajian ini juga menunjukkan sokongan penuh terhadap hubungan di antara Keupayaan IT dan kesemua dimensi Prestasi Organisasi. Selain daripada itu, kajian ini mendapati bahawa Keupayaan IT memberikan kesan pengantara terhadap hubungan di antara faktor PKP dan Prestasi Organisasi. Hasil kajian ini memberikan pandangan yang berharga kepada kedua-dua pihak iaitu pengamal dan ahli akademik untuk memahami lebih lanjut terhadap kesan faktor PKP dan Keupayaan IT ke atas Prestasi Organisasi. Akhir sekali, batasan kajian juga telah dibincangkan dan cadangan penyelidikan lanjut turut disarankan kepada penyelidik masa hadapan.

Kata kunci: pengurusan kesinambungan perniagaan, prestasi organisasi, keupayaan teknologi maklumat, ISO 27001, ISO 22301

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LIST OF ABBREVIATIONS

BCI	-	Business Continuity Institute
BCP	-	Business Continuity Planning
BCM	-	Business Continuity Management
BCMS	-	Business Continuity Management System
BIA	-	Business Impact Analysis
BNM	-	Bank Negara Malaysia
BRP	-	Business Resiliency Planning
CEO	-	Chief Executive Officers
CIA	-	Confidentiality, Integrity and Availability
CNII	-	Critical National Information Infrastructure
DRP	-	Disaster Recovery Planning
ETP	-	Economic Transformation Program
EUC	-	End User Computing
GTP	-	Government Transformation Program
ISMS	-	Information Security Management System
ISO	-	International Organization for Standardization
ICT	-	Information and Communication Technology
IS	-	Information System
IT	-	Information Technology
KBV	-	Knowledge-Based View
MAMPU	-	Malaysian Administrative Modernization and Management Planning Unit
OP	-	Organizational Performance
PDCA	-	Plan Do Check Act
RBV	-	Resource-Based View
ROI	-	Return of Investment
SDLC	-	System Development Life Cycle
SIRIM	-	Standards and Industrial Research Institute of Malaysia
SPSS	-	Statistical Package of Social Science

CHAPTER 1
INTRODUCTION

1.1 Introduction

The purpose of this study is to examine the moderating effect of IT capability on the relationship of between business continuity management factors and organizational performance. This chapter presents the outline of this study. It describes the research background, states the problem statements, defines the research questions and objectives, highlights the significance of the study, outlines the scope of the study, and provides the definition of key terms. The chapter ends with the organization of the thesis.

1.2 Background of the Study

In current landscape, the global business atmosphere and conditions are becoming more turbulent and sometimes unpredictable. Situations such as drastic technology advancements and social dynamics affect almost everyone including all organizations around the planet (Mitroff, 2004; Pollard & Hotho, 2006). Hence, organizations desiring to stay competitive and successful must be well protected, through heightened resilience so that they could remain profitably in the event of any fatal business disruption. According to Wong (2009), organizations that incorporate Business Continuity Management (BCM) in their strategic management could gain a distinctive competencies over their competitors in terms of operational resilience, which includes swift recovery of critical business functions at predefined period of time while minimizing the adverse impacts to their value and reputation.

As an illustration, the September 11 tragedy generally impacted many businesses negatively. It was a disastrous in which many organizations failed to recover their operations in timely manner. However, organizations which had comprehensive BCM program in place were able to demonstrate high resilience and had their services recovered within a few hours or days after the incident. A good example was Dow Jones, which had about 800 employees on floors 9 to 12 and 14 to 16 of the World Trade Centre. In the incident, all of its employees survived and no loss of data or services was reported during the disaster period. This was mainly because Dow Jones had a comprehensive and effective BCM program in practice (Childs & Dietrich, 2002). Likewise, American Express and Merrill Lynch which also had a large presence in the World Trade Centre, were back in business in hours after the tragedy, due to the fact that they had well developed BCM plans. Also, NASDAQ, an American stock exchange which also had a BCM in place, managed to resume its services in a few days after the incident (Hecht, 2002).

In similar situation, the natural disaster incidents such as the great Indian Ocean earthquake and tsunami in 2004 had reformed the global perspective in managing business risk that triggered a major boost-up on the adoption of BCM (Alonso & Boucher, 2001; Gallagher, 2003). This fact is consistent with the result of a survey conducted by Chartered Management Institute in 2012 illustrated in Figure 1.1, who reported that the awareness and the use of BCM are growing. Particularly, the responses indicated a rising trend in the adoption of BCM, with 61 percent of the respondents reported that their organizations already have BCM program in place (Pearson & Woodman, 2012).

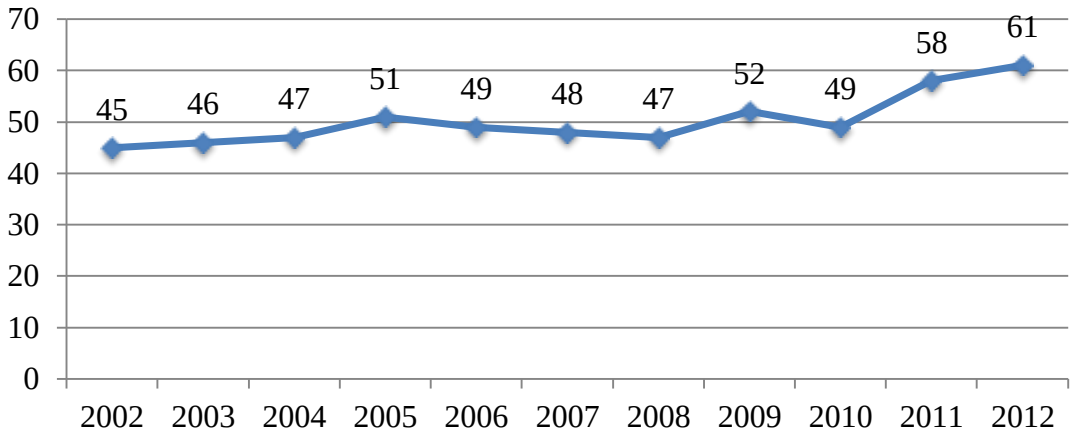

Figure 1.1
BCM Adoption Trend from 2002 to 2012

The survey also reports that substantial differences persist in the uptake of BCM among organizations of different sizes (Pearson & Woodman, 2012). In conjunction, about 74 percent of managers of large organizations agreed that they have implemented BCM compared with just 31 percent from micro organizations. The trend is illustrated in Figure 1.2.

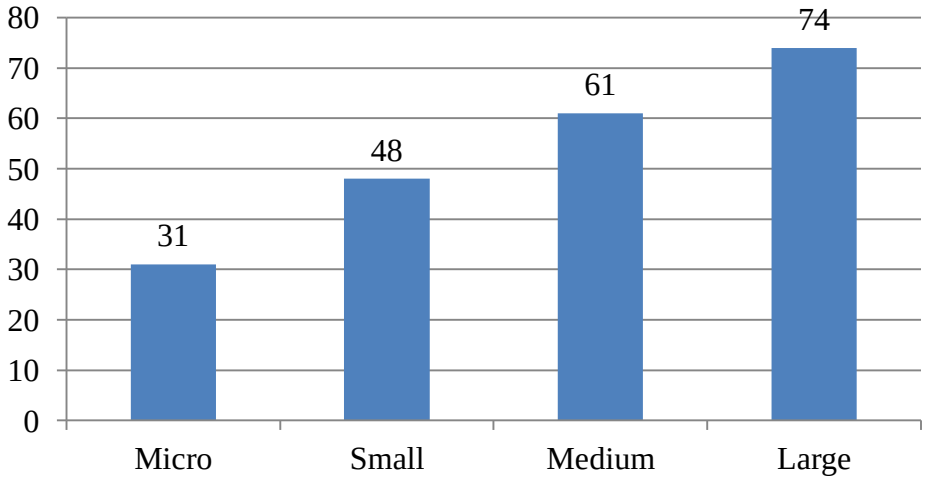

Figure 1.2
The Adoption of BCM by Size of Organizations

In recent years, there have been many crises causing substantial financial loss and, under the worst circumstances, even a loss of market shares and affecting customer

loyalty (Sheffi & Rice, 2005). This argument is further supported by Hendricks and Singhal (2005) who estimated that the stock prices decreased by nearly 10 percent when supply chain interruptions are publically announced and about 40 percent in the longer term. Learning from the past, it is a known fact that while crisis may be unforeseen and we may not be able to prevent it from happening, it can be managed with practice (Mitroff, 2001). Similarly, Sawalha (2013a) postulates that an organization's vulnerability to crises stimulates the necessity to develop an effective strategy to manage the risk.

The discussion in the previous paragraph explains that BCM can be considered as a subset of enterprise risk management. Business Continuity Institute (2011) stated that BCM and risk management sit side by side. BCM comprises of preventive and corrective approaches of risk management through business continuity and disaster recovery planning. Further, Krell (2006) states that the most significant difference between risk management and BCM relates to the output of each activity. The risk management strategy, either risk avoidance or risk mitigation, which is handled through risk reduction, risk sharing or risk transfer is established before an unplanned disruptive event happens. Generally, BCM strategies primarily focuses on the activities that take place after the occurrence of a disaster incident and its aim is to resume the business to normalcy as quickly, efficiently, and effectively as possible.

In order to promote customers confidence, ensure regulatory compliance, and uphold its reputation, continuous availability of essential services and critical business functions are the basic necessities for all organizations. Hence, it is very important for an organization to continuously improve its capabilities to react swiftly in the event of a disastrous situation to safeguard the survival of its business and reputation. In

general, BCM entails, 1) understanding the organization and its needs, 2) recognizing the potential risks that may interrupt critical business functions, 3) managing those risks so that the impact is minimized, and 4) ensuring effective business continuity and disaster recovery efforts following unforeseen incidents (Gibb & Buchanan, 2006; Herbane, Elliott, & Swartz, 2004). BCM also helps organizations to prepare sufficiently for the worst possible untoward circumstances where the organization would be able to resume its operations following a crisis situation. More importantly, the organization must be able to restore its normal functions immediately after the disastrous situation. Similar with suggestions in the previous paragraphs, Pitt (2010) in this situation also asserts that an organization will likely to experience lesser impact from the initial and immediate effects of a disaster and able to recover more swiftly and effectively if it has a good BCM practices in place.

Historically, BCM framework roots from Disaster Recovery Planning (DRP) practices that emerged during the 1950s and 1960s, where organizations started to store backup media copies of their critical information, electronic or paper based at their alternate sites (Randeree, Mahal, & Narwani, 2012). According to Herbane (2010b), DRP originated from the desire of banks in United States to better protect their corporate data centres from disastrous events. During that time, the goal of DRP was to protect the computer systems rather than providing organizational wide or business side protection.

Since then, BCM has become a topic of great concern to organizations that strive to overcome negative forces (KPMG, 2006). In the literatures, the importance for organizations to establish a comprehensive BCM framework has been deliberated by many researchers (Gupta, 2012; Jordan, 1999; Mohan & Rai, 2006; Venclova,

Urbancova, & Vydrova, 2013). Similarly, Randeree (2012) has also pointed out that there has been a significant increase in perceived importance of pursuing Business Continuity Planning (BCP) initiatives acknowledged by the senior management. Establishing elevated resilience is extremely necessary in current economic and security environments, which creates a new set of challenges to the management and board members (Starr, Newfrock, & Delurey, 2003).

In current agenda, management thinking is driven by the key business objectives such as service availability, prompt delivery, and meeting customer's expectations. In order to survive, organizations must consistently delivering right products, at the right time, and at the right price to the end customers on a continual basis. Hence, so as to ensure the availability of service is maintained at all time, every organization must always be prepared and plan for a greater extent than they traditionally have, to counter all the potential threats. Many organizations recognize the fact that they should forecast the surrounding environment in order to heighten their awareness of the possible risks that might affect their businesses and strategic directions (Fink, Marr, Siebe, & Kuhle, 2005; Saxby, Parker, Nitse, & Dishman, 2002). In fact, it is believed that the readiness of an organization in responding to contingencies such as fire, avian flu pandemic, terrorism, killer tsunami waves, electricity power failure, and earthquake is reliant on the involvement of its management in embracing the BCM (Low, Liu, & Sio, 2010).

Consequently, Woodman and Hutchings (2010) suggest that all organizations should incorporate BCM in their business plan regardless of its size. Similarly, Gallagher (2002) asserts that BCM should not only be a subject of concern to large corporations, but also to the medium and small size enterprises since both entities are under constant pressure from their key stakeholders i.e. shareholders and the consumers to

deliver uninterruptable services. In addition, Gallagher (2002) also highlights that there are many glitches that can be caused by human errors or process failures in the small and medium size organizations. Therefore, the consequence of not having a good BCM practice in place may be threatening. Besides, the elements of BCM can be applied to all types of organizations, in public and private sectors. It is also becoming widely embraced in various industries including financial institution, manufacturing, transportation, services, local authorities, telecommunication, healthcare, education and government agencies.

A rising number of newly introduced industry guidelines, government regulations and organizational directives demand organizations to pursue risk reduction measures by establishing BCM practices within the organization. In the United Kingdom, government authorities such as the Financial Services Authority (FSA) considers that the expenditure on BCM is part of the business operation costs and it has to be funded appropriately. Meanwhile, the Sarbanes–Oxley Act and Foreign Corrupt Practices Act (1977) in the United States have imposed a condition in which the company's directors and executives are personally responsible for failures of control within their organizations (Peterson, 2009). In the Malaysian context, the regulatory requirements by Bank Negara Malaysia (BNM) are imposed on financial institutions governed by the central bank that outlines the principles and detailed requirements on the formulation of BCM and disaster recovery programs (Bank Negara Malaysia, 2008).

Besides the regulatory requirement, there are also a number of BCM best practices and standards available as guidance for organizations in implementing and maintaining an effective BCM program. According to Peterson (2009), the widely used international standards related to BCM include BS 25999, ISO 27001, ISO

22301, PAS56, NPFA 1600, and NIST 800. Among these standards, the commonly adopted standards in the Asian region specifically in Malaysia are the British Standard Institute's BS 25999 and International Organization for Standardization's ISO 27001 and ISO 22301.

In addition to the regulatory requirement and standards, BCM is closely related and driven by IT which is the backbone of almost all businesses nowadays. From the technological viewpoint, Information System (IS) or IT incidents may cause disruption to the business services. In some cases, they may also cause severe impact to business survival. In this regard, Luftman and Zadeh (2011) found that many organizations recognised business continuity issue as one of the major challenges in information management. The role to ensure continuous IT services is among the key responsibilities of an organization's information security management, even though the business is potentially be interrupted by non-security related incidents too (Fink, 1994; Gerber, Solms, & Von Solms, 2005). In general, an IT disaster incident is classified as any major failure of computer system and facilities or loss of critical data. The situation may happen through natural disasters such as earthquake, flood or fire. It may also be an accidental events or in certain cases, a malicious act conducted by a disgruntled employee (Petroni, 1999).

In the context of Malaysia, the 10^{th} Malaysia Plan and the Government Transformation Framework emphasize the importance of Information and Communication Technologies (ICT) as a critical foundation in facilitating sustainable economic growth of the country. ICT will continue to be a significant element in delivering and creating innovative solutions for many business opportunities, Entry Points Projects (EPP), and National Key Results Areas (NKRA) initiatives planned

under the Economic Transformation Programme (ETP) and Government Transformation Programme (GTP) (MOSTI, 2013).

Another important flagship is Multimedia Super Corridor (MSC) Malaysia, the country's most concerted project for the global ICT industry, which was launched in 1996. As one of the strategic initiatives, Malaysian government has invested heavily in setting up the infrastructure in Cyberjaya as part of its blueprint to develop the MSC. Dual electricity power resources from two separate substations were put in place to provide high availability of electricity service to the surrounding area (NST, 2013). In addition, the telecommunication infrastructure which includes the high speed fibre-optic network, which are supplied and operated by multiple service providers for the purpose of contingency and redundancy (Cyberview, 2009).

1.3 Problem Statement

As strategized in the national Knowledge-based Economy Master Plan by the Economic Planning Unit (EPU), Malaysia is now focusing on developing a knowledge-based economy. The nation is becoming more reliant on Information Technology to spearhead its national agenda to perform in the digital era (EPU, 2002). Hence, the demand to protect the continuity of critical business services in the event of any unforeseen disaster or disruption has become more critical than ever. Organizations in private and public sectors have to be more prepared to counter any undesired crisis and to ensure that the interruptions to their business operations are kept at a very minimal possibility. Any critical operational failure may cause a degradation of service quality and even a monetary loss if the duration or degree of business interruption is extensive (Yiu & Tse, 1995).

According to the Gartner Group report in 2004, it was revealed that the average cost of service downtime worldwide was at USD 42,000 (RM 132,000) per hour per incident (Vancoppenolle, 2007). Another recent survey conducted by KPMG (2014) reported that the cost of downtime for an organization for the past twelve months was over USD 100,000 (RM 360,000) for 36 percent of the organization. In detail, almost 12 percent reporting losses at over USD 1 million (RM 3.6 million) while over 28 percent indicated that they 'do not know' the total cost of the downtime. Further detailed breakdown of the estimated cost of business disruption extracted from "The 2013-2014 Continuity Insights and KPMG LLP Global Business Continuity Management Program Benchmarking Study" are depicted in Table 1.1 and Table 1.2.

Table 1.1
Estimated Cost of Business Disruption over the Past 12 Months

Estimated Cost of Business Disruption (USD)	**Percentage of Respondent (%)**
Less than $100,000	35.7
$100,000 to < $500,000	16.0
$500,000 to < $1 million	8.5
$1 million to < $5 million	7.2
$5 million or more	4.4
Do not know	28.2

Source: KPMG (2014)

Table 1.2
Estimate of Total Financial Impact of Major Disruption that Last for 5 Business Days

Estimated Cost of Business Disruption (USD)	**Percentage of Respondent (%)**
Less than $25,000	4.7
$25,000 to < $50,000	2.5
$50,000 to < $100,000	2.5
$100,000 to < $250,000	5.3
$250,000 to < $500,000	6.0
$500,000 to < $1 million	9.1
$1 million to < $5 million	18.5
$5 million or more	29.5
Do not know	19.7
Other (please specify)	2.2

Source: KPMG (2014)

The estimated business disruption covers both expenditures and internal costs, which include the estimated costs of cancelled or delayed product, loss of revenues from existing operations, loss of brand value and life time cost of lost customers. However, the downtime costs vary significantly depending on the industries, size of business, and the nature of disaster.

In Malaysia, despite the strict guidelines imposed by the central bank, several instances of major service disruptions still occurred. For instance, in October 2006, Hong Leong Bank encountered an intermittent computer system outage for 5 consecutive days before a double national festivals (The Star, 2006). In addition, on 3rd July 2008, Bursa Malaysia, the stock exchange of Malaysia, suspended for one full day stock trading following a trading system glitch (Permatasari & Hin, 2008). According to Raj (2008), a similar computer system failure also occurred in Bursa Malaysia in year 2006. In another occasion, on 22nd December 2008, Bursa Malaysia suspended its stock trading again in the afternoon for about 45 minutes due to technical system glitches; this was the second time in the week for a similar incident effecting the national stock exchange trading environment (Edy Sarif, 2008). These incidents shook the investors' confidence in the local bourses, financial market and brought dissatisfaction, and inconveniences to the individual customers and businesses nationwide. Besides the direct monetary lost, the downtime may also affect the non-financial performance which includes corporate reputation, branding, customer loyalty, regulatory compliance, and employee productivity. Based on these facts, it is undeniable that an effective BCM plays a very crucial role in ensuring an organization's survivability and remaining competitive.

The above incidents have also raised a concern that many organizations have not putting in sufficient effort in developing strategies to safeguard their business survival. The Information Security Management System (ISMS) survey conducted by National ICT Security and Emergency Response Centre (NISER) highlights that only 37 percent of Malaysian organizations are implementing BCM (Jalil, 2009). The survey however does not include measuring the effectiveness of the BCM plans and thus the number of organizations having a comprehensive and fully tested BCM program might even be less than the ones stated. Similarly, another survey conducted by Malaysian Administrative Modernization and Management Planning Unit (MAMPU) in 2010 involving 48 government agencies, reveals that only 23 percent of the agencies have initiated the implementation of BCM program, 52 percent indicated that they were still at the planning stage while the remaining 25 percent have not started the implementation (Hashim, 2010a). Generally, these statistics shows that the level of BCM implementation in Malaysia is still at a relatively early stage and more work needs to be done to increase the awareness on the importance of BCM implementation (Jalil, 2009). It is therefore a critical business imperative that a working BCM plan is established in every organization to ensure that in the event of an unplanned disruption, operations can be restored as quickly and as effectively as possible.

Having said that, there are many challenges faced by the BCM professionals in developing and maintaining the BCM framework and infrastructure. With all the expenditure associated with the preparation of essential BCM infrastructures and resources such as planning and consulting, setting up the hot-site data center and operation center and acquisition of additional hardware and software, it is crucial to present a solid business case in order to gain top management's buy in (Petroni,

1999). Peterson (2009) argued that one of the reasons many organizations fail to implement effective BCM is due to lack of financial support as great prudence in expenditures is exercised by many senior management and the board of directors. This may be due to there is no direct financial benefit or return of investment seen as a result of the BCM implementation. In order to successfully secure the funding, IT professionals should work together with the business owners to estimate the potential loss due to service downtime, identify the likelihood of risks, define the optimum recovery objectives and choose the most cost effective solution and technology (Belaouras, 2009). Another challenge is in deploying BCM in organizations which cut across several business units or implementing it on a corporate enterprise wide basis (Belaouras, 2009). These situations emphasize the importance of the supports and directives by the senior management to mandate the priority of BCM initiatives across all organization members.

In order to address the above challenges, understanding the potential benefits of BCM on organizational performance is important so that it gives a proper merit to the BCM efforts and draw attention and subsequently, obtaining full support from the senior management. Sawalha (2013b) suggests that understanding the effects of BCM on organizational performance is significant since BCM is one of the primary driving factors for enhancing an organization's ability to withstand its resilience, as well as survival in extreme internal and external pressures.

The previous studies which focused on the strategic role of BCM argued that BCM could become a source of competitive advantage for organizations but these studies have not deliberated comprehensively on how BCM can contribute to organizational performance specifically (Herbane et al., 2004). The available literatures uncover

several studies that deliberate risk management in relation to organizational performance. They have concluded that understanding the likelihood and the impact of potential disaster events can enhance organizational performance (Alesi, 2008; Herbane et al., 2004; Herbane, 2010b; Selden & Perks, 2007). On the same ground, Sawalha (2013b) believes that similar to risk management, which is considered the roots of BCM, BCM could also play an important role that may contribute to the optimization of organizational performance. In addition, Sawalha (2013b) also highlights that the role of BCM in enhancing organizational performance has rarely been deliberated or even addressed in the existing studies. Furthermore, he claims that his research is the first that examines the effects of BCM on several dimensions of organizational performance. In his qualitative study in Jordanian banking sector, one of the critical roles of BCM is to provide customers with high availability services which lays the foundations for preserving a positive corporate reputation, enhances the competitive advantage, increase profitability, and subsequently enhances the overall organizational performance.

For the purpose of this study, the researcher has introduced BCM Factors that comprise of Management Support, External Requirement, Organization Preparedness and Embeddedness of Continuity Practices. These factors refer to the critical factors that lead to the successful implementation of effective BCM program in an organization which may eventually leads to optimized organizational performance.

Notably, the major theoretical gaps in the existing literatures observed in this study lies in the insufficient studies which have investigated and established the relationships between BCM Factors and Organizational Performance. Hence, the goal of this study is to extend the limited literatures on the relationship that exists between

BCM Factors and Organizational Performance. As for the Organizational Performance dimensions, this study considers multiple performance measurements, which include financial and non-financial indicators.

In its early days, BCM focused primarily on the continuous operability and recovery of IT systems to counteract against disastrous events. Since then, BCM was considered as an IT function and the activities were led by an IT manager (Gibb & Buchanan, 2006; Pitt & Goyal, 2004; Solms & Botha, 2004). As IT is seen as one of the main drivers of BCM, this study also investigates the influence of IT Capability on the relationship between BCM Factors and Organizational Performance. Particularly, IT Capability attributes in this study includes IT knowledge, IT operations, and IT objects (Tippins & Sohi, 2003).

Based on the abovementioned practical issues and theoretical gaps, this study attempts to fill the gaps by providing empirical evidence on the relationships that exist between BCM Factors and Organizational Performance. Additionally, this study also investigates the effects of IT Capability as a moderator on the relationship between the two main constructs.

1.4 Research Questions

Based on the issues discussed in the problem statement, this study is expected to provide answers for the following research questions:

1. Does BCM Factors relate to Organizational Performance?
2. Does IT Capability relate to Organizational Performance?
3. Does IT Capability moderate the relationship between BCM Factors and Organizational Performance?

1.5 Research Objectives

The objectives of this study derived from the above research questions are as follows:

1. To determine the relationship between BCM Factors and Organizational Performance.
2. To determine the relationship between IT Capability and Organizational Performance.
3. To examine the moderating effect of IT Capability on the relationship between BCM Factors and Organizational Performance.

1.6 Significance of Study

In the current global business environment, which is full of uncertainty, organizational long-term survival is greatly dependent on the assured continuous availability of its services and operations. As asserted by Morwood (1998), BCM is significant in achieving this assurance. In such situation, the significant contributions of this study comprises of theoretical and practical aspects.

1.6.1 Significance of the Research to Academics

Firstly, this study aims to contribute to the existing theories and body of knowledge through a detailed literature review and empirical findings that establish the relationships between BCM Factors and organization performance. As highlighted by Sawalha (2013b), the gap in the literatures lies in the insufficient studies that have established the relationships that exist between BCM and Organizational Performance.

Secondly, this study broadens the existing body of knowledge by enhancing the understanding of BCM Factors and the moderating effects of IT Capability, which may influence the effectiveness of BCM implementation.

Thirdly, this study contributes to the current body of knowledge by integrating BCM Factors, organization performance, and IT Capability in a single study. Hence, this study enhances the current knowledge of Management studies of the combined effect of BCM Factors and IT Capability and their effects on Organizational Performance. Based on the existing literatures, it is discovered that there are limited studies carried out on BCM in Malaysia and in some ways this study contributes to the knowledge repositories for future references. It is hoped that this study will instigate more scholars to carry out advance studies in this domain of knowledge.

1.6.2 Significance of the Research to Practitioners

On the significance of the research to the practitioners or industry players, this study aims to further establish the importance of BCM as a strategic management tool, which must be employed by organizations to minimize the operational risks and its impacts to critical business functions. This study provides empirical evidence on the relationship that exist between BCM Factors and Organizational Performance in various sectors in Malaysia with moderating effects of IT Capability.

It is hoped that the outcomes of this study are able to assist managers and business and IT professionals to justify further investment and efforts in improving the knowledge, processes, and infrastructure of BCM. In the Malaysian context, this study provides some insights on the importance of BCM, which may help to boost the take-up by both private and public sectors. As the country is focusing on building a

knowledge-based economy and becoming highly dependent on Information Technology to spearhead its drive to be in the information age, the demand to ensure continuity of services in the event of an unplanned disaster becomes more critical than ever. All organizations providing services to the public, regardless of size, type, and nature of business, need to be more prepared for any emergency situations and ensure that any disruptions affecting their services are kept at a very minimal stage. This is also in line with the initiative of the Malaysian government in promoting Electronic Government. Thus, respective agencies must ensure the services are reliable and consistently available (Hashim, 2010b). In addition, this study also provides better understanding to the decision makers on the significant roles of BCM in relation to organizational performance and encourages their participation at the strategic level.

1.7 Scope of Study

The scope of this study focuses on BCM Factors, IT Capability, and Organizational Performance elements as derived from the literatures. In order to test the research framework and hypotheses, samples were selected from 147 organizations, which have obtained the ISO 27001 and ISO 22301 accreditation from Standards and Industrial Research Institute of Malaysia (SIRIM). The population for this study are organizations which have obtained international certification standards. With that, they are deemed to possess considerably high sense of commitment towards ensuring the business resilience by enhancing their capability and competency. This could also be seen as an indication of the organization's maturity in practising BCM. In regards to that, Sawalha (2013b) found that organizations with matured BCM processes had indicated substantial performance improvements. Furthermore, these organizations represent various industries such as financial institution, telecommunications, ICT,

utility providers, services, industrial, education, transportation, and government agencies. This study utilized quantitative method, in which questionnaires were employed for the purpose of collecting data from the identified samples. This study focuses on the organizational level i.e. from the management perception of BCM Factors, IT Capability, and Organizational Performance. As such, the target respondents for the survey were limited to managers or executive who involve in the implementation and operationalization of BCM within organizations.

1.8 Definition of Key Terms

Sekaran (2003) states that operational definition is significant in defining a concept to render that it is quantifiable, and is done by observing at the facets, behavioral dimensions or properties represented by the concept. In accordance, this study operates several key terms that are necessary to be understood clearly. The definitions of key terms used in this study are described in Table 1.3. Additionally, they are further elaborated in detail in the literature review section in Chapter 2.

Table 1.3
Definition of Key Terms

	Key Term	Operational Definition
1.	BCM Factors	BCM is defined as a holistic management process that identifies potential threats to an organization and the impacts to business operations that those threats, if realized, might cause, and which provides a framework for building organizational resilience with the capability for an effective response that safeguards the interests of its key stakeholders, reputation, brand and value-creating activities (ISO, 2012). BCM Factors are defined as the extent of the critical factors that lead to successful outcomes of BCM implementation which include management support, external requirement, organization preparedness and embeddedness of continuity practices.

Table 1.3 (Continued)

	Key Term	Operational Definition
	a. Management Support	Management Support is defined as senior management commitment in ensuring business functions and services operating at an acceptable condition under crisis situation.
	b. External Requirement	External requirement is defined as external interested parties such as the legislators, regulators and customers who motivate organizations to further enhance their service continuity.
	c. Organization Preparedness	Organization preparedness is defined as the preparedness and capability of an organization to resume its normal business functions following a disaster incident.
	d. Embeddedness of Continuity Practices	Embeddedness of Continuity Practices is defined as incorporation of continuity practices into existing processes and the high commitment demonstrated by the senior management and staffs.
2.	IT Capability	IT Capability is defined as an organization's ability to acquire, deploy, and leverage its IT-related resources in combination with other resources in order to achieve, gain and maintain competitive advantage and business objectives through IT implementation. IT Capability has three attributes namely IT knowledge, IT operations, and IT object (Tippins & Sohi, 2003).
3.	Organizational Performance	Organizational Performance refers to the organizational effectiveness and represents the results of the organization's activities or focuses on the achievement of objectives (Hammer & Champy, 1993; Henri et al., 2004). This study considers organizational performance as the combined financial and non-financial performance measurements.
	a. Financial Performance	Financial Performance encompassed measurements on revenue, market share and cost reduction.
	b. Non-Financial Performance	Non-Financial Performance encompassed measurements on operational stability, competitive advantage, reputation, growth, customer satisfaction and loyalty, employee morale and productivity.

1.9 Organization of the Thesis

This thesis is presented in six chapters.

Chapter One generally provides an overview to the study by drawing an extensive outline of the study as a whole and therefore it sets the foundation for the following chapters. This chapter is made up of the background of the study, problem statement, research questions, research objectives, significance of the research to the academician and practitioners, scope of the study, definition of key terms and finally, the outline of the thesis.

Next, Chapter Two reviews previous studies relating to the three main constructs of this study i.e. BCM Factors, IT Capability, and Organizational Performance. The review of literatures establishes the in-depth understanding on the fields of study. It covers the origination of BCM, potential organization performance benefited from the BCM and IT Capability as the moderating factor. The chapter also explains the underpinning theories and previous empirical evidences that are related to the scope of the study.

Based on that, Chapter Three outlines the theoretical platforms of this study, which focus on the conceptual framework, the overall relationship between the variables and finally the derivation of the hypotheses of this study.

Further, Chapter Four describes the methodological choices, which includes the selection of research design and methods of data analysis utilized in achieving the objectives. It also covers the research population and sampling, data collection methods, development of the survey instrument and identification of the measurement items.

Consequently, Chapter Five details the empirical results of the data analysis, as well as the findings and result of the hypotheses testing. Finally, the last chapter of this thesis, Chapter Six discusses the research findings followed by limitations of the study and recommendations for future research.

CHAPTER 2
LITERATURE REVIEW

2.1 Introduction

This chapter aims at identifying the gaps in the present body of knowledge and developing a theoretical model by reviewing the existing literatures. The first section of this chapter focuses on the overview of BCM, its evolution and current status to develop an in-depth understanding of BCM and its significant roles in enhancing organizational performance, which is at the center of this study. The following sections discusses in great detail on Organizational Performance, its measurements and how BCM relates to performance. Next, the chapter also reviews on the critical success factor of BCM, its standards and framework. Subsequently, this chapter discusses on IT Capability attributes and its moderating role on Organizational Performance. Lastly, this chapter elaborates the underpinning theories governing this study that are used as the basis in the development of the theoretical framework.

On top of that, this chapter also reviews the previous studies on the three main constructs i.e. BCM Factors, Organizational Performance, and IT Capability as the references of this study.

2.2 Overview of BCM

As an impact of the globalization and intense in the business competition, organizational risks are escalating and risk management has become an integral part for the success of practically every organization regardless of its nature of business and size. Against a

background of rising threats, BCM has emerged in various industries as a systematic approach to counteract the consequences of crises and disruptions. The evolution of BCM since the early Disaster Recovery Planning (DRP) to Business Continuity Planning (BCP) and finally to the present BCM has led to several different definitions being proffered over time, as detailed in Table 2.1.

Table 2.1
Various Definitions of BCM

Definition	**Source**
ISO 22301:2012 defined BCM as *"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."*	ISO (2012)
The Disaster Recovery Institute (DRI) defined BCM as *"the process of developing advance arrangements and procedures that enable an organization to respond to an event in such a manner that critical business functions continue with planned levels of interruption or essential change".*	Foster and Dye (2005)
The Business Continuity Institute (BCI) defined BCM as *"the act of anticipating incidents which will affect mission-critical functions and processes for the organization and ensuring that it responds to any incident in a planned and rehearsed manner".*	Gallagher (2002)
Standards, Productivity and Innovation Board of Singapore (SPRING) defined BCM as *"a holistic management process of identifying potential incidents that threaten an organization and the development of plans to respond to such incidents. It covers a broad spectrum of business and management disciplines, including risk management, disaster recovery and crisis management".*	SPRING Singapore (2005)
Bank Negara Malaysia (BNM) defined BCM as an *"enterprise-wide planning and arrangements of key resources and procedures that enable the institution to respond and continue to operate critical business functions across a broad spectrum of interruptions to the business, arising from internal or external events."*	Bank Negara Malaysia (2008)

Table 2.1 (Continued)

Definition	Source
BCM is defined as "a tool that can be employed to provide greater confidence that the outputs of processes and services can be delivered in the face of risks. It is concerned with identifying and managing the risks which threaten to disrupt essential processes and associated services, mitigating the effects of these risks, and ensuring the recovery of a process or service is achievable without significant disruption to the enterprise".	Gibb and Buchanan (2006)

A closer look at these definitions shows a number of common themes regarding BCM. The similarity represents the characteristics of BCM, which includes anticipating possible risks before they happen, safeguarding the continuity of critical business services and functions at any time, ensuring swift response, and effective recovery following an emergency situation as well as preventive measures.

In addition to the above definitions, Moore and Lakha (2006) described BCM as: 1) proactive measures that aims at developing business continuity strategies prior to unforeseen incident, 2) resource-focused actions that aims at ensuring the most effective resources being utilized), 3) efficiency-focused that aims at minimizing the wastage of resources, 4) value adding activity that aims at trimming down the cost of operational processes and maximize the levels of efficiency, 5) utilizes essential services and resources, 6) return-to-normalcy-focused that aims at supporting an organization in returning to its normal condition following a disastrous event, 7) time-focused that concentrates on immediate and long term business continuity strategies, 8) focuses on information management services, and 9) it is driven by the senior management.

Besides, Randeree *et* al. (2012) also highlight a few important features of BCM derived from the existing definitions:

1. The purpose of BCM is to safeguard the continuity of the critical business functions and services that are essential to the organization at at-least the minimum acceptable level.
2. Functions that are not within the scope of BCM which normally less critical also need to be recovered at the later stage, but not necessarily within a short period of time.
3. BCM comprises of preventive, repressive and corrective action plans where it covers both the prevention of interruptions and minimizing the effect to business in the event of disastrous situations.
4. Activities related to BCM should be prioritized with greater considerations towards critical business functions and processes.
5. BCM involves an iterative management process and it is not a one-off project. Over time, BCM will become obsolete if it is not maintained and tested on regular basis.

The primary reason that motivates organizations to develop BCM plans is to ensure that they already have a mitigation plan in place prior to a crisis event so that it will facilitate the fast and effective recovery of critical business functions following a disastrous situation (Morwood, 1998). It also aims at heightening the confidence level and developing a corporate wide resilience competency that will consequently enhance the organization's defensive capability to counter various types of threats so that organizations could ensure its continuous survival (Elliott, Swartz, & Herbane, 2010; Garcia, 2008). In addition, enterprise resilience is considered as a capability that supports organizations to withstand business disruptions in order to adapt and continue to remain relevant in the uncertain and rapidly changing business atmospheres (Starr et al., 2003).

Organizations that are capable to recover speedily and thoroughly from crises or incidents will suffer minor damage to their competitive standing. In the event if an organization is incapable to recover on time or if the recovery efforts were carried out ineffectively, the impacts on its reputation to the public may outlast the direct effects of the crises (Herbane et al., 2004). BCM itself may not necessarily lead to superior competitive advantage but without it the organization's risk exposure could be intensified. In response to that, Herbane et al. (2004) posited that the potential contribution of BCM to an organization is value preservation.

At the same time, BCM has been referred to as a systematic process through which organizations are prepared to undertake recovery activities to overcome service interruption caused by natural disasters such as storms, earthquakes, floods and disease outbreaks or man-made disasters such as fire, utility failure, terrorism, facilities loss, telecommunication network and systems failure (Herbane, 2010b). Based on the global survey conducted by KPMG (2012), the leading causes of operational interruptions, which triggered the activation of business continuity plan, crisis management and/or disaster recovery plan are severe weather (50 percent), electricity power outages (47 percent), flood (31 percent) and various IT related disruptions. Another annual survey report on BCM conducted by Chartered Management Institute (CMI) revealed the breakdown of disruption experienced by organizations from 2007 to 2012 as exhibited in Table 2.2 (Pearson & Woodman, 2012). It is seen that extreme weather conditions surpassed the loss of IT as the most commonly experienced cause of business interruption in 2010 and has remained dominant at the highest position since then. Nonetheless, loss of IT maintains the second most commonly experienced cause of business interruptions,

followed by loss of people. Based on the result of both surveys, the natural disaster has become the most frequent events causing business disruptions as experienced by organizations worldwide.

Table 2.2
Percentage of Disruption Experienced by Organizations

Threats	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
Extreme weather e.g. flood/high winds	28	29	25	58	64	49
Loss of IT	39	43	40	35	34	39
Loss of people	32	35	24	28	34	34
Loss of telecommunications	25	30	23	20	20	24
Industrial action	7	7	7	4	6	22
School/childcare closures	-	-	-	18	17	22
Transport disruption	-	-	-	22	30	20
Loss of access to site	13	16	13	22	26	20
Loss of key skills	20	21	14	15	18	19
Employee health & safety incident	17	17	16	14	15	16
Supply chain disruption	13	12	9	13	19	15
Loss of electricity/gas	-	-	-	15	16	14
Negative publicity/coverage	19	18	14	9	11	13
Damage to corporate image / reputation / brand	11	10	11	22	10	10
Loss of water/sewerage	-	-	-	6	9	8
Pressure group protest	7	6	7	6	6	8
Customer health/product safety incident	6	7	4	6	7	7
Environmental incident	6	7	7	5	7	6
Fire	6	5	5	4	4	6
Malicious cyber attack	-	-	-	-	4	6
Terrorist damage	3	3	2	1	2	2

Source: Pearson & Woodman (2012)

2.2.1 Risk Management and BCM

Borodzicz (2005) postulates that like in the past, risk will continue disturbing humankind's modern life. Since the 1960s, organizations have begun introducing basic risk management strategies in order to minimize the impacts of crises and disastrous incidents.

Later, the new millennium century has showcased many changes in the global business environment (Al-Shammari & Hussein, 2008). Kubitscheck (2001) also highlighted that the concept of organizational risk has evolved since the beginning of the 21st century where new form of risks have emerged, such as terrorism, cyber-crime, and reputational risk. These newly emerging risks exceed the speed at which solutions are being devised to counteract them. Hence, with the rising of these new risks, organizations require not only a coherent, predetermined, integrated, and well-resourced responses, but also flexible and manageable approaches to mitigate the risk (Herbane et al., 2004). When times are uncertain and risky, organizations face challenges that can be best managed by proactive planning and preparation (Gage & Reinoso, 2002).

Risk management is an effective approach to minimize undesirable consequences of risks and optimizing the benefits of uncertain conditions (Jafari, Chadegani, & Biglari, 2011). Earlier Chapman and Ward (1997) defined risk management as a process improvement, which is developed through systematic identification, assessment and mitigation of project risks. In conjunction to that, Belluz (2002) describes risk management as a technique of taking advantage of the strengths of an organization and the opportunities arising from the external business environment in order to minimize or mitigate potential

risks and future uncertainty. One of the major roles of risk management is to reduce variation of company's profit. In fact, profit consistency will minimize the likelihood of financial distress, which results in minimizing the cost of capital. Currently, organizations around the world are facing several risk management challenges including business risk, strategic risk, market risk, and operational risk. Hence, risk management is considered as one of the major concerns of the top management and the risk management activities are becoming essential to every organization. Based on the existing literature, a few applied studies have been conducted to investigate whether risk management practically leads to desirable effects on organizational performance (Jafari et al., 2011). When an organization has the ability to counteract the undesirable effects of risks and effectively respond to the environmental changes, it will be less vulnerable to economic consequences. In conjunction, ParvizRad (2002) asserted that when an organization adequately manages its risk, it will successfully adapt to changes in environmental conditions hence profit variation will be minimized.

Besides, BCM can also be considered as a subset of enterprise risk management. Business Continuity Institute (BCI) states that BCM and risk management sit side by side. BCM comprises of preventive and corrective approaches of risk management through business continuity and disaster recovery planning. From the BCI perspective, the primary goal of BCM is to prepare the organizations to manage their business functions under adverse situations by adopting effective resilience strategies, crisis management procedures, and recovery objectives in collaboration with, or as an important element of an enterprise risk management plan (BCI, 2011).

An important element of a BCM program is risk assessment. This is where the lines differentiating between BCM and risk management may appear to be unclear as both are fundamentally looking at the same threats. Vaid (2008) noted that the discussion on BCM is not complete without referring to its' operational risks. The purposes of operational risk management are to identify, evaluate and mitigate risks so that the business will not be deterred from achieving its goals (Viner, 2007). Ernst and Young in its 2008 Global Information Security Survey report suggests that organizations have to consider BCM as a critical risk management function and as part of the overall corporate strategy to mitigate risks (Ernst & Young, 2008). The suggestion is in line with Krell (2006), who argued that risk managers are increasingly recognizing BCM as an integral part of the overall enterprise risk management strategy.

In BCM, the risk assessment is carried out through the Business Impact Analysis (BIA) process. Particularly, Tammineedi (2010) posited that BIA is the foundation of BCM. There are four main goals of BIA, which are listed below:

1. To assess the potential impact to the organization in the event of business disruption.
2. To identify critical business functions or services and their maximum tolerable period of downtime (MTD), recovery point objectives (RPO) and recovery time objectives (RTO).
3. To formulate recovery strategy, minimum resources requirement, and vital records that are essential for business continuity activities.
4. To determine the priority and sequence of business functions recovery in the event of disruption.

In such condition, the major difference between BCM and risk management relates to the output of each activities (Krell, 2006). The risk management strategy primarily focuses on risk avoidance before the occurrence of an incident. In contrast, BCM strategy largely focuses on the activities that took place after the occurrence of an incident and its primary objective is to resume the business operation as effectively and efficiently as possible. The Business Continuity Institute's "Good Practice Guidelines (2005)" highlights a brief comparison of the two strategies as outlined in Table 2.3.

Table 2.3
Comparison between Risk Management and BCM

Attributes	**Risk Management**	**Business Continuity Management**
Key Method	Risk analysis	Business Impact Analysis (BIA)
Key Parameters	Impact and probability	Impact and recovery time
Type of Incident	All types of disruptive events, normally segmented	Disruptive events causing significant business interruption

Source: Business Continuity Institute (Krell, 2006)

2.2.2 Evolution of BCM

BCM has its roots from DRP that emerged in organizations during the 1950s and 1960s. In such context, Herbane (2010a) and Randeree et al. (2012) argued that organizations started to keep their backup copies of critical data, electronic or paper based away at the remote alternate sites. It was discovered that DRP was originated from the desire of United State's financial sector to secure their corporate data centers (Herbane, 2010b). During that time, the goal of DRP was to protect the computer systems rather than providing organizational or business side protection. Resulted from the disaster recovery scenario planning approach, the awareness of maintaining backup or recovery sites arose.

Initially, the offsite storage occurred only periodically, but the file backup procedures had become more frequent and complex by the late 1970s. During this period, third-party storage facilities were built to become the alternate or "hot" site. Over the later decades, DRP has evolved into a higher level of maturity into BCP and then further up into BCM.

According to Savage (2002), in the early days, the focus of BCP and DRP has been on IT. The basic DRP strategy focuses mainly on the technical aspect of the recovery from disastrous incidents and assumes that disruptions are only caused by technology failure and was not expanded to cater for wider causes of disasters that may affect the business (Elliott et al., 2010). The internal and technology focus of disaster recovery permits only partial analysis of the causes of disasters and seeks to address the effects or symptoms rather than preventing them. Hoong (2011) stated that in the context of DRP, the amount of time taken to recover from a disaster and the currency of data are the two important elements to measure its success.

In the late 1970s, DRP was expanded to cater a broader scope, forming the BCP approach that covers more extensive internal factors which has relevancy on crisis management in the organizations. This move had taken place as the nature of IT systems revolutionized from a mainframe-based data processing landscape to a more End User Computing (EUC) such as local server and PC-based. The migration to EUC spread computing component across organization (Panko, 1987). This trend had a significant impact on DRP strategy as organizations' data was now dispersed rather than centralized, in the case of the mainframe-based approach.

In late 1980's, there was a major paradigm shift from traditional DRP to BCP (Herbane, 2010b). The BCP scope was much broader than DRP and it is prepared for incidents that might disrupt critical business activities in an organization. BCP facilitates to identify and recognize the often complex causes of business interruption. It was seen that the benefit in organizational competitive advantage was made possible as a result of having BCP in place as a business centric process.

Later, in the 1990's era, the scope of BCP was further expanded to enhance the value to the organization as a whole and broaden out its focus to include the stakeholders (Elliott et al., 2010; Herbane, 2010b). This expansion of focus founded the BCM approach which includes organization wide and external considerations. This approach will provide better forecasting and protection from disaster events that may affect the organization.

According to Borodzicz (2005) and Gallagher (2002), the interest in BCM has raised significantly in the early 2000's. Alonso and Boucher (2001) and Wong (2009) stated that man-made and natural disaster, as well as the Y2K crisis and the September 11 incidents triggered a great boost to BCM and underscored the importance of BCM in sustaining organizational survival.

It is a known fact that none of the above approaches provide 100 percent guarantee to successful recovery when a disaster occurs. Irrespective of the approach adopted, there is still a likelihood that an incident will happen that will result in a disastrous situation. Nonetheless, by having a good BCM practices in place, an organization will become more resilient and its capability to recover and resume normal businesses after a disaster

incident is enhanced. Having discussed that, the evolution of BCM periods, drivers, practices and nature of progress can be seen in Figure 2.1.

Figure 2.1
The Evolution of BCM
Source: Herbane (2010b)

In some philosophies, DRP and BCP are grouped together into the term business resiliency planning (BRP). In most organizations, BRP is sometime synonymous with the term BCM. The similarity between DRP and BCP sometimes leads to a certain degree of overlapping, interchangeable, complimentary, and seemingly ambiguous concepts and activities (Elliott et al., 2010). In the digital era, a balance between the technological and business focus is highly relevant as businesses become even more dependent on technology to deliver services. In short, Table 2.4 compares the characteristics of both DRP and BCP.

Table 2.4
Comparison between DRP and BCP

Characteristic	**Disaster Recovery Planning (DRP)**	**Business Continuity Planning (BCP)**
Practice	Standard	Better
Vision	Old	New
Focus	IT	Business
Staff	IT	Multi-Disciplinary
Structure	Existing	New
Aim	Protect core operations	Protect organization
Emphasis	Recovery	Prevention
Recovery Approach	Single-focus	Holistic
Reaction	Reactive	Proactive

Source: Elliott et al. (2010)

2.2.3 A Global Overview of BCM

In United States, the business continuity standard has been in practice for quite some time. The introduction of the US Foreign Corrupt Practices Act (FCPA) in 1977 initiated a series of drivers that would implicitly or explicitly require the establishment of DRP and BCM programs in organizations (Herbane, 2010b). FCPA has also been cited as an early piece of legislation that requires organizations to make specific arrangements for keeping and protecting vital company records from destruction. The policies and practices for disaster-based BCM have dramatically changed since the September 11 tragedy in areas such as assessments of the public impact of risk (Lodge, 2009). The post September 11 landscape can be characterized by a notable acceleration in the introduction of guidelines and regulations for organizations operating within financial services sector, stock exchanges, utilities, and public authorities. Notable examples for that include the

Federal Reserve Board, Office of Comptroller of Currency, and Securities and Exchange Commission (FRB-OCC-SEC) Guidelines for strengthening the resilience of the US financial system, National Institute of Standards and Technology Special Publications 800 Series, Security guidelines for the electricity sector, and New York Stock Exchange Rule 446 (Herbane, 2010b). The characteristic of each of these regulations is the requirement that organizations should possess demonstrable business continuity and disaster recovery processes within which are minimum safeguards for highly interwoven sectors in terms of business and technology.

In Canada, the principal business continuity standard is Z1600, which was established in 2008 by the Canadian Standards Association (Herbane, 2010b). Z1600 was developed based on the U.S. National Fire Protection Association (NPFA) 1600 standard, and has been adapted to support Canadian interests. Like NFPA 1600, the Canadian standard addresses both emergency management and business continuity requirements.

At the leading edge of business continuity and disaster recovery for many years, the United Kingdom not only has an established BCM standard such as BS 25999, but also legislation, in the form of the Civil Contingencies Act of 2004 (Kirvan, 2009). Both of these initiatives underscore the country's commitment in preparing for and responding to various incidents. In addition, BS 25999 is also widely used as a baseline BCM standard by many member countries of the European Union. In the aspect of IT disaster recovery, the British Standards Institution has developed BS 25777 Code of practice for information and communications technology continuity management (Herbane, 2010b).

While those are standards for countries in the west, the key standards in Asian countries include Bank of Thailand Guideline on BCM; Reserve Bank of India Guidelines for Relief Measures; Business Continuity Guidelines from the government of Japan's Central Disaster Management Council; Monetary Authority TM-G-2 standard for BCM in Hong Kong; and the 7/25/PBI/2005 risk management certification for banks in Indonesia (Kirvan, 2009). These standards provide clear guidelines on the requirement of BCM best practices to be adopted by organizations.

In the neighboring countries, the latest standard in Singapore is SS 540 Business Continuity Management that was established in 2008 (Kirvan, 2009). The standard highlights the country's growing commitment towards business continuity and resilience. It is the latest in a series of standards that has included the first national standard that mandates the provision of BCM by vendors and other designated third-party organizations (Heng, 2012). The SS 540 was developed based on the Plan-Do-Check-Act (PDCA) process advocated by BS 25999 and other key ISO standards such as ISO 9001, ISO 14001, and ISO 27001.

The current trend around the globe shows that compliance with business continuity standards is a good business. This demonstrates that organizations are firmly committed to protecting their businesses and ensuring that they can survive in the aftermath of disastrous events. It also shows that the organizations recognize the importance of identifying and managing risk, and protecting their investments in people, process, and technology. On the other hand, lack of interest in or reluctance to implement business continuity can be reversed by mandatory legislation or standards.

Currently, only a few countries have made BCM mandatory to any extent, as noted previously. In addition, certain vertical markets such as banking also mandate it through regulations such as BASEL II, regardless of the country. Besides the country-specific standards, the International Organization for Standardization (ISO) is also addressing business continuity, and could forge the basis for a global standard. Over time, market forces such as competition and reputation may spur acceptance and adoption of business continuity standards. Clearly, the interest in business continuity and related activities are growing worldwide with appropriate supports by respective government. The issue of compliance moves at different speeds depending on the country. Eventually, acceptance of and compliance with BCM standards and legislation will increase the ability of public and private organizations to ensure their resilience.

2.2.4 BCM Initiatives in Malaysia

In Malaysia, the implementation of BCM varies in different types of industry. In general, industries with most comprehensive BCM program, in descending order, are financial services, telecommunication, multinational oil and gas companies, airline, and aerodrome operators (Lin, 2008). Meanwhile, other industries are less structured and are more on ad-hoc basis.

Realizing the importance of BCM, the Malaysian Government is putting efforts to promote the professional practices of BCM among the organizations in the country. In regards to that, the following sections discuss the initiatives undertaken by both private and public sectors in strengthening their BCM practices in Malaysia.

2.2.4.1 Private Sector

In the Malaysian private sector, SIRIM and Bank Negara Malaysia have spearheaded the initiatives by the issuance of the MS 1970 BCM Framework and Guidelines on Business Continuity Management respectively with the objective of promoting sound BCM practices to their member institutions and corporate organizations in the nation (DRI Malaysia, 2015).

In 2007, SIRIM together with a team of industry experts have developed the first Malaysian MS 1970 Business Continuity Management Framework to assist organizations in setting up a BCM program. The MS 1970 was established through consensus by a committee that consists of a balanced representation of users, producers, consumers and others with relevant interests, as may be appropriate to the BCM practices (SIRIM, 2007). To the greatest extent possible, this framework was aligned to or is an adoption of existing international standards. Particularly, the MS 1970 Framework describes the structured process for designing, developing, implementing, and maintaining a BCM program, which is applicable to any organization in any sector or industry. The scope is limited to identification of processes involved in establishing a BCM program, the recommended sequence of activities and the minimum deliverables expected from each processes. However, the document is not a requirement or a specification type standard. Hence it is not intended to be used for certification purpose.

The second major initiative in the private sector is the establishment of Guidelines on Business Continuity Management by the Malaysian central bank, BNM. It has been the objective of the Ministry of Finance to ensure a chain of stable financial systems in the

country. The aim of the guidelines is to provide guidance and impose minimum requirements of BCM on financial institutions in order to ensure the resumption of critical services and operations within a pre-determined period of time following a major business interruption (Bank Negara Malaysia, 2011). Minimum disruption to critical business functions would increase the public confidence in the institution as well as the local financial system. The enhanced stability would also mitigate the reputational risk to financial institutions. These guidelines address BNM's expectations for financial institutions to implement comprehensive and effective BCM program so as to improve its resilience and always prepared for any contingencies. Generally, the objectives of the BCM guidelines are to ensure that all financial institution in Malaysia:

1. Have in place a comprehensive BCM program that includes a business continuity policy.
2. Set up a comprehensive BCM program to develop, implement, and test the business continuity and disaster recovery plan.
3. Continuously review and update the business continuity plan and disaster recovery plan to reflect changes in the business operation.
4. Provide adequate information relating to BCM initiatives to the Board of Directors to enable them to discharge their responsibilities under the guidelines.

In 2013, the BNM enhanced its roles as the leader for financial services industry with respect to BCM and participated in the annual national level cyber drill exercise. The exercise which was led by Majlis Keselamatan Negara (National Security Council) was

engaged to ensure higher integration between financial institution crisis management and the national level BCM infrastructure.

The third move by the government to embrace BCM best practices is the directive to enforce all Critical National Information Infrastructure (CNII) organizations to be certified in the MS ISO/IEC 27001:2007 Information Security Management System (ISMS). The Malaysian Cabinet on 24th February 2010 has decided that private and public agencies listed in the CNII must be certified in MS ISO/IEC 27001:2007 within a three-year period (MAMPU, 2010a). The implementation of ISMS certification is to be coordinated by the relevant ministries and agencies that are responsible over the specific CNII. Among the required domain in the ISMS certification is BCM implementation. Based on CyberSecurity (2015), CNII is classified as those assets (both real and virtual), systems and services which are critical to the country that their destruction or incapacity would cause devastating effects on the:

1. Economic strength where the national key growth area can effectively compete in the global market while maintaining favorable standards of living to the citizen.
2. Projection of the country's image towards enhancing stature and sphere of influence.
3. Defense and security that guarantee sovereignty and independence whilst maintaining internal security.
4. Government's ability to perform and deliver minimum essential public services.
5. Public health and safety that deliver and manage optimal health care to the citizen.

Such aspiration is possible because in general, the CNII entities consist of ten critical sectors or industries, namely:

a. Banking and Finance
b. Emergency Services
c. Energy
d. Food and Agriculture
e. Government
f. Health Services
g. Information & Communications
h. National Defense & Security
i. Transportation
j. Water

Although the literature recognizes the initiatives undertaken by the several parties to promote sound BCM practices among Malaysian organizations, the level of BCM adoption by the private sectors in Malaysia is still relatively low. Thus, further effort is required to increase the awareness on the importance of BCM to the survival of the organization. Learning from the practices by other countries, the support and enforcement by the government and regulatory bodies are also crucial as the issue of compliance is normally treated at a higher priority in the corporate agenda.

2.2.4.2 Public Sector

Based on a survey by MAMPU in 2010, involving 48 government agencies, only 23 percent have started implementing BCM, 52 percent were still at the planning stage while

25 percent have not started the implementation (Hashim, 2010a). In addition, the survey also revealed that 45 percent of the agencies have hired external consultant to develop their BCM plan, while only 55 percent have utilized their own internal resources for the same purpose. Therefore, in order to boost-up the deployment of BCM in the public sector, the Director General of MAMPU has issued a directive to all public sector agencies dated 22nd January 2010 entitled 'Pengurusan Kesinambungan Perkhidmatan agensi Sektor awam' (MAMPU, 2010b). This document provides the milestones, policy, and guidelines for BCM implementation in public sector agencies. The objective of the document is to encourage public sector agencies to implement BCM within their organization and be prepared for any calamity within the agency. Additionally, the document also complements the disaster and relief management under the purview of the National Security Council.

Generally, the primary business of the public sector is service delivery. Hence, the government has coined or rebranded BCM in the public sector as 'Pengurusan Kesinambungan Perkhidmatan' (Service Continuity Management) (Hashim, 2010b). The goals of BCM implementation in the public sector agencies include the following:

1. To minimize the impact of a disruption or disaster to the service delivery system of the agency;
2. To ensure the continuity in the services provided by the agencies especially to the public; and
3. To ensure compliance to best practices such as MS ISO/IEC 27001:2007 Information Security Management Systems.

Hashim (2010b) asserted that BCM is not only important but the need for it is critical, especially in current situation, in which most of the government services are delivered online. Hence, implementing BCM in the public sector has become a necessity since the citizens are demanding for a reliable services and any failure is not tolerated. She added that since the government is promoting Electronic Government, therefore the respective agencies must ensure their availability too.

According to the directive from MAMPU (2010b), the initial BCM implementation is emphasized on the front line agencies, where any disruption in service delivery will cause major impact to the public at large. The front line agencies refers to public sector agencies that deal directly and provides counter services to the public as their main functions, or agencies that provide emergency services, security or savior to the public or agencies that directly impact the welfare of the people and national interest. Based on the five-year (2010 to 2015), the implementation of BCM is divided into two phases. The first phase (from 2010 to 2011) focuses on central and front line agencies, while the second phase (from 2012 to 2015) covers the remaining agencies. Since BCM is an ongoing process, agencies which have completed the initial setup should continue maintaining and improving their BCM program. In conjunction, the high level plan is depicted in Figure 2.2.

Due to unavailability of information on the latest development of this initiative, the current status of the BCM adoption in the public sector is unknown. However, based on survey responses received from the government agencies that participated in this study, it reflects that most of the agencies have already established a proper BCM program in place.

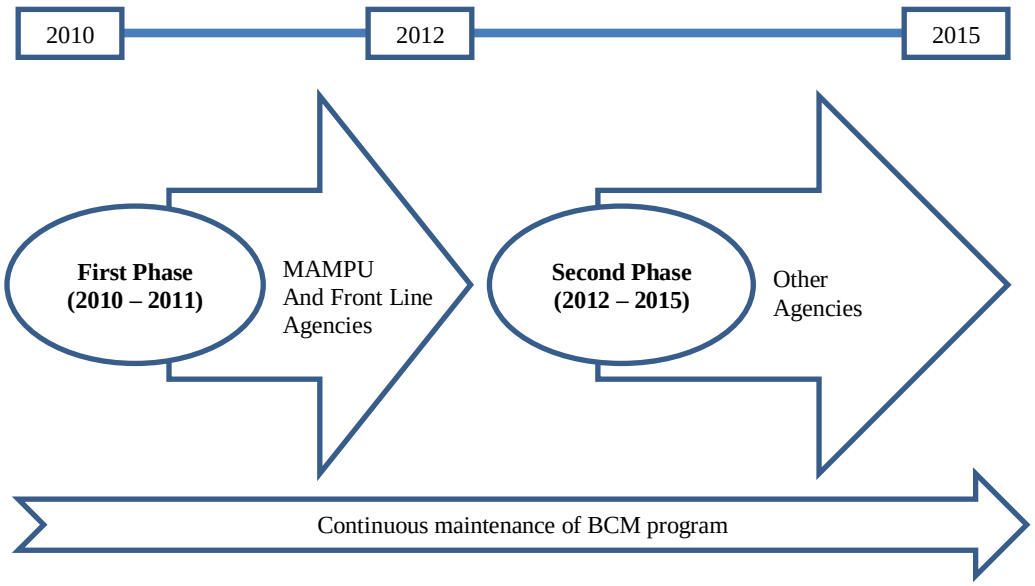

Figure 2.2
High Level Implementation Plan of BCM in Public Sector
Source: MAMPU (2010b)

2.3 Organizational Performance

Organizational Performance refers to the ability of an organization to accomplish its corporate goals such as profitability, strong financial results, sizeable market share, quality products, customer satisfaction, and long-term survival, using appropriate strategies and action plans (Sawalha, 2013b). It is a continuous innovation and advancement process that remains evolving in line with the organizational growth that necessitates the involvement of all levels of management and staff within the organization (Ference, 2001; Sener, Varoglu, & Aren, 2011). High-performing organizations not only aim to maintain at a predefined level of performance, but also continuously strive to raise the organizational performance by enhancing performance elements.

With the pressure of global competition, Organizational Performance measurement has become more and more crucial to ensure the continued survival of organizations. According to Škrinjar, Bosilj-Vukšic, and Indihar-Štemberger (2008), organizations that aim to attain business excellence must develop a performance measurement system. The measurement of Organizational Performance consists of the actual output or achievement of an organization measured against its anticipated outputs i.e. goals and objectives (Škrinjar et al., 2008). Besides, Organizational Performance is also used to assess how well an organization is performing in terms of quality, profits, and market share benchmarked with other organizations in the same segment (Sawalha, 2013b). Hence, Organizational Performance can be considered as a manifestation of the productivity and it allows organizations to give more attention on areas that require improvement by measuring how well a specific function is executed in terms of cost, time, and quality. Nevertheless, Venkatraman and Ramunujam (1986) added that Organizational Performance has also been applied as an indicator to assess how well an organization succeeds its objectives.

While Organizational Performance is perhaps one of the most extensively used as a dependent variable in organizational-based research, at the same time it still remains vague with loosely defined constructs (Rogers & Wright, 1998). Green and Inman (2007) posited that there are several studies which have used different techniques in measuring Organizational Performance. Some studies have measured performance based on quantitative financial or monetary measures, while little emphasis on the qualitative elements of performance measurement. In contrast, Maskell (1992) recommends that performance measures should mainly use non-financial performance methods and change

overtime as the organizations evolve. Organizational Performance should also involve qualitative measures such as learning and innovation, customer service and satisfaction and product quality (Kaplan & Norton, 1992; Neely, 2002).

Robbins and Coulter (2012) posited that Organizational Performance can be measured through the effectiveness and efficiency of organization's objectives achievement. The Organizational Performance includes three specific areas of organizational results, 1) financial performance that is encompassed of profitability, return on assets, return on investment, and other financial measures, 2) product market performance which includes sales, market share and others, and 3) shareholder return that includes total shareholder return, economic value added and others (Richard, Devinney, Yip, & Johnson, 2009). Similarly, Kanji (2002) had established four main areas of Organizational Performance measurement which include, 1) increase stakeholder value, 2) accomplish process excellence, 3) enhance organizational learning, and 4) customer satisfaction. Kanji's four main areas are in line with the Balanced Scorecard perspective as written by Kaplan and Norton (1996) namely, 1) financial perspective recognizes how an organization wishes to be viewed by the shareholders which includes Return on Investment (ROI) and economic value added, 2) the customer perspective determines how the an organization wishes to be viewed by its customers which includes market share, customer satisfaction and retention, 3) the internal business process perspective defines how an organization conducts its business processes in order to satisfy its shareholders and customers which includes new product development, quality, response time and cost, and 4) the organizational learning and growth perspective entails the improvements and changes which an organization desires to achieve its intended objectives which includes

information systems service availability and employee satisfaction. Kanji (2002) also suggests that the four dimensions of financial, customer, employee, and internal processes are able to present a holistic view of the Organizational Performance.

In addition, Sink (1985) recommends that the measurement of Organizational Performance includes: 1) effectiveness which refers to the degree to which a system accomplishes what it should accomplish, 2) efficiency which refers to the degree to which the system uses the appropriate processes, 3) quality which refers to the degree to which a system comply to the specifications, requirements or expectations, 4) profitability which refers to the relationship between revenues against costs, 5) quality of work life which refers to the way participants in a system react to socio-technical aspects, 6) innovation which refers to how well the organization does at introducing new, improved, added functionality products, and 7) productivity which refers to the relationship between the outputs produced by a system and the inputs to generate those outputs.

Learning from the above literature, this study considers the organizational performance as multi-dimensional achievements that can be measured by financial and nonfinancial indicators. Both elements should be consolidated in measuring the organizational performance in order to give a complete and unabridged quantification of the performance measurement made throughout the study. Table 2.5 summarizes the above mentioned studies and some others, with categorization of financial and non-financial organizational performance measures.

Table 2.5
Summary of Selected Studies on Organizational Performance Measures

No	Author	Non-Financial Performance Measures	Financial Performance Measures
1	Sink (1985)	1. Effectiveness 2. Efficiency 3. Quality 4. Quality of work life 5. Innovation 6. Productivity	1. Profitability
2	Järveläinen (2013)	1. Decreased business disruptions 2. Facilitates customer acquisitions 3. Competitive advantage 4. Company growth 5. Improved reputation 6. Able to survive in the market	1. Market position
3	Jang and Lin (2008)	1. Market performance 2. Operational performance	1. Market shares
4	Kamal and Agrawal (1997)	1. Process improvement - reduce the number of activities	
5	Sun (2000))	1. Customer satisfaction 2. Competitive advantage 3. Employee's satisfaction 4. Environmental protection	1. Financial profitability
6	Terziovski, Samson and Dow (1997)	1. Delivery time 2. Guarantee costs 3. Quality costs 4. Rate of defects 5. Productivity 6. Customer and employee satisfaction 7. Innovation and number of employee	1. Cash flow 2. Market share 3. Sales 4. Export

Table 2.5 (Continued)

No	Author	Non-Financial Performance Measures	Financial Performance Measures
7	Bontis (1998), Bontis, Chua and Richardson (2000)		1. Industry leadership, future outlook 2. Profit, profit growth, sales growth 3. After-tax return on assets 4. After-tax return on sales 5. Overall response to competition 6. Success rate in a new-product launch 7. Overall business performance
8	Feng, Terziovski, and Samson (2008)	1. Cost reduction 2. Productivity 3. Quality improvement 4. Customer satisfaction 5. Internal procedures 6. Employee morale 7. Corporate image 8. Competitive advantage 9. Access to global market	1. Market share 2. Profitability
9	Ascari, Rock, and Dutta (1995) Jelinek et al. (1999)	1. Productivity - improved financial strength 2. Productivity - decrease in staff turnover	
10	Naveh and Marcus (2004)	1. Defect rate 2. Cost of quality 3. Productivity 4. On time delivery to customer 5. Customer satisfaction.	1. Market share 2. Sales 3. Export growth

Based on the above analysis, instead of relying on a single dimensional measure of performance, this study considers a multidimensional approach that includes both financial and non-financial measures is more appropriate, especially when measuring practices and performance (Ketokivi & Schroeder, 2004). The performance indicators include revenue, market share, cost reduction, operational stability, competitive advantage, reputation, customer satisfaction, employee morale and productivity. The perceived measures of both Financial and Non-financial Organizational Performance are applied since subjective measures has been studied to be correlated with the objective measures of performance (Dess & Robinson, 1984). Additionally, the past studies also discovered that the correlation and reliability between objective and perceived measures are positive and significant (Bart, Bontis, & Taggar, 2001; Hansen & Wernerfelt, 1989; Lyles & Salk, 1996). Likewise, previous studies carried out by Bontis (1998), Idris (2011), and Nura and Osman (2012) also confirmed that the subjective measures of Financial and Non-Financial Performance are acceptable. The rationale for the usage of subjective data rather than actual or objective data arises from the argument by Merchant (1981) who posited that a subjective measurement is adequate since it is quite complicated to measure Non-Financial Performance through objective data in a cross-sectional study.

The following section elaborates in more detail on the effect of BCM on the organizational performance in the context of this study.

2.3.1 BCM and Organizational Performance

The current literature presents a number of studies that deliberate risk management and its relation to Organizational Performance. According to Sawalha (2013b), these studies have indicated that by understanding the impact and likelihood of potential incidents, it could enhance the organizational performance. In this context, risk management is exercised by organizations to minimize the adverse impacts of internal and external risks that may affect its activities and performance. Risk management also supports organizations in responding to uncontrollable market conditions to sustain consistent profitability, which eventually leads to optimized organizational performance (Jafari et al., 2011; Saleem, 2011).

Understanding the effects of BCM on organizational performance is crucial because BCM is one of the key driving forces to strengthen firm's ability to withstand risks and survive under extreme organizational and environmental pressures. According to Sawalha (2013b), the role of BCM in enhancing organizational performance has rarely been investigated or even discussed in the existing literatures. He believes that similar with the objective of risk management, BCM can also contribute significantly to the optimization of organizational performance.

Several existing literatures that focus on the strategic role of BCM posited that BCM can provide organizations with sources of competitive advantage, but these studies have not deliberated or explained comprehensively on how BCM could influence Organizational Performance specifically (Alesi, 2008; Herbane et al., 2004; Herbane, 2010b; Selden & Perks, 2007)

Additionally, Sawalha (2013b) asserted that the relationship between BCM and Organizational Performance has not been deeply researched. He claims that his research was the first initiative that examined the influence of BCM on various elements of Organizational Performance, subsequently highlighting the value add and significance of BCM strategically. In his study on Jordanian banking sector, involving 11 out of 17 banks, one of the most important roles of BCM is to provide customers with uninterruptible and secured banking services at all time. This capability lays the foundations for preserving a positive corporate reputation, enhances the competitive advantage against the competitors, increase profitability, and subsequently improves the overall organizational performance. In contrast, if customers frequently experience disruptions or delays while conducting their banking transactions, they are most likely to switch to other banks, seeking for better services (Sawalha, 2013b). The qualitative study also reveals that BCM has a significant role in improving profitability. Based on the interviews, 100 percent of respondents asserted that BCM implementation ensures banking operations and critical business functions are preserved uninterrupted before, during, and after an unexpected incident, hence making sure that banking transactions are carried out continuously by the customers (Sawalha, 2013b). Besides Financial Performance, his study also discovered that BCM also effects on several Non-Financial Performance indicators such as effectiveness, efficiency, quality, innovation, productivity, and quality of work life. The findings in Jordanian banks, especially in those that have established BCM program for more than five years indicate that significant organizational performance improvements have been gained. Nonetheless,

performance improvements have also been realized by those banks which have embraced BCM in a shorter period of time i.e. less than five years.

Hence, this study seeks to extend the limited literature on BCM and its effect on organizational performance.

2.4 BCM Critical Success Factors

There are various definitions of critical success factor by many social science scholars. For the purpose of this study, critical success factor is defined as a few performance measures of which, if they are accomplished satisfactorily, they will assure successful competitive performance for organizations. Rockart (1979) asserted that they must go right. Thus, special attention must be given to these factors.

This study specifically examines the relationship between BCM Factors and Organizational Performance with the moderating effect of IT Capability. Based on the literatures, there are various critical success factors of BCM. For the purpose of this study, the critical success factors are also referred to as factors. In conjunction, Table 2.6 exhibits some of previous studies (by Järveläinen (2013), Chow and Ha (2009), Hoong (2011), Chow (2000), Herbane et al. (2004) and Karim (2011)) with different factors.

Table 2.6
Past Studies on BCM Factors

No	Title / Authors	Type of Research and BCM Factors (IV)	Measurement (DV)	Finding
1	IT incidents and business impacts: Validating a framework for continuity management in information systems (Järveläinen, 2013)	Empirical Survey 1. Management Support 2. Organizational alertness and preparedness 3. Embeddedness of Continuity Practices 4. External Requirements	Perceived business impact 1. Facilitating customer acquisition 2. Competitive advantage 3. Kept market position 4. Growth of company. 5. Improve reputation 6. Survive in the market 7. Decreased business disruptions	1. Management Support is a crucial. 2. External Requirements imposed by regulator and customers could influence senior management to improve BCM. 3. Embeddedness of business continuity practices is important in minimizing the effects of incidents. 4. Uninterrupted services require commitment from the senior management, business units and staff.

Table 2.6 (Continue)

No	Title / Authors	Type of Research & BCM Factors (IV)	Measurement (DV)	Finding
2	Determinants of the critical success factor of disaster recovery planning for information systems (Chow & Ha, 2009)	Empirical Survey 1. Documentations 2. Steering committee 3. Testing 4. Policy and goals 5. Training 6. Maintenance and staff involvement 7. Minimum IT processing requirements 8. Senior management commitment 9. Prioritization of IS critical functions 10. Internal and external backup system		This paper identifies 10 DRP's critical success factor for information system functions.

Table 2.6 (Continue)

No	Title / Authors	Type of Research & BCM Factors (IV)	Measurement (DV)	Finding
3	Factors Influencing the Success of the Disaster Recovery Planning Process: A Conceptual Paper (Hoong, 2011)	Literature Review/Research 1. Planning (project management, maintenance) 2. Technology (IT availability, technology competency, infrastructure advantage) 3. Organization (business continuity benefits, top management commitment, organization readiness) 4. Environment (regulatory requirement, SLA, business environment) 5. Individual (staff competency, roles & responsibility, stakeholder relationship)		It describes the factors inherent in existing BCM and DRP procedures and how they could be integrated to achieve effective and successful implementation.
4	Success factors for IS disaster recovery planning in Hong Kong (Chow, 2000)	Empirical Survey Top 5 factors: 1. Management Support 2. Adequate Financial Support 3. Appropriate backup site 4. Off-site storage of backup media 5. Training		The research identifies five success factors of DRP in 4 main industries i.e. financial services, manufacturing, hotel, and trading. However, the order of the success factors may vary depending on industries.

Table 2.6 (Continue)

No	Title / Authors	Type of Research & BCM Factors (IV)	Measurement (DV)	Finding
5	Business Continuity Management: time for a strategic role? (Herbane et al., 2004)	Case-based observational and semi-structured interview. 1. Speed of recovery (organization alertness and preparedness) 2. Configuration resilience 3. Obligation (regulation and legislation) 4. Embeddedness of BCM process		BCM can be integrated with the conventional strategic activities of an organization.
6	Business Disaster Preparedness: An Empirical Study for measuring the Factors of Business Continuity to face Business Disaster (Karim, 2011)	Empirical Survey 1. Strategic management 2. Risk analysis 3. Resources 4. Training and awareness 5. Documentation 6. Information 7. Life Cycle Management	Successful preparedness for potential threats	There is a significant effects of strategic management, risk analysis, training and awareness, and information life cycle managements on the successful preparedness to disaster.
7	Critical Dimensions of Disaster Recovery Planning (Hoong & Marthandan, 2014)	Empirical Survey 1. Technology 2. Organization 3. Environment 4. Individual	Successful DRP	Identified 8 critical dimensions namely IT availability & reliability, technology competence, perceived BCM benefits, top management support, external pressure, business environment, staff competency, and roles & responsibility.

Based on the above studies, previous researchers have identified several critical success factors which contribute to effective BCM implementation in different setting. However, some of these factors are overlaps in term of definition and usage of different terminology to represent the same factor. This issue arises as there is no standard terminology adopted by the researchers.

Consequently, this study focuses on examining the selected BCM critical success factors adapted from previous studies. The selected BCM Factors will be used as the independent variables in this study, which include 1) management support, 2) External Requirements, 3) Organization Preparedness, and 4) Embeddedness of Continuity Practices. These four factors are selected as their definitions and scopes are able to represent all of the critical success factors in the previous studies. Furthermore, these factors are important elements to ensure the successful implementation of BCM in an organization. The details of each factor are discussed in the following sections.

2.4.1.1 Management Support

The senior management commitment in ensuring business functions and services operating at an acceptable condition under crisis situation and managing an organization's risk exposure to service disruptions are crucial elements of the overall corporate strategy (Laurent, 2007).

Several researchers posited that it is essential that business continuity program to be initiated, sponsored and authorized by senior management from the preliminary phase of its implementation (Arend, 1994; Chow, 2000; Yen, Chou, & Hawkins, 2000). In the context of BCM, it is a long term commitment that necessitates a substantial financial

investment by an organization (Cerullo & McDuffie, 1994; Chow, 2000). Hence, only strong engagement by the senior management can warrant the on-going provision of monetary support and other critical resources for developing and maintaining a BCM program. In conjunction, Botha and Solms (2004) argued that senior management is the sole corporate entity who can grant substantial amount of financial capital, other resources and time to undertake BCM life cycle activities (Cerullo & Cerullo, 2004). Thus, it is important that the senior management should thoroughly understand and authorize all BCM-related activities prior to providing their ultimate concurrence (Rosenthal & Sheniuk, 1993).

Earlier, Payne (1999) argued that lack of senior management commitment would ultimately result in poor executions, lack of corporate-wide involvement and in the end, program failures. In a similar manner, a lack of senior management understanding also hinders the effectiveness of a BCM program implementation (Pitt & Goyal, 2004). In addition, Dominic Elliott, Swartz, and Herbane (1999) recommend that one or more members of senior management team to be part of the designated BCM committee because such move will greatly increase the opportunities that senior management will be committed to the BCM-related activities and all the required financial supports and resources are allocated and accounted for. Rohde and Haskett (1990) also posited that staff will normally undertake the BCM initiatives seriously if it is apparent that the management team has given a full commitment and support to the program. It is also crucial that senior management assumes full responsibility for the implementation of BCM activities and thus, they should be provided with regular updates on the progress and issues (Ivancevich, Hermanson, & Smith, 1998; Seow, 2009).

Ginn (1999) asserted that three reasons to support the importance of management commitment are: 1) senior management finalizes and approves the annual budget to fund the BCM initiatives, 2) senior management provides the direction on how and when the BCM should be deployed in the organization, and 3) senior management determines the level of support and cooperation that should be rendered by all affected units when a BCM is activated in the organization. Accordingly, it is the senior management's obligation to ensure that the necessary measures have been undertaken to maintain business continuity, and that the stakeholders namely shareholders, employees, and customers anticipate that their interests are well protected (Socka, 1998). Without the sponsorship and visionary leadership from the management, most initiatives will not be effective and lesser chance for innovation and mobilization of potencies for organizational transformation (Attaran, 2003).

Based on the discussions in the previous paragraphs, it can be concluded that senior management support is one of the key factors that determines the tipping point between potential success and failure of a BCM program, which requires appropriate attention when implementing a BCM project. The existence of management support is normally indicated by strong sponsorship behind the initiation of the business continuity project and active participation in BCM initiatives by the senior management.

2.4.1.2 External Requirement

As discussed in previous sections, BCM is deployed to mitigate the risk of business interruptions on the delivery of critical business functions. In today's competitive environments, BCM is no longer an optional task in large organizations in public and

private sectors. The value preservation within an organization is increasingly becoming a matter of concern of external interested parties such as the legislators and regulators, who consequently oblige organizations under their purview to comply with business continuity provisions. The regulatory requirements enforced by the government authorities and sometime even by the customers will motivate the management to further enhance the service continuity of their Information Technology and systems (Herbane et al., 2004). The survey conducted by the Institute of Chartered Management in 2012 revealed that the drivers of BCM vary depending on the sector. The respondents agreed that the central government is the driver for 50 percent of the organizations in public sector, but only 14 percent of the organizations in Non-profit sector, and 10 per cent of the organizations in private sector. While the potential or existing customers are the strongest driver of the organizations in private sector (48 percent), it is the second strongest for organizations in the not-for-profit sector (34 percent), and the fifth for organizations in public sector (22 percent).

Besides the type of sector, the external drivers also vary depending on the size of organization. In accordance, Table 2.7 depicts that customers are the key driver for smaller organizations, while corporate governance and regulation are more significant for larger organizations.

Table 2.7
Top 3 External Drivers by Organization Size

Small (10 - 50 employees)	**%**	**Medium (51 - 250 employees)**	**%**	**Large (> 251 employees)**	**%**
Customers	40	Customers	39	Corporate Governance	55
Corporate Governance	25	Regulations	37	Regulations	42
Regulations	16	Corporate Governance	36	Central Government	37

Source: Pearson & Woodman (2012)

Herbane et al. (2004) also argued that, while such external drivers have uplifted the importance of BCM to a greater level within the corporate governance agenda, they have also challenged the organizations to assess whether their actions should be merely to conform with the minimum requirements as outlined by the regulators or to take on a more strategic approach i.e. to exceed the minimum requirements with the intention of enhancing their BCM capabilities further. In some countries, health care and financial sectors are obliged to make sure that service continuity in their information system operations are in accordance to regulatory guidelines (Elliott et al., 2010). Nowadays, customers do not anticipate the delivery of goods and services to be disrupted at any time for any reason. As a result, customers will soon switch to another web service provider if the web pages do not response within a reasonable time (Parasuraman, Zeithaml, & Malhotra, 2005). To certain extent, consumers of business-to-business who are highly dependent on their suppliers sometime demand for assurances on matters such as compliance with business continuity guidelines and audit reports before proceeding on the engagement of long-term strategic relationships (Choudhuri, Maguire, & Ojiako, 2009; Woodman, 2008).

The role of the government in demanding organizations to pursue risk reduction measures is not new. According to Peterson (2009), in United Kingdom, government authorities such as the Financial Services Authority (FSA) considers that expenditure on BCM is a part of the cost of operating business and it has to be funded appropriately. Similarly, utility service providers and emergency services must ensure full BCM capability incorporated into their operation. Likewise, the United States' Sarbanes-Oxley Act has imposed a condition, in which the directors and executives of organizations are personally responsible for failures of control within their organizations (Peterson, 2009). Despite this act has created much criticism and scrutiny, it remains legal and has escalated the importance of BCM to the attention of senior management. Similarly, the United States Foreign Corrupt Practices Act (1977), in which managers or executives in organization's would be personally held liable for the protection of company assets, is often considered as one of the main drivers of business continuity practices in the country. More recently, the Presidential Decision Directive 67 (PDD67) has demanded US Federal Agencies to set up provisions for the 'continuity of operations' (a public sector synonym for business continuity) in their organizations (Herbane et al., 2004).

In the Malaysian context, there are regulatory requirements on BCM imposed on the banking sector governed by BNM, which has issued two guidelines namely, 1) Guidelines on Management of IT Environment (GPIS 1) (Bank Negara Malaysia, 2004), and 2) Guidelines on Business Continuity Management (Bank Negara Malaysia, 2008). These guidelines outline the BCM principles and detailed requirements on the establishment of BCP and DRP programs, which include the implementation, maintenance, and testing by the financial institutions. The guidelines also highlight that

the Board of Directors and management team are fully responsible in making sure that enterprise wide implementation of comprehensive BCM practices as an element of prudent risk management measures and good corporate governance.

On the contrary, in some organizations, the senior management tends to believe that since a disaster incident has never happened, there is no compelling business case for expending limited resources on BCM implementation. This belief often results in a lack of serious effort in the implementation of BCM and it is usually merely to satisfy the regulatory requirements or closing audit findings on non-compliance (Lingeswara & Tammineedi, 2012). Nonetheless, this situation could be addressed by commencing a continuous BCM awareness program among key stakeholders by emphasizing the benefits of gaining high resilience from their perspective such as meeting current and prospective customer's expectation, regulatory conformity, averting liability, and sustaining a competitive edge.

2.4.1.3 Organization Preparedness

When an unexpected event occurs, an organization only has a little chance to respond and recover with no room for mistake. For that reason, getting an organization to be more prepared and capable of resuming its normal business functions following a disaster incident is deemed to be one of the primary goals of the senior management (Hurley-Hanson, 2006; Mostafa, Sheaff, Morris, & Ingham, 2004). Business resilience is very much depending on the capability of an organization to avoid and swiftly recover from an untoward event. Herbane et al. (2004) posited that an organization that is able to quickly

identify potential risks and subsequently escalate it to the crisis management team is said to be superior in organizational alertness.

Organization Preparedness refers to familiarity with various recovery approaches and avoidance of risks, such as maintaining a business continuity plans, establishing crisis management teams, and developing key personnel redundancy (Hägerfors, Samuelsson, & Lindström, 2010; Ruighaver, Ahmad, & Hadgkiss, 2012). The business continuity plans should be regularly updated, tested and improvised, even after the occurrence of major incidents (Gibb & Buchanan, 2006). Herbane et al. (2004) added that the swiftness of recovery is the surface exposure of a more profound capability in the form of Organizational Preparedness, which includes readiness of alternative sites, well-executed recovery plans and redundancy of critical resources. Organization preparedness is also enhanced if critical business functions or systems can be restored efficiently by one or several persons (Conlon & Smith, 2010). An important element of BCM is identifying the critical business functions facilitated by conducting a Business Impact Analysis (BIA), recognizing the inter-dependencies between internal and external systems, which include demanding external partners and suppliers to comply with good business continuity practices (Blos, Wee, & Yang, 2010).

Currently, most organizations would agree that planning for the business continuity following a disaster event is not just about prudent practice but it is a business requirement. From time to time, organizations need to continually be sure that they are adequately prepared to respond to and recover from disastrous incidents to sustain the business competitiveness and survival.

2.4.1.4 Embeddedness of Continuity Practices

Herbane et al. (2004) asserted that when an organization is well-prepared, practices are incorporated into existing processes, staff as well as senior management are highly committed, then continuity practices are said to be embedded in the organization. This embeddedness will contribute to positive business impacts, in which the organization will become more robust, capable to minimize the potential risk of incidents and recover more speedily as compared to its rivals.

Nonetheless, embedding BCM in the culture of an organization might be time consuming (Gallagher, 2003). The effort necessitates corporate changes, enterprise-wide participation, and the involvement of all employees, as well as a variety of business units to work in teams that are capable of acting effectively during a crisis situation. Furthermore, it entails continuous training and awareness program, as well as updating and maintaining the business continuity plans and procedures (Elliott et al., 2010). Past empirical studies reveal that there was a substantial degree of cross-functional effort in BCM and show that business units, including IT, operation, quality assurance, and facilities management, also had different roles in BCM in order to be fully integrated and comprehensive (Pitt & Goyal, 2004; Woodman, 2007, 2008). In conjunction, Gallagher (2007) argued that if BCM is not embedded in the organization's culture, it may not be able to contribute to the achievement of the long-term strategic goals. Likewise, similar concern was also highlighted by Herbane et al. (2004) who underscored the importance of establishing a business continuity culture within the organization day-to-day operation. In order to inculcate the embeddedness of BCM process, organizations can employ a combination of ways to communicate its relevancy, which includes awareness raising

activities, training and constant communication personalized to meet the needs of various target groups. In addition, Elliott et al. (2010) suggested that embedding BCM in the culture of the organization can be realized by engaging all employees in the BCM program; by providing continuous trainings and awareness raising activities; by assigning all business areas their own business continuity plans; by developing the continuity plans internally; by making continuity plans be reviewed and updated as part of the normal course of business; by creating flexible and communicable plans; and by effective leadership. These actions also indicate the extent to which BCM is a one-off activity or it is embedded and on-going within the organization. The embeddedness of BCM practices enables the effective implementation of information system continuity management and it requires consistency with clear organizational structure (Elliott et al., 2010). Another approach of embedding BCM in an organization is to adopt international standards or frameworks that systematically integrate it into the current critical processes (Järveläinen, 2013). Among the commonly adopted BCM standards are ISO 27001, ISO 22301, BS 25999, NFPA 1600, NIST SP 800 and PASS.

2.5 BCM Standards and Implementation Guidelines

2.5.1 BCM Standards

Numerous BCM best practices and standards are available (Kenny, 2006), but their contents are largely similar. These models and standards offer the information as to how to implement BCM framework but they do not provide a mechanism to specify the extent

to which an organization should deploy the BCM initiative. The following Table 2.8 presents a number of widely adopted BCM-related standards.

Table 2.8
BCM Related Standards

Document	Title	Comments
PAS56	Publicly Available Specification – Business Continuity Management	It is a standard that was published by the British Standards Institution in 2003, which was then largely succeeded by BS 25999. The intention of PAS 56 is to be adopted by organizations to enhance their performance in BCM, whether starting out the BCM plan for the first time or refining their existing BCM plan next to best practice.
BS 25999 (1 & 2)	BSI Business Continuity Management.	The standard was launched by British Standard Institute in 2006 and 2007, which is considered as an excellent reference for BCM. The standard has two parts namely code of practice and specification for BCM.
NFPA 1600	Standard on Disaster and Emergency Management and Business Continuity Programs	It was created by National Fire Protection Association (U.S) in 1995, which is used as the blueprint for any organization in dealing with emergency and BCM.
NIST 800-34	Contingency Planning Guide for Information Technology Systems	It was first published in June 2002 by National Institute of Standards and Technology (U.S.) which provides consideration, instructions, recommendations and for government IT contingency planning.
ISO 27001	The Information Security Standard & Information Security Management System	It was released in October 2005 to replace the old BS7799-2 standard. It is a specification for an Information Security Management System (ISMS).

Table 2.8 (Continue)

Document	Title	Comments
ISO 22301	Societal security – Business Continuity Management System – Requirements	Newly introduced BCM standard (in 2012), which provides a framework to plan, establish, implement, operate, monitor, maintain, review, and continuously enhance a Business Continuity Management System (BCMS).

Source: Peterson (2009)

Among these standards, the commonly adopted standards in the Asian region specifically in Malaysia are the British Standard Institute's BS25999 and International Organization for Standardization's ISO 27001 and ISO 22301, which are further elaborated in the following sections.

2.5.1.1 BS25999 – Business Continuity Management Standard

The British Standards Institution (BSI) developed the Business Continuity Management Standards in two parts: 1) BS 25999-1:2006 A Business Continuity Management Code of Practice, which provides the general guidelines and seeks to establish terminology, processes and principles for BCM, and 2) BS 25999-2:2007 A specification for Business Continuity Management, stipulates the requirements for deploying, operating and enhancing a documented Business Continuity Management System (BCMS), defining only the requirements that can be independently and objectively audited (Venclova et al., 2013).

The BS 25999 standard entails the implementation of a management system in line with the "Plan–Do–Check–Act" (PDCA) cycle (Vancoppenolle, 2007) illustrated in Figure 2.3. The PDCA cycle is constructed on the conception of imperfection and therefore

pursues a continuous improvement process. During the initial "Plan" stage of the PDCA cycle, the standard necessitates the identification of critical business functions in the organization. In the "Do" stage, it involves the development and implementation of relevant policies, procedures, processes, and controls. The "Check" stage then examines whether the plan and the objective set in the "Plan" stage is still in line with the rest of the system. If it is not, then corrective actions need to be taken in the "Act" stage. Following this stage, a risk assessment must be conducted. Subsequently, a continuity plan must be developed in response to every high impact and low probability risks identified during the assessment. The response is initiated as a corresponding countermeasure to restore the original state following as disaster event (Boehmer, 2009).

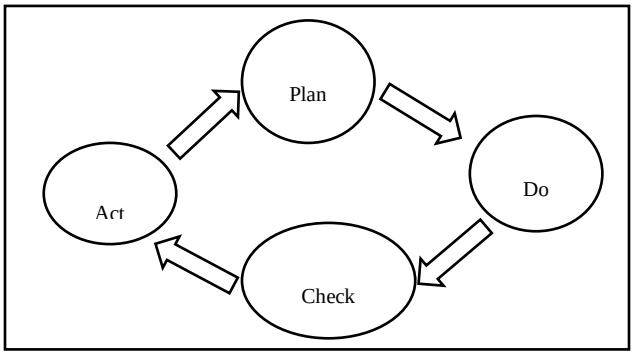

Figure 2.3
The Plan–Do–Check–Act Cycle

An independent audit assessment against the BS25999 standard is a useful tool at the preliminary stage of the BCM development process to better understand organization business continuity capability. The audit assessment is also an opportunity to benchmark the BCM practice maturity level against an internationally recognized standard (Mcloughlin, 2008).

2.5.1.2 ISO 22301 – Business Continuity Management System

The ISO 22301:2012, the world's first international standard for Business Continuity Management has been established to assist organizations minimize the risk of business disruptions. The official title of this standard is "Societal Security – Business Continuity Management Systems (BCMS) – Requirements". This new BCM standard was published on 15th May 2012 to replace the existing British Standard BS 25999 (St-Germain, Aliu, Lachapelle, & Dewez, 2012). The transition period has ended in May 2014 when no new BS 25999 certification will be issued. As for the existing BS 25999 certified organizations, the required transition is relatively straightforward and can be conducted at a future surveillance audit visit up until 31st May 2014.

ISO 22301 utilizes BS 25999:2 as a foundation, a standard that has already gained wide acceptance outside United Kingdom (SunGard, 2012). On top of that, it was also developed along with feedbacks from the international communities and the existing business continuity practices outlined in other BCM standards such as NFPA 1600, FINRA Rule 4370, and NIST SP 800-34, as well as various national standards in other countries such as Australia, New Zealand, Canada, Japan, and Singapore. Hence, ISO 22301 represents the latest milestone in the evolution of BCM best practices. According to Heng (2012), ISO 22301 should be viewed as a convergence of all BCM standards into an ISO requirement.

The requirements stipulated in ISO 22301 are quite generic and aims to be applicable to all organizations regardless of size, type, and nature of business. However, the extent of

applicability of these requirements depends very much on the operating environment and the complexity of the organization (Heng, 2012).

Similar to BS 25999, the purpose of this standard is to plan, establish, implement, operate, monitor, maintain, review, and continuously enhance the documented BCMS. As stated by Heng (2012), the main objectives of the BCMS are to protect against, minimize the likelihood of the occurrence of, prepare for, respond to and recover from a disruptive situation when it arises. PDCA cycle is also applied into this standard. The PDCA model offered in ISO 22301 is in many respects almost identical with the model adopted in BS 25999 and ISO 27001. The major difference between ISO 22301 and BS 25999 lies in the management section of the standard, in which ISO 22301 imposes a greater emphasis on the understanding of the requirement, objective, and performance measurement of BCM program. The rationale of this enhancement is to gain a higher level of acceptance by the top management, which in turn will contribute to the widespread adoption of the standard across all industries like the earlier standards such as ISO 9001, ISO 14001, and ISO 27001.

2.5.1.3 ISO 27001 – Information Security Management System

ISO 27001 is a global information system security standard that assists organizations in establishing a comprehensive information security management system (Rosso, 2011). It was established in October 2005, essentially to replace the old BS7799-2 standard. The standard offers a model for establishing, deploying, operating, monitoring, maintaining, evaluating, and enhancing an ISMS (Gillies, 2011). Similar with the BS25999 standard,

the ISO 27001:2005 version of the standard introduced in 2005 heavily utilizes the PDCA model in structuring the related processes.

An important element involved in the implementation of ISO 27001 standard is to assess the risk of information assets scoped within the system against three fundamental information security requirements. The risk assessment process involves evaluation of potential risks that would compromise an information asset's confidentiality, integrity and availability (frequently abbreviated as CIA) (Lomas, 2010), in which the concept os illustrated in Figure 2.4.

1. Confidentiality refers to the property that information is not disclosed or made accessible to unauthorized parties.
2. Integrity refers to the property of safeguarding the completeness and accuracy of information assets.
3. Availability refers to information assets should be readily accessible and useable upon demand by an authorized party.

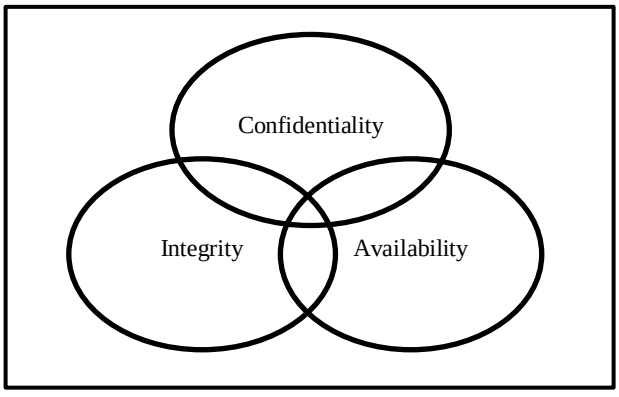

Figure 2.4
Confidentiality, Integrity and Availability Concept

In the context of BCM, ISO 27001 classifies the business continuity requirement as part of the 'availability' component. The BCM control statements are outlined in Clause 14 i.e. Business Continuity Management with the objectives to respond to the disruption on the business processes and to safeguard critical business functions from the effects of major disruptions of information system services and to ensure timely recovery.

The adoption of ISO 27001 standard shall benefit organizations in several ways. Besides tightening up the information security system, the standard may also help to streamline the internal processes, eliminate redundancies, prevent costly litigation, and enhance the competitive advantage. This is because the ISO 27001 standard necessitates continuous security management, which means after obtaining the initial certification, organizations should consistently monitor, review, and improvise as necessary to remain in compliance. The surveillance audit is conducted annually while the recertification audit is conducted once every three years (Rosso, 2011). Thus, the ISO 27001 certification can be an essential market differentiator for an organization, which may attract and retain customers with the enhanced information system security. It is a recognition that the organization is actively managing its information security based on the internationally established standards.

In Malaysia, there are two versions of ISO 27001 standards presently adopted by local organizations namely the international standard of ISO/IEC 27001:2005 and the Malaysian standard of MS ISO/IEC 27001:2007. On top of that, the latest, ISO/IEC 27001:2013, which was introduced in September 2013 will be replacing such existing standards by September 2015.

According to BSI (2014), the improvement offered by this new standard are as follows:

1. Emphasizing on setting of objectives, monitoring performance and metrics.
2. Establishing a new section on outsourcing, which reflects the fact that many organizations are highly dependent on third parties to provide some aspects of IT services.
3. Greater attention is given to the organizational context of information security and risk assessment. The risk assessment requirements have been aligned with ISO 31000, a risk management standard.
4. Overall, ISO/IEC 27001:2013 is designed and structured to fit better alongside with other management standards. This will make the integration to be more straightforward when implementing more than one management standards such as ISO 9001 and ISO 14000.

2.5.2 BCM Implementation Guidelines

The BCM implementation guidelines provides a roadmap for organizations to establish and maintain an effective BCM program. This guidelines comprise of the following eight stages, from the initiation to the maintenance of a BCM program.

2.5.2.1 Project Initiation and Planning

In order to commence a BCM program project, a project initiation and planning stage should start by obtaining the management approval and sponsorship. A full commitment and support from the senior management is very critical in the initial phase of developing a BCM program (Gibb & Buchanan, 2006; Hecht, 2002; Heng, 1996). This stage also

entails the planning activities that include, 1) setting up the objectives and project timelines, 2) establish frameworks and milestones, 3) defining project deliverables, 4) identifying limitations and constraints, and 5) allocating budgets and resource requirements. Also, during this stage, a decision has to be made to identify and prioritize critical business functions that have to be covered by the BCM program, as well as determining the financial and human resources, which are required to ensure that the project is successfully executed (Elliott et al., 2010; Solms & Botha, 2004).

2.5.2.2 Establishing the BCM Teams

In this stage, the roles and responsibilities are discussed, agreed, and assigned to all team members to ensure accoutability on the given tasks and activities. Besides the IT personnels, selected employees from various business and administration units who understand the organization's critical business functions in term of its business, risks, processes, and technology are also required to develop the high level business continuity strategy and priority. The recovery teams need to be formed to provide the technical knowledge and participate in the development of the business continuity and recovery plans and to keep these plans up-to-date. In addition, the support teams are also required to faciliate the entire BCM program namely which comprise of operations, communications, command center and administration team.

In some organizations, for the disaster recovery activities, the core team is normally led by the IT team who are responsible for formulating IT recovery strategies and resumption plan for critical business functions (Moore & Lakha, 2006). Nonetheless, the participation of employees from other business units is also essential to ensure an

organization-wide involvement because a BCM program is not only focusing on IT systems but it also has to ensure that the entire organization is up and running as quickly as possible after a disastrous incident (Hecht, 2002).

2.5.2.3 Risk Assessment and Business Impact Analysis

At this stage, the team will identify the business operations or services, which have direct impact on the customers and revenues, as well as determining and prioritizing critical business functions. Once these critical business functions have been identified, the team will conduct an internal and external assessment of the business environment to evaluate all possible risks that are potential to impact these functions including the systems, information, and other corporate assets (Gibb & Buchanan, 2006; Pitt & Goyal, 2004). Consequently, a Business Impact Analysis (BIA) will be conducted based on the risk assessment and impacts analysis on each identified critical business functions (Elliott et al., 2010).

The primary objective of the BIA is to assess the impact of a loss of critical business functionalities due to a disruption affecting the business services. These impacts will be measured quantitatively through an information gathering process that includes the estimatation of financial implication and qualitatively that may include the operational impacts to internal and external parties (Jackson, 1999). BIA also facilitates organization to quantify the potential losses of revenue due to business disruption and further prioritizes them in the order of importance. Besides assessing the financial, IT and human losses, BIA also measures the impact of disruption on customer confidence and damage to corporate image. Furthermore, a comprehensive BIA exercise shall provide valuable

insights on the operational factors that could minimize the smooth running of the business, establish the priority and sequence of critical business functions recovery activities, formulate recovery strategies, and determines back-up options for critical information (Gallagher, 2003; Selden & Perks, 2007; Tammineedi, 2010). Finally, the outcome of BIA should be tabled to the senior management committee for discussion and approval together with the BCM team's recommendations prior to proceeding to the next stage (Jackson, 1999).

2.5.2.4 Evaluating Recovery Strategies

Once the BIA is approved, the next step is to identify available continuity strategy alternatives that best suite the business requirement. In some organization, the strategy selection process also considers various risk management options such as risk avoidance, risk acceptance, risk limitation, risk transfer, and risk sharing. These options are evaluated when assessing the suitable business continuity strategies for the particular business function (Jackson, 1999). The main goal of this phase is to strive for the establishment of a recovery options matrix with appropriate business justifications for the proposed business continuity strategy. During this stage, the team will evaluate recovery options, selecting alternate recovery sites and providing the senior management with the recommended recovery and back-up strategies together with alternative solutions (if any) (Solms & Botha, 2004).

2.5.2.5 Developing a Disaster Recovery Plan

In this stage, the activities involve developing and documenting the recovery strategies agreed in the previous phase. The basic disaster recovery plan (DRP) strategy focuses

mainly on the technical aspect of the recovery actions. The DRP shall include procedures on the business resumption and recovery activities that should be activated by the BCM team following a crisis event in order to resume to normalcy for the disrupted business functions (Gibb & Buchanan, 2006). These documented procedures will be used in the event of a disaster incident that has the possibility to affect the availability or operational of a critical business services. The document shall provide the necessary information and checklists for the IT support teams to recover the IT system and infrastructure in order to effectively recover critical business functions and eventually resume the normal business operations.

DRP should also address the recovery team structures, location of the emergency command center, and inventory information such as staff and vendors contact numbers, documentation, hardware, software, critical applications, vital records, data processing reports needed, and communications capabilities required (Jackson, 1999).

2.5.2.6 Developing a Business Continuity Plan

During this stage, a business continuity plan (BCP) which entails continuity procedures that cover all critical business functions, business units, infrastructure and other resources is discussed and documented. This plan is developed based on the understanding of the three phases of a disaster namely respond, rebuild, and resolve phases, as well as the level of disruption that is classified as minimal, moderate, and major together with the corresponding actions to be carried out in each phase of the disaster (Clas, 2008). In the 'respond' phase, it includes preparing the immediate action plans to be activated by the BCM team when the unexpected incident occurs to resume normalcy. Meanwhile, the

'rebuild' phase involves the replacement or recovery of a damaged piece of equipment or in worst scenario, rebuilding the whole organization infrastructures and recovering all the effected business services (D'Amico, 2007). Then, the 'resolve' phase shall include planning and developing the counter measures to prevent the incident from recurring or minimize its adverse impacts should it reoccur in the future.

2.5.2.7 Training and Testing

The development and completion of the BCP documentation does not mark the end of a BCM project (Elliott et al., 2010). Lindström, Samuelsson, and Hägerfors (2010) argue that the workability of DRP and BCP needs to be tested in a real situation and not only in theory. Hence, the management process of BCM that covers training, testing, and maintenance of the plans is very important (Tammineedi, 2010). Besides promoting teamwork among team members, a training program will motivate and encourage all employees in an organization to actively involve in the establishment and enhancement of a BCM program.

More importantly, the DRP and BCP exercises should be regularly tested so that the relevant staff are familiar with the recovery activities as documented in the plan and to be able to use it effectively during the actual disaster situation. The testing is an important platform for the BCM team to examine the workability and comprehensiveness of the developed BCP and DRP documents and their ability to cater various types of disastrous events. Furthermore, a full BCM plan testing in a real atmosphere allows the team to observe possible shortfalls or weaknesses in the current plans so that improvement

measures can be made to strengthen the BCM processes for future exercises (Cerullo & Cerullo, 2004).

2.5.2.8 Maintenance of Plan

Botha and Solms (2004) state that an effective maintenance of a BCM plan will ensure continuous update of the recovery plans. This will ensure the plans are capable to effectively reflect the dynamicity of the business environment and that they are fit for use at any time and the workability is assured. In addition, Karakasidis (1997) proposed two modes of BCM plan maintenance i.e. in-response and periodic. In-response maintenance is performed in response to any internal or external corporate requirements or responding to the rapid changes of the business and IT system environments, while periodic maintenance is performed on regular basis such as monthly, quarterly, or annually.

2.6 BCM Challenges

The following sections discuss the common challenges attributed to high failure rate of BCM implementation.

2.6.1.1 Lack of Senior Management Involvement

BCM program is ultimately a strategic organizational level responsibility and therefore, it requires full support from the senior management in the organization. BCM is commonly sponsored by one of the senior management members such as Chief Information Officer (CIO), Chief Operating Officer (COO) or in most cases, and the Chief Executive Officers (CEO) themselves. According to Belaouras (2009), almost about 25 percent of the time, the CEO is the main sponsor of BCM implementation in organizations. This finding is in

line with several empirical studies conducted in the United Kingdom by Chartered Management Institute, in which it was discovered that senior management is responsible and play a leading role for BCM (Pearson & Woodman, 2012; Woodman & Hutchings, 2010; Woodman, 2008).

However, in some organizations, the primary executive sponsor of the BCM program is too occupied or busy to oversee the implementation and thus, the responsibility is delegated to a middle level manager (Lingeswara & Tammineedi, 2012). The delegation could reduce the visibility of the BCM issues that requires the management attention at the organizational level and it may also lead to a lack of serious cooperation from the relevant departments. This setback may be addressed by establishing a cross functional BCM steering committee that comprises of key stakeholders. This committee should convene periodically e.g. monthly, bimonthly, or quarterly to resolve issues, if any, and provide direction on way forward.

2.6.1.2 Lack of Financial Support

One of the reasons causing many organizations failed to implement effective BCM program is due to financial constraint. Arising from the recent worldwide financial crisis, great prudence is exercised by many senior management and particularly the board of directors in granting approval for expenditures (Peterson, 2009). With all the expenses associated with BCM activities and its infrastructure set-up such as consulting, planning, expanded backup procedures, additional system acquisition, and alternate site subscriptions, it is crucial to present a strong justification so that the senior management will buy into the preparedness effort (Petroni, 1999). Belaouras (2009) adds that to

successfully secure the funding from the management, BCM professionals should work with business owners to estimate the potential loss due to the downtime, identify the potential risks, determine the recovery objectives and choose the most cost-effective solutions.

2.6.1.3 Poor Crisis Communication

There are many challenges faced by BCM practitioners in relation to communication and dissemination of information to all stakeholders in a timely manner during disastrous situations. Chow and Ha (2009) have recognized communication as one of the critical success factors for effective BCM implementation. In the absence of robust communication between organization and its stakeholders during times of crisis, stakeholders are left to speculate and construct their own sense of reality concerning the crisis and the "reality" that they constructed may not be accurate (Frahm & Brown, 2007).

Crisis communication at all levels is one of the common issues encountered during emergency situation and are crucial to ensure coherent and swift recovery. Hence, it is utmost important that organizations dedicate a special attention in developing a communication plan as one of the key components of BCM. A survey conducted by Forrester Research (Belaouras, 2009) found that: 1) training and awareness programs have been insufficiently conducted across organizations, 2) existing BCM plans have not sufficiently address internal communication and collaboration, and 3) existing BCM plans have not sufficiently address strategic partners communications and collaboration.

Therefore, it is vital that all organizations treat communication as an important component of BCM and put extra efforts and coordination to keep stakeholders such as the management, operational staff, customers and suppliers informed and continuously being updated on the situation while the recovery efforts are taking place to resume to normalcy (Peterson, 2009).

2.6.1.4 Disconnection between Business and IT

In the highly competitive market, organizations are often compelled to counter dynamically to a competitor's offerings. Sometime, under great pressure to minimize the time to market for newly conceived products and services, business managers do not provide sufficient advanced notice to the IT team to address capacity issues to support the new initiatives (Lingeswara & Tammineedi, 2012).

The failure to align IT infrastructure and system capability with the business needs and growth projections often results in solution gaps, deceiving expectations, and operational performance issues that will adversely impact the organizational reputation. Nonetheless, these issues could be addressed by a systematic planning and teamwork between the business and the IT teams.

2.6.1.5 Complexity of BCM Testing

Conducting a BCM testing or simulation is one of the major challenges for most organizations. According to Hoong (2011), one in four BCM tests fail and this has increasingly affected the revenue and customers service. The failure arises from the technical and operational complexity to simulate the disastrous situation while keeping minimal interruption to the services. Thus, some organizations did not test their BCM

plan to avoid the risk of service failure due to the test (Belaouras, 2009). The objectives of testing a BCM plan are multifold. Most importantly, the test or simulation will likely reveal problems that were not anticipated prior to an actual disastrous incident. The test may also reveal hidden costs and enhance the understanding of normal operational flaws the business might have already encountered unknowingly. Besides, it may even disclose something as qualitative as employee morale when dealing with disastrous situation.

2.6.1.6 Technology-only Approach towards Resiliency

During the planning stage of developing organizational resilience plan, some organizations give too much focus on technology and do not provide equal importance to other organizational resources such as employees, premises, data, processes, and supplies (Lingeswara & Tammineedi, 2012). This shortfall can be addressed by promoting awareness program among key stakeholders, identifying potential risks, and single points of failure of organizational resources and consequently recommending appropriate risk mitigation plans to assure the continuous availability of critical resources, and finally, incorporating BCM processes into day-to-day operations.

2.7 IT Capability

Every year, business organizations invest hundreds of billions of dollars in Information Technology (IT) (Barua, Kriebel, & Mukhopadhyay, 1995). In fact, Schnitt (1993) found that the spending on IT accounts for almost one third of all expenditures and it is the largest single item in the capital spending budget of US corporations. Indeed, IT has become the most effective tool that could generate extremely invisible capability in the competitive era of knowledge-based economy (K-economy). Li, Chen, and Huang

(2006) posited that the capability has been recognized in creating significant influence on organizational performance. Several studies have revealed that an organization's capabilities are more difficult to be replicated or imitated than the organization's resources. Hence, these studies proposed an "IT Capability" concept to explain the value of IT as an element of the organization's capabilities (Bharadwaj, 2000). In this study, the author investigates the technological capability in another perspective via investigating the role of IT Capability as a moderator of the relationship between BCM and Organizational Performance.

The concept of IT Capability was introduced by Ross, Mathis, and Dale (1996). They argue that the success of organizations cannot be guaranteed by IT alone, but by organizations' IT Capability by employing IT in supports of the dynamic business opportunities. In other words, organizations cannot only rely on acquiring IT infrastructure as a necessary condition to sustain the competitive advantage, but they must also acquire and nurture internal capabilities to effectively manage the infrastructure (Jacks, Palvia, Schilhavy, & Wang, 2011).

Even though scholars have investigated IT Capability from various perspectives as detailed in Table 2.9, there is still no standard definition in the literatures (Yongmei, Hongjian, & Junhua, 2008).

Table 2.9
Definitions of IT Capability

Definition	Source
IT Capability is defined as *"a firm's ability to acquire, deploy, and leverage its IT related resources in combination with other resources in order to achieve, gain and maintain competitive advantage and business objectives through IT implementation".*	Bharadwaj (2000)
IT Capability is defined as *"a firm's ability to use IT to support and enhance its distinctive competencies and skills in other business functions".*	Prasad, Ramamurthy, and Naidu (2001)
IT Capability is defined as *"the ability to control IT-related costs, deliver systems when needed, and affect business objectives through IT implementations".*	Ross et al. (1996)
IT Capability is defined as *"the ability to enhance competitive agility by delivering IT-based products, services and business applications within short development cycle times; build a highly skilled, empowered, and energized IS workforce with an entrepreneurial orientation toward leveraging technological knowledge into business application".*	Clark, Cavanaugh, Brown, and Sambamurthy (1997)

In short, IT Capability may be referred to as the distinctive assets, knowledge, competencies, procedures, and relationships that support organizations to effectively procure, implement, and manage IT products and services in influencing innovations and shaping business strategies (Feeny & Willcocks, 1998). Recent studies investigated IT Capability from a Resource-Based View (RBV) perspective (Bharadwaj, 2000; Tippins & Sohi, 2003). The RBV perspective focuses on benefits stemming from firm's internal resources that are diverse, unique, and difficult to reproduce (Prahalad & Hamel, 1990).

The literatures also reveal that IT is recognized for its role in creating both initial competitive advantage as well as long-term sustained competitive advantage (Barney, 1991; Feeny & Ives, 1990). Nonetheless, IT alone is not capable to assure sustained competitive advantage, but it has to leverage on other elements such as complementary human, intangible, and business resource to achieve the objective (Powell & Dent-

Micallef, 1997). Further, Tippins and Sohi (2003) detail that IT competency, in this study refers as IT Capability, consists of three main attributes namely IT knowledge, IT operations, and IT objects.

2.7.1 IT Knowledge

Assuming that knowledge is information combined with experience, reflection, interpretation, and context, it holds a tacit element that is difficult to be measured (Davenport, Long, & Beers, 1998). Noel, Capon, and Glazer (1987) address that IT knowledge is distinguishable as a component of a broad conception of knowledge when compared with other domains of knowledge. IT knowledge is described as a set of principles and techniques beneficial to stimulate change towards desired objectives. It is also defined as a contextual-based know-how, in which in a specific conditions, the appropriate series of actions and administration of right decisions may lead to predictable results (Tippins & Sohi, 2003). For the purpose of this study, IT knowledge is conceptualized as the extent to which an organization is equipped with a body of technical knowledge concerning objects such as IT-based information systems. Later, Bassellier, Reich, and Benbasat (2001) broaden the IT knowledge concept to include not only skills, but also emotional. With that, they recommend that it has two primary dimensions namely explicit and tacit knowledge.

1. Explicit knowledge is a formal knowledge that can be obtained through learning, reading or explanation. Among the components of explicit IT knowledge are technological expertise, know-how of computer applications that includes appropriate use and competency in managing systems development processes and issues. Another

components are vocabulary and communication skills to interact between all related industries and accessing other sources of knowledge when further information is required, either people or material resources (Bassellier et al., 2001).

2. Meanwhile, tacit knowledge is developed through experience. The experience will improve memory of how to perform an action, which in turn enhances the competency levels. The mixture of diversity and intensity of the experiences will influence the degree of the tacit knowledge. When the knowledge is developed via internalized learning, it begins as explicit knowledge and overtime turned into tacit knowledge (Bassellier et al., 2001).

In relation to BCM, IT knowledge may comprise of the development of risk assessment profile, business impact analysis, business continuity policies and procedures, and awareness program and training.

2.7.2 IT Operations

According to Mitcham and Mackey (1983), the technical operations include activities that are undertaken in order to achieve a specific objective. This conceptualization tallies with the idea of process technology, which is a series of actions utilized to achieve an intended goal (Noel Capon & Glazer, 1987). The technical operations are also deemed as a manifestation of technical knowledge in that the application of technical knowledge will affect in technical operations or expertise.

For the purpose of this study, IT operations are conceptualized as the extent to which an organization employs IT to manage their market and customers' information.

Operationally, IT operations will manage and monitor IT resources to deliver services to support the business objectives. In addition, IT operations can streamline the business processes and optimize IT resources in order to reduce costs, enhance productivity, and eventually increase the revenue.

From the perspective of BCM, IT operations comprise of preventive, repressive, and corrective action plans, covering both the prevention of interruptions and the minimization of the impact to business in the event of crisis situation. IT operations will ensure uninterrupted and continuous service availability to enhance customer satisfaction, rather than solely focusing on technology matters.

2.7.3 IT Objects

According to Reardon, Hasty, and Coe (1996), IT objects is relatively easy to be measured. IT objects generally functions as the enablers and are mostly responsible for the present growth of production and distribution of information (Glazer, 1991). In addition, Martin (1988) describes IT objects as a tool that facilitates the acquisition, processing, storing, utilization, and dissemination of information.

For the purpose this study, the conceptualization of IT objects represents IT-based hardware, software, and network components as well as supporting human resources. In the view of BCM, IT objects comprises of the BCM support teams and infrastructure such as the back-up system, redundancy in communication network, data replication solution, off-site data center, and operation center facilities.

2.7.4 The Importance of IT Capability

In the 1990s, many people doubted the capability of IT in providing significant contribution to the organization's bottom line. This phenomenon is known as the "productivity paradox" (Brynjolfsson, 1993). However, Brynjolfsson further discovered substantial effects of IT spending on both productivity and profitability of the organization (Brynjolfsson & Hitt, 1996). In addition, subsequent studies have established the continual importance of IT Capability in the creation of business values and sustaining competitive advantage (Melville, N., Kraemer, K. and Gurbaxani, 2004).

Later, IT has become bread and butter in our life. Almost everybody in the modern world has truly become information and technology-based society. Hence, the demand for effective IT implementation has never been more important (Beaumaster, 2002). An effective implementation of IT initiatives would reduce the vulnerability by lowering the cost of anticipated project failures and improving the adaptability by lowering the adjustment cost (Malhotra, A., Gosain, S., & El Sawy, 2005).

From the organizational view point, a great pressure is imposed to almost every organization to ensure their operational, tactical, and strategic activities are more effective and efficient. An increasingly attractive ways of enhancing these practices lies in the wide selection of IT-based solutions. In fact, Kane and Alavi (2007) assert that as organizations need to evolve, a robust IT infrastructure which is made up of hardware, software, and people is the only hope for keeping-up with the competitive market.

IT Capability has become the critical elements in delivering the goods and services especially in industries such as financial services, utility providers, airlines,

telecommunications, and retailing. For instance, in the financial services industry, electronic brokerage service providers, such as E-trade.com and Schwab.com have developed a new business model that makes IT services a crucial strategic business unit in the companies (E. Y. Li et al., 2006). As compared to the conventional financial service companies, Schwab.com has gained benefits of enhanced competitive advantage through lower prices of goods, outstanding services, and innovative products. This move is in line with the global trend of paradigm shift from the transitions of industrial economy towards the IT-based economy or sometime known as K-economy.

2.7.5 IT Capability and BCM

During its early days, DRP (which is a component of BCM) focused predominantly on the continuous operability and recovery of computing systems to counteract against man-made or natural disasters. Since then, BCM was viewed as an IT issue and the activities were led by an IT function, normally IT managers (Gibb & Buchanan, 2006; Pitt & Goyal, 2004; Solms & Botha, 2004).

Toigo (1996) underscored the advantages of employing appropriate IT Capability while designing a business system. In this case, IT Capability includes the system hardware, application software, data structure, network infrastructure, and back-up systems. Based on the BCM best practices, the appropriate recovery technology and strategy have to be determined during the system analysis and design phase of system development life cycle (SDLC). Additionally, this process has to be incorporated into the project management methodology (Socka, 1998).

Randeree et al. (2012) argued that organizations employ BCM to support continuous performance of IT, where their core activities are based on. The reliable delivery of data and information is an important indicator of organization's information management capability (Mithas, Ramasubbu, & Sambamurthy, 2011). Based on Ernst & Young's Global Information Security Survey, organizations perceived BCM or DRP initiatives as the most probable area for investment on information security (Ernst & Young, 2011).

The management of IT Capability has become a serious issue due to the tight constraints concerning on human resources, budget and high investment in setting up resilience IT infrastructure. Currently, the production environment that comprises of a wide range of IT infrastructure and application components have evolved and expanded over time. This situation results in a complex configuration of servers and software components, which are normally costly and hard to manage. Thus, it creates a challenge that sometime hinders the flexibility, efficiency, and effectiveness of the BCM testing. Regarding that, Hoong (2011) found that one in four BCM tests fail and this has increasingly affected the revenue and customer service. The failure arises from the complexity of the technical and operational environment, which is difficult to be simulated during a BCM testing.

2.7.6 IT Capability and Organizational Performance

The existing literatures reveal a number of studies that discuss on the roles of IT Capability and its relation to Organizational Performance. These studies have suggested that IT capabilities is crucial in achieving competitive advantage and improving organizational performance (Santhanam & Hartono, 2003). Proponents of the RBV Theory also suggests that IT is a form of organizational capability that can be developed

into a valuable, rare, and not easily imitable asset, which consequently established as a foundation of competitive advantage and superior organizational performance (Bharadwaj, 2000). In addition, Tippins and Sohi (2003) posited that an IT Capability, which is also referred to as IT competency, enhances organizational performance through the elimination of process inefficiency and minimizes operational errors which in return reduces the long-term cost and enhances service reliability. Similarly, Bhatt and Grover (2005) agree that IT Capability has a significant effects on organizational' performance.

The literatures also highlight that IT capabilities alone is ineffective in developing a foundation for sustainable competitive advantage since the capabilities can easily be duplicated by the competitors (Bharadwaj, 2000; Prahalad & Hamel, 1990). Besides, Brynjolfsson (1993) argue that the effect of IT Capability on Organizational Performance is not conclusive in the service sector in general. In contrast, the effect is significant in the manufacturing sector. As such, the impact of IT Capability on organization's performance cannot be quantified directly, but can only be measured by investigating the indirect effect. Table 2.10 provides a summary of selected past studies on the relationship between IT Capability and Organizational Performance.

Table 2.10
Summary of Selected Studies on IT Capability and Organizational Performance

No	Title / Authors	Independent Variable	Dependent Variable	Findings
1	Capabilities and Financial Performance: The moderating effect of strategic type (Song, M., Benedetto, C. A., & Nanson, 2007)	Four firms capabilities (technology, IT, market-linking, and marketing capabilities.	Financial Performance moderated by strategic type.	Technology and IT capabilities increase Financial Performance.
2	Issues in Linking Information Technology Capability to Firm Performance (Santhanam & Hartono, 2003)	IT Capability.	Firm performance.	Firms with superior IT Capability certainly exhibit superior current and sustained performance.
3	Interfirm IT Capability Profile And Communications For Co-creating Relational Value: Evidence From The Logistics Industry (Arun Rai, Pavlou, Im, & Du, 2012)	Interfirm IT Capability.	Relational value (share of wallet, buyer loyalty).	Interfirm IT Capability and interfirm communications both individually and jointly support the co-creation of relational values in interfirm relationships.

2.7.7 The Moderating Role of IT Capability

This study examines the relationship between BCM Factors and Organizational Performance, while introducing IT Capability as the moderating variable in order to investigate the form and magnitude of the relationship.

Baron and Kenny (1986) describe a moderator as a quantitative variable such as the level of reward or qualitative variable such as class, race, and sex that may affect the direction and/or strengthen the relationship between independent and dependent variables. Particularly within a framework of correlational analysis, a moderator is a third variable that affects the zero-order correlation between two other variables. Baron and Kenny (1986) also add that a moderator is normally introduced when the relationship between the independent and dependent variables is inconsistent or unexpectedly weak.

In the past, the benefit gained from IT investment has been studied by many researchers including academics, economists, and business practitioners. Nonetheless, previous findings about the impact of IT investment on firm performance have indicated inconsistent results across studies (Lim, Richardson, & Roberts, 2004). Several empirical studies discovered that there was either no relationship, or a slightly negative relationship, between IT investment and Organizational Performance (Landauer, 1995; Mahmood & Mann, 1993; A. Rai, Patnayakuni, & Patnayakuni, 1997; Weill, 1992). On the contrary, some studies found a positive relationship between IT investment and Organizational Performance dimensions such as productivity or profitability (Brynjolfsson & Hitt, 1995; Chatterjee, Richardson, & Zmud, 2001; Hitt & Brynjolfsson, 1996; Kudyba & Diwan, 2002; Mitra & Chaya, 1996). Likewise, Chan (2000) who conducted a comprehensive review on IT value articles published from 1993 to 1998 reported that little evidence was observed with regard to the payoff gained from IT investment in terms of organizational performance and the results were inconsistent. These inconsistencies of findings could be further understood with the introduction of a moderating variable. In the context of this study, BCM Factors are conceptualized as IT

investment since the provisioning of a BCM program requires substantial amount of investment on IT to setup the backup system infrastructure, facilities, and other resources.

In the previous studies related to organizational performance, researchers have investigated various moderating variables such as industry type, time period, and size of organization (Lim et al., 2004). Several studies also suggest that IT capabilities is capable to improve organizational performance by providing a foundation in gaining competitive advantage (Bharadwaj, 2000; Bhatt & Grover, 2005; Santhanam & Hartono, 2003; Yongmei et al., 2008). In addition, a meta-analysis study by Lim et al. (2004) on IT investment and firm performance considered IT Capability as the ability of an organization to mobilize and deploy IT resources which are not directly influenced by the IT investment. Likewise, Yongmei et al. (2008) asserted that, to certain extent, the effect of IT investment on tangible and intangible IT resources that influence organizational performance is moderated by IT Capability. The result shows that no matter how much an organization spent on IT resources, significant performance improvement can only be realized by evolving IT Capability. IT Capability serves as a moderator on the relationship between IT resources such as people and IT-enabled intangible resources as independent variables whereas performance as the dependent variable.

Nevertheless, Dewett and Jones (2001) also found that some studies have relied on the flawed assumption that adoption of IT would definitely enhance the performance. It is a known fact that IT Capability can improve organization's efficiency but it may not necessarily give the competitive advantages because similar technology can be adopted by competing organizations.

On top of that, Said, Hui, Taylor, and Othman (2009) revealed that IT Capability moderates the relationship between customer-focused strategies and organizational performance, which provides the justification for Malaysian local government authorities (LGA) to invest in terms of resources and commitment, in adopting customer focus strategies and IT capabilities. Furthermore, Li et al. (2006) suggested that IT Capability is a moderator than a mediator based on RBV Theory of firm performance because IT Capability is defined as the capability to utilize IT-based resources, which does not have any direct effect by IT investment. In addition, a study by Shao, Feng, Choudrie, and Liu (2010) investigated the moderating effect of Chief Information Officers' (CIO's) competency between IT investment and organizational performance. The study re-conceptualized CIO's competency into six elements that includes interpersonal communication skills, political skills, dynamic leadership, business knowledge, strategic IT knowledge, and IT management experience. The study was underpinned by RBV and knowledge-based view (KBV) theories in explaining the IT productivity paradox phenomenon.

Having discussed on the moderating roles of IT Capability on Organizational Performance in the previous paragraphs, they are summarized in Table 2.11. The table helps visualizes the agreeing and disagreeing points.

Table 2.11
Summary of Selected Studies on the Moderating Role of IT Capability on Organizational Performance

No	Title / Authors	Independent Variable	Dependent Variable	Findings
1	IT Capability as a moderator Between IT Investment and Firm Performance (Yongmei et al., 2008).	IT Investment	Firm Performance	The finding confirms the moderating effect of IT Capability.
2	The Moderating Effect of A Chief Information's Officer's Competence on IT Investment and Firm Performance (Shao et al., 2010).	IT Investment	Firm Performance	The findings suggest that the CIO's competency moderates the relationship between IT investment and Organizational Performance.
3	Customer-Focused Strategies And Information Technology capabilities: Implications For Service Quality Of Malaysian Local Authorities (Said et al., 2009).	Customer Focus (CF) Strategies.	Organizational Performance	This study found that IT Capability moderates the relationship between CF-strategies and Organizational Performance.
4	The Moderating Effect of IT Capability on the Relationship between Business Process Reengineering Factors and Organizational Performance of Banks (Ringim, 2012).	Business Process Reengineering (BPR) Factors	Organizational Performance	The results revealed that IT Capability moderates the relationship between BPR factors and customer service management performance

2.8 Differences between This Study and Previous Studies

Based on the reviewed literatures, this study found that limited studies have investigated the relationship between BCM and Organizational Performance. This finding is consistent with Sawalha (2013b) who stated that the role of BCM in enhancing

organizational performance has rarely been investigated by previous scholars and his research on the Jordanian banking sector is the first initiative.

The differences between this study and the previous study are as follows:

1. Previous studies have employed qualitative method and the data collection was conducted via semi structured interviews, whereas this study employs quantitative method and the data were collected via questionnaire.
2. The population in the previous studies were people in banking sector, whereas this study covers a broader type of industries, which includes financial institution, telecommunications, ICT, utility providers, services, education, transportation, and government agencies.
3. This study introduces IT Capability as the moderating variable between BCM Factors and organizational performance. Previous empirical studies have revealed that IT Capability may contribute to performance improvement through the elimination of inefficiency, reduction of long-term cost, enhancing service reliability, and minimized transaction errors (Tippins & Sohi, 2003).
4. This study also introduces BCM Factors as the independent variables which include Management Support, External Requirement, Organization Preparedness, and Embeddedness of Continuity Practices. These factors have been adapted from previous studies on the critical success factors of BCM (Chow & Ha, 2009; Chow, 2000; Herbane et al., 2004; Hoong, 2011; Järveläinen, 2013).

2.9 Related Underpinning Theories

In general, an underpinning theory is used to facilitate in understanding the notion behind the phenomenon under investigation. The theory also provides a representation of the logical linkage between various constructs or concepts, allowing better understanding on the relationship among them, and how they affect each other (Zikmund, 2003). Accordingly, this study considers three main theories, and are used in explaining the relationships that exist between BCM Factors, IT Capability, and Organizational Performance. The theories are Resource-Based View (RBV), Crisis Management and Stakeholders theories.

2.9.1 Resource-Based View

RBV suggests that organizations possess resources, which empowers them to gain competitive advantage and leads to sustaining superior long-term performance (Barney, 1991; Grant, 1991). This theory empirically asserts that in order to achieve competitive advantage over the competitors, an organization has to develop and structure its available resources in a way that it could best serve both the organization's internal and external challenges (Meso & Smith, 2000). Similarly, according to Barney (1991), RBV postulates that an organization can outperform its competitors through fostering resources that are unique and diversely distributed. This situation will lead to dissimilarities in organizational performance among firms within similar industries (Peteraf, 1993). In addition, past empirical studies have also discovered these differences not only between firms within the same industry but also within the narrowed confined groups within the industry (Cool & Schendel, 1988; Hansen & Wernerfelt, 1989). These findings propose

that individual and firm-specific resources may have significant effects on organizational performance (Mahoney & Pandian, 1992). The contemporary approach to this theory affirms that the capability to create and sustain competitive advantage depends very much on how the firm deploys its resources (Barney & Arikan, 2001). In order to foster distinctive capabilities, the resources must be rare, valuable, non-imitable, non-transferable, and non-substitutable (Barney, 1991).

The resource based view helps an organization to determine where to invest in critical resources to have a competitive advantage. The more valuable and rare the right resources are in the right places, the more likely the firm may have a long-term advantage over its competition. The Figure 2.5 illustrates the relationship between resources, competetive advantage and sustainability as defined by RBV Theory.

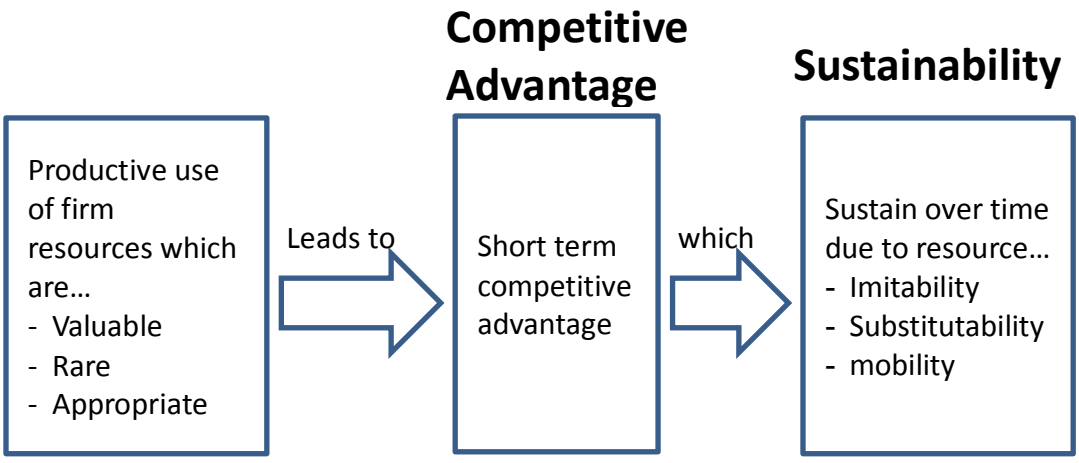

Figure 2.5
Resource-Based View
Source: Strategy-Keys.com

One of the main challenges faced by RBV theorists is to agree on a single definition of a resource. Scholars and practitioners who involved in studies on RBV have used various

terms to explain firm's resources which includes competencies (Prahalad & Hamel, 1990), skills (Grant, 1991), strategic assets (Amit & Schoemaker, 1993), assets (Ross et al., 1996), and stocks (Capron & Hulland, 1999). Govind-Menon (2008) defines resources as inputs into an organization's operational processes, such as organizational culture, capital, equipment, technology, employee's skills, patents, and competent managers. Nevertheless, many scholars have been using the term capabilities and resources interchangeably (Christensen & Overdorf, 2000; Gold, Malhotra, & Segars, 2001).

Wade and Hulland (2004) define resources as assets and capabilities, which are available and beneficial in discovering and reacting to market opportunities or threats. Another definition of resources is provided by Amit and Schoemaker (1993), which refers to assets acquired by an organization through ownership or control, while capabilities refer to the ability of an organization to bring together resources and effectively exploit them, such as leveraging on competent staffs and organizational good practices to establish a uniquely innovative work culture.

Further, Mills, Platts, and Bourne (2003) classify resources into 6 categories namely, 1) tangible resource, such as financial, organizational, physical, and technology, 2) knowledge resources, such as employee skills and experiences, 3) procedural and system resources, 4) cultural values, 5) networking and resources with potential dynamic capability, and 6) intangible resources such as innovation, employee, and reputation resources. Other classification of resources are by Fahy (2000), who group resources into three categories namely tangible, intangible, and capabilities. Meanwhile, Barney (1991)

suggests three categories of resources namely organizational capital resources, human capital resources, and physical capital resources.

The empirical studies on RBV Theory begun in the field of strategic management (Mahoney & Pandian, 1992) and was followed by studies in other disciplines of management, which includes information systems. Later, researchers started to incorporate IT capabilities in their studies which examined the relationship between various attributes of IT such as IT knowledge, IT operations, and IT objects on organizational performance (Bhatt & Grover, 2005; Tippins & Sohi, 2003). The outcomes of their studies reveal that IT capabilities improve organizational performance. Additionally, studies on IT also discovered that IT capabilities offers a basis of achieving competitive advantage and improves organizational performance (Bharadwaj, 2000; Santhanam & Hartono, 2003).

Through a comprehensive literature review, Melville, Kraemer, and Gurbaxani (2004) discovered that RBV continues to be the dominant theoretical explanation of IT business value. In the study, they discovered two key formulations of performance, which are efficiency and effectiveness. Scholars have also introduced RBV to address the "IT productivity paradox" phenomenon, which is difficult to be explained using only RBV. Several studies have asserted that IT resources do not fulfill the conditions of RBV namely rare, valuable, inimitable, and non-substitutable since the organizations' competitors could replicate the IT investment by procuring the similar equipment or implementing the same IT projects (Ross et al., 1996).

According to Bharadwaj (2000), the RBV of a firm has emerged as a pertinent theoretical perspective to understand the relationship between IT and firm values. The dynamic capability perspective that evolved from RBV has further underscored the significance of resource and its integration, competence configuration, coordination, and transformation in creating values to the business, especially when the direction to achieving success is uncertain (Yongmei et al., 2008).

In this study, RBV is used as the underpinning theory that explains the relationship between organizational resources and sustaining a competitive advantage to achieve superior organizational performance. BCM Factors are placed in the context of the RBV of the firm by examining how organizations can utilize IT Capability and other resources to achieve better performance. As RBV is an appropriate theoretical framework for addressing performance deficiencies, this study proposes that BCM Factors as the intangible resources, while IT Capability (which is measured by IT knowledge, IT operations, and IT objects) is considered as the organizational technological competence.

The RBV has been adopted as the underpinning theory since it has the advantage to facilitate the classification of resources, allow comparison, and provide strategic measurement of resources. Organizational performance is very much depending on the resources within the organization, such as BCM Factors and IT Capability.

2.9.2 Crisis Management Theory

Crisis Management Theory focuses on the origin, manifestation, and recovery from a crisis event (Herbane, 2010a). Shaluf, Ahmadun, and Said (2003) define crisis as an abnormal condition that might expose high risk to business and if it is mismanaged or

ignored, it might lead into a disaster. Meanwhile, Hermann (1963) defines a crisis as an unforeseen event that threatens high-level organization's priorities, which allows only a little time for managers to respond. Hence, if a crisis escalates or becomes uncontrolled, it could end up as a disastrous incident. Rothberg (1989) defines a disaster as any event that may cause significant interruption to operations and therefore threatening the business survival.

The Crisis Management Theory was introduced towards a strategic role of the ability of an organization to resist and recover from crises. According to Herbane et al. (2004), crisis management can be considered as the root of BCM. While, DRP is considered to be a less socio-technical predecessor to BCM, the differences between them emphasizes on how the approaches to deal with crisis recovery had progressed since the past decades. In comparison, a disaster recovery approach emphasizes on recovery of computer systems due to its IT centric. Meanwhile, BCM reflects on Crisis Management Theory, which focuses on the origin, manifestation and recovery from a crisis event (Herbane, 2010a). Based on the historical review, the origin of BCM can be traced started off with the conflation of crisis management, risk analysis, and disaster recovery planning (Swartz, Elliott, & Herbane, 1995). With its enterprise-wide and socio-technical approach, BCM acknowledges that the causes of crisis often result from the interactions between human and machine. As such, the best counteracts to a crisis are those that combine these elements.

Crisis management involves the management and coordination of preparation activities in order to respond to events that hinder or impede normal business operations, thus threatening the achievement of organizational goals (Pearson & Clair, 1998). Such

events may be characterized by its low probability, high impact, ambiguity, and little time to react (Weick, 1988). In the existing literatures, the word crisis has been used interchangeably with other terms like disaster, business disruption, emergency, contingency, or catastrophe (Herbane, 2010a).

The existing literatures on crisis management have also gathered pace to analyze the origin, manifestation, and impact of crisis events in the context of an organization, which varies in terms of the levels of vulnerability, management styles, and cultures. They have matured in the form of thematic evolvement in domains such as, 1) organizational learning from crisis, 2) crisis causation from socio-technical approaches, 3) to glide path and defense layers to epidemiological perspectives, 4) investigation of the pre, trans and post crisis phases of the crisis chronology, 5) understanding the impact of differing threat perceptions, and 6) crisis typologies (Herbane, 2010a).

In line with the maturity of the literatures in crisis management, BCM has been established as a formalized structure and expression of an organization's crisis management values and practices.

2.9.3 Stakeholder Theory

According to Freeman (1984), stakeholder theory is one of the focal point of interests of any organization to ensure their survival. Based on the stakeholders' perspective, organizations tend to respond to demands of dominant stakeholders, who exert strong influence on their operations, or in control of their resources, and they will ignore these demands, when groups with lack of power or influence exist (Bouma & Kamp-Roelands, 2000).

Freeman (1984) who is considered as the founder of the stakeholder theory defines stakeholder as a group or individual who can affect or is affected by the achievement of the organization's objectives. Nonetheless, his initial idea was then redefined when Freeman (2004) coined with a new definition of stakeholders as a group who is vital to the survival and success of the organization. Hence, the senior management of an organization is responsible to ensure the needs of the interested parties are fulfilled and not only focusing on the profitability alone. In addition, stakeholder theory also asserts that the management of an organization is impacted by the power of the stakeholders who are in control of the required resources to run their operations. Table 2.12 depicts the needs and expectation of various stakeholders to an organization.

Table 2.12
Stakeholders: Their Needs and Expectation

Stakeholders	**Needs and Expectations**
Customer	Quality, price and delivery performance of products and services
Owners / Shareholders	Sustained profitability and transparency
Employees	Conducive working environment, job security, recognition and reward
Suppliers and Partners	Mutual benefits and continuity of relationship
Society	Environmental protection, ethical behavior and compliance with statutory and regulatory requirement

Source: (ISO, 2009)

Based on empirical study by Berman, Wicks, Kotha and Jones (1999), there are causal relationships between stakeholders, organization's strategy and financial performance. Moreover, the study which had identified the stakeholder's entities which include the employees and customers has indicated positive relationship between stakeholder entities and financial performance. Hillman and Keim (2001) also argue that sustainable

organizational advantage may be built with tacit assets that derive from maintaining relationships with key stakeholders. In the same way, Phillips, Freeman and Wicks (2003) assert that the survival of an organization is largely depending on its stakeholder management. In today's business environment, it is characterized by the increasing importance and strength of various stakeholder groups. Generally, it has become quite apparent that the input from all key stakeholders needs to be taken into account when measuring modern organizational performance. This is the main idea behind the Freeman's stakeholder theory.

In the context of this study, founded on the general concepts of stakeholder theory, the measurement of the organizational performance is not only relying on the profitability aspects but also from other perspective of performance indicators such as operational stability, customer and employee satisfaction. This study also recognizes the employees and external requirements such as the regulators and customers as the primary stakeholders which may influence the achievement of superior performance.

2.10 Chapter Summary

In this chapter, Organizational Performance, BCM, and IT Capability are introduced and discussed by reviewing the existing literatures. Several empirical studies are reviewed and discussed in order to provide relevant evidences and support the discussion.

The reviews on previous works reveal that BCM provides organizations with preventive and corrective measures in order to enhance the preparedness, response, and recovery capabilities against various disastrous events that are prone to occur unexpectedly, which is associated with unfavorable impacts. Despite the importance of BCM to all types of

organization, findings from the deep reviews on the literatures also discover that there are very limited studies specifically examining the effects of BCM on Organizational Performance.

Besides, this chapter also discusses the underpinning theories particularly RBV, Crisis Management and Stakeholder Theories that govern the proposed theoretical framework of this study. Finally, the reviews provide a foundation for the theoretical framework and hypothesis development of this study, which are discussed in the following chapter.

CHAPTER 3
RESEARCH FRAMEWORK AND HYPOTHESES

3.1 Introduction

In this chapter, the research framework and hypotheses development are deliberated deeply based on the information gathered from the literatures as reviewed in the previous chapter.

Practically, all research studies in social and behavioral sciences irrespective of disciplines necessitate a rationale or basis for conducting research. Sekaran (2000) states that a research framework is a conceptual representation of how a study theorizes or formulates a logical sense of the relationships between several factors that have been classified as significant to the research problem. In principal, a research framework attempts to integrate important pieces of information, mainly variables in a logical approach, and thus conceptualizes a problem that can be investigated. A research framework usually provides a schematic explanation of relationships among independent, dependent, moderating, mediating, control, and extraneous variables in order to ease the reader in understanding the theorized relationships.

In conjunction to that, Chapter 1 states that the objective of this study is to examine the relationship between three variables namely Business Continuity Management (BCM) factors, IT Capability, and Organizational Performance. Hence, this chapter aims to develop a research framework of the study and propose the hypotheses to be tested based on the relationship among the variables.

3.2 Conceptual Framework

According to Sekaran (2003), the concept of conceptual framework is to explain the relationship between the variables in a study. The development of the conceptual framework of this study is done based on the outcome of the reviews of literatures on theories and concept of BCM, IT Capability, and Organizational Performance inclusive of related empirical researches on the subjects. Based on the discussions in previous chapters, one independent variable with four sub variables, one dependent variable and one moderating variable have been identified, conceptualized in a framework illustrated in Figure 3.1.

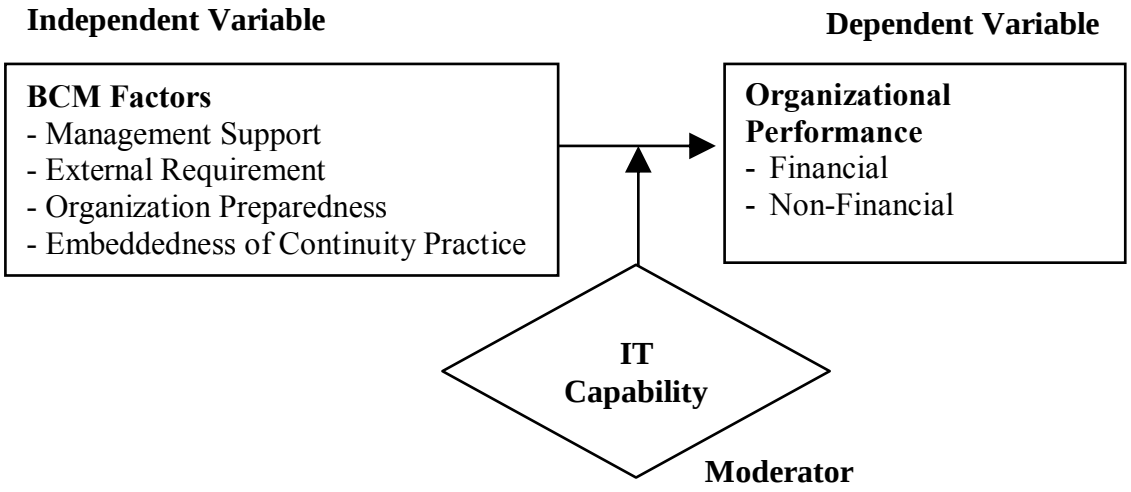

Figure 3.1
Conceptual Framework

Figure 3.1 visualizes that the independent variable is BCM Factors which comprise of four sub variables namely, 1) Management Support, 2) External Requirement, 3) Organization Preparedness, and 4) Embeddedness of Continuity Practices. BCM Factors have been adapted from previous studies by various scholars on the critical success

factors of BCM (Chow & Ha, 2009; Chow, 2000; Herbane et al., 2004; Hoong, 2011; Järveläinen, 2013). The critical success factor is defined as performance measures of which, if they are accomplished satisfactorily, they will assure successful competitive performance for the organization.

In this study, Organizational Performance has been identified as the dependent variable, which refers to the ability of an organization to accomplish its corporate's financial and non-financial goals using appropriate strategies and action plans. This study believes that a multi-dimensional performance measure that includes Financial and Non-Financial Performance is more potential, as it provides more comprehensive measurement as compared to the uni-dimensional approach.

Previous studies recommend several performance indicators such as profitability, success rate of new product development, return of investment (ROI), customer satisfaction, customer focus, quality, and process improvement to be used. For this study, the measures of Organizational Performance are adapted from studies by Sawalha (2013b), Sink (1985), and Järveläinen (2013), which includes Financial and Non-Financial Performance indicators.

The moderating variable of this study is IT Capability. It is considered to moderate the relationship between BCM Factors and Organizational Performance. Bharadwaj (2000) defines IT Capability as an organization's ability to acquire, implement, and leverage its IT-related resources, combined with other resources in order to sustain competitive advantage and accomplish business objectives through the implementation of IT initiatives. Besides, IT Capability also refers to the tangible IT resources such as

distinctive IT assets and intangible IT resources such as competencies, knowledge, skills, processes, and relationships. For this study, the attributes of IT Capability are adapted from the study by Tippins and Sohi (2003), who proposed three attributes of IT Capability, namely IT knowledge, IT operations, and IT objects.

The relationship between BCM Factors, IT Capability, and Organizational Performance is based on the RBV Theory that proposes the performance of an organization is influenced by internal resources. An organization achieves better performance than its competitors by effectively utilizes its internal resources. IT Capability is a dynamic capability and it will eventually affect Organizational Performance. However, in order to foster distinctive capabilities, the resources must be rare, valuable, non-imitable, non-transferable, and non-substitutable (Barney, 1991).

Also, the relationship between BCM Factors and Organizational Performance is explained by the Crisis Management Theory that highlights the importance of organization readiness in responding to unexpected crisis events that may hinder or impede normal business operations, thus threatening the achievement of organizational objectives (Pearson & Clair, 1998). Jafari et al. (2011) postulate that when a company is capable of avoiding the adverse impacts of external risks and responding to the environmental changes, it will be less vulnerable to financial consequences of market disparity. In other words, when an organization manages its risks effectively, it will successfully adapt to changes in market conditions and profit variation will be minimized.

In addition, the Stakeholder Theory offers the interpretations of the relationship between the stakeholders and performance. The stakeholder view asserts that organizations are accountable for the stakeholders and not only to the shareholders. Past studies on the relationship between stakeholder management and organizational performance has proven that stakeholders such as shareholders, employees, customers, suppliers, lenders, government, and society can contribute to firm's profitability (Berman et al., 1999). In the context of this study, the key stakeholders include customers, regulatory bodies and employees. Therefore, due to the significance roles of various stakeholders, organizational performance should not be solely measured by financial indicators. According to Tangem (2004), there are several ways to assess the organizational performance which encompass different stakeholder's perspectives. For purpose of this study, multiple dimensions of Organizational Performance is applied which includes both Financial and Non-Financial Performance.

3.3 Hypotheses Development

Hypotheses are statements in a quantitative study, in which the researcher formulates a prediction or a conjecture about the result of a relationship between the variables or attributes. Creswell (2012) states that hypotheses are traditionally used in experimental research and they serve as research questions that narrow the purpose statement to specific predictions. Hypothesis is a clear statement of what is anticipated to be examined. Usually, hypothesis development is established prior to the conduct of the research that identifies the main concepts involved in the research.

Drawing upon the reviews of literatures discussed in the previous chapter and the proposed theoretical framework, hypotheses statements have been formulated based on the relationships between BCM Factors, IT Capability, and Organizational Performance. This study primarily investigates the relationship that exist between BCM Factors and Organizational Performance.

In addition, this study also investigates the moderating effect of IT Capability on the relationship between BCM factor and Organizational Performance dimensions, on both financial and non-financial measures. A model by Baron and Kenny (1986) is used to test the moderating effects of IT Capability as depicted in Figure 3.2. It is seen that the model has three causal paths that feed into the outcome variable. Path ‘a’ is the impact of the predictor on the outcome and path ‘b’ is the impact of the moderator on the outcome. Meanwhile, path ‘c’ is the interaction of path ‘a’ and ‘b’ and the impact on the outcome. The moderator hypothesis is supported if the interaction of path ‘c’ is significant. There may also be significant effects for the predictor (path ‘a’) and moderator (path ‘b’), but those effects are not directly relevant conceptually to test the moderating hypothesis.

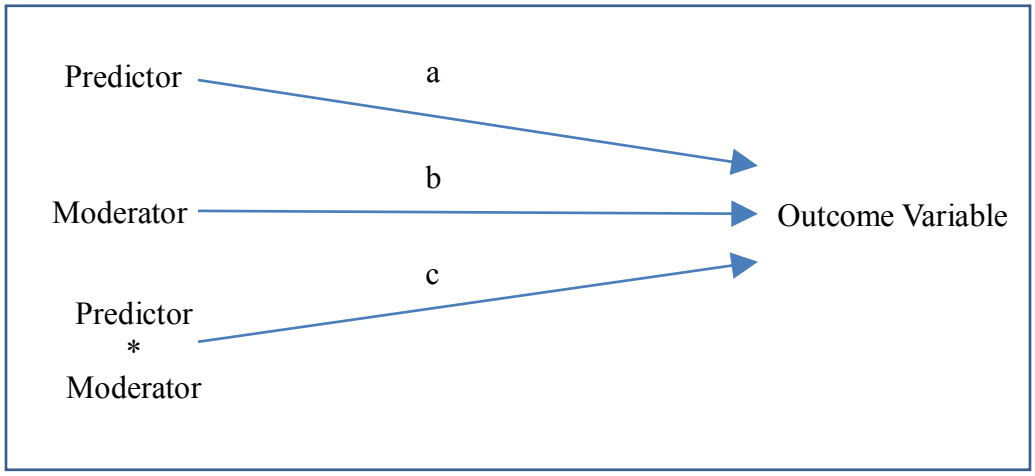

Figure 3.2
Moderating Effects Model

The high level hypotheses statements are as follows:

H1: BCM Factors are significantly related to Organizational Performance.

H2: IT Capability is significantly related to Organizational Performance.

H3: IT Capability significantly moderates the relationship between BCM Factors and Organizational Performance.

Further, detailed direct relationship hypotheses statements for each of BCM Factors in relation to Organizational Performance are summarized in Table 3.1.

Table 3.1
Direct Relationship Hypotheses Statement of BCM Factors

Hypothesis No	Hypothesis Statement
H1a	**BCM Factors are significantly related to Overall Organizational Performance.**
H1a-1	Management Support is significantly related to Overall Organizational Performance.
H1a-2	External Requirement is significantly related to Overall Organizational Performance.
H1a-3	Organization Preparedness is significantly related to Overall Organizational Performance.
H1a-4	Embeddedness of Continuity Practices is significantly related to Overall organizational performance.
H1b	**BCM Factors are significantly related to Financial Performance.**
H1b-1	Management Support is significantly related to the organization's Financial Performance.
H1b-2	External Requirement is significantly related to the organization's Financial Performance.
H1b-3	Organization Preparedness is significantly related to the organization's Financial Performance.
H1b-4	Embeddedness of Continuity Practices is significantly related to the organization's Financial Performance.
H1c	**BCM Factors are significantly related to Non-Financial Performance.**
H1c-1	Management Support is significantly related to the organization's Non-Financial Performance.
H1c-2	External Requirement is significantly related to the organization's Non-Financial Performance.
H1c-3	Organization Preparedness is significantly related to the organization's Non-Financial Performance.
H1c-4	Embeddedness of Continuity Practices is significantly related to the organization's Non-Financial Performance.

The above hypotheses state the relationships between each independent variable of BCM Factors and the dependent variable of Organizational Performance dimensions.

Further, the details of the direct relationship hypotheses statements of IT Capability in relation to Organizational Performance are summarized in Table 3.2.

Table 3.2
Direct Relationship Hypotheses Statement of IT Capability

Hypothesis No	Hypothesis Statement
H2a	**IT Capability is significantly related to Organizational Performance.**
H2a-1	IT Capability is significantly related to Overall Organizational Performance.
H2a-2	IT Capability is significantly related to the organization's Financial Performance.
H2a-3	IT Capability is significantly related to the organization's Non-Financial Performance.

Further, Table 3.3 summarizes the detailed indirect relationship hypotheses statements of IT Capability in moderating the relationship between BCM Factors and Organizational Performance.

Table 3.3
Indirect Relationship Hypotheses Statement for BCM Factors, Organizational Performance and IT Capability

Hypothesis No	Hypothesis Statement
H3a	**IT Capability significantly moderates the relationship between BCM Factors and Overall Organizational Performance.**
H3a-1	IT Capability significantly moderates the relationship between Management Support and Overall Organizational Performance.
H3a-2	IT Capability significantly moderates the relationship between External Requirement and Overall Organizational Performance.
H3a-3	IT Capability significantly moderates the relationship between Organization Preparedness and Overall Organizational Performance.
H3a-4	IT Capability significantly moderates the relationship between Embeddedness of Continuity Practices and Overall Organizational Performance.
H3b	**IT Capability significantly moderates the relationship between BCM Factors and Financial Performance.**
H3b-1	IT Capability significantly moderates the relationship between Management Support and Financial Performance.
H3b-2	IT Capability significantly moderates the relationship between External Requirement and Financial Performance.
H3b-3	IT Capability significantly moderates the relationship between Organization Preparedness and Financial Performance.
H3b-4	IT Capability significantly moderates the relationship between Embeddedness of Continuity Practices and Financial Performance.

Table 3.3 (Continued)

Hypothesis No	Hypothesis Statement
H3c	**IT Capability significantly moderates the relationship between BCM Factors and Non-Financial Performance.**
H3c-1	IT Capability significantly moderates the relationship between Management Support and Non-Financial Performance.
H3c-2	IT Capability significantly moderates the relationship between External Requirement and Non-Financial Performance.
H3c-3	IT Capability significantly moderates the relationship between Organization Preparedness and Non-Financial Performance.
H3c-4	IT Capability significantly moderates the relationship between Embeddedness of Continuity Practices and Non-Financial Performance.

All hypotheses have been tested in this study. Creswell (2012) defines hypothesis testing as a process of formulating decisions about the outcomes by comparing an observed value with a population value to ascertain if no difference or relationship exists between the values.

3.4 Chapter Summary

Based on the literatures, this chapter outlines the theoretical framework affiliated with this study. The framework consists of three main variables namely BCM Factors, IT Capability, and Organizational Performance. In total, 34 hypotheses have been outlined to address the research questions, which have been tested in the data analysis stage. Next, Chapter 4 extensively discusses the research methodology adopted in this study.

CHAPTER 4
RESEARCH METHODOLOGY

4.1 Introduction

The objective of this chapter is to discuss the methodology adopted in this study. It explains the whole process carried out in achieving the research objectives. The discussion includes the research design, population and sampling, data collection methods, the development of the instrument, and the methods of analysis. The elaboration of these aspects clarifies on the appropriateness of the selected methodology and its ability to provide sufficient answers to the research questions.

4.2 Research Design

Babbie (2004) defines research design as an action plan for getting from here to there. In such context, 'here' refers to the initial set of research questions to be answered, and 'there' is the set of conclusions or results answering the questions. Conceptually, a research design encompasses the overall research approach, starting from the formulation of the theoretical framework to the gathering and analysis of data (Hussey & Hussey, 1997). In addition, it helps this study to make a guided decision on the selection of the appropriate research methods so as to cater the limitations and constraints of the intended study (Saunders, Lewis, & Thornhill, 2009).

A research design is classified into three categories namely: 1) experimental design, which is conducted at the laboratory or field work, 2) non-experimental or survey design comprising of questionnaires and interviews, and 3) historical design, which investigates

using secondary data or observation research (Zikmund, 2003). Based on that, this study employs a non-experimental study or survey research design. It means this study does not have the control over the independent variables that may influence the effect on the dependent variables. Data have been gathered from selected organizations in both private and public sectors to examine the relationship of the three main variables explained in Chapter 3 namely BCM Factors, IT Capability, and Organizational Performance within the Malaysian settings. In this case, this study can only manipulate the measurement used in the study but could not intervene in the research settings.

4.2.1 Purpose of Research

As stated earlier, the objective of this empirical study is to examine the relationship between BCM Factors and Organizational Performance. BCM Factors are the independent variable, whereas Organizational Performance is analyzed as the dependent variable. On top of that, this study also investigates the moderating effect of IT Capability on the relationship between BCM Factors and Organizational Performance.

Based on quantitative data analysis method this study is expected to unveil considerable information on the present status of BCM practices by selected Malaysian organizations. A descriptive and explanatory study facilitates organizations in recognizing the factors of BCM that are associated with IT Capability, which are bound to contribute to desirable performance. Since this study examines the relationship between multiple variables, it is characterized as a correlational study. As a result, as stated by Sekaran (2003), this study (correlational study) is conducted in the natural settings, which is also called field study.

4.2.2 Research Strategy

A research strategy is defined as the general plan that this study employs to answer the research questions (Saunders, Lewis, & Thornhill, 2000). It is categorized into 10 categories, namely: 1) action research, 2) case method, 3) collaborative research, 4) cooperative inquiry, 5) ethnography, 6) experimental methods, 7) grounded theory, 8) narrative methods, 9) quasi-experiment research, and 10) survey research (Easterby-Smith, Thorpe, & Jackson, 2008).

The experimental method is very much related to the natural sciences while the case study method intends to develop an intensive knowledge about a case under study. Grounded theory, co-operative inquiry, narrative methods, and ethnography belongs to the inductive approach. The action and collaborative research entail the researcher to work closely and collaborate with the practitioners, thus it requires the researchers to be part of the organization under study (Saunders et al., 2000). Survey research strategy facilitates researchers to examine sizable samples in order to generalize the findings and describe the characteristics of the entire population. It is normally used when the researcher intends to gather data from a large number of samples. Meanwhile, a survey research is a highly structured strategy that aids the collection of standardized data (Hair, Babin, Money, & Samouel, 2003).

The selection of appropriate research strategy is very much depending on several factors including: 1) the research goals, 2) the constraints that are likely to be encountered by the researcher, such as access to data and geographical obstacles, and 3) the amount of time available to the researcher to complete the research (Saunders et al., 2000).

Based on the above discussion, survey strategy has been selected for this study with the following rationales: 1) the concept examined is measureable, hence a survey research strategy is well-suited to this study, 2) survey strategy is usually associated with a deductive approach where a research attempts to generalize the findings to represent the entire population, 3) survey strategy is widely used by researchers in business studies, 4) survey strategy helps in gathering various opinions and attitudes, as well as getting cause-and-effect relationships that facilitates in accomplishing the research objectives (Ghauri & Gronhaug, 2005; Saunders et al., 2000).

4.2.3 Research Method

Theoretically, there are two major research methods employed by researchers namely quantitative and qualitative method. Each method is significantly different in the way the data are collected and analysed. A quantitative research mainly focuses on numerical results and limiting human factor influence. It provides objective and unbiased results, which is normally influenced by the researcher (Hussey & Hussey, 1997). Manheim and Rich (1995) state that a quantitative research is about a collection of primary data from a set of sample data, which is utilized to make presumption over a larger population.

Meanwhile, a qualitative research is suitable to accommodate factors that cannot be translated into numerical based results. It is usually employed to investigate the influence of human factors and cause-and-effect level. The result of a qualitative research may be influenced by the interaction between the researcher and the subject under study. Hence, in order to minimize the effect, researchers' objectivity and skills over the research must be beyond the situation. In this case, Maxwell (1996) states that a qualitative research

involves data collection that includes words, narratives, and observations. The interpretation of these data are driven to answer the research questions about various views of phenomena rather than numerical based results.

The two research methods have their own set of advantages and disadvantages when applied to a particular phenomenon. Both methods are widely used in social science research including business research (Babbie, 2004; Saunders, Lewis, & Thornhill, 2007), in which their characteristics summarized in Table 4.1.

Table 4.1
Characteristics of Quantitative and Qualitative Methods

Characteristics	**Quantitative Method**	**Qualitative Method**
Objective	To quantify the data and generalize the result from sample to the population of interest.	To gain qualitative understanding of underlying reasons and motivations.
Approach	Logical and critical approach.	Interpretation and rational approach.
Sample	Large number of representative.	Cases.
Data Collection	Structured.	Unstructured.
Data Analysis	Structured.	Non-statistical.
Perspective	Particularistic and analytical.	Holistic.
Generalization	Generalization by population membership.	Generalization by comparison of properties and contexts of individual organization.
Outcome	Recommend the final course of action.	Develop and initial understanding.

Source: Baraghani SN (2007) and Ghauri & Gronhaug (2005)

Besides the two research methods, contemporary evaluators of educational and social programs have expanded their methodological repertoire, which combines both quantitative and qualitative methods. Hence, the third method was introduced and scholars name it as ‘mixed method’. A mixed method research is becoming increasingly

popular among researchers in several areas since it offers an approach that provides a better understanding of research problems (Greene, Caracelli, & Graham, 1989). Creswell (2009) states that a mixed method ways of thinking is an orientation toward social enquiry that actively encourages participation in dialogue about various ways of seeing and hearing things, multiple ways of making sense of the social world and multiple standpoints on what is significant and to be valued and cherished.

This study has utilized the survey method which is predominantly quantitative in nature. It is an empirical research, which analyses BCM Factors as the independent variable while Organizational Performance is analysed as the dependent variable. This study also examines the moderating effect of IT Capability on the relationship between BCM Factors and Organizational Performance. By adopting a quantitative analysis, this study reveals considerable information on the current status and the impact of BCM practices by Malaysian organizations in both private and public sectors. Statistical data analysis were conducted and the results have become the evidence to the legitimacy of the proposed relationships of the constructs.

4.2.4 Research Time Dimension

A research is also characterized by its time dimension. An awareness of the time dimension helped this study in conducting the research activities as different research questions incorporate time factor in different ways. In this regard, there are two types of research time dimension namely cross-sectional and longitudinal.

Babbie (2009) states that a cross-sectional research is based on an observation of a sample, population, or phenomenon, which is made at a single point of time. Generally,

most research works especially in business studies adopting cross-sectional because they often encounter a certain level of limitations such as time, budget, staff, and other resource allocation. A cross-sectional study assists to explain how different factors are related in different organizations from a sizable population at a particular point of time, which in turn, helps achieving the research objectives (Saunders et al., 2000).

In contrast, longitudinal study refers to a study, which is repeated over an extended period and intend to track changes over time (Cooper & Schindler, 2003). According to Babbie (2004), a longitudinal study involves multiple collection of data at different points of time. The selection between these two types of research is motivated by a number of factors, such as: 1) the time available for the researcher (Remenyi, Williams, Money, & Swartz, 1998), 2) research strategy (Bryman & Bell, 2007), and 3) practicality for organizational research (Lee & Lings, 2008).

For this study, the cross-sectional time dimension is selected and the rationale for this selection is threefold, 1) budget and time constraints because this study is an academic research, which is limited in time and budget (Cooper & Schindler, 2003; Saunders et al., 2000), 2) this is a descriptive study that intends to describe a detailed picture of an issue or business elements at a given point of time (Hair et al., 2003; Saunders et al., 2007), and 3) geographical constraint because this study is deployed on a nationwide scale using questionnaire (Easterby-Smith, Thorpe, & Lowe, 2002; Hair et al., 2003).

4.2.5 Unit of Analysis

Neuman (2006) defines unit of analysis as the type of unit used by a study when measuring the variables. It is used to explain the unit itself and also to refer to the aspects being examined in the research. Evidences from the previous social science studies have established that a unit of analysis could be an organization, individual, or a group of organization/individual.

The unit of analysis for this study is organization level and data were gathered from representatives of respective organizations. The samples were selected from 147 organizations, which have obtained the ISO 27001 and ISO 22301 certifications from SIRIM. These organizations comprise of various industries including financial institution, telecommunications, ICT, utility providers, services, education, transportation, and government agencies. The target respondents for the survey were limited to managers or executive staff who involve directly in the implementation and operational of BCM within the organizations. These respondents are presumably well-versed in implementing and maintaining BCM programs. They could also participate in strategic decision-making for opportunities and issues in relation to BCM. In short, these group of respondents are similar to respondents used in previous studies on BCM (Chow & Ha, 2009; Järveläinen, 2013; Lindström et al., 2010).

4.3 Population and Sampling

The sampling process begins with the identification of the target population. Sekaran (2003) defines population as a group of people or organization who are of interest to a study. Similarly, Cavana, Delahaye, and Sekaran (2001) define population as the

complete collection of the subject of interest to be studied in a research. In a research project, a population consists of a collection of data and information whose properties are going to be analysed in order to achieve the research objectives (Cavana et al., 2001; Hair, Black, Babin, Andersen, & Tatham, 2010).

Meanwhile, a sample is defined as a segment of the target population of interest of the research and statistically, it is referred to as a sub-collection that is selected from the population of interest. A population sampling is defined as the research process to select a group of representative elements or individuals from a given population for the purpose of statistical analysis.

For this study, the target population is organizations that have obtained the ISO 27001 and ISO 22301 certifications from SIRIM. The rationales of selecting these organizations are as follows:

1. The selection of population with ISO 27001 and ISO 22301certifications is appropriate as these standards are widely adopted and relevant to all types and sizes of organization throughout both public and private sectors where it specifies the requirements for setting up and managing an effective Business Continuity Management System (BCMS).
2. Organizations which have obtained the certification of internationally recognized standards are deemed to possess considerably high sense of commitment towards ensuring their business resilience by enhancing their capability to handle disruption and protect brand reputation.
3. By obtaining the certification, this could be seen as an indication of the organization's maturity in the practise of BCM in line with international best practices. Sawalha

(2013b) found that organizations with matured BCM processes indicated substantial performance improvements have been achieved.

4. The population represents almost all major industries in both private and public sectors, which includes financial institution, telecommunications, ICT, utility providers, services, education, transportation, and government agencies. Hence, this would represent a good composition for generalization to a broader group of population.

Regarding sampling frame, Zikmund (1991) defines it as the list of population elements where sample is drawn. For this study, the sampling frame refers to the list of ISO 27001 and ISO 22301 certified companies enlisted in SIRIM Directory Services. The composition of these organizations as at August 2014 is presented in Table 4.2.

Table 4.2
Sampling frame

Certification	**Number of Organizations**
ISO/IEC 27001:2005	48
ISO/IEC 27001:2005 and MS ISO/IEC 27001:2007	78
MS ISO/IEC 27001:2007	20
MS ISO/IEC 27001:2005 and ISO 22301:2012	1
Total	**147**

Source: SIRIM (2014)

4.3.1 Sampling Size Determination

One of the major advantages in quantitative study is the researcher's ability to use a small number of respondents to make appropriate inferences about a large population that might be too costly to be studied (Cavana et al., 2001). In order to determine the sample

size, Roscoe (1975) suggests as a rule of thumb that sample sizes between 30 and 500 are appropriate for most research. Sekaran (2003) agrees with that, in which it could guarantee effective subject to the research questions investigated and the type of sampling design used in the study. According to Van Dalen (1979), three factors have to be taken into consideration to determine the size of adequate sample namely, 1) nature of population, 2) type of investigation, and 3) degree of precision desired.

For this study, the table provided by Krejcie and Morgan (1970) to determine the sample size based on confidence level desired from a given population is used. Based on the table, the appropriate number of sample size for a population of 147 respondents with the confidence level of 95 percent is 108. The recommended sample size represents 73 percent of the total population. Nonetheless, additional population members may be invited to participate in the survey to increase the response rate and enhance the generalizability of the results.

4.3.2 Sampling Design

This study adopts stratified random sampling design since the ultimate intention of the study is to draw the samples from various types of certifications obtained by the organizations. This approach will ensure that identified subgroups in the population are proportionally represented in the sample in the same proportion with the overall population (Gay & Diehl, 1992) and to produce more representative and accurate sample (Biemer & Lyberg, 2003; De Vaus, 2002). Hence, stratified random sampling is appropriate for this study.

Based on Saunders et al. (2009), stratified random sampling is a variation of random sampling where the population is divided into two or more related groups and significant strata based on one or several attributes. The sampling frame was segregated into several subsets. Further, simple random sampling was drawn from each of the strata based on proportionate of the total number of elements in the respective strata against the total sampling (73 percent for case of this study). A simple random sampling gives every member of the population equal chance of being chosen from the population (Hau & Marsh, 2004; Van, Gerrit, Gary, & Kacker, 2002). Thus, random numbers were generated using Microsoft Excel software as the basis of sample selection. The detailed breakdown of the stratified sample size is tabulated in Table 4.3.

Table 4.3
Proportionate Stratified Random Sampling

Organization	Population	Proportionate Sample Size
ISO/IEC 27001:2005	48	35
ISO/IEC 27001:2005 and MS ISO/IEC 27001:2007	79	58
MS ISO/IEC 27001:2007	20	14
ISO/IEC 27001:2005 and ISO 22301:2012	1	1
Total	147	108

4.4 Data Collection Method

According to Sekaran (2003), for the purpose of research, data can be obtained from primary and secondary sources. Primary data source refers to the information gathered first hand by the researcher himself. Hox and Boeije (2005) assert that whenever a social science researcher collects primary data, a new contribution to the overall body of knowledge is made. This explains the importance of primary data collection as it

contributes to the novelty of the research projects. Meanwhile, secondary data refers to information obtained by the researcher from existing sources or information that has already been collected by others. Thus, secondary data is easier and less costly to be obtained as compared with primary data (Blumberg, Cooper, & Schindler, 2008).

Sekaran (2003) defines data collection as a process of preparing and gathering data and the collection methods are an integration part of research design. There are several methods of data collection could be employed by researchers, in which each method has its own set of advantages and disadvantages. The common data collection methods include interview, survey questionnaire or observation (Sekaran, 2003). As discussed in the previous section, this study has conducted its data collection using survey method. Sekaran (2003) has introduced three modes of questionnaire data collection as listed in Table 4.4.

Table 4.4
Questionnaire Mode of Data Collection

Mode of Data Collection	**Advantages**	**Disadvantages**
Personally administered questionnaire	1. Ability to rapport and motivate respondent. 2. Doubts can be clarified. 3. High response rate ensured. 4. Respondent anonymity is high.	1. Organizations may be reluctant to give company time for the survey with group of employees assembled for the purpose. 2. Expensive.
Mail questionnaire	1. Respondent anonymity is high. 2. Wide geographic regions can be reached. 3. Respondent can take more time to respond at convenience. 4. Can be administered electronically, if desired.	1. Response rate is almost always low. 2. A 30 percent rate is quite acceptable. 3. Not able to clarify question. 4. Follow-up procedure for non-responses are necessary.

Table 4.4 (Continued)

Mode of Data Collection	Advantages	Disadvantages
Electronic questionnaire	1. Easy to administer. 2. Can reach globally. 3. Very inexpensive. 4. Fast delivery. 5. Respondent can answer at their own convenience like the mail questionnaire	1. Computer literacy is a must. 2. Respondent must have access to the internet facility. 3. Respondent must be willing to complete the survey.

Source: Sekaran (2003)

This study has adopted multiple modes of data collection i.e. personally administered questionnaire and distribution of questionnaire through conventional and electronic mail to ensure high response rate is achieved within a reasonable period of time. In order to overcome the potential low response rate, previous researchers have recommended several practical tips such as: 1) the questionnaire is available in the form of a booklet and Word document to cater for both conventional and electronic mailing, 2) provide assurance on respondent's anonymity and confidentially of information given, 3) pre-notification where the organizations will be contacted to identify target respondents prior to sending out the questionnaire, 4) induce respondents' interest on the objectives of the study, 5) reasonable length of questionnaire, 6) provide return postage, 7) good appearance of survey, 8) communicate with the respondents to clarify any concerns and assist smooth returns of answered surveys 9) gentle reminders follow-up and emphasize on closing date for receiving responses (Fox, Crask, & Kim, 1989; Yammarino, Skinner, & Childers, 1991).

4.5 Development of Survey Instrument

The objective of developing the instruments is to obtain measures of the research constructs. The basis for the instrument development of this study arises from the proposed conceptual framework and existing literatures on BCM, IT Capability, and Organizational Performance as discussed in previous chapters. As mentioned earlier, the instrument employed by this study to collect data is in the form of questionnaires. It is considered one of the most appropriate data collection instruments used by survey-based studies (Sekaran, 2003).

4.5.1 Questionnaires Development

The questionnaire is developed mainly based on the literatures and research hypotheses as discussed in previous sections. The preparation of the questionnaire design, rating scale, and wordings were made in line with the recommendations by Kaplan and Saccuzzo (2009) to ensure the reliability and validity of the questionnaire. As a result, vague wording, double-barreled questions, double-negative words, and too technical jargons and terms were eliminated. In addition, close-ended questions are constructed as they restrict the respondents within the set of supplied alternative answers in measuring their objective and subjective perception of the questions. The close-ended questions also assist the respondents to clearly understand the objective of the questions so that they can provide appropriate response (Sekaran, 2003). These efforts are very crucial because the expected responses are significant in order to achieve a reliable statistical analysis for the final results (Hair, Black, Babin, Andersen, & Tatham, 2006).

The questionnaire is prepared in English to avoid any misunderstanding of the technical terms, especially on questions related to BCM and IT Capability. Moreover, the anticipated respondents for this survey are those who are conversant with the subjects and they are in the management and executive levels. The questionnaire is divided into four major sections with purposes detailed in Table 4.5 to fulfill the required information that contributes to the achievement of the research objectives. The full Questionnaire is available in Appendix 1.

Table 4.5
Major Sections of the Questionnaire

Section	Title	Purpose
1	Organization and Respondent Profile	To obtain demographic information about the respondent and organization background.
2	BCM Factors	To evaluate the degree of BCM Factors implementation in the organization.
3	IT Capability	To evaluate the level of IT Capability of the organization in supporting BCM.
4	Organizational Performance	To evaluate the degree of perceived Organizational Performance over the past three years.

Accompanying the questionnaire, a personalized cover letter was provided. It includes a brief introduction to the research to establish a common understanding between this study and the respondents such as purpose, objective, and confidentiality of the survey. The cover letter also provides the definitions of selected terms, specific instructions for returning the survey form, and appreciation note for the respondent's contribution to the study.

The following sections describe in detail the development of the measurement items of the three main constructs of this study namely BCM Factors, IT Capability and Organizational Performance.

4.5.2 BCM Factors Construct and Dimensions

BCM Factors in this study refers to the critical success factors that contribute to the success of BCM implementation within an organization. The selected BCM Factors are adopted from Järveläinen (2013), Chow and Ha (2009), Hoong (2011), Chow (2000), and Herbane et al. (2004). The factors are: 1) Management Support, 2) External Requirements, 3) Organization Preparedness, and 4) embeddedness of continuity practices. Further, the measurements of BCM Factors are adapted and conceptualized to suit the current study from Chow and Ha (2009), Hoong (2011), Herbane et al. (2004), Järveläinen (2013), Karim (2011), Sawalha (2013b), Seow (2009) and Vancoppenolle (2007). In detail, the measurement of BCM Factors construct contains 28 measurable items as exhibited in Table 4.6. The respondents are required to answer the questions based on 7-point Likert scale (1:Strongly Disagree to 7:Strongly Agree).

Table 4.6

BCM Factors Construct Measurement Items

No.	Measurement Items	Sources
a.	**Management Support**	
Our top management…		
1.	provides adequate financial and human-resource support for BCM.	Chow and Ha (2009), Hoong (2011), Järveläinen (2013), Karim (2011)
2.	commits to BCM implementation.	Chow and Ha (2009), Hoong (2011), Järveläinen (2013), Vancoppenolle (2007)
3.	supports the development of BCM.	Chow and Ha (2009), Hoong (2011), Järveläinen (2013), Vancoppenolle (2007)
4.	assumes ultimate responsibility of BCM initiatives.	Chow and Ha (2009), Hoong (2011), Järveläinen (2013)
5.	requires regular update on BCM activities and issues.	Chow and Ha (2009), Järveläinen (2013), Seow (2009)
b.	**External Requirements**	
We implement BCM in our organization to …		
1.	enhance our customer service.	Hoong (2011), Järveläinen (2013), Karim (2011), Sawalha (2013b)
2.	satisfy customer requirements.	Hoong (2011), Järveläinen (2013), Sawalha (2013b)
3.	meet legal or governmental requirements.	Herbane et al. (2004), Hoong (2011), Järveläinen (2013)
4.	improve our reputation from the public and customer perspective.	Järveläinen (2013), Karim (2011), Sawalha (2013b)
5.	improve our position in relation to our competitors.	Herbane et al. (2004), Järveläinen (2013), Seow (2009)
6.	survive in an extremely competitive environment.	Järveläinen (2013), Herbane et al. (2004), Sawalha (2013b)

Table 4.6 (Continue)

No.	Measurement Items	Sources
c.	**Organization Preparedness**	
We have …		
1.	conducted a systematic Business Impact Analysis.	Herbane et al. (2004), Järveläinen (2013), Karim (2011)
2.	imposed adequate BCM requirements on our suppliers.	Herbane et al. (2004), Hoong (2011), Järveläinen (2013)
3.	included a continuity plan as an integral part of developing a new product or service.	Herbane et al. (2004), Hoong (2011), Järveläinen (2013)
4.	setup alternative systems for critical IT applications.	Chow and Ha (2009), Hoong (2011), Järveläinen (2013)
5.	identified one or more alternative key personnel.	Chow and Ha (2009), Hoong (2011), Järveläinen (2013)
6.	setup an alternative site for our critical facilities.	Chow and Ha (2009), Hoong (2011), Järveläinen (2013)
7.	developed communication procedures to be used during disaster situations	Herbane et al. (2004), Hoong (2011), Järveläinen (2013)
8.	tested our BCM plan by simulating an incident regularly.	Chow and Ha (2009), Hoong (2011), Järveläinen (2013)
9.	documented continuity plans for our critical business processes.	Chow and Ha (2009), Hoong (2011), Järveläinen (2013), Karim (2011)
10.	documented continuity plans for our critical information systems and IT infrastructure.	Chow and Ha (2009), Hoong (2011), Järveläinen (2013),
11.	updated our BCM plans on regular basis.	Chow and Ha (2009), Hoong (2011), Järveläinen (2013)

Table 4.6 (Continue)

No.	Measurement Items	Sources
d.	**Embeddedness of Continuity Practices**	
Our organization …		
1.	business units have their representatives in the BCM team.	Herbane et al. (2004), Järveläinen (2013), Vancoppenolle (2007)
2.	business units have shown strong commitment to BCM.	Herbane et al. (2004), Järveläinen (2013), Vancoppenolle (2007)
3.	staff members aware on the continuity practices related to their work area.	Herbane et al. (2004), Hoong (2011), Järveläinen (2013), Karim (2011)
4.	staff members are committed to pursuing disruption-free operations.	Herbane et al. (2004), Järveläinen (2013), Seow (2009)
5.	staff members who has improved BCM may be rewarded.	Herbane et al. (2004), Järveläinen (2013)
6.	relevant staffs have attended systematic BCM training.	Chow and Ha (2009), Hoong (2011), Järveläinen (2013), Karim (2011)
7.	relevant staffs are members of the BCM team.	Chow and Ha (2009), Hoong (2011), Järveläinen (2013)

4.5.3 IT Capability Construct

Bharadwaj (2000) defines IT Capability as an organization's ability to acquire, deploy, and leverage its IT resources in combination with other resources in order to accomplish business objectives and sustain competitive advantage through IT implementation.

The attributes of IT Capability are adopted from Tippins and Sohi (2003) who proposed that IT Capability comprises of three main components namely IT knowledge, IT operations, and IT objects. The measurements of IT Capability attributes are adapted and

conceptualized from Powell and Dent-Micallef (1997), Tippins and Sohi (2003), Bharadwaj, Sambamurthy and Zmud (1999), Zhang, Sarker and McCullough (2008) and Zhang, Sarker and Sarker (2008). In detail, the measurement of IT Capability construct contains 16 measurable items as seen in Table 4.7, also with 7-point Likert scale (1:Strongly Disagree to 7:Strongly Agree).

Table 4.7
IT Capability Construct Measurement Items

No.	Measurement Items	Sources
a.	**IT Knowledge**	
Our organization …		
1.	operational staffs are knowledgeable in computer-based systems.	Tippins and Sohi (2003), Bharadwaj et al. (1999), Zhang et al. (2008), Zhang, Sarker and McCullough (2008)
2.	IT department staffs are qualified for the job.	Tippins and Sohi (2003), Zhang et al. (2008), Zhang, Sarker and McCullough (2008)
3.	IT department staffs are proactive in new innovation.	Tippins and Sohi (2003), Bharadwaj et al. (1999), Zhang et al. (2008)
4.	IT department staffs regularly attend training courses.	Powell and Dent-Micallef (1997), Tippins and Sohi (2003)
5.	has engaged computer expertise as consultants.	Bharadwaj et al. (1999), Powell and Dent-Micallef (1997)
6.	has gained better understanding of our critical business functions through Business Impact Analysis (BIA).	Bharadwaj et al. (1999), Zhang et al. (2008)

Table 4.7 (continued)

No.	Measurement Items	Sources
b.	**IT Operation**	
Our organization …		
1.	relies on computer-based systems to acquire, store, and process information.	Tippins and Sohi (2003), Bharadwaj et al. (1999)
2.	IT practices are in accordance with the guidelines provided by the certification body.	Bharadwaj et al. (1999), Zhang et al. (2008)
3.	monitors the availability of services rendered to our customers.	Bharadwaj et al. (1999), Zhang et al. (2008)
4.	has a standard procedure to ensure effective customer service.	Bharadwaj et al. (1999), Zhang et al. (2008), Zhang, Sarker and McCullough (2008)
5.	has taken the necessary measures to ensure high service availability.	Bharadwaj et al. (1999), Zhang et al. (2008)
c.	**IT Objects**	
Our organization…		
1.	has a formal IT department.	Tippins and Sohi (2003), Zhang, Sarker and McCullough (2008)
2.	employs a manager whose main duties include the management of information technology.	Tippins and Sohi (2003), Bharadwaj et al. (1999), Zhang et al. (2008)
3.	has an annual budget for new information technology hardware and software.	Tippins and Sohi (2003), Bharadwaj et al. (1999), Zhang et al. (2008)
4.	develops customized software applications when the need arises.	Tippins and Sohi (2003), Bharadwaj et al. (1999), Zhang et al. (2008)
5.	Staff members are inter-connected by a computer network.	Tippins and Sohi (2003), Bharadwaj et al. (1999), Zhang et al. (2008)

4.5.4 Organizational Performance Construct and Dimensions

Organizational Performance refers to the ability of an organization to accomplish its corporate goals such as revenue, market share, cost reduction, operational stability, competitive advantage, reputation, customer satisfaction, employee morale, and productivity using appropriate strategies and action plans.

This study considers multiple dimensions of Organizational Performance, which includes both Financial and Non-Financial Performance. This approach is in line with the suggestion of Dossi and Patelli (2010) that it is important to include non-financial measures as it broadens the spectrum of control by avoiding short-sighted measurement while financial measurement is heavily favored as it is directly linked to the outcome of the implemented strategies. As for the measurement, the perceived measures of both Financial and Non-Financial organizational performance are applied since subjective measures were found correlated with the objective measures of performance (Dess & Robinson, 1984).

The measurements of Organizational Performance dimensions in this study are adapted and conceptualized from Herbane et al. (2004), Jacks et al. (2011), Järveläinen (2013), Sawalha (2013b) and Sink (1985) and. The measurement of Organizational Performance construct contains 12 measurable items as detailed in Table 4.8, with 7-point Likert scale. Particularly, this study bases the Organizational Performance on the perceived performance for the last three years.

Table 4.8
Organizational Performance Construct Measurement Items

No.	Measurement Items	Sources
a.	**Financial Performance**	
During the last three years, we have…		
1.	avoided or minimized potential loss of revenue due to service disruption.	Jacks et al. (2011), Sawalha (2013b), Sink (1985)
2.	avoided or minimized potential loss of market share due to service disruption.	Jacks et al. (2011), Järveläinen (2013), Sawalha (2013b),
3.	avoided or minimize the unnecessary recovery cost due to service disruption.	Sawalha (2013b), Sink (1985)
4.	reallocated our organizational resources in the most economical way through Business Impact Analysis exercise.	Jacks et al. (2011), Sawalha (2013b)
b.	**Non-Financial Performance**	
During the last three years, we have…		
1.	minimized unplanned disruptions to our services.	Järveläinen (2013), Sawalha (2013b)
2.	improved our reputation from the perspective of customers.	Jacks et al. (2011), Järveläinen (2013), Sawalha (2013b)
3.	achieved competitive advantage.	Herbane et al. (2004), Järveläinen (2013), Sawalha (2013b)
4.	obtained high customer satisfaction on the reliable services.	Jacks et al. (2011), Sawalha (2013b)
5.	contributed to the growth of our organization.	Jacks et al. (2011), Järveläinen (2013)
6.	successfully retained customer confidence and loyalty by providing continuous and uninterrupted services.	Jacks et al. (2011), Sawalha (2013b)
7.	improved employee productivity by promoting physical and overall security of the work-place.	Jacks et al. (2011), Sawalha (2013b), Sink (1985)
8.	improved our operational stability.	Järveläinen (2013), Sawalha (2013b)

4.5.5 Rating Scale

According to Saunders et al. (2009), most rating questions commonly use the Likert type scale, in which the respondents are requested to indicate how strongly they agree or disagree with a statement, usually between 4 to 7 point rating scales. Krosnick and Fabrigar (1997) agree that a rating scale between 5 to 7 points is more reliable and valid as compared to a shorter or longer scale.

Hence, for purpose of this study, the 7-point Likert type scale is used in measuring the responses for the questionnaire. It allows this study to measure the intensity (e.g. 'strongly agree' or 'slightly agree') and the direction (e.g. yes or no scale) of the responses (Hair et al., 2003). In addition, Bryman and Cramer (2001) posited that Likert scale facilitates the use of different statistical tools for the purpose of data analysis and hypothesis testing. Further, other rationales of choosing a 7-point rating scale are as follows:

1. An odd number of category in the scale is selected because this study believes that certain respondents may have neutral opinion about some of the measures being examined due to the difference in the nature of business and organizational characteristics. This is in line with several researchers that an odd number of category will not subject the respondents into any undue cognitive burden (Cavana et al., 2001; Hair et al., 2010).
2. A 7–point scale is selected because of the wider distribution of scores around the mean value. It shall provide more discriminating advantages and easier to determine covariance between two variables with a high dispersion around their means (Allen & Rao, 2000). Also, they posited that the 7–point scale measurement is satisfactorily

accepted by researchers in both academic and industry lines. Similarly, Churchill and Peter (1984) found that 7-point Likert scales is deem to be efficient in achieving an optimal result in information processing and scale reliability.

Hence, the use of a 7-point Likert scale is deemed appropriate because its potential in enhancing the reliability of the measurement and minimize social desirability bias among respondents, as the target respondents are conversant enough to understand the questions being investigated in this study.

Nonetheless, several researchers argued that the decision of choosing the right scale is mainly based on the researcher's preference and there is no single best method for rating scale construction; one may be better for one research problem but not necessarily good for another (Dawis, 1987; Hughes, 1969).

4.5.6 Pre-Testing the Questionnaire

A pre-testing is essential to ascertain that the newly developed questionnaire is practically and theoretically sound, clearly written, and understood by the respondents. Even though the process of pre-testing a questionnaire is time-consuming, it is extremely important to ensure a quality questionnaire (Salant & Dillman, 1994). In addition, Ghauri and Gronhaug (2005) highlight that a researcher should conduct a pre-test on the questionnaire by consulting experts for their advice before deploying it for the actual survey.

Hence, for purpose of this study, the pre-testing was organized to assess the face and content validity of the questionnaire. Face and content validity involve subjective

judgment on the accuracy of answers towards a set of questions by means of logical assessment (Zikmund, 1991). In order to warrant content validity, Devellis (2003) suggests that the items in the questionnaire should obtain input of experts from both academia and industry.

In this study, most of the questions in the questionnaire were adopted or adapted from past studies. Therefore, the face validity is apparent. Face validity refers to whether the questions make sense to the respondents (Saunders et al., 2009). Nevertheless, for those dimensions that lack of measurement items, some measures were reconstructed and refined specifically for this study. In addition to face validity, the content validity is also important. Content validity refers to the suitability of the questions with the concept of the study. Sekaran (2003) suggests that content validity ensures that the measurements are sufficient and are able to represent the concept being tested. This is where the review by a panel of expert is needed. In conjunction, Krejcie and Morgan (1970) suggest ten experts as sufficient for instrument refinements in any content validity assessment.

For that purpose, this study distributed the questionnaire for review by five industry experts on BCM practices and five academicians in the area of information technology and business study. While the industry experts primarily focused on the face validity as it is closely related to the current industry practices, the academic experts mainly focused on the content validity. Several face-to-face meetings were arranged with the industry and academic experts in order to get their inputs. During the meetings, they were asked to answer the questionnaires, where ambiguities or irrelevant questions were pointed out by the experts. These experts also helped in assessing the questionnaire thoroughly to ensure adequacy in its understanding, comprehensibility, and the reliability of the measures. The

general feedback from the experts indicated that the questionnaire is easy to understand and is able to be completed within the suggested timeframe (15 minutes). Based on the experts' feedbacks and comments, appropriate modifications were made accordingly and questions which are not relevant to the study were removed. Altogether, the modifications are summarized in Table 4.9.

Table 4.9
Summary of Modifications Made on the Questionnaire

No	Section	Nature of change
1	General Guideline	- Added the definition of Business Impact Analysis to provide better understanding.
2	Section 1: Organization and Respondent Profile	- Rearrangement of some questions so as to improve the general flow and sequencing of the questions. - Modification of position's title to suit both public and private sectors. - Standardized the range of year options to ease familiarization. - Removed questions which are not relevant to the research objectives.
3	Section 2, 3 to 4: BCM Factors, IT Capability and Organizational Performance	- Wordings of questions for several constructs were simplified for easy clarification. - Minimized repetitive wordings.
4	Section 5: Comments	- Added comments section to capture other feedbacks or views from the respondent on the research topic.

4.6 Data Analysis Method

For the purpose of data analysis, this study utilizes descriptive and inferential data analysis techniques to analyze the data gathered from the survey. Several methods of data analysis were used in the study namely 1) cleaning and screening of data, 2) descriptive

statistics, 3) factor and reliability analysis, 4) correlation analysis, 5) multiple regression analysis, and 6) hierarchical regression analysis. The data were analyzed using statistical analysis tools called IBM Statistical Package for the Social Science (SPSS) Statistics Version 20.

4.6.1 Cleaning and screening the data

Upon completion of data collection, but prior to further analyses, the data were screened to detect any error in coding, missing data, outliers, normality, out of range values, and input errors. The data screening was conducted through an examination of basic descriptive statistics and frequency distribution. A frequency test was performed for each variable to identify any missing responses. Pallant (2005) states that in summary, data screening comprise of three main steps namely, 1) checking for errors, 2) finding the errors in the data file, and 3) correcting the errors in the data file.

4.6.2 Descriptive Analysis

Creswell (2012) states that descriptive analysis presents the initial review of the outcomes of the research. By scanning the results, it can provide an understanding of the responses of participating respondents to the outcome measures. As suggested by Pallant (2001), the types of descriptive statistics conducted in this study include, 1) central tendency such as mean – point that minimizes the collective differences of scores from that point, median – number that lies at the midpoint of the distribution of earned scores and mode – most frequently occurring score, 2) standard deviation - used measure of dispersion, 3) range of scores, 4) skewness of data – measure of symmetry and deviation from a normal distribution, and 5) kurtosis of data – measure of whether the data are peaked or flat

relative to normal distribution. These values are calculated to get an overview of the respondents' perception towards the constructs of the study and then, the distribution of data is estimated.

4.6.3 Factor and Reliability Analysis

Factor and reliability analysis were conducted to measure the validity and reliability of the independent variables (BCM Factors), dependent variable (Organizational Performance), as well as the moderating variable (IT Capability).

The basic function of factor analysis is to determine the underlying structure within variables and investigates the inter-relationships between variables and/or dimensions (Hair et al., 2010). A factor analysis deals with items that are inter-related to each other or correlated, where it describes which item in which dimension. Therefore, it permits only the viable and reasonable variables being used.

With regard to this study, factor analysis is conducted to examine whether each variable of this study cluster together, hence, it reduces a sizeable number of variables to an interpretable, meaningful, and manageable set of factors (Cavana et al., 2001). The value of significant factor loading most appropriate for the interpretation is influenced by the size of sample. Generally, the items being tested on a small sample size needs a high value of factor loading to determine its practical significance (Hair et al., 2010). Theoretically, Hair et al. (2010) suggest that as the final sample size for this study is 77, only items with factor loadings of 0.60 and above are considered as significant.

Besides, Hair et al. (2006) and Coakes (2005) suggest a minimum of five observations for each variable to conduct factor analysis. Additionally, Steven (1996) recommends that for social science research, about 15 subjects per predictor are needed for a reliable equation. Nonetheless, Guadagnoli and Velicer (1998) argue that sample size is not a problem if a factor has four or more loading greater than 0.6. Hence, for this study, the sample size of 77 is acceptable and meet the minimum requirement to perform factor analysis.

On top of that, McBurney and White (2010) state that reliability analysis is performed to substantiate that the measures produce consistent results on different occasions. In addition, repeatability and internal consistency are two qualities that specify the concept of reliability (Zikmund, 1991). In statistical research, the most commonly used measure to evaluate the reliability of the dimensions is Cronbach's alpha, in which the higher value indicates higher reliability.

4.6.4 Correlation Analysis

Pallant (2007) suggests that the correlation analysis is conducted to identify the existence of multicollinearity among independent variables. This condition may affect the relationship between independent variables and dependent variables in a regression analysis. In short, the correlation analysis was performed to determine the link between the variables and it also identifies the power and direction of the linear relationship between two variables.

The value of correlation coefficient (r) ranges from -1.0 (negative) to +1.0 (positive). This value indicates the strength of association between two metric variables, where

positive r value denotes direct relationship whereas negative r value denotes inverse relationship (Hair et al., 2010). In addition, the strength of correlations is categorized into small where r value is between 0.10 and 0.29, medium where r value is between 0.30 and 0.49, and large where r value is between 0.50 and 1.00 (Cohen, 1988).

4.6.5 Multiple Regression Analysis

Saunders et al. (2009) state that the method of computing coefficient of determination and regression equation using a single independent variable is defined as regression analysis, whereas computing a coefficient of multiple determination (or multiple regression coefficient) and regression equation using two or more independent variables is defined as multiple regression analysis. This method is a more comprehensive type of analysis that allows multiple independent variables to be used to explain a dependent variable in a single equation.

A multiple regression coefficient values are between 0 and 1. A value of 1 indicates that all the variation in the dependent variable can be explained statistically by the independent variables. Meanwhile, a value of 0 indicates that none of the variation in the dependent variable can be explained by the independent variables (Saunders et al., 2009). For this study, multiple regression analysis was performed to examine the relationship between the independent variables i.e. BCM Factors and the dependent variable i.e. Organizational Performance, and at the same time, to identify the contributory variables. Similarly, the multiple regression analysis was also performed to examine the relationship between the moderator variable i.e. IT Capability and the dependent variable.

4.6.6 Hierarchical Regression Analysis

Hierarchical regression analysis is used to test the interaction effect of the moderating variables on the relationship between the independent and dependent variables. According to Baron and Kenny (1986), hierarchical regression or moderator regression analysis is considered to be an appropriate method in examining the moderating variables.

Before proceeding to get the interaction terms to measure the moderating effect, all the predictor and moderator variables were centered or standardized. This means that the mean of each variable was subtracted from all the values of that variable and subsequently all the values of the variable were divided by its standard deviations. Several statisticians recommend that these variables to be centered. This is because predictor and moderator variables generally are highly correlated with the interaction terms created from them. By centering the variables, it will minimize problems associated with multicollinearity among these variables in the regression equation (Frazier, Tix, & Barron, 2004).

For this study, hierarchical regression analysis was conducted to test the moderating effect of IT Capability on the relationship between BCM Factors and Organizational Performance. Eventually, the result of this analysis has provided the answers to the third research question and hypothesis to the study.

4.7 Chapter Summary

Research methodology is concerned with a series of interrelated multi-stage procedures that are required to be undertaken by a research project in order to achieve its objectives.

In this chapter, the research methodology and rationale for selecting different aspects related to the research process are discussed. This includes deciding on the selection of the research design, population and sampling, data collection methods, development of the instrument, and statistical methods used for data analysis.

As a summary, this research adopts a survey strategy using a quantitative method. A questionnaire was used as the instrument for collecting data. In addition, the research time dimension is characterized as cross-sectional as it is carried out once and represents a snapshot of one point of tim**e**. The target population of this study is organizations that have obtained the ISO 27001 and ISO 22301 certifications in Malaysia.

On the development of the instrument, this chapter discusses the dimensions and the measurement items of each construct that were incorporated into the questionnaire. Finally, for the purpose of data analysis, statistical analysis software was used to analyze and present the quantitative data collected by the survey, which covers both descriptive and inferential statistics.

CHAPTER 5
DATA ANALYSIS AND FINDINGS

5.1 Introduction

The aim of this chapter is to showcase the outcomes of the study based on the research methodology as outlined in Chapter 4. This chapter also attempts to provide the answers to the research questions by conducting a series of rigorous statistical analyses on the data gathered from the questionnaires using IBM SPSS Statistics Version 20. The data analyses include response rate, test of non-response bias, demographic profile of participating organizations and respondents, detection and treatment of missing data and outliers, fundamental statistical assumptions, goodness of measures through the validity and reliability analysis of measures being used, descriptive statistics, correlation analyses, hypothesis testing through multiple regression, and hierarchical regression analyses. The chapter ends with a summary of the results of hypotheses testing and research findings.

5.2 Response Rate

As stated by Babbie (2004), response rate measures researcher's success in persuading respondents to respond to the questionnaire. For this study, the survey was conducted over a period of four months using multiple data collection methods including self-administered and distribution of questionnaire via conventional and electronic mail. In order to avoid duplication of responses from the same respondents, a register was maintained to record the method of data collection mode for each respondent. This means that for respondent who had responded through self-administered method, the researcher

will update the register to ensure that the survey will not been sent again via mail to the same respondent, and vice versa.

Some respondents who were contacted in this study responded to the survey early whereas some respondents responded after being followed up with a series of friendly reminders. According to Hussey and Hussey (1997), the response rate for mail distribution is normally low, about 10 percent or less. For that reason, counter measures must be taken in order to increase the response rates. Fox et al. (1989) recommend for repeat follow-up to substantially increase the return rates. In this study, during the initial stage, the response rate via conventional and electronic mail was quite low. Therefore, this study sent reminders via email to the respondents together with a phone call reminding them to complete and return the questionnaires.

In order to convince and persuade the respondents, this study had also re-emphasized the objectives and the importance of the study. For the respondents' convenience, they were given options to return the questionnaires via conventional or electronic mail at their earliest time possible. For this study, the reminders had played an important role to garner participations since most respondents have indicated their willingness to participate in the survey during the initial contact.

Due to insufficient number of response obtained from the initial sample of 108 organizations, additional population elements were invited to participate in the survey to increase the response rate so as to improve the generalizability of findings. As stated by Israel (2009), many researchers commonly increase additional of 10 percent to the

sample size to compensate for respondents that this study failed to contact and the sample size is often increased by 30 percent to compensate for nonresponse.

For this study, the response rate is calculated by dividing the number of responses obtained with net contactable respondents, where the latter is a sum that excludes organizations with unreachable contact details. In total, 140 out of 147 organizations were contacted but only 79 responded through a self-administered approach, conventional and electronic mail. Hence, the overall response rate was 56.43 percent.

In order to minimize the response bias that may disrupt the results of this study, this study had excluded two responses due to incomplete questionnaire, which contained more than 50 percent of missing data and a questionnaire that the respondent did not specify the type of BCM-related quality system their organization certified with, which indicated that the organization may not belong to the target sampling frame. Thus, the final usable or effective response rate is 55.00 percent, as detailed in Table 5.1.

Table 5.1
Response Rate

Item	Frequency	Percentage (%)
Distributed Questionnaires	140	100.00
Returned Questionnaires	79	56.43
Rejected Questionnaires	2	1.43
Effective Response Rate	77	55.00

According to Babbie (2004) and Zikmund (1991), this figure is adequate for multivariate analyses and reporting as they advocate for a minimum of 50 percent response rate. On the same note, Sekaran (2003) argues that a response rate of 30 percent is acceptable for surveys.

5.3 Non-Response Bias

Based on the past studies, it has been widely expressed that the elements of non-response is hardly avoidable in any research. The situation may appear in varying degrees and different forms such as demographic, personality, motivation, and behavior of respondents. As pointed out by Malhotra, Hall, Shaw, and Oppenheim (2006), in any form and at any degree, those non response biases might affect the result of the research. On the other hand, Armstrong and Overton (1977) recommend that non-respondents and late respondents could be assumed to share similar characteristics. Therefore, for this study, the Chi-square test has been conducted to determine the significant characteristic distribution among early and late respondents. For that purpose, this study considers responses within one month after the distribution as early response, while the questionnaires returned after one month of the distribution is considered as late responses. This approach is assumed consistent with the argument posed by Churchill and Brown (2004) that late responses convey unwillingness to participate in the survey without being influenced by series of follow-ups.

Based on such classifications, there are 63 early responses and 14 late responses. Further, the parameters analyzed to check the non-response bias in this study are based on the demographic profile of the respondents, which is exhibited in Table 5.2. The results show that there is no significant difference across all respondents' demographic characteristics based on speed of responses. Therefore, the null hypothesis cannot be rejected because all of the variables are insignificant at $p > 0.05$.

Table 5.2
Chi-Square Test for Comparison of Early and Late Responses

Variables	Categories	Early Response	Late Response	Chi-Square Value	Sig. (2 sided)
Industry	Education	4	1	13.120	0.108
	Financial Service	6	0		
	Government	34	4		
	Industrial & Consumer Product	1	0		
	Technology	7	3		
	Telecommunication	6	1		
	Trading & Services	1	0		
	Transportation	1	2		
	Utilities	3	3		
Years of Existance	Less than 3 years	2	0	0.474	0.789
	3 to 5 years	0	0		
	6 to 10 years	5	1		
	More than 10 years	56	13		
Number of Employee	Less than 50	1	0	5.044	0.283
	101 to 200	4	3		
	201 to 1000	24	7		
	1001 to 2000	11	1		
	More than 2000	23	3		
Number of Years BCM in Place	Less than 3 years	23	6	2.269	0.518
	3 to 5 years	21	3		
	6 to 10 years	13	2		
	More than 10 years	6	3		
Highest Responsibility of BCM Program	Managing Director / CEO	31	5	8.366	0.301
	General Manager	3	3		
	Head of Management Services	7	1		
	Head of Business	4	0		
	Head of Operations	1	0		
	Head of Risk Management	2	0		
	Head of IT	12	5		
	Others	3	0		
Current Position	Executive	14	0	10.578	0.060
	Senior Executive	13	4		
	Manager	17	9		
	Senior Manager	15	1		
	General Manger	3	0		
	Others	1	0		
Number of Years Working in the Organization	Less than 3 years	11	3	7.170	0.067
	3 to 5 years	21	3		
	6 to 10 years	6	5		
	More than 10 years	25	3		
Number of Years Working in the Industry	Less than 3 years	0	0	1.487	0.475
	3 to 5 years	5	0		
	6 to 10 years	9	3		
	More than 10 years	49	11		

However, the results also show that the respondents' current position and number of years working in the organization are close to becoming significant at p = 0.060 and p =

0.067 respectively. Based on the observations, the respondents with high ranking positions, i.e. manager and above tend to respond late, which may be due to their tight schedule and job commitment.

Based on the above results and arguments, this study holds that there is no non-response bias exists that could affect the generalization of the findings. Therefore, it can be concluded that the samples obtained are able to represent the total population of study.

5.4 Demographic Profile of Respondents

As describe in the previous section, this study involves 77 organizations, which have obtained the ISO 27001 and ISO 22301 certifications from SIRIM. In detail, Table 5.3 summarizes the demographic profiles of the respondents in their type of industry, years of existence, type of BCM-related quality system certification, number of years the BCM has been in place in their organizations, senior management with highest responsibility of BCM program, their current position, and their period of working experience in the organization as well as in the industry. Meanwhile, the full details of the demographic variables are provided in Appendix 2.

Table 5.3
Demographic Profiles of the Respondents

Variables	Categories	Frequency	Percentage (%)
Industry	Education	5	6.50
	Financial Services	6	7.80
	Government	38	49.40
	Industrial & Consumer Product	1	1.30
	Technology	10	13.00
	Telecommunication	7	9.10
	Trading & Services	1	1.30
	Transportation	3	3.90
	Utilities	6	7.80
Years of Existence	Less than 3 years	2	2.6
	6 to 10 years	6	7.8
	More than 10 years	69	89.6
Number of Employee	Less than 50	1	1.3
	101 to 200	7	9.1
	201 to 1000	31	40.3
	1001 to 2000	12	15.6
	More than 2000	26	33.8
ISO 27001:2005 Certification	Not Certified	31	40.3
	Certified	46	59.7
ISO 27001:2007 Certification	Not Certified	22	28.6
	Certified	55	71.4
ISO 22301 Certification	Not Certified	76	98.7
	Certified	1	1.3
Other ISO Certification	Not Certified	73	94.8
	Certified	4	5.2
Number of Years BCM in Place	Less than 3 years	29	37.7
	3 to 5 years	24	31.2
	6 to 10 years	15	19.5
	More than 10 years	9	11.7
Highest Responsibility of BCM Program	Managing Director / CEO	36	46.8
	General Manager	6	7.8
	Head of Management Services	8	10.4
	Head of Business	4	5.2
	Head of Operations	1	1.3
	Head of Risk Management	2	2.6
	Head of IT	17	22.1
	Others	3	3.9

Table 5.3 (Continued)

Variables	Categories	Frequency	Percentage (%)
Current Position	Executive	14	18.2
	Senior Executive	17	22.1
	Manager	26	33.8
	Senior Manager	16	20.8
	General Manager	3	3.9
	Others	1	1.3
Number of Years Working in the Organization	Less than 3 years	14	18.2
	3 to 5 years	24	31.2
	6 to 10 years	11	14.3
	More than 10 years	28	36.4
Number of Years Working in the Industry	3 to 5 years	5	6.5
	6 to 10 years	12	15.6
	More than 10 years	60	77.9

The Table 5.3 visualizes that there is an almost equal balance of respondents from both public and private sectors. In total, there are 38 (49.4%) organizations representing the public sector while 39 (50.6%) organizations representing the private sector. Within the private sector, the highest percentage of the respondents are from the technology industry (13.0%) followed by telecommunication (9.10%), utilities (7.8%), and financial services (7.8%).

Regarding the period the organizations have been in their respective industries which are represented by the number of years of existence, it is found that 69 (89.6%) of the organizations have been in the industry for more than 10 years, 6 (7.8%) organizations between 6 to 10 years, and 2 (2.6%) organizations less than 3 years.

The size of the organization is reflected through the number of employees in the organizations. The results exhibit that 26 (33.8%) of the organizations have more than

2,000 employees, 12 (15.6%) are employing between 1,001 and 2,000 employees, and 31 (40.3%) are employing between 201 and 1,000 employees. These statistics indicate that the size of the organization may have an impact on the level of adoptions of BCM-related quality systems.

The important requirement for organizations to be able to participate in this study is that they must be certified with BCM-related quality systems such as ISO 27001 and ISO 22301 by SIRIM. With reference to the table, it is seen that 24 (31.2%) of the organizations are certified with both ISO/IEC 27001:2005 and MS ISO/IEC 27001:2007, 22 (28.6%) are certified with ISO/IEC 27001:2005, and 31 (40.3%) are certified with MS ISO/IEC 27001:2007. Meanwhile, one organization is certified with both ISO/IEC 27001:2005 and ISO 22301:2012. A possible reason for this could be that the ISO 22301 certification is relatively new in the market since it was introduced in May 2012. There is also other BCM-related quality system declared by a small percentage of respondents (5.2%), but having carefully checked, this study found that the certification was actually ISO 9001, a quality management systems standard which is not directly related to BCM.

In terms of the number of years BCM program has been in place in the organizations, the results show that 24 (31.2%) organizations have established the BCM program for more than 6 years, between 3 to 5 years in 24 (31.2%) organizations, and less than 3 years in 29 (37.7%) organizations. The statistics reflect that 62.3 percent of the organizations have a matured BCM program in place (more than 3 years), while 37.7% of the organizations are considered relatively new in the BCM implementation.

It is seen that in most of the participating organizations, the highest responsibility of BCM program is held by the Managing Director or CEO (46.8%). This finding is consistent with the survey conducted in the UK by Chartered Management Institute in 2012 that BCM in 40 percent of the organizations were sponsored by the Managing Director (Pearson & Woodman, 2012). The next highest responsibility of BCM program is held by the Head of IT (22.1%), followed by the Head of Management Services (10.4%). These facts indicate that most organizations have demonstrated the importance of senior management holding the ultimate responsibility of BCM program, in line with BCM good practices.

Other findings show that most of the respondents of this study hold managerial positions, which comprise of manager, senior manager, and general manager (58.5%), while only 22.1 percent and 18.2 percent for senior executive and executive positions respectively. These respondents are presumably well-versed in BCM programs and they could also participate in strategic decision-making for future direction of the BCM in their organizations. Moreover, such groups have also been used in previous studies on BCM (Chow & Ha, 2009; Järveläinen, 2013; Lindström et al., 2010).

Further, the results reveal that 28 (36.4%) respondents have worked in their current organization more than 10 years, 11 (14.3%) respondents between 6 and 10 years, and the rest (49.4%) of the respondents less than 6 years. It is also seen that 77.9 percent of the respondents have had more than 10 years of working experience in the industry, while 15.6 percent of the respondents have had between 6 and 10 years of experience. Therefore, they can be considered to be very competent and knowledgeable on the BCM

initiatives, the drivers of effective BCM implementation and its effect to Organizational Performance.

5.5 Preliminary Analysis

Byrne (2010) recommends that establishing the assumption of psychometric properties before deploying necessary data analysis techniques requires a study to deploy a series of data screening approach, among which includes detection and treatment of missing data and outliers. They are important so that the data distribution and the selected sample size will have a direct effect on the type of data analysis techniques to be employed.

On the other hand, it is a known fact that the importance of data screening in any form of data analysis especially quantitative study cannot be underpinned since it provides a very solid groundwork for achieving significant results. In fact, Hair et al. (2010) have pointed out that the quality of the results and analyses in spite of their enormous burden, are very much dependent on the quality of the preliminary data screening activities. Therefore, ignoring the importance of data screening would occasionally result in poor quality of output and analysis. Even though the data quality could be ensured by mere proof reading and manual checking, this approach may be very tasking when dealing with huge set of data (Tabachnick & Fidell, 2007).

5.5.1 Missing Data

Cavana et al. (2001) argued that past studies have established that missing data is a major concern of many researchers and it has negative consequence that may affect the results of an empirical research. The rates at which missing data occur in studies vary, so also is

the degree of its impact. As an instance, if the rate is below 1 percent, there will not be any problem. Generally, if it is below 5 percent it is bearable and manageable, but if it reaches 15 percent it demands for drastic actions using certain very sophisticated techniques to overcome it (Acuna & Rodriguez, 2004). Further, Hair et al. (2010) suggest that it is better for a study to remove cases with more than 50 percent missing data and the study does not has any issue on sample size. Alternatively, the common treatment of missing data through SPSS software is by replacing the missing values with mean or median of nearby points or via linear interpolation.

For this study, to ensure that the data is clean, the frequency distribution for each variable was identified. The results show that there were three cases having missing data issue, which represents only 0.06 percent, which is relatively very small. Nonetheless, in order to rectify the shortcoming, the missing data (items A1, A5, and I8) were treated by replacing the values with the mean of the nearest values. This approach was chosen because of its unique ability to replace the missing values in terms of both the quantitative and qualitative attributes (Liu, Lei, & Zhang, 2004).

5.5.2 Outliers

Hair et al. (2006) define outliers as the observations that differ distinctly from other observations and have unique characteristics. It means that the observed value found to be far or significantly different from the others. Upon detection, the values may be omitted from further data analyses. Many methods can be used to detect outliers. Mahalanobis D-square is by far the most frequently used method to detect multivariate outliers (Hair et al., 2010). It is a multidimensional version of a z-score. It measures the

distance of a case from the central (multidimensional mean) of a distribution, given the covariance (multidimensional variance) of the distribution (Rasmussen, 1988). In this technique, a case is considered as a multivariate outlier if the probability associated with its D-square is 0.001 or less.

For this study, having carefully checked the gathered data, none of the item obtains the Mahalanobis D-square score (probability) of less than 0.001. Hence, all 77 responses are valid to be used for further analyses.

5.6 Fundamental Statistical Assumptions

For this study, the data analyses and hypotheses testing were conducted using regression analysis. Hence, prior to conducting the regression analyses, the assumptions of multiple regression analyses were analyzed for all the variables. For this purpose, Pallant (2001) and Hair et al. (2010) underline that the assumptions include ratio of cases to independent variables, normality, linearity, multicollinearity, and homoscedasticity.

5.6.1 Ratio of cases to variables

Tabachnick and Fidell (2007) recommend that for standard multiple or hierarchical regression analyses, a bare minimum requirement needs to have at least 5 times more cases than the number of independent variables. Likewise, the current response rate is considered sufficient going with the suggestion that a sample size should be between 5 and 10 times the number of study variables (Bartlett, Kotrlik, & Higgins, 2001; Hair et al., 2010). In addition, Roscoe (1975) provides the rule of thumb of sample size to be 10 times of the number of variables, particularly to run the multivariate analysis. Hence, as

this study involves 7 variables, a sample size of 77 is adequate and satisfies the minimum requirement to conduct regression analysis.

5.6.2 Normality

A normality test is performed to determine whether a data set is well-modeled by a normal distribution or not, or to estimate how likely an underlying random variable is to be normally distributed. Hulland (1999) highlights that in every study, there is a need to ensure that normality is achieved so as not to disfigure the relationships between the variables and not to interfere the significance of the results. Hence, a normal distribution is very crucial, since it will offer the underlying foundation for inferences to be made, which utilizes sampling when collecting data (Hair, Money, Page, & Samouel, 2007).

For this study, two types of normality tests were performed to determine the data normality, namely graphical and statistical approach. For graphical approach, histogram and normal probability plot (P-P Plot) were utilized. Meanwhile for statistical approach, the data were assessed through Skewness and Kurtosis analysis. Further, the results of the normality tests are detailed in the following section. The dependent variables are represented by Overall Organizational Performance, Financial Performance, and Non-Financial Performance. Meanwhile, the independent variables of BCM Factors are Management Support, External Requirement, Organization Preparedness and Embeddedness of Continuity Practices.

5.6.2.1 Graphical Approach

In the graphical approach, the histogram and the normal probability plot (P-P Plot) of the regression standardized residual were used based on which the normality was determined. Having run the test, the results are exhibited in Figure 5.1. It displays the histogram and P-P Plot between BCM Factors and Overall Organizational Performance dimension. The histogram pictorially illustrates that the normality assumption is achieved since the bars make a normal curve. On top of that, the P-P Plot graph shows that all the points lie along a 45^0 diagonal line from bottom left to top right. This demonstrates that the normality assumption has not been violated. As for other dependent variables (Financial and Non-Financial Performance), the results (available in Appendix 3) also show that the normality assumption is also not violated. Therefore, it can be concluded that the data approximately follow normal distribution.

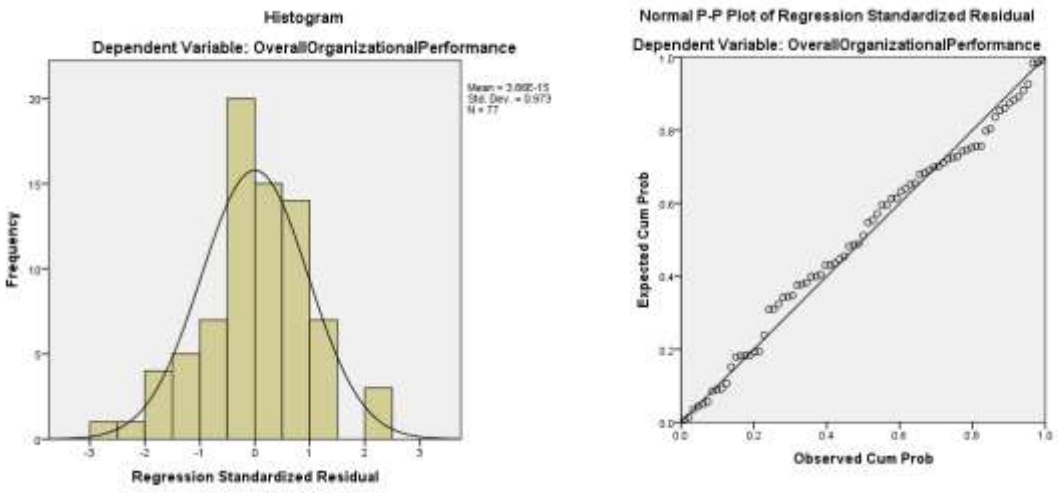

Figure 5.1
Graphical Approach of Normality Test for Overall Organizational Performance

5.6.2.2 Statistical Approach

Subsequently, a statistical approach normality test was conducted to determine the skewness and kurtosis of all variables. The results are detailed in Table 5.4, which show that the skewness and kurtosis values are between -0.148 and -1.410 and between -0.429 and 3.591 respectively. Kline (2011) suggests that the acceptable value for skewness is ±3 and for kurtosis is ±10. Therefore, all the values for data in this study fall between the two limits, and are normally distributed.

Table 5.4
Statistical Approach of Normality Test

Variable	Skewness	Kurtosis
Management Support	-0.693	0.891
External Requirement	-0.927	1.562
Organization Preparedness	-0.423	1.977
Embeddedness Of Continuity Practices	-0.148	0.627
Overall IT Capability	-1.410	3.088
Financial Performance	-1.257	3.591
Non-Financial Performance	-0.287	-0.429
Overall Organizational Performance	-0.454	0.230

5.6.3 Linearity

This study investigated the scatter plot of residuals against predicted values and the normal plot of regression standardized residuals for the dependent variable in order to check for linearity. Figure 5.2 displays the scatter plot between BCM Factors and Overall Organizational Performance dimension. The scatter plot exhibits that there is no evidence of non-linear pattern to the residuals and there is no sign of curved pattern of residuals dispersion (read from left to right), which might imply a non-linear relationship. The graph also shows that the residual scores are concentrated at the center along the zero (0) point. This suggests that the linearity assumption is met. As for the other dependent variables (Financial and Non-Financial Performance), the linearity assumptions are also

met (referring to the results detailed in Appendix 3). Therefore, this study concludes that the gathered data comply with the linearity distribution assumption.

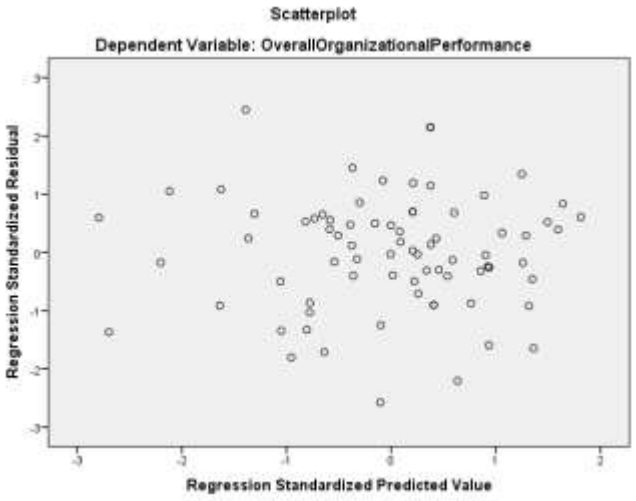

Figure 5.2
Scatter Plot for Overall Organizational Performance

5.6.4 Multicollinearity

This test is important because if multicollinearity exists between two or more independents variables, it could disrupt the results of multiple regression analysis. For this study, two types of multicollinearity tests were performed using Pearson correlations and Tolerance Value and Variance Inflation Factors (VIF).

5.6.4.1 Pearson Correlation between Independent Variables

Pearson's correlation explains the relationship between two or more independent variables, in which the correlation is significant at either 0.0l or 0.05 level. The general rule of thumb is that it should not exceed 0.75. Similarly, Allison (1999) and Cooper and Schindler (2003) argue that correlation values of 0.8 or greater are problematic, which indicates that multicollinearity exists between the independent variables.

For the data gathered in this study, based on the results in Table 5.5, it demonstrates that the multicollinearity does not exist between the independent variables since the Pearson correlation indicators for all independent variables do not exceed 0.75.

Table 5.5
Pearson's Correlation between Independent Variables

Variable	1	2	3	4
1. Management Support	1			
2. External Requirement	0.505**	1		
3. Organization Preparedness	0.412**	0.516**	1	
4. Embeddedness Of Continuity Practices	0.534**	0.474**	0.468**	1

**. Correlation is significant at the 0.01 level (2-tailed).

5.6.4.2 Tolerance and VIF

The second method that was employed to test the multicollinearity between the independent variables is Tolerance Value and Variance Inflation Factor (VIF). It is generally believed that any VIF exceeds 10 with a tolerance value less than 0.10 indicates a potential problem of multicollinearity (Hair et al., 2010). For the data in this study, Table 5.6 presents the results for all the independent variables. It is seen that the tolerance values are greater than 0.10 and the VIF values are less than 10. Hence, multicollinearity does not exist among the independent variables.

Table 5.6 *Tolerance and VIF Values*

	Collinearity Statistics	
Independent Variables	**Tolerance**	**VIF**
Management Support	0.627	1.596
External Requirement	0.611	1.637
Organization Preparedness	0.662	1.510
Embeddedness Of Continuity Practices	0.621	1.610

5.6.5 Homoscedasticity

Homoscedasticity is assumed when there is no pattern in the data distribution, and residuals are scattered randomly around the horizontal line through 0 (Norusis, 1999). For the gathered data, the scatterplot in Figure 5.2 obviously demonstrates that there is no clear relationship between the residual and the predicted value for BCM Factors and Overall Organizational Performance dimension. Following the suggestion of Hair et al. (2010), since the scatterplot shows no clear relationship between residuals and predicted values, it proves there is no problem of homoscedasticity or independence of residuals. Similarly, the homoscedasticity assumptions for other dependent variables (Financial and Non-Financial Performance) are met (refer to Appendix 3).

5.7 Goodness of Measure

Based on Sekaran (2003), the goodness of measures is established through measures of validity and reliability. Generally, a study has to ensure whether or not the test measures do actually measure what is to be measured (validity) and maintain consistency of the measurement results (reliability) (Cooper & Schindler, 2003). In this study, prior to subsequent multivariate analyses, the goodness of measures was analyzed through factor analysis and reliability test.

5.7.1 Factor Analysis

For this study, factor analysis was conducted to test the construct validity of the measurement instruments. Statistical validity refers to whether a statistical research is able to derive conclusions that are in agreement with scientific and statistical laws. In

other words, Kalla (2010) argues that if a conclusion is obtained from a given data set after experimentation, it is believed to be scientifically valid if the conclusion is derived from a scientific experiment and relies on mathematical and statistical laws. A factor analysis was conducted to examine the validity of each construct separately because of the limitation of the sample size (Hair et al., 2010), and assumption of unidimensionality among the items in one dimension.

Principal Component Analysis (PCA) was employed to conduct factor analysis rather than Exploratory Factor Analysis (EFA). As discussed in the previous chapter, all the constructs' measurements were adopted and adapted from past studies, thus EFA is not necessary (Hair et al., 2010). The objective of PCA is to derive a relatively small number of components that can account for the variability found in a relatively large number of measures. This statistical procedure, which is also called data reduction is normally performed when a study does not want to include all of the original measures in the analyses but it still wants to work with the information contained in the measures. According to DeCoster (1998), the goal of data reduction is to simplify by summarizing the variance associated using a smaller number of factor. PCA is commonly considered the best technique for the pragmatic purposes of data reduction.

The suitability of factor analysis is subjected to the use of Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and the Bartlett's Test of Sphericity. If the KMO values is greater than 0.6 (Coakes, Steed, & Ong, 2009) and the Bartlett's test value is large and significant ($p<0.05$) (Hair et al., 2006), factorability is then considered possible. In addition, a correlation matrix that is appropriate for factor analysis should have several sizeable correlations greater than 0.3 (Hair et al., 2006). The value of significant factor

loading most appropriate for interpretation is determined by the sample size where items that are being tested on smaller sample size requires higher factor loading to ascertain practical significance. Based on the guidelines recommended by Hair et al. (2010), the significant factor loading for this study is of 0.60 and above considering the sample size of 77 cases.

5.7.1.1 Dependent Variable: Financial Performance

Four questions were used to measure Financial Performance, a dimension of Organizational Performance. The KMO measure of sampling adequacy value is 0.820, which exceeds the required value of 0.6. This indicates that the sample size is adequate for performing factor analysis. Also, it means that the ratio of the sample size to the number of items is sufficient for factorability. Besides, the Bartlett's test of sphericity is statistically significant, as the p-value is 0.000. This supports the factorability of the correlation matrix with the approximate Chi-square value of 322.163, which also allows for factor analysis.

Therefore, factor analysis was carried out. A principal component analysis was used to test the four items in the factor analysis process. The factor solutions indicate that all items of Financial Performance had loading of greater than 0.60, ranging from 0.873 and 0.956 using the Varimax rotation method. This factor loadings indicate good correlation between the items and the factor grouping they belong to. Besides, the component solution explains a total of 85.835 percent of the variance, exceeding the minimum value of 60 percent recommended by Hair et al. (2010). On the other hand, no item has been deleted due to low MSA value, low communalities value, and the loading is less than

0.60. In overall, the inspection on the correlation matrix revealed the presence of many coefficient of 0.3 and greater. Eventually, the summary of the factor analysis of Financial Performance construct is exhibited in Table 5.7. Meanwhile, the details are provided in Appendix 4.

Table 5.7
Summary of Factor Analysis for Financial Performance

Item	Description	Component 1
H1	avoided or minimized potential loss of revenue due to service disruption.	0.956
H3	avoided or minimize the unnecessary recovery cost due to service disruption.	0.949
H2	avoided or minimized potential loss of market share due to service disruption.	0.925
H4	reallocated our organizational resources in the most economical way through Business Impact Analysis exercise.	0.873
Eigenvalues		3.433
Percentage of variance explained (%)		85.835
KMO		0.820
Bartlett's Test of Sphericity: - Approx Chi-Square - df - Sig.		 322.163 6 0.000

5.7.1.2 Dependent Variable: Non-Financial Performance

This study measures Non-Financial Performance (a dimension of Organizational Performance) using eight questions. The KMO measure of sampling adequacy value is 0.873, exceeding the required value (0.6). This indicates that the sample size is adequate for factor analysis, and that the ratio of the sample size to the number of items is sufficient for factorability. Additionally, the Bartlett's test of sphericity is statistically significant, with p-value 0.000, supporting the factorability of the correlation matrix with approximate Chi-square value of 568.810. This also indicates a permission for factor analysis.

Further, a principal component analysis was used to test the eight items in the factor analysis process. The factor solutions indicate that all items of Non-Financial Performance had loading of greater than 0.60, ranging between 0.724 and 0.914 using the Varimax rotation method. The factor loadings indicate good correlation between the items and the factor grouping they belong to. The component solution explains a total of 71.403 percent of the variance, exceeding the minimum value (60%) recommended by Hair et al. (2010). There is no item deleted due to the low MSA value, low communalities value, and the loading is less than 0.60. In overall, the inspection of the correlation matrix revealed the presence of many coefficients of 0.3 and above. In short, the details discussed in this paragraph and the previous are summarized in Table 5.8, while the details are available in Appendix 4.

Table 5.8
Summary of Factor Analysis for Non-Financial Performance

Item	Description	Component 1
I4	obtained high customer satisfaction on the reliable services.	0.914
I2	improved our reputation from the perspective of customers.	0.879
I3	achieved competitive advantage.	0.869
I6	successfully retained customer confidence and loyalty by providing continuous and uninterrupted services.	0.867
I1	minimized unplanned disruptions to our services.	0.836
I7	improved employee productivity by promoting physical and overall security of the work-place.	0.832
I8	improved our operational stability.	0.826
I5	contributed to the growth of our organization.	0.724
Eigenvalues		5.712
Percentage of variance explained (%)		71.403
KMO		0.873
Bartlett's Test of Sphericity: - Approx Chi-Square - df - Sig.		 568.810 28 0.000

5.7.1.3 Moderator: IT Capability

In total, 16 questions were used to measure IT Capability, which comprise of IT knowledge, IT operations, and IT objects. The KMO measure of sampling adequacy value is 0.837, which exceeds the threshold (0.6), indicating that the sample size is adequate for factor analysis. This means that the ratio of the sample size to the number of items is sufficient for factorability. The Bartlett's test of sphericity is also statistically significant with p-value 0.000, supporting the factorability of the correlation matrix with the approximate Chi-square value 481.814, which also allows for factor analysis to be conducted.

A principal component analysis was used to test the 16 items in the factor analysis process. The factor solutions indicate that all items in IT Capability have loading of greater than 0.60, ranging between 0.675 and 0.922 using the Varimax rotation method. The factor loadings indicate good correlation between the items and the factor grouping they belong to. Besides, the component solution explains a total of 69.876 percent of the variance, exceeding the minimum value of 60 percent as recommended by Hair et al. (2010).

As a result of the factor analysis, nine items were removed for various reasons, such as having low MSA value, low communalities value, and loading less than 0.60. Those nine deleted items from the initial 16 measurement items of IT Capability construct (E3, E4, E5, E6, F1, G1, G3, G4, and G5) were items that indicated failure to fit well with other items in their components. By removing them, the total variance explained has increased significantly. Further inspection of the correlation matrix revealed the presence of many

coefficients of 0.3 and greater. As a summary, the details are provided in Table 5.9, while Appendix 4 provides detailed results.

Table 5.9
Summary of Factor Analysis for IT Capability

Item	Description	Component 1
F5	has taken the necessary measures to ensure high service availability.	0.922
F2	IT practices are in accordance with the guidelines provided by the certification body.	0.893
F3	monitors the availability of services rendered to our customers.	0.886
F4	has a standard procedure to ensure effective customer service.	0.848
E1	operational staffs are knowledgeable in computer-based systems.	0.803
E2	IT department staffs are qualified for the job.	0.799
G2	employs a manager whose main duties include the management of information technology.	0.675
Eigenvalues		4.891
Percentage of variance explained (%)		69.876
KMO		0.837
Bartlett's Test of Sphericity: - Approx Chi-Square - df - Sig.		 481.814 21 0.000

5.7.1.4 Independent Variable: Management Support

There are 5 questions used to measure Management Support, a dimension of BCM Factors. It was found that the KMO measure of sampling adequacy value is 0.816, which exceed the bottom line (0.6). This indicates that the sample size is adequate for factor analysis, which means that the ratio of the sample size to the number of items is sufficient for factorability. The Bartlett's test of sphericity is statistically significant, with p-value equals 0.000, supporting the factorability of the correlation matrix with the approximate Chi-square value of 240.874, also allowing for factor analysis to be carried out.

Further, a principal component analysis was used to test the 5 items in the factor analysis process. The factor solutions indicate that all items in Management Support have loading of greater than 0.60, ranging from 0.746 to 0.917 using the Varimax rotation method. The factor loadings indicate good correlation between the items and the factor grouping they belong to. On top of that, the component solution explains a total of 70.441 percent of the variance, exceeding the minimum value of 60 percent recommended by Hair et al. (2010). There is no item deleted because they fit the conditions well. Further inspection of the correlation matrix revealed the presence of many coefficients of 0.3 and greater. All these are summarized in Table 5.10, while the detailed results are available in Appendix 4.

Table 5.10
Summary of Factor Analysis for Management Support

Item	Description	Component 1
A2	commits to BCM implementation.	0.917
A1	provides adequate financial and human-resource support for BCM.	0.863
A3	supports the development of BCM.	0.856
A4	assumes ultimate responsibility of BCM initiatives.	0.804
A5	requires regular update on BCM activities and issues.	0.746
Eigenvalues		3.522
Percentage of variance explained (%)		70.441
KMO		0.816
Bartlett's Test of Sphericity: - Approx Chi-Square - df - Sig.		 240.874 10 0.000

5.7.1.5 Independent Variable: External Requirement

In total, 6 questions are used to measure the External Requirement, a dimension of BCM Factors. The KMO measure of sampling adequacy value is 0.750, which exceeds the threshold (0.6), indicating that the sample size is adequate for factor analysis. This means

that the ratio of the sample size to the number of items is sufficient for factorability. It is supported with the Bartlett's test of sphericity, which is statistically significant (p-value equals 0.000), supporting the factorability of the correlation matrix with the approximate Chi-square value of 361.015. A principal component analysis was used to test the 6 items in the factor analysis process. The factor solutions indicate that all items of the External Requirement have loading of greater than 0.60, ranging from 0.757 to 0.896 using the Varimax rotation method. This indicates good correlation between the items and the factor grouping they belong to. On top of that, the component solution explains a total of 70.508 percent of the variance, exceeding the minimum value of 60 percent recommended by Hair et al. (2010). This study then removed one item (B3) due to low communalities value and loading less than 0.60. The item has indicated a failure to fit well with other items in their components. By removing the item, the total variance explained has increased significantly. Subsequently, inspection of the correlation matrix revealed the presence of many coefficients of 0.3 and greater, as seen in Table 5.11. Further, the detailed results are available in Appendix 4.

Table 5.11
Factor Analysis for External Requirement

Item	Description	Component 1
B4	improve our reputation from the customer perspective.	0.896
B1	enhance our customer service.	0.887
B2	satisfy customer requirements.	0.884
B5	improve our position in relation to our competitors.	0.762
B6	to survive in an extremely competitive environment.	0.757
Eigenvalues		3.525
Percentage of variance explained (%)		70.508
KMO		0.750
Bartlett's Test of Sphericity: - Approx Chi-Square - df - Sig.		 361.015 10 0.000

5.7.1.6 Independent Variable: Organization Preparedness

In total, 11 questions are used to measure the Organization Preparedness, a dimension of BCM Factors. It was found that the KMO measure of sampling adequacy value is 0.880, which exceeds the required value (0.6). This indicates that the sample size was adequate for factor analysis to be conducted, which means that the ratio of the sample size to the number of items is sufficient for factorability. The p-value of Bartlett's test of sphericity is 0.000, which significantly supports the factorability of the correlation matrix with the approximate Chi-square value of 469.830, which also allows for factor analysis.

A principal component analysis was used to test the 11 items in the factor analysis. The factor solutions indicate that all items of the Organization Preparedness have loading of greater than 0.60, ranging between 0.675 and 0.861 using the Varimax rotation method. The factor loadings indicate good correlation between the items and the factor grouping they belong to. The component solution explains a total of 62.399 percent of the variance, exceeding the minimum value (60%) recommended by Hair et al. (2010). Then, two items (C2 and C3) were removed due to low communalities value, which indicate a failure to fit well with other items in their components. By removing these items, the total variance explained has increased significantly. Subsequently, further inspection of the correlation matrix revealed the presence of many coefficients of 0.3 and greater. The details are summarized in Table 5.12, while the detailed results are available in Appendix 4.

Table 5.12
Factor Analysis for Organization Preparedness

Item	Description	Component 1
C6	setup an alternative site for our critical facilities.	0.861
C9	documented continuity plans for our critical business processes.	0.860
C5	identified one or more alternative key personnel.	0.823
C4	setup alternative systems for critical IT applications.	0.815
C10	documented continuity plans for our critical information systems and IT infrastructure.	0.813
C7	developed communication procedures to be used during disaster situations	0.801
C11	updated our BCM plans on regular basis.	0.743
C1	conducted a systematic Business Impact Analysis.	0.696
C8	tested our BCM plan by simulating an incident regularly.	0.675
Eigenvalues		5.616
Percentage of variance explained (%)		62.399
KMO		.880
Bartlett's Test of Sphericity: - Approx Chi-Square - df - Sig.		 469.380 36 0.000

5.7.1.7 Independent Variable: Embeddedness of Continuity Practices

In total, 7 questions are used to measure Embeddedness of Continuity Practices. It was found that the KMO measure of sampling adequacy value is 0.781, which exceeds the bottom line (0.6). This indicates that the sample size is adequate for factor analysis, which means that the ratio of the sample size to the number of items is sufficient for factorability. It is supported with the p-value of the Bartlett's test of sphericity (0.000), supporting the factorability of the correlation matrix with the approximate Chi-square value of 151.941.

A principal component analysis was used to test the 7 items in the factor analysis. The factor solutions indicate that all items of Embeddedness of Continuity Practices have loading of greater than 0.60, ranging between 0.697 and 0.903 using the Varimax rotation

method. Such loadings indicate good correlation between the items and the factor grouping they belong to. The component solution explains a total of 70.222 percent of the variance, exceeding the minimum value (60%) recommended by Hair et al. (2010). Then, this study removed three items (D1, D5 and D7) due to low communalities value and indicating a failure to fit well with other items in their components. With the remained four items, the total variance explained has increased significantly. Further inspection of the correlation matrix revealed the presence of many coefficients of 0.3 and greater. These are summarized in Table 5.13 and the detailed results are available in Appendix 4.

Table 5.13
Factor Analysis for Embeddedness of Continuity Practices

Item	Description	Component 1
D4	staff members are committed to pursuing disruption-free operations.	0.903
D3	staff members aware on the continuity practices related to their work area.	0.892
D2	business units have shown strong commitment to BCM.	0.843
D6	relevant staffs have attended systematic BCM training.	0.697
Eigenvalues		2.809
Percentage of variance explained (%)		70.222
KMO		0.781
Bartlett's Test of Sphericity: - Approx Chi-Square - df - Sig.		 151.941 6 0.000

5.7.2 Reliability Analysis

According to Hair et al. (2010), a reliability analysis determines the extent the variables are reliable to measure the constructs. In determining the internal consistency of the measurement items, Cronbach's Alpha is suggested and has been commonly used for reliability coefficient (Coakes & Steed, 2003; Sekaran & Bougie, 2010). Accordingly, in this study, a reliability analysis has been conducted on the scale to ascertain the

applicability of the instrument. In regards to that, Nunally (1978) recommends 0.70 as the minimum acceptable Cronbach's Alpha value. Based on the recommendation, this study has reliable constructs because the Cronbach's Alpha values generated by reliability analysis as seen in Table 5.14 range between 0.851 and 0.944. Hence, no item was deleted during reliability analysis. Further, Appendix 5 exhibits the detailed results.

Table 5.14
Reliability Test Results for All the Variables

Variable	No of Items	No of Items Deleted	Cronbach's Alpha
Management Support	5	0	0.888
External Requirement	5	0	0.888
Organization Preparedness	9	0	0.921
Embeddedness of Continuity Practices	4	0	0.851
IT Capability	7	0	0.924
Financial Performance	4	0	0.944
Non-Financial Performance	8	0	0.940

5.8 Descriptive Statistics

A descriptive study was conducted to enrich the knowledge and to describe the characteristics of the variables of the study. Sekaran and Bougie (2010) argue that descriptive analysis will facilitate in making simple decisions for many situations in a quantitative manner. For the purpose of this study, descriptive analysis was undertaken to examine the level of BCM Factors, which comprise of Management Support, External Requirement, Organization Preparedness, and Embeddedness of Continuity Practices; IT Capability (comprise of IT knowledge, IT operation, and IT object); and Organizational Performance (comprise of Financial and Non-Financial Performance).

The descriptive statistics in Table 5.15 depicts the minimum, maximum, mean values, and standard deviation of all the variables in the questionnaires. Since this study employs

a seven-point Likert scale, the range is between 1 (the lowest) and 7 (the highest). With the purpose to classify the perception level of these variables, a computation was made on the mean using the middle point to differentiate the low, moderate, and high level (Healey, 2005). Hence, the mean scores are segregated into three levels namely low (mean=1.00 to 3.00), moderate (mean = 3.01 to 5.00) and high (mean = 5.01 to 7.00). Based on the results, it is seen that the mean values range between 5.00 and 6.29. In general, it can be summarized that each variable either dependent, independent, or moderator has a high level of mean score.

Table 5.15
Descriptive Statistics for All Variables

Variable	Minimum	Maximum	Mean	Std. Deviation
Management Support	3.20	7.00	5.58	0.785
External Requirement	2.00	7.00	5.44	0.976
Organization Preparedness	2.56	7.00	5.40	0.740
Embeddedness Of Continuity Practices	2.50	7.00	5.00	0.814
Overall BCM Factors	3.52	6.87	5.38	0.642
IT Knowledge	1.50	7.00	5.84	0.958
IT Operation	3.50	7.00	5.87	0.759
IT Object	4.00	7.00	6.29	0.704
Overall IT Capability	3.57	7.00	5.92	0.717
Financial Performance	1.00	7.00	5.51	1.023
Non-Financial Performance	4.00	7.00	5.52	0.787
Overall Organizational Performance	3.08	7.00	5.52	0.811

From the table, it is seen that the mean for BCM Factors is 5.38 with standard deviation of 0.642, in scores between 3.52 and 6.87. In detail, the mean for individual BCM Factors support each other. Particularly, the mean for Management Support is 5.58 with standard deviation of 0.785; the mean for External Requirement is 5.44 with standard deviation of 0.976; Organization Preparedness is 5.40 with standard deviation of 0.740; and embeddedness of continuity is 5.00 with standard deviation of 0.814.

Similarly, the mean for IT Capability is 5.92 (ranging between 5.84 and 6.29) with standard deviation of 0.717. Particularly, IT objects scores the highest (mean = 6.29 with standard deviation of 0.704); followed by IT operation (mean = 5.87 with standard deviation of 0.759); and IT knowledge (mean = 5.84 with standard deviation of 0.958).

The Organizational Performance is also assessed using a 7-point Likert scale. The Organizational Performance is based on perceived performance of the last three years. Overall Organizational Performance mean score values indicate that most of the organizations participating in this study were doing well in terms of both Financial and Non-Financial Performance as shown by the mean value of 5.52 with standard deviation of 0.811. The highest mean value is recorded by Non-Financial Performance (mean = 5.52 with standard deviation of 0.787), followed by Financial Performance (mean = 5.51 with standard deviation of 1.023).

In a nutshell, the results show that the means for all variables and dimensions are greater than 5.00. This fact generally indicates that the organizations agree that they possess relatively good BCM critical success factors relating to Management Support, External Requirement, Organization Preparedness, and Embeddedness of Continuity Practices; having relatively good IT Capability in place to support the BCM implementation, which result in relatively good Financial and Non-Financial Performance.

5.9 Correlation Analysis

Prior to hypotheses testing, Pearson's product-moment correlation test was conducted to examine the linearity association of two metric variables (Hair et al., 2006). In regards to that, Tabachnick and Fidell (2007) suggest that certain assumptions have to be made when exercising correlation techniques to explore relationships between variables. The assumptions consist of level of measurement, independence of the observations, detection and treatment of missing data and outliers, normality, linearity and homoscedasticity.

Meanwhile, in order to determine the relationship between BCM Factors and Organizational Performance and the relationship between IT Capability and Organizational Performance, correlation analysis was performed where the correlation coefficient explains the relationship between the independent, moderator, and dependent variables.

Subsequently, Table 5.16 underscores the inter-correlations among all variables in this study. According to Hair et al. (2006), the correlation coefficient (r) indicates the strengths of the association between any two metric variables. The '+' or '–' sign indicates the direction of the relationship within value that range between +1.0 and -1.0. Particularly, +1.0 indicates a perfect positive relationship while -1.0 indicates a perfect negative relationship (Hair et al., 2006). In psychological research, a correlation coefficient of 0.10 to 0.29 is categorized as weak or small association; between 0.30 and 0.49 is considered a moderate correlation; while 0.50 or greater represents a strong or large correlation (Cohen, 1988).

Table 5.16
Pearson's Correlation between the Constructs

Variable	1	2	3	4	5	6	7	8
1. Management Support	1							
2. External Requirement	0.505**	1						
3. Organization Preparedness	0.412**	0.516**	1					
4. Embeddedness Of Continuity Practices	0.534**	0.474**	0.468**	1				
5. Overall IT Capability	0.456**	0.238*	0.187	0.460**	1			
6. Financial Performance	0.405**	0.720**	0.442**	0.482**	0.259*	1		
7. Non-Financial Performance	0.523**	0.678**	0.442**	0.638**	0.430**	0.742**	1	
8. Overall Organizational Performance	0.509**	0.742**	0.472**	0.616**	0.387**	0.901**	0.959**	1

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

The correlation procedure is subjected to two-tailed test of statistical significance at two levels namely significant at $p<0.01$ and $p<0.05$. For the variables in Hypothesis 1, all of the BCM Factors' dimensions indicate significant positive relationship with dimensions of Organizational Performance. Particularly, the strength of the correlations between Management Support and Organizational Performance is medium to strong ($0.405 \leq r \leq 0.523$), strong ($0.678 \leq r \leq 0.742$) between External Requirement and Organizational Performance, medium ($0.442 \leq r \leq 0.472$) between organizational preparedness and Organizational Performance, and medium to strong range ($0.482 \leq r \leq 0.638$) between Embeddedness of Continuity Practices and Organizational Performance. In overall, the results indicate that all the relationships between BCM Factors and Organizational Performance are significant at $p<0.01$. In comparison of the strength of the

relationships, the strongest positive correlation lies in the relationship between the External Requirement and Overall Organizational Performance ($r=0.742$, $p<0.01$), where a high level of External Requirement is associated with a high level of Overall Organizational Performance. The next strongest positive correlation is between External Requirement and Financial Performance ($r=0.720$, $p<0.01$), followed by External Requirement and Non-Financial Performance ($r=0.678$, $p<0.01$). This indicates that a high level of External Requirement on BCM implementation is associated with a high level of Organizational Performance.

For the variables in Hypothesis 2, IT Capability indicates significant positive relationship with Organizational Performance, where the strength of the correlations is low to medium ($0.259 \leq r \leq 0.430$). The results indicate that all relationships between IT Capability and Organizational Performance are significant at $p<0.01$ and $p<0.05$. In detail, the strongest positive correlation is the relationship between IT Capability and Non-Financial Performance ($r=0.430$, $p<0.01$), in which a high level of IT Capability is associated with a high level of Non-Financial Performance. The next strongest positive correlation is between IT Capability and Overall Organizational Performance ($r=0.387$, $p<0.01$), followed by IT Capability and Financial Performance ($r=0.259$, $p<0.05$). This initial evidence suggests that investing in IT Capability may enhance Organizational Performance. For further analysis, the correlation between IT Capability and Organizational Performance is also important for identifying the presence of quasi or pure moderators.

According Zikmund, Babin, Carr, and Griffin (2010), even though the results of the correlation analysis are reliable and support some of the hypotheses, the correlation

analysis is unable to implicate cause and effect evidence. Hence, multivariate statistical analysis is suggested for testing the hypotheses in order to examine the effect of various interactions and combination of variables (Hair et al., 2007; Zikmund et al., 2010).

5.10 Hypotheses Testing

In order to test the hypotheses, multiple regression and hierarchical regression analyses were conducted. Specifically, multiple regression analysis assesses the predictive power of independent variables towards the dependent variables. It also examines whether a significant positive relationship or a negative relationship exists between the variables being analyzed. It was performed between BCM Factors and the dimensions of Organizational Performance; and between IT Capability and the dimensions of Organizational Performance. Eventually, the results of the multiple regression analysis answer the first and second research questions of this study. Meanwhile, the multiple correlation (R), squared multiple correlation (R^2), and adjusted squared multiple correlation (R^2adj) signify how well the combination of independent variables predict the dependent variable.

On the other hand, hierarchical regression or moderator regression has been recommended by many scholars as the technique for analyzing the moderating effect (Baron & Kenny, 1986; Frazier et al., 2004). Prior to conducting the hierarchical regression analysis, multiple regression analysis was carried out to determine the effect of predictor variables on criterion variable so as to analyze the power of predictor variables. In detail, Russ and McNeilly (1995) suggest that a less stringent significant level of $p<0.25$ should be utilized to address the lack of power in detecting the effect of the

moderator. For this study, three levels of significance namely 1 percent, 5 percent and 10 percent are used to detect the moderating effect of IT Capability on the relationship between BCM Factors and Organizational Performance. Eventually, the result of the hierarchical regression analysis answer the third research question.

According to Sharma, Durand, and Gur-arie (1981), statistically significant interactions and the relationship between the moderator and the dependent variable are two criteria to classify the type of the moderator, either pure or quasi. Further, the presence of pure moderator must satisfy two criteria; (1) the interaction variable is significant and (2) there is no significant relationship between the moderator and the dependent variables. Whereas, a quasi moderator is classified if (1) the interaction variable is significant and (2) there is significant relationship between the moderator and the dependent variables.

5.10.1 Multiple Regression Analysis between BCM Factors and Overall Organizational Performance

A multiple regression analysis was performed to determine the relationship between BCM Factors and the variables in the overall organization performance. Simultaneously, the regression analysis has identified the most contributory dimensions among the BCM Factors that best predicts Overall Organizational Performance.

The results in Table 5.17 exhibits that the regression equation with the predictors is significant with $R = 0.802$, $R^2 = 0.643$, R^2 adj $= 0.623$, $F(4, 72) = 32.386$, $P<0.001$. In other words, the multiple correlation coefficients between the predictor and the dependent variable is 0.802; the predictor accounts for 64.3 percent of the variance in the overall performance. The generalizability of this model in other populations is 0.623. In detail,

the value of R^2 drops to only 0.020 (about 2.0%) in the adjusted R^2, which indicates that the cross validity of this model is fine. Meanwhile, the significant F-test reveals that the relationship between the dependent variable and the independent variables is linear and the model significantly predicts the dependent variable. The F-test F (4, 72) = 32.386 at $P<0.001$ indicates an overall significant prediction in the independent variables to the dependent variables, but it lacks of information about the importance of each independent variable.

Among the 4 predictors, External Requirement (β=0.559, t=6.200, p=0.000) has the highest standardized beta coefficient, which indicates that External Requirement is the most important variable in predicting Overall Performance. In descending order, the importance follows with Embeddedness of Continuity Practices (β=0.317, t=3.544, p=0.001). In contrast, Management Support (β=0.052, t=0.585, p=0.561) and Organization Preparedness (β=0.014, t=0.162, p=0.872) are not significantly related to Overall Organizational Performance. Two predictor variables impact the dependent variable in the direction hypothesized. This implies that a better Overall Organizational Performance can be achieved when the organization has strong External Requirement and Embeddedness of Continuity Practices in place. Based on the results, this study concludes that hypotheses H1a-2 and H1a-4 are supported while hypotheses H1a-1 and H1a-3 are rejected.

Table 5.17
Multiple Regression Result between BCM Factors and Overall Organizational Performance

Model	Un-Std		Std			Collinearity Statistics	
	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
(Constant)	1.035	0.498		2.077	0.041		
Management Support	0.054	0.092	0.052	0.585	0.561	0.627	1.596
External Requirement	0.464	0.075	0.559	6.200	0.000	0.611	1.637
Organization Preparedness	0.015	0.095	0.014	0.162	0.872	0.662	1.510
Embeddedness Of Continuity Practices	0.315	0.089	0.317	3.544	0.001	0.621	1.610
R	0.802						
R^2	0.643						
Adjusted R^2	0.623						
Std Error Estimate	0.49792						
F	32.386						
Sig.	0.000						
Durbin-Watson	1.741						

a. Dependent Variable: Overall Organizational Performance

5.10.2 Multiple Regression Analysis between BCM Factors and Financial Performance

Multiple regression analysis was performed to determine the relationship between BCM Factors and the variables in Financial Performance. Simultaneously, the regression analysis has identified the most contributory dimensions among BCM Factors that best predict Financial Performance.

Table 5.18 evidences that the regression equation with the predictors is significant with R = 0.739, R^2 = 0.546, R^2 adj = 0.521, F (4, 72) = 21.658, P<0.001. In other words, the multiple correlation coefficient between the predictor and the dependent variable is 0.739; the predictor accounts for 54.6 percent of the variance in Financial Performance.

The generalizability of this model in another population was 0.521. The value of R^2 drops to only 0.025 (about 2.5%) in the adjusted R^2, which indicates that the cross validity of this model is fine. Further, the significant F-test reveals that the relationship between the dependent variable and the independent variables is linear and the model significantly predicts the dependent variable. In detail, the F-test $F(4, 72) = 21.658$, $P<0.001$ indicates an overall significant prediction in the independent variables to the dependent variables. Among the 4 predictors, External Requirement ($\beta=0.625$, $t=6.150$, $p=0.000$) has the highest standardized beta coefficient. This indicates that External Requirement is the most important variable in predicting Financial Performance. However, Management Support ($\beta=-0.025$, $t=-0.246$, $p=0.806$), Organization Preparedness ($\beta=0.047$, $t=0.481$, $p=0.632$), and Embeddedness of Continuity Practices ($\beta=0.177$, $t=1.7581$, $p=0.083$) are not significantly related to Financial Performance. This implies that a better Financial Performance can be achieved when the organization has strong External Requirement in place. Based on the result, this study concludes that hypothesis H1b-2 is supported while hypotheses H1b-1, H1b-3, and H1b-4 are rejected.

Table 5.18
Multiple Regression Result between BCM Factors and Financial Performance

Model	Un-Std		Std			Collinearity Statistics	
	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
(Constant)	0.664	0.709		0.937	0.352		
Management Support	-0.032	0.131	-0.025	-0.246	0.806	0.627	1.596
External Requirement	0.655	0.106	0.625	6.150	0.000	0.611	1.637
Organization Preparedness	0.065	0.135	0.047	0.481	0.632	0.662	1.510
Embeddedness Of Continuity Practices	0.223	0.127	0.177	1.758	0.083	0.621	1.610
R	0.739						
R^2	0.546						
Adjusted R^2	0.521						
Std Error Estimate	0.70818						
F	21.658						
Sig.	0.000						
Durbin-Watson	1.710						

a. Dependent Variable: Financial Performance

5.10.3 Multiple Regression Analysis between BCM Factors and Non-Financial Performance

Multiple regression analysis was also performed to determine the relationship between BCM Factors and Non-Financial Performance variables. It is supported with a regression analysis that identified the most contributory dimensions among BCM Factors that best predict Non-Financial Performance.

The results are detailed in Table 5.19. It visualizes that the regression equation with the predictors is significant with R = 0.772, R^2 = 0.595, R^2 adj = 0.573, F (4, 72) = 26.487, P<0.001. In detail, the multiple correlation coefficients between the predictor and the dependent variable is 0.772; the predictor accounts for 59.5 percent of the variance in

Non-Financial Performance. The generalizability of this model in another population is 0.573. The value of R^2 drops to only 0.022 (about 2.2%) in the adjusted R^2, which indicates that the cross validity of this model is fine. The significant F-test reveals that the relationship between the dependent variable and the independent variables is linear and the model significantly predicts the dependent variable. Particularly, the F-test F (4, 72) = 26.487, P<0.001 indicates an overall significant prediction in the independent variables to the dependent variables. Among the 4 predictors, External Requirement (β=0.457, t=4.767, p=0.000) has the highest standardized beta coefficient, which indicates that External Requirement is the most important variable in predicting Non-Financial Performance. It is followed by Embeddedness of Continuity Practices (β=0.374, t=3.933, p=0.000). However, Management Support (β=0.096, t=1.018, p=0.312) and Organization Preparedness (β=-0.009, t=-0.096, p=0.924) are not significantly related to Non-Financial Performance. Two predictor variables impact on the dependent variable in the direction hypothesized. This explains that a better Non-Financial Performance can be achieved when the organization has strong External Requirement and Embeddedness of Continuity Practices in place. Accordingly, this study concludes that hypotheses H1c-2 and H1c-4 are supported while hypotheses H1c-1 and H1c-3 are rejected.

Table 5.19
Multiple Regression Result between BCM Factors and Non-Financial Performance

Model	Un-Std		Std			Collinearity Statistics	
	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
(Constant)	1.220	0.515		2.370	0.020		
Management Support	0.097	0.095	0.096	1.018	0.312	0.627	1.596
External Requirement	0.369	0.077	0.457	4.767	0.000	0.611	1.637
Organization Preparedness	-0.009	0.098	-0.009	-0.096	0.924	0.662	1.510
Embeddedness Of Continuity Practices	0.362	0.092	0.374	3.933	0.000	0.621	1.610
R	0.772						
R^2	0.595						
Adjusted R^2	0.573						
Std Error Estimate	0.51457						
F	26.487						
Sig.	0.000						
Durbin-Watson	1.957						

a. Dependent Variable: Non-Financial Performance

5.10.4 Multiple Regression Analysis between IT Capability and Overall Organizational Performance

Similar with the previous, multiple regression analysis was used to determine the relationship between IT Capability and the variables in Overall Organizational Performance. The results are listed in Table 5.20, which explain that the regression equation with the predictors is significant with R = 0.387, R^2 = 0.150, R^2 adj = 0.139, F (1, 75) = 13.329, P<0.05. In detail, the multiple correlation coefficient between the predictor and the dependent variable is 0.387; the predictor accounts for 15.0 percent of the variance in Overall Organizational Performance. The generalizability of this model in another population was 0.139. The value of R^2 drops to only 0.011 (about 1.1%) in the adjusted R^2, which indicates that the cross validity of this model is fine. The significant

F-test reveals that the relationship between the dependent variable and the independent variables is linear and the model significantly predicts the dependent variable. The F-test F (1, 75) = 13.329, P<0.05 indicates an overall significant prediction in the independent variables to the dependent variables. The results indicate that IT Capability is significantly associated with Overall Organizational Performance (Standard Beta=0.387, p=0.001). Hence, this implies that a better Overall Organizational Performance can be achieved when the organization has strong IT Capability in place. Based on the result, it is concluded that hypothesis H2a-1 is supported.

Table 5.20
Multiple Regression Result between IT Capability and Overall Organizational Performance

Model	Un-Std		Std			Collinearity Statistics	
	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
(Constant)	2.928	0.717		4.083	0.000		
OverallITCapability	0.438	0.120	0.387	3.638	0.001	1.000	1.000
R	0.387						
R^2	0.150						
Adjusted R^2	0.139						
Std Error Estimate	0.75251						
F	13.329						
Sig.	0.001						
Durbin-Watson	2.103						

a. Dependent Variable: Overall Organizational Performance

5.10.5 Multiple Regression Analysis between IT Capability and Financial Performance

Also, multiple regression analysis was performed to determine the relationship between IT Capability and the variables in Financial Performance. The results in Table 5.21 evidences that the regression equation with the predictors is significant with R = 0.259,

R^2 = 0.067, R^2 adj = 0.055, F (1, 75) = 5.397, P<0.05. It narrates that the multiple correlation coefficient between the predictor and the dependent variable is 0.259; the predictor accounts for 6.7 percent of the variance in Financial Performance. The generalizability of this model in another population is 0.055. The value of R^2 drops to only 0.012 (about 1.2%) in the adjusted R^2, which indicates that the cross validity of this model is fine. The significant F-test reveals that the relationship between the dependent variable and the independent variables is linear and the model significantly predicts the dependent variable. The F-test F (1, 75) = 5.397, P<0.05 indicates an overall significant prediction in the independent variables to the dependent variables.

The results indicate that IT Capability is significantly associated with Financial Performance (Standard Beta=0.259, p=0.023). Hence, this implies that a better Financial Performance can be achieved when the organization has strong IT Capability in place. The results lead to a conclusion that hypothesis H2a-2 is supported.

Table 5.21
Multiple Regression Result between IT Capability and Financial Performance

Model	Un-Std		Std			Collinearity Statistics	
	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
(Constant)	3.323	0.948		3.505	0.001		
OverallITCapability	0.369	0.159	0.259	2.323	0.023	1.000	1.000
R	0.259						
R^2	0.067						
Adjusted R^2	0.055						
Std Error Estimate	0.99475						
F	5.397						
Sig.	0.023						
Durbin-Watson	1.867						

a. Dependent Variable: Financial Performance

5.10.6 Multiple Regression Analysis between IT Capability and Non-Financial Performance

Multiple regression analysis was also performed to determine the relationship between IT Capability and the variables in Non-Financial Performance. The results in Table 5.22 evidences that the regression equation with the predictors is significant, with R = 0.430, R^2 = 0.185, R^2 adj = 0.174, F (1, 75) = 17.012, P<0.001. It explains that the multiple correlation coefficient between the predictor and the dependent variable is 0.430; the predictor accounts for 18.5 percent of the variance in Non-Financial Performance. The generalizability of this model in another population is 0.174. The value of R^2 drops to only 0.011 (about 1.1%) in the adjusted R^2, which indicates that the cross validity of this model is fine. The significant F-test reveals that the relationship between the dependent variable and the independent variables is linear and the model significantly predicts the dependent variable. The F-test F (1, 75) = 17.012, P<0.001 indicates an overall significant prediction in the independent variables to the dependent variables. This indicates that IT Capability is significantly associated with Non-Financial Performance (Standard Beta=0.430, p=0.000). Hence, it implies that a better Non-Financial Performance can be achieved when the organization has strong IT Capability in place. Based on that, it is concluded that hypothesis H2a-3 is supported.

Table 5.22
Multiple Regression Result between IT Capability and Non-Financial Performance

Model	Un-Std		Std			Collinearity Statistics	
	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
(Constant)	2.731	0.682		4.004	0.000		
OverallITCapability	0.472	0.114	0.430	4.125	0.000	1.000	1.000
R	0.430						
R^2	0.185						
Adjusted R^2	0.174						
Std Error Estimate	0.71560						
F	17.012						
Sig.	0.000						
Durbin-Watson	2.298						

a. Dependent Variable: Non-Financial Performance

5.10.7 Hierarchical Regression Analysis: Moderating Effect of IT Capability on the Relationship between BCM Factors and Overall Organizational Performance

Table 5.23 exhibits the summarized results (detailed results are provided in Appendix 8) of the hierarchical regression analysis of the moderating effects of IT Capability on the relationship between BCM Factors and Overall Organizational Performance. The BCM Factors were entered first in step 1, explaining 80.2 percent of the variance. After the entry of IT Capability in step 2 the total variance explained by the model as a whole was 80.8 percent. In step 3, the interaction terms were entered, which resulted in an additional variance explaining up to 83.9 percent. The Sig. F change from step 1 to 2 is not significant (Sig. F change=0.170) and from step 2 to 3 is significant at the 0.05 significance level (Sig. F change=0.029).

The inspection of the individual interaction terms between IT Capability x Organization Preparedness (β=-0.187, t=-1.939, p=0.057) and IT Capability x Embeddedness of Continuity Practices (β=0.263, t=1.951, p=0.055) found that Organization Preparedness and Embeddedness of Continuity Practices are significant at α=0.1 level. Additionally, the Durbin-Watson value of 1.754 is within the acceptable range of 2.00 ± 0.50, which indicates that the assumption of independence of error terms is not violated. These results indicate that IT Capability moderates the relationship between the BCM Factors (Organization Preparedness and Embeddedness of Continuity Practices) and Overall Organizational Performance. Given that IT Capability does have direct influence on Overall Organizational Performance, it emerges as a quasi moderator rather than a pure moderator. Therefore, it can be concluded that hypotheses H3a-3 and H3a-4 are supported while hypotheses H3a-1 and H3a-2 are rejected.

Table 5.23
Hierarchical Regression Results: the Moderating Effect of IT Capability on the Relationship between BCM Factors and Overall Organizational Performance

Variables	Std Beta Step 1	Std Beta Step 2	Std Beta Step 3
Independent Variable			
Management Support	0.052	0.014	0.047
External Requirement	0.559	0.564	0.513
Organization Preparedness	0.014	0.024	-0.009
Embeddedness Of Continuity Practices	0.317	0.277	0.277
Moderating Variable			
IT Capability		0.115	0.200
Interaction			
Management Support x IT Capability			-0.008
External Requirement x IT Capability			0.089
Organization Preparedness x IT Capability			-0.187*
Embeddedness Of Continuity Practices x IT Capability			0.263*
R	0.802	0.808	0.839
R^2 Change	0.643	0.009	0.051
F Change	32.386	1.924	2.874
Sig F Change	0.000	0.170	0.029
Durbin-Watson			1.754

*Significant levels: ***p < 0.001, **p < 0.05, *p < 0.1*

5.10.8 Hierarchical Regression Analysis: Moderating Effect of IT Capability on the Relationship between BCM Factors and Financial Performance

Table 5.24 exhibits the summarized results of the hierarchical regression analysis of the moderating effects of IT Capability on the relationship between BCM Factors and Financial Performance. BCM Factors were entered first in step 1, explaining 73.9 percent of the variance. After the entry of IT Capability at step 2 the total variance explained by the model as a whole is 74.0 percent. In step 3, the interaction terms were entered, which resulted in an additional variance explaining up to 75.9 percent. The Sig. F change from step 1 to 2 and from step 2 to 3 are not significant at 0.645 and 0.342 respectively.

Further, the inspection of the individual interaction terms between BCM Factors and IT Capability reveals that all interactions are not significant. The Durbin-Watson value of 1.738 is within the acceptable range of 2.00 ± 0.50, which indicates that the assumption of independence of error terms is not violated.

The above results indicate that IT Capability does not moderate the relationship between BCM Factors (Management Support, External Requirement, Organization Preparedness, Embeddedness of Continuity Practices) and Financial Performance. Therefore, it can be concluded that all of the related hypotheses namely H3b-1, H3b-2, H3b-3, and H3b-4 are rejected.

Table 5.24
Hierarchical Regression Results: the Moderating Effect of IT Capability on the Relationship between BCM Factors and Financial Performance

Variables	Std Beta Step 1	Std Beta Step 2	Std Beta Step 3
Independent Variable			
Management Support	-0.025	-0.039	-0.018
External Requirement	0.625	0.627	0.589
Organization Preparedness	0.047	0.051	0.020
Embeddedness Of Continuity Practices	0.177	0.162	0.162
Moderating Variable			
IT Capability		0.044	0.116
Interaction			
Management Support x IT Capability			0.000
External Requirement x IT Capability			0.078
Organization Preparedness x IT Capability			-0.178
Embeddedness Of Continuity Practices x IT Capability			0.186
R	0.739	0.740	0.759
R^2 Change	0.546	0.001	0.029
F Change	21.658	0.214	1.147
Sig F Change	0.000	0.645	0.342
Durbin-Watson			1.738

*Significant levels: ***p < 0.001, **p < 0.05, *p < 0.1*

5.10.9 Hierarchical Regression Analysis: Moderating Effect of IT Capability on the Relationship between BCM Factors and Non-Financial Performance

Table 5.25 exhibits the results of the hierarchical regression analysis of the moderating effects of IT Capability on the relationship between BCM Factors and Non-Financial Performance. The BCM Factors were entered first in step 1, explaining 77.2 percent of the variance. After the entry of IT Capability at step 2, the total variance explained by the model as a whole is 78.2 percent. In step 3, the interaction terms were entered, which resulted in an additional variance explaining up to 81.8 percent. The Sig. F change from step 1 to 2 at the 0.1 significance level (Sig. F change=0.093) and from step 2 to 3 are significant at 0.05 level (Sig. F change=0.026).

Further, the inspection of the individual interaction terms between IT Capability x Organization Preparedness (β=-0.173, t=-1.700, p=0.094) and IT Capability x Embeddedness of Continuity Practices (β=0.285, t=2.005, p=0.049) found that the Organization Preparedness and Embeddedness of Continuity Practices are significant at α=0.1 and α=0.05 levels respectively. Additionally, the Durbin-Watson value of 1.997 is within the acceptable range of 2.00 ± 0.50, which indicates that the assumption of independence of error terms is not violated.

The above results indicate that IT Capability moderates the relationship between the BCM factor (Organization Preparedness and Embeddedness of Continuity Practices) and Non-Financial Performance. Given that IT Capability does have direct influence on Non-Financial Performance, it emerges as a quasi moderator rather than a pure moderator. Therefore, this study concludes that hypotheses H3c-3 and H3c-4 are supported while hypotheses H3c-1 and H3c-2 are rejected.

Table 5.25
Hierarchical Regression Results: the Moderating Effect of IT Capability on the Relationship between BCM Factors and Non-Financial Performance

Variables	Std Beta Step 1	Std Beta Step 2	Std Beta Step 3
Independent Variable			
Management Support	0.096	0.047	0.084
External Requirement	0.457	0.464	0.410
Organization Preparedness	-0.009	0.004	-0.027
Embeddedness Of Continuity Practices	0.374	0.322	0.323
Moderating Variable			
IT Capability		0.149	0.233
Interaction			
Management Support x IT Capability			-0.012
External Requirement x IT Capability			0.086
Organization Preparedness x IT Capability			-0.173*
Embeddedness Of Continuity Practices x IT Capability			0.285**
R	0.772	0.782	0.818
R^2 Change	0.595	0.016	0.058
F Change	24.487	2.898	2.948
Sig F Change	0.000	0.093	0.026
Durbin-Watson			1.997

*Significant levels: ***p < 0.001, **p < 0.05, *p < 0.1*

5.10.10Summary of Hypotheses Testing

Based on the multiple regression and hierarchical regression analyses detailed in the previous sections, Tables 5.26 to 5.28 summarize the results of the hypotheses testing of the direct relationship between BCM Factors and Organizational Performance; direct relationship between IT Capability and Organizational Performance; and the moderating effect of IT Capability on the relationship between BCM Factors and Organizational Performance.

Table 5.26

Summary of Hypothesis Testing: BCM Factors and Organizational Performance

Hypothesis No	Hypothesis Statement	Result
H1a	**BCM Factors significantly related to Overall Organizational Performance.**	
H1a-1	Management Support is significantly related to Overall Organizational Performance.	Not Supported
H1a-2	The External Requirement is significantly related to Overall Organizational Performance.	Supported
H1a-3	Organization Preparedness is significantly related to Overall Organizational Performance.	Not Supported
H1a-4	Embeddedness of Continuity Practices is significantly related to Overall Organizational Performance.	Supported
H1b	**BCM Factors is significantly related to Financial Performance.**	
H1b-1	Management Support is significantly related to the organization's Financial Performance.	Not Supported
H1b-2	The External Requirement is significantly related to the organization's Financial Performance.	Supported
H1b-3	Organization Preparedness is significantly related to the organization's Financial Performance.	Not Supported
H1b-4	Embeddedness of Continuity Practices is significantly related to the organization's Financial Performance.	Not Supported
H1c	**BCM Factors is significantly related to Non-Financial Performance.**	
H1c-1	Management Support is significantly related to the organization's Non-Financial Performance.	Not Supported
H1c-2	The External Requirement is significantly related to the organization's Non-Financial Performance.	Supported
H1c-3	Organization Preparedness is significantly related to the organization's Non-Financial Performance.	Not Supported
H1c-4	Embeddedness of Continuity Practices is significantly related to the organization's Non-Financial Performance.	Supported

Table 5.27
Summary of Hypothesis Testing: IT Capability and Organizational Performance

Hypothesis No	Hypothesis Statement	Result
H2a	**IT Capability is significantly related to Organizational Performance.**	
H2a-1	IT Capability is significantly related to Overall Organizational Performance.	Supported
H2a-2	IT Capability is significantly related to the organization's Financial Performance.	Supported
H2a-3	IT Capability is significantly related to the organization's Non-Financial Performance.	Supported

Table 5.28
Summary of Hypothesis Testing: Moderating Effect of IT Capability on the Relationship between BCM Factors and Organizational Performance

Hypothesis No	Hypothesis Statement	Result
H3a	**IT Capability significantly moderates the relationship between BCM Factors and Overall Organizational Performance.**	
H3a-1	IT Capability significantly moderates the relationship between Management Support and Overall Organizational Performance.	Not supported
H3a-2	IT Capability significantly moderates the relationship between the External Requirement and Overall Organizational Performance.	Not supported
H3a-3	IT Capability significantly moderates the relationship between Organization Preparedness and Overall Organizational Performance.	Supported
H3a-4	IT Capability significantly moderates the relationship between Embeddedness of Continuity Practices and Overall Organizational Performance.	Supported
H3b	**IT Capability significantly moderates the relationship between BCM Factors and Financial Performance.**	
H3b-1	IT Capability significantly moderates the relationship between Management Support and Financial Performance.	Not supported
H3b-2	IT Capability significantly moderates the relationship between the External Requirement and Financial Performance.	Not supported
H3b-3	IT Capability significantly moderates the relationship between Organization Preparedness and Financial Performance.	Not supported

Table 5.28 (Continued)

Hypothesis No	Hypothesis Statement	Result
H3b-4	IT Capability significantly moderates the relationship between Embeddedness of Continuity Practices and Financial Performance.	Not supported
H3c	**IT Capability significantly moderates the relationship between BCM Factors and Non-Financial Performance.**	
H3c-1	IT Capability significantly moderates the relationship between Management Support and Non-Financial Performance.	Not supported
H3c-2	IT Capability significantly moderates the relationship between the External Requirement and Non-Financial Performance.	Not supported
H3c-3	IT Capability significantly moderates the relationship between Organization Preparedness and Non-Financial Performance.	Supported
H3c-4	IT Capability significantly moderates the relationship between Embeddedness of Continuity Practices and Non-Financial Performance.	Supported

5.11 Chapter Summary

This chapter discusses the data analyses and findings of the study. It begins with an elaboration on the response rate of the study, particularly 77 responses that representing 55 percent of the sample population have been collected. Upon checking, it was found that there is no significant bias between the early and the late responses. On the demographics, the profile of the respondents is diversified in terms of the type of industry, size of organization, and nature of business. In the preliminary analysis, the detection and treatment of missing data was conducted, followed by observation of multivariate outlier, which confirms that there is no outliers within the data and all the responses are valid to be used for further analysis. Besides, tests of normality, linearity,

multicollinearity, and homoscedasticity were also undertaken and the results also reveal that there is no threat of non-normal distribution of the data. In order to verify the validity and reliability of the instrument, factor analysis was performed. As a result, a few items were deleted due to low factor loading and communalities followed by reliability analysis which confirms that all variables are reliable to measure the constructs. A descriptive statistics on the major variables and correlation analysis were also conducted towards explaining the dataset.

Finally, the hypotheses of the study were tested using multiple and hierarchical regression analyses in order to determine if any significant relationship exists among the predictors and the criterion variables; as well as the effect of the moderating variable. The results of the hypotheses testing indicate that 12 out of 27 hypotheses are supported while 15 hypotheses are not supported. In the following chapter, these findings are discussed in more detail to shed more light on the results and their theoretical and managerial implications.

CHAPTER 6
DISCUSSION AND CONCLUSION

6.1 Introduction

This chapter summarizes and discusses of the research findings with relation to the research questions and hypotheses. In addition, this chapter also discusses the implications and recommendations from the theoretical and practical perspectives. Then, it is ensued by the limitations of the study and suggestions for future research as well to acknowledge some shortcomings of this study. Finally, this chapter ends with a concluding remarks of the study.

6.2 Executive Summary

In brief, this study attempts to provide empirical evidence on the relationships that exist between BCM Factors and Organizational Performance with the moderating effect of IT Capability in organizations from various sectors in Malaysia. To the author's knowledge, this is the first study known that investigates the relationship between the BCM, IT Capability, and Organizational Performance. At the high level, this study aims to achieve two broad objectives. First, to investigate the extent of BCM Factors and IT Capability influence Organizational Performance. Secondly, to examine the extent IT Capability moderates the relationship between BCM Factors and Organizational Performance. This study believes that by understanding the relationships, it may contribute to the betterment of Organizational Performance.

Theoretically, the framework of this study is supported by the RBV Theory, which postulates that organizations' competitiveness and performance are influenced by the organizational resources such as intangible resources and competency (Barney, 1991; Grant, 1991). In regards to that, this study proposes BCM Factors as the intangible resources, while IT Capability that is measured by IT knowledge, IT operations, and IT objects is considered as the organizational technological competency. In order to achieve the intended objectives, this study employs a survey strategy and the target population is organizations that have obtained the ISO 27001 and ISO 22301 certifications from SIRIM.

Consequently, a survey was deployed involving 147 organizations comprising of both the public and private sectors. The organizations are selected to participate in this study as they are deemed to possess considerably high sense of commitment towards embracing BCM's best practices to enhance their business resilience. The unit of analysis for this study is organization, whereas the managers or executive positions that involve directly in the implementation and operational of BCM within the organizations are chosen as the respondent of the survey.

For the purpose of data collection, a set of questionnaires is used. It is adapted from previous studies and all responses pertaining to dependent, independent, and moderator variables are measured using 7-points Likert scales. The content and face validity assessments were carried out, in which selected academicians and industry professionals involved by reviewing the questionnaires to obtain their expert opinions on the relevancy of the questions to support the research objectives. Based on the feedbacks from the experts, appropriate modification was made accordingly and questions which are not

relevant to the research were dropped. This study had employed multiple methods of data collection, which include self-administered approach and distribution of questionnaires via electronic and conventional mail. At the end of data collection period, 77 usable responses have been obtained which represent 55 percent of effective response rate.

Subsequently, data analysis that includes descriptive and inferential statistics was conducted using SPSS Version 20. The data analysis process started with the preliminary analysis, followed by fundamental statistical assumptions and goodness of measures. The data were then analyzed using Pearson correlation and hypothesis testing procedure, which comprise of multiple and hierarchical regression analysis in order to achieve the objectives of the study. For the purpose of quick reference, the research objectives stated in Chapter 1 are listed below:

1. To determine the relationship between BCM Factors and Organizational Performance.
2. To determine the relationship between IT Capability and Organizational Performance.
3. To examine the moderating effect of IT Capability on the relationship between BCM Factors and Organizational Performance.

Consequently, the following are brief findings that map the research objectives:

1. In regards to the first objective, this study reveals that BCM Factors that are represented by the External Requirement and Embeddedness of Continuity Practices influences Organizational Performance dimensions. In total, there are 12 relationships identified through the hypothesis testing. In detail, multiple regression analysis indicates that 5 out of 12 relationships are statistically significant. However, this

study also reveals that two dimensions of BCM Factors namely Management Support and Organization Preparedness hold no significant association with all of the dimensions in Organizational Performance.

2. For the second objective, this study finds that IT Capability has significant relationships with all dimensions in Organizational Performance. This implies that the hypothesis is fully supported.
3. Regarding the third research objective, the empirical results partially support the moderating effect of IT Capability on the relationship between BCM Factors and Organizational Performance. The result was derived from a 3-step hierarchical regression analysis. Additionally, the significance of interaction terms in predicting the dimensions of Organizational Performance validates that the Organization Preparedness and Embeddedness of Continuity Practices are quasi moderators.

6.3 Discussion of Results

This section discusses the results involving the direct relationships between BCM Factors and Organizational Performance; IT Capability and Organizational Performance; and the indirect relationship between BCM Factors, IT Capability, and Organizational Performance.

6.3.1 Relationship between BCM Factors and Organizational Performance

As discussed previously, the first objective of the study is to investigate the relationships that exist between BCM Factors and Organizational Performance. Based on the result of the correlation analysis, all dimensions of BCM Factors indicate significant positive

relationship with all dimensions of Organizational Performance, with medium to strong correlations. This result implies that BCM Factors are related to Organizational Performance.

Further, multiple regression analysis was performed to identify the most contributory variables among BCM Factors that best predict the dimensions of Organizational Performance namely Overall Organizational Performance, Financial Performance, and Non-Financial Performance. For this purpose, three standard regression analysis models were developed and the outcomes indicate that all models are statistically significant. In overall, the results show that Management Support, External Requirement, Organizational Preparedness, and Embeddedness of Continuity Practices jointly explain 64.3 percent of the variance of Overall Organizational Performance, 54.6 percent of the variance of Financial Performance, and 59.5 percent of the variance of Non-Financial Performance. Thus, the models propose that the effect of BCM Factors on Overall Organizational Performance is the highest, followed by Non-Financial Performance, and then Financial Performance.

Two predictor variables namely External Requirement and Embeddedness of Continuity Practices are proven significantly related to Overall Organizational Performance and Non-Financial Performance. The External Requirement is the strongest contributor predictor that explains the variance of Overall Organizational Performance and Non-Financial Performance, followed by Embeddedness of Continuity Practices. However, only one predictor variable i.e. the External Requirement is found to have a statistically significant relationship with Financial Performance. Therefore, the mixed results between

the individual dimensions of BCM Factors and Organizational Performance dimensions of this study suggest that the first main hypothesis of this study is partially supported.

The statistically significant results on the relationship between the BCM and Organizational Performance are consistent with the findings of several studies on BCM. As an example, Marsh (2010) highlights that many firms start to draw a great attention on the strategic roles and significance of BCM, which can yield many organizational benefits. Also, a study by Sawalha (2013b) in the Jordanian banking industry has revealed that providing customers with uninterruptible and secured banking services lays the foundations for maintaining a positive corporate reputation, increases profitability, enhances the competitive advantage, and ultimately improves the overall organizational performance. On the contrary, if customers constantly encounter disruptions and delays in their banking services, they are likely to switch to other banks, seeking for better services. Furthermore, by having a well-designed, resilient and proven BCM infrastructure, it will provide a competitive advantage, in which customers can rely upon the organization to continue providing an uninterrupted service, even if there is a major disruption or emergency situation (Alonaizan, 2009). Similarly, Järveläinen (2013) also argued that an effective continuity management practice has led to a reduction in business disruptions, indicating that proactive measures undertaken by organizations to ensure continuity will minimize adverse impacts to the business. In addition, a well-designed BCM program may also lead to competitive advantage (Beazley, Boenisch, & Harden, 2002; Garcia, 2008; N. W. Wong, 2009). In contrast, an ineffectively planned BCM program can result in financial loss to an organization and also damages the organization's reputation from the business and personnel point of view (Blyth, 2009). In

the same way, when disruption occurs, the overall performance will be negatively affected and the organization may suffer tremendous consequences (Hurley-Hanson, 2006). Unexceptionally, disruptions of any sort could have incredibly damaging repercussions to the organizations, not only in terms of tangible financial losses, but also intangible impact to the reputation and the customers' confidence in the organization. Hence, it is a critical business imperative that effective BCM practices must be embedded into critical processes to ensure that in the event of an unplanned interruption, business operations will be restored as quickly and effectively as possible.

Even though the outcomes of this study suggest a mixed result, the overall model indicates that BCM Factors significant and jointly explains the variance of the dimensions of Organizational Performance. Particularly, the findings propose that a high level of BCM Factors is associated with a high level of Organizational Performance. However, the individual dimension of BCM Factors that strongly contribute to the specific performance dimensions, such as the External Requirement and Embeddedness of Continuity Practices need to be taken into consideration by organizations that wish to embrace effective BCM.

On the other hand, the non-significant results of the relationship between BCM Factors and Organizational Performance can possibly be explained by the study by Venclova et al. (2013) on the advantages and disadvantages of the BCM. The study argues that among the drawbacks of the BCM are poor implementation of the BCM that may lead to financial losses, time-consuming requirement to implement BCM in the organization and higher financial burden to establish a BCM program. The detailed results of the

relationship between individual BCM Factors and the dimensions of Organizational Performance are deliberated in the following sections.

6.3.1.1 BCM Factors and Overall Organizational Performance

In this study, Overall Organizational Performance is measured through the combination of Financial and Non-Financial Performances. The perceived measures of both Financial and Non-Financial Organizational Performance are applied since subjective measures were studied to be correlated with the objective measures of performance (Dess & Robinson, 1984). Accordingly, hypotheses H1a-1, H1a-2, H1a-3, and H1a-4 postulate significant relationships between BCM Factors and Overall Organizational Performance. Based on the descriptive statistics, this study finds out that the respondents perceive that their organizations have achieved a fairly good level of performance contributed by BCM implementation over the last three years (mean=5.52).

Nonetheless, the results of the multiple regression analysis indicate that only two BCM Factors namely External Requirement and Embeddedness of Continuity Practices have significant relationships with Overall Organizational Performance. Meanwhile, the other two BCM Factors namely Management Support and Organizational Preparedness are not significantly related to Overall Organizational Performance.

Firstly, hypothesis H1a-2 states that the External Requirement is significantly related to Overall Organizational Performance. For the purpose of this study, the External Requirement refers to the external interested parties such as the legislators and regulators who enforce organizations under their purview to comply with business continuity guidelines and provisions. In the Malaysian context, the External Requirements imposed

by government authorities such as Bank Negara Malaysia for financial services industry and MAMPU for the government sector have motivated the senior management to further enhance the continuity of their information systems and services. In some countries, financial and healthcare sectors are obliged to ensure that the service continuity in their information system operations adhere to governmental regulations (Elliott et al., 2010). For instance, national banks in the United States must comply with the 1983 Banking Circular 177 (BC-177), which enforces that banks must develop the means to minimize the impact or risk of losing data processing support (Bandyopadhyay, Mykytyn, & Mykytyn, 1999).

Based on the mean score of the descriptive statistics, the respondents perceive that their organizations have a fairly good level of External Requirement (mean=5.44). The result implies that the level of External Requirement is related to Overall Organizational Performance. This means that the level of achievement in overall Organizational Performance is subjected to the extent of the External Requirement imposed on the organization. In other words, a higher level of External Requirement may lead to a superior overall Organizational Performance.

Such results provides empirical support for the hypothesis H1a-2 and is consistent with the past studies on BCM (Choudhuri et al., 2009; Herbane et al., 2004; Hoong & Marthandan, 2013; Järveläinen, 2013; Peterson, 2009; Woodman, 2008). Those studies suggest that the external drivers have uplifted the importance of BCM to a greater level within the corporate governance agenda. According to the Business Continuity Management Survey conducted by Chartered Management Institute in 2012, corporate governance remains the biggest external driver of BCM, with 42 percent of the

respondents highlighting it as a catalyst for BCM implementation (Pearson & Woodman, 2012). Besides the corporate governance, the pressure from the customers who demand for uninterrupted services had also pushed the importance of BCM to a higher level. Nowadays, customers do not expect the delivery of products and services to be interrupted at any time for any reason. As a consequence to interruption, customers will soon switch to the competitor (Parasuraman et al., 2005). The situation will end up to a loss of business opportunities and if it is not attended to seriously, it may ultimately affect Overall Organizational Performance. These findings are also supported by the Stakeholder Theory which recognizes the stakeholders, in this context, the external requirements by the regulatory bodies and customers that may influence the achievement of superior performance.

Secondly, hypothesis H1a-4 states that Embeddedness of Continuity Practices is significantly related to Overall Organizational Performance. According to Herbane et al. (2004), continuity practices are said to be embedded when an organization is well prepared, practices are incorporated in processes, business units and staffs as well as the senior management is highly committed. As expected, the finding of this study provides support for the hypothesis. This means that a higher level of Embeddedness of Continuity Practices would result in a higher level of Overall Organizational Performance.

In addition, based on the mean score of the descriptive statistics, the respondents perceive that their organizations have a fairly good level of Embeddedness of Continuity Practices (mean=5.00). The results are in line with the findings of the study conducted by Järveläinen (2013a), that Embeddedness of Continuity Practices related significantly with perceived business impacts. In addition, Gallagher (2007) and Herbane et al. (2004) also

highlight that if BCM is not embedded in the organization's culture, it may not be able to contribute to the accomplishment of the long-term strategic goals. The finding may indicate that the respondents of this study believe that all employees know their responsibilities, and that the IT department, business units, and other departments are committed in embracing the business continuity within the organization. It also signifies that technical preparedness in the IT department alone is not enough to make an impact to the success of BCM, but other elements of Embeddedness of Continuity Practices such as training and awareness raising programs are also important components of successful BCM implementation (Chow & Ha, 2009; Karim, 2011). On top of that, all staff involved in the BCM plan must know their roles and responsibilities. Hence, a training and awareness program is essential to ensure that all staff understand their roles and responsibilities, which will consequently minimize the potential for operational errors and the opportunity for miscommunication when the plan is executed during a real disaster event (Chow & Ha, 2009). The success of a BCM is, to an extent, dependent upon the understanding and awareness of the end users (Moore & Lakha, 2006). In the context of the population of this study, one of the strategies employed to embed BCM best practices in an organization is to systematically adopt and integrate the international standards such as ISO 27001 and ISO 22301 into their critical processes.

Thirdly, based on previous researches on the critical success factors of BCM, hypothesis H1a-1 posits that Management Support has a significant relationship with Overall Organizational Performance (Chow & Ha, 2009; Chow, 2000; Hoong & Marthandan, 2013; Järveläinen, 2013). The mean score of the descriptive statistics indicates that the respondents perceive that their organizations have a fairly good level of Management

Support (mean=5.58). However, this study discovers insignificant relationships between Management Support and Overall Organizational Performance. Hence, the hypothesis related to this relationship is rejected. This finding contradicts with previous studies on the success factors of BCM. With such finding, this study evidences that Management Support does not directly influence Overall Organizational Performance of organizations. One plausible explanation for this finding may be related to the fact that 22.1 percent of the respondents indicated that the highest responsibility of BCM program is held by the Head of IT instead of the senior management. Several researchers posited that it is essential that business continuity program to be initiated, sponsored, and authorized by the senior management from the preliminary phase of its implementation (Arend, 1994; Chow, 2000; Yen et al., 2000). The finding is consistent with previous studies, which highlighted that lack of commitment by the senior management will ultimately result in poor executions, lack of corporate wide involvement, hinders the effectiveness of a BCM program implementation and eventually program failures (Payne, 1999; Pitt & Goyal, 2004). Therefore, the senior management should involve themselves in the whole process of crisis management so that their staff would have confidence in their ability to lead them successfully through such critical times (Moore & Lakha, 2006).

Besides the lack of authority, the Head of IT probably put too much focus on technology and may not provide equal importance to other organizational resources such as employees, premises, data, processes, and supplies (Lingeswara & Tammineedi, 2012). Another possible issue pertaining to management support is the delegation of roles. In some occasions, the executive sponsor of the BCM project is too busy to oversee the project, and the responsibility is delegated to a middle level manager. This situation may

reduce the visibility of BCM implementation at the corporate wide level and may also result in lack of serious cooperation from relevant departments (Lingeswara & Tammineedi, 2012). On the other hand, the insignificant relationship between Management Support and Overall Organizational Performance might be due to weak inter-correlation values between variables. Sekaran (2003) postulates that this situation could cause insignificant result in the multiple regression analysis.

Further, hypothesis H1a-3 states that Organization Preparedness is significantly related to Overall Organizational Performance. The finding indicates insignificant relationship, which contradicts the expectation. In other words, any improvement in Organization Preparedness factors, such as business impact analysis, readiness of alternate sites and system, documentation, simulation exercises, communication procedures, and imposing BCM requirement on suppliers, may not result in a substantial effect on Overall Organizational Performance. Therefore, hypothesis H1a-3 is not supported.

The previous study by Järveläinen (2013a) revealed that Organization Preparedness and alertness was not statistically significant in relation to perceived business impacts. The study found that the BCM plans were not tested regularly in all organizations, which could render them impractical and useless (Gibb & Buchanan, 2006). The finding is in agreement with this study which found insignificant relationship between Organization Preparedness and Overall Organizational Performance. Similarly, upon close examination of the questionnaires' responses, this study also discovers about 26 percent of the respondents do not fully agree on regular testing of BCM plan may indicate lack of exercise conducted on the BCM plan. Randeree (2012) argues that regular testing and exercising on BCM plans under simulated or live situations will help in gaining

confidence and prepare the organization to face real disasters. Moreover, BCM shall become obsolete if is not maintained or tested on a regular basis. Similar with Management Support factor, the insignificant relationship between Organization Preparedness and Overall Organizational Performance in the multiple regression analysis might be due to weak inter-correlation values between variables (Sekaran, 2003).

6.3.1.2 BCM Factors and Financial Performance

Hypotheses H1b-1 to H1b-4 postulate significant relationships between BCM Factors and Financial Performance. For the purpose of this study, Financial Performance reflects the potential loss of revenue and market share due to service disruption, cost of recovery and reallocation of organizational resources in the most economical way. The descriptive statistics show that the respondents perceive that their organizations have achieved a fairly good level of Financial Performance contributed by the BCM implementation over the last three years (mean=5.51). Based on the results of the multiple regression analysis, this study discovers that only the External Requirement is significantly related to Financial Performance.

Besides the regulatory and government guidelines, other important factors of the External Requirement are customer service and reputation. From the business view point, the resumption of customer facing services is always regarded as their top priority (Wan, 2009). It is an unarguable fact that most of the businesses require continuous improvement in their service delivery to satisfy the rising expectation from customers. In addition, the main customer facing services and channels should be detailed in the business continuity plan, together with an indication of their priority (Savage, 2002). The

finding is also supported by a previous study which highlights that providing customers with reliable services will enhance corporate reputation, competitive advantage, and profitability (Sawalha, 2013b). Also, the continuity of customer service provides greater customer satisfaction, which will directly contribute to the profitability and growth in market share (Bandyopadhyay et al., 1999). In contrast, any failure in that will result in substantial business losses in terms of revenue, customers' confidence, and reputation (Bank Negara Malaysia, 2008).

However, this study also reveals that other BCM Factors namely Management Support, Organizational Preparedness, and Embeddedness of Continuity Practices have no significant relationship with Financial Performance. Hence, the hypotheses related to these factors and Financial Performance i.e. H1b-1, H1b-3, and H1b-4 are not supported. A plausible explanation for this finding may be due to the fact that these BCM Factors are commonly seen related to internal operational performance and are not directly affecting financial result. This finding is supported by the survey conducted by KPMG (2014) who reported that over 28 percent of the respondents indicated that they 'do not know' the total monetary cost of the downtime. Hence, it is important for organizations to understand the cost of downtime to the business to justify the cost to establish a BCM program and develop a robust recovery solution. Similarly, Vancoppenolle (2007) suggests that the value should be established during the business impact analysis phase of the business continuity management project. For instance, it does not make business sense to invest on an expensive recovery solution to counteract a potential loss of data that may have little value to the organization. On the contrary, it may also not make sense to deploy a recovery solution that only capable to resume service within days if the

business requires it within minutes. Eventually, any chosen solution should be justified through a cost and benefit assessment.

Another possible explanation for the insignificant relationship between these factors and Financial Performance could be attributed to the weak inter-correlation in the multiple regression analysis (Sekaran, 2003).

6.3.1.3 BCM Factors and Non-Financial Performance

Hypotheses H1c-1 to H1c-4 state that BCM Factors are significantly related to Non-Financial Performance. For the purpose of this study, Non-Financial Performance refers to benefits gained by the organizations from BCM implementation in terms of operational stability, reputation, competitive advantage, customer satisfaction, growth, customer's loyalty, and employee productivity. In general, the respondents perceive that their organizations have achieved a fairly good level of Non-Financial Performance over the last three years (mean=5.52).

Similar to Overall Organizational Performance, this study also finds that External Requirement and Embeddedness of Continuity Practices dimensions have significant relationships with Non-Financial Performance. Likewise, the other two BCM Factors namely Management Support and Organizational Preparedness are also found not significantly related to Non-Financial Performance. Hence, the hypotheses related to these factors and Non-Financial Performance are rejected.

In addition, according to Sekaran (2003), the non-significant results between BCM Factors and Non-Financial Performance in the multiple regression analysis could be attributed to the weak inter-correlation values.

6.3.2 Relationship between IT Capability and Organizational Performance

The second objective of this study is to investigate the relationships that exist between IT Capability and Organizational Performance. For the purpose of this study, IT Capability refers to the internal ability to which an organization is equipped with IT knowledge, IT object or infrastructure as well as effective IT operations. Based on the correlation analysis, the results indicate that IT Capability has significant positive relationship with all dimensions of Organizational Performance, with weak to medium strength of the correlations. This means that a high level of IT Capability is associated with a high level of organizational performance. Regarding this, hypotheses H2a-1, H2a-2, and H2a-3 postulate significant relationships between IT Capability and Organizational Performance which includes Overall Organizational Performance, Financial and Non-Financial Performance dimensions. The results of multiple regression analysis show that these hypotheses are fully supported, which implies that the variance in Organizational Performance is explained by IT Capability.

In addition, the multiple regression analysis was also performed to investigate the contributory explanation of IT Capability as a variable that best predicts Organizational Performance dimensions. For this purpose, three regression analysis models were tested and the outcomes indicate that all models are statistically significant. In short, the results exhibit that IT Capability explains 15 percent of the variance in Overall Organizational Performance, 6.7 percent variance of Financial Performance, and 18.5 percent of the variance in Non-Financial Performance. These results also demonstrate that the relationship between IT Capability and Non-Financial Performance is the strongest followed by Overall Organizational Performance and Financial Performance. In the

context of BCM, this proposes that IT Capability is an important factor for organizations to achieve better performance. In other words, a high level of IT Capability is linked to a high level of Organizational Performance.

The above findings corroborates with previous studies on the relationship between IT Capability and Organizational Performance. Since the past a few decades, organizations have developed IT-enabled strategies, which has been motivated by the expectation that implementing such strategies over time would enhance organizational performance (Chen, Lim, & Stratopoulos, 2011). Similarly, Li, Chen, and Huang (2006) found that IT Capability has been recognized in creating significant influence on organization's performance. IT is also recognized for its role in creating both initial competitive advantage as well as long-term sustained competitive advantage (Barney, 1991; Feeny & Ives, 1990). In addition, Bhatt and Grover (2005) argued that IT Capability supports the smooth execution of the organization's strategy, develops reliable and cost effective solutions and anticipates customer needs.

While this study finds that IT Capability is associated with Organizational Performance, it means that the extent of achievement in Organizational Performance may be dependent on the level of IT Capability. In other words, a higher level of IT Capability may lead to a superior organizational performance. As previously discussed, the RBV Theory is applied as the foundation for this study. In fact, the significant relationship between IT Capability and Organizational Performance dimensions of this study is in line with RBV and is supported by findings from past studies (Mithas et al., 2011; Santhanam & Hartono, 2003). Chen et al. (2011) also found that organizations with a systematic IT Capability have a distinct competitive advantage in their ability to generate sustainable income and

to swiftly recover from economic downturn. From the context of business continuity and operational efficiency, Floyd et al. (1990) asserted that IT capabilities improve service reliability, minimize transaction errors and enhance performance consistency.

6.3.3 Moderating Effect of IT Capability

Finally, the third objective of this study is to examine the moderating effect of IT Capability on the relationship between BCM Factors and Organizational Performance dimensions. For that purpose, hierarchical regression analysis was conducted to analyze the interaction terms between the independent variables (BCM Factors) and the moderating variable (IT Capability) in order to test the moderating effects. The outcome reveals a mixed result on the interaction effect between IT Capability and the individual BCM Factors. Hence, the third main hypothesis of this study is partially supported.

The results of the moderating effects of IT Capability on the relationship between BCM Factors and Organizational Performance dimensions is consistent with the literatures on RBV, which suggest that organizations possess resources that empower them to gain competitive advantage and lead to sustaining superior long-term performance (Barney, 1991; Grant, 1991). Similarly, many of previous researchers have adopted the RBV in linking IT to firm performance (Liang, You, & Liu, 2010; Santhanam & Hartono, 2003; Yongmei et al., 2008).

In general, this study contributes some insights to the managers and practitioners especially in the Malaysian organization settings. Organizations are encouraged to invest in terms of financial, time, resources and commitment to enhance their IT Capability in order to further gain benefits from the implementation of BCM, which may eventually

lead to an improved organizational performance. With regards to IT Capability, managers need to look beyond specific technology, where all three attributes namely IT knowledge, IT operations, and IT objects are essential to be present in order to achieve optimum results.

In a nutshell, the overall findings have proven the association between the IT capabilities on the relationship between BCM Factors and organizational performance. The linkage between these variables provides a new empirical contribution to academic knowledge and practitioners.

6.3.3.1 Moderating Effect of IT Capability on BCM Factors and Overall Organizational Performance

Hypotheses H3a-1, H3a-2, H3a-3, and H3a-4 postulate that IT Capability moderates the relationship between BCM Factors and Overall Organizational Performance. Based on the hierarchical regression analysis, this study finds that IT Capability only moderates the relationship of two BCM Factors namely Organization Preparedness and Embeddedness of Continuity Practices. Given that IT Capability does have direct influence on Overall Organizational Performance, it emerges as a quasi-moderator rather than a pure moderator. However, the analysis also show that IT Capability does not moderate the relationship of two BCM Factors namely Management Support and External Requirement.

In this regard, the graph in Figure 6.1 elaborates the moderating effect of the relationship between Organization Preparedness and Overall Organizational Performance. Generally, the graph shows that the higher IT Capability, the lower Overall Organizational

Performance is. This explains that when the level of Organization Preparedness is lower, those organizations with less emphasis on IT Capability appear to achieve higher level of overall Organizational Performance. However, when the level of Organization Preparedness is higher, those organizations with high emphasis on IT Capability experience a significant reduction in Overall Organizational Performance. In other words, the high overall Organizational Performance is observed when there is low level of Organization Preparedness and low level of emphasize on IT Capability.

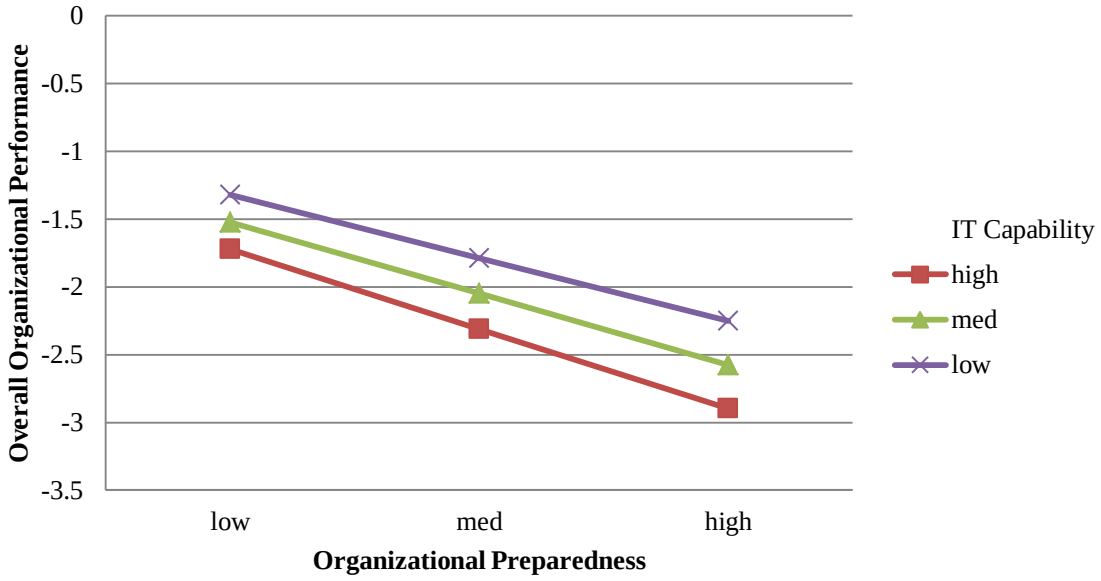

Figure 6.1
The Moderating Effect of IT Capability on the Relationship between Organization Preparedness and Overall Organizational Performance

Hence, this finding agrees with by Järveläinen (2013a) who revealed that Organization Preparedness and alertness was not statistically significant in relation to perceived

business performance. Even though most of the respondents in this study indicate that they are adequately prepared and have heavily invested in terms of their IT infrastructure, this study finds that the BCM plans are not regularly tested by some organizations, which could render them impractical and useless (Gibb & Buchanan, 2006). This finding is also supported by Pearson and Woodman (2012) who reported that 52 percent of their respondents did not exercise their BCM plan in year 2011 while 17 percent never tested their BCM plan. In addition, Rosenthal and Sheniuk (1993) argued that unless BCM plans are periodically and regularly tested, they are seldom usable operationally.

Currently, business continuity and disaster recovery simulation exercises are widely adopted to exercise the employees, procedures, infrastructure, and resources for both the IT and non-IT-related aspects of an organization's BCM and life-safety plans. The simulation methods and scenarios commonly used for these exercises are designed to test the various procedures to recover critical business functions while assuring the safety of the personnel and facilities. Based on the Bank Negara Malaysia guidelines, business continuity plan should be tested at least once a year for all critical business functions, while the disaster recovery plan for all critical application systems should be tested at least twice a year, of which one of the tests should be a live run (Bank Negara Malaysia, 2008). The scope of testing should be adequately comprehensive to cover the critical components of BCM as well as coordination and interfaces among relevant parties.

Meanwhile, the interaction terms between IT Capability and Embeddedness of Continuity Practices were analyzed to test the moderating effects on Overall Organizational Performance. The results reveal that the interaction effect is significant. Figure 6.2 illustrates that positive relationship between Embeddedness of Continuity Practices and

Overall Organizational Performance would be stronger when the level of IT Capability is higher. This explains that the high overall Organizational Performance is observed when the level of Embeddedness of Continuity Practices is high while embracing greater emphasis on IT Capability.

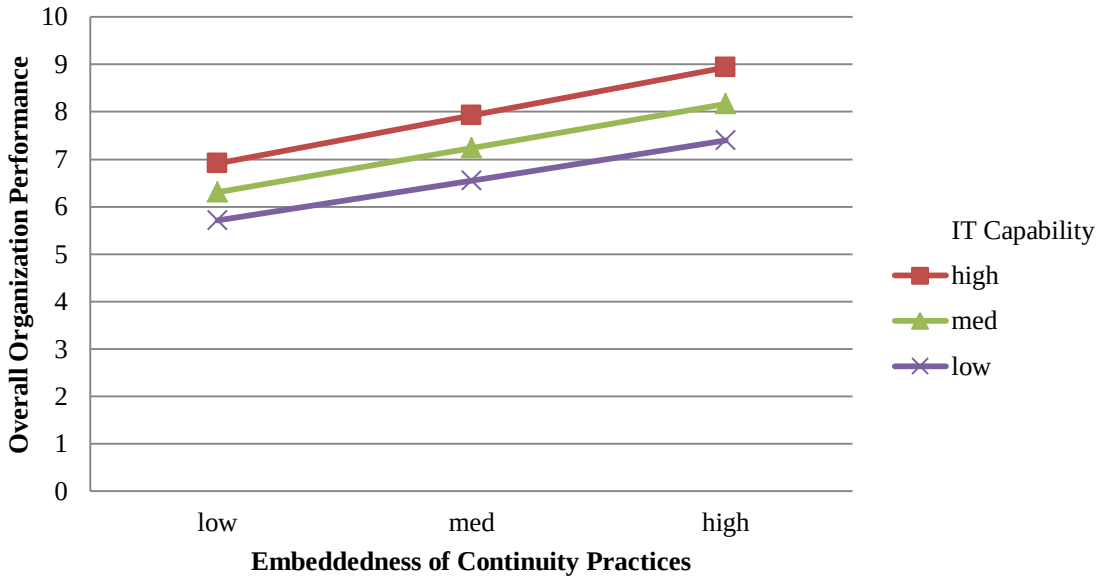

Figure 6.2
The Moderating Effect of IT Capability on the Relationship between Embeddedness of Continuity Practices and Overall Organizational Performance

This also demonstrates that Embeddedness of Continuity Practices has significant direct and indirect effects on Overall Organizational Performance, in which the indirect effect is achieved via IT Capability. This means that organizations which have embedded good BCM practices within their operations would also require an effective IT Capability in order to achieve a high level of overall Organizational Performance. Previous studies argued that Embeddedness of Continuity Practices facilitates the effective

implementation of information system continuity management and necessitates stability and a clear organizational structure (Elliott et al., 2010). It agrees with Järveläinen (2013b), who suggested that one way of embedding continuity in an organization is to comprehensively adopt an international standard or framework into the processes. The suggestion is in line with the population of this study which has adopted ISO 27001 and ISO 22301 standards as part of their efforts to enhance their BCM competency and improve operational stability. From IT Capability perspective, these ISO standards represent IT Knowledge and IT operations elements possessed by the organizations.

The finding is also consistent with prior study which suggest that IT capability in combination with effective awareness program is an important part of changing the culture to create a consensus on the need for sustainability (Guyon, Sheridan, & Donnellan, 2012). In the same way, Barney, Wright, and Ketchen (2001) postulate that the synergy between two or more resources may generate a sustainable competitive advantage. Besides the adoption of BCM standards, awareness and training programs are important factors to embed BCM best practices in an organization. In the Malaysian context, Jalil (2009) suggests that strategic steps need to be taken to raise the BCM awareness in the country. He suggests that a localized version of a BCM standard needs to be made available for public consumption in order to make it easier for the adoption of BCM. By having such standard, Malaysian organizations will have a set of best practices as guidance and this will eventually enhance the effectiveness of BCM implementation. In addition, internal awareness training programs should be conducted for all employees upon the establishment of the initial BCM plan, especially for newly-recruited employees during induction courses and for staff who are assigned with new responsibilities under

the BCM plan (Morwood, 1998). Besides, a BCM awareness program among key stakeholders should highlight the benefits of achieving high level of resilience such as regulatory compliance, meeting current and prospective customer demands, avoiding liability, and more importantly maintaining a competitive advantage.

6.3.3.2 Moderating Effect of IT Capability on BCM Factors and Financial Performance

For this purpose, the interaction terms between IT Capability and BCM Factors namely Management Support, External Requirement, Organization Preparedness, and Embeddedness of Continuity Practices were examined to test the moderating effect on Financial Performance. The results of the hierarchical regression analysis reveal that the interaction effects between all four BCM Factors and IT Capability are found to be insignificant. In other words, it can be expressed that IT Capability does not moderate the relationship between BCM Factors and Financial Performance.

This contradicts the findings by Sawalha (2013b), which highlights that providing reliable services will enhance corporate reputation, competitive advantage, and profitability. On the other hand, Li and Ye (1999) discovered that IT investment was not statistically significant in enhancing profitability when measured by return on assets and return on sales. As discussed earlier, a reasonable explanation for this contradicting finding may be due to the fact these BCM Factors are commonly viewed as related to operational performance and not directly affecting financial bottom line. This assumption is supported by KPMG (2014) who found that some organizations did not realize the total cost of the downtime. Thus, the results of this study convey that it is important for organizations to recognize the cost of downtime to the business to appreciate the

contribution of BCM on Financial Performance. This proposition can be achieved by conducting a business impact analysis.

Although the success of BCM implementation is influenced by the use of appropriate technology and availability of robust IT infrastructure, this study found that a great extent of IT Capability alone is not beneficial enough to strengthen the relationship between BCM Factors and Financial Performance. According to Lingeswara and Tammineedi (2012), this phenomenon may occur if during the planning stage of developing organizational resilience plan, too much focus is given on technology without providing equal importance to other organizational resources such as employees, premises, data, processes, and supplies. To overcome this issue, the scope of a BCM program should be expanded to cater for wider causes of disasters that may affect the business (Elliott et al., 2010).

6.3.3.3 Moderating Effect of IT Capability on BCM Factors and Non-Financial Performance

This study reveals that IT Capability plays a quasi-moderating role on the relationship between BCM Factors and Non-Financial Performance. In regards to this, Figure 6.3 illustrates that the higher the Organization Preparedness, the lower Non-Financial Performance is. This means when the level of Organization Preparedness is low, those organizations with less emphasis on IT Capability appear to achieve a high level of Non-Financial Performance. However, when the level of Organization Preparedness is high, organizations with high emphasize on IT Capability experience a significant reduction in Non-Financial Performance. In other words, a high Non-Financial Performance is

achieved when there is low level of Organization Preparedness and low level of emphasize on IT Capability.

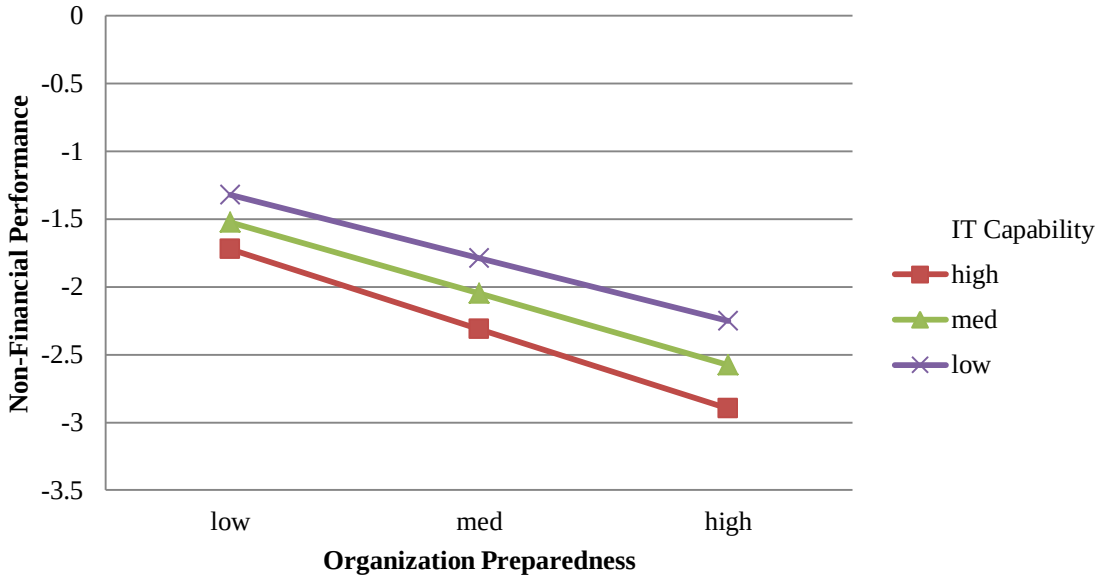

Figure 6.3
The Moderating Effect of IT Capability on the Relationship between Organization Preparedness and Non-Financial Performance

This contradicting result may be resulted by the lack of regular exercise of BCM plan as observed in respondents' feedbacks. It is also noted from the literatures that exercising the business continuity plans is the major challenge for most organizations (Symantec research, 2009). In fact, according to Hoong (2011), 25 percent of business continuity test fails and nearly 30 percent of the organizations do not cover all critical IT environments in their test plan. He added that the use of technology like automation, workload

management and cross-environment tools can close these fundamental gaps for effective BCM implementation.

Meanwhile, Figure 6.4 illustrates the association between IT Capability, Embeddedness of Continuity Practices, and Non-Financial Performance. The result indicates that the interaction effect of IT Capability is significant. In general, the graph shows that positive relationship between Embeddedness of Continuity Practices and Non-Financial Performance would be greater when the level of IT Capability is higher. This means that a higher Non-Financial Performance is observed when the level of Embeddedness of Continuity Practices gradually increases while embracing greater emphasis on IT Capability. Also, the result reveals that Embeddedness of Continuity Practices has significant direct and indirect effects on Non-Financial Performance where the indirect effect is achieved via IT Capability. In conclusion, organizations which have embedded good BCM practices within their operations would also require an effective IT Capability in order to achieve higher level of Non-Financial Performance. The finding is consistent with the previous studies which postulated that Embeddedness of Continuity Practices facilitates the effective implementation of BCM program through the adoption of an international standard and effective awareness program (Elliott et al., 2010; Guyon et al., 2012; Järveläinen, 2013).

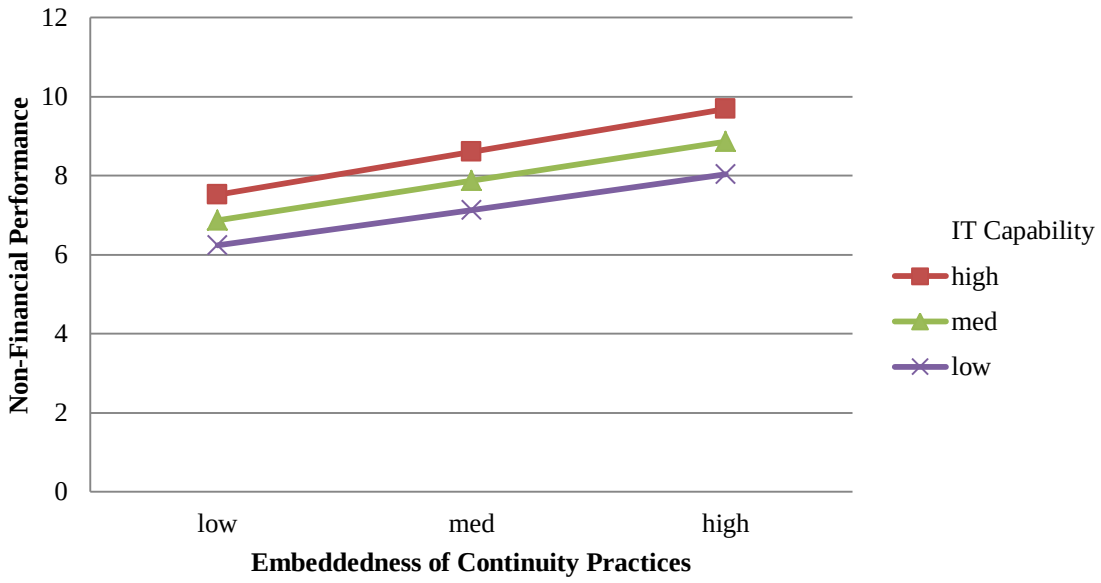

Figure 6.4
The Moderating Effect of IT Capability on the Relationship between Embeddedness of Continuity Practices and Non-Financial Performance

6.4 Implications of the Study

The primary objective of this study is to examine the relationship between BCM Factors and Organizational Performance with the moderating effect of IT Capability, in the context of Malaysian organizations. Fundamentally, this study has established new insights for academics and practitioners that contribute to the existing body of knowledge. Accordingly, this section attempts to discuss the implications of the main findings on the theories and practices. The first part of this section emphasizes on the theoretical implications of this study. Meanwhile, the second part of this section discusses in detail on the practical or managerial implications.

6.4.1 Theoretical Implication

As discussed in Chapter 1, the gap in the literatures lies in the insufficient studies, which has established the relationships that exist between BCM and Organizational Performance (Sawalha, 2013b). In response to the shortfall, this study attempts to develop a theoretical research framework that could explain the effect of BCM on Organizational Performance in Malaysian context. Based on the analyzed data, this study has established empirical evidences on the theoretical relationships as postulated in the research framework. In overall, this study outlines three main hypotheses as derived from the research questions. The results of the hypotheses testing reveal that one main hypothesis is fully supported whereas the other two main hypotheses are partially supported. For the purpose of this study, RBV, Crisis Management and Stakeholder theories are used to underpin the research framework. In addition, this study also contributes new insight to the body of knowledge with the presence of IT Capability in the relationship between BCM Factors and Organizational Performance, which is little known thus far.

Also, this study reveals empirical evidence to support the RBV Theory. The RBV proposes that the performance of an organization is very much influenced by its internal resources. In the context of this study, BCM Factors that comprise of four dimensions namely Management Support, External Requirement, Organizational Preparedness, and Embeddedness of Continuity Practices are regarded as the resources. This study discovers that the External Requirement and Embeddedness of Continuity Practices are significantly associated to Overall Organizational Performance and Non-Financial

Performance while only the External Requirement is significantly related to Financial Performance. Mainly, this study finds that the External Requirement and Embeddedness of Continuity Practices are the significant predictors of Organizational Performance of Malaysian organizations in the context of BCM. The results of this study are consistent with RBV Theory, which addresses that dynamic capabilities are organization's abilities in acquiring, adjusting, and employing internal resources such as people, knowledge, and capital to sustain business and operational resilience that are advantageous to organization in achieving superior performance. Organizations that do not seriously maintain and invest in good BCM practices may find that business recovery during disastrous events is complex and costly, eventually causing negative impacts on the overall performance.

On top of that, this study also contributes further to the current literature on the role of IT Capability as a moderator. In the case of this study, IT Capability plays a moderating role in the relationship between BCM Factors and Organizational Performance. Based on the empirical results, this study finds that Organizational Performance can be explained by BCM Factors and IT Capability. Particularly, BCM Factors that have been moderated by IT Capability include Organizational Preparedness and Embeddedness of Continuity Practices.

This study reveals that the first dimension of Organizational Performance, which is Overall Organizational Performance is moderated by IT Capability when associated with Organizational Preparedness and Embeddedness of Continuity Practices. On the contrary, Overall Organizational Performance is not moderated by IT Capability when associated with Management Support and the External Requirement. Meanwhile, the second

dimension of Organizational Performance, which is Financial Performance is not moderated by IT Capability when associated with all dimensions of BCM Factors. For the third dimension of Organizational Performance, which is Non-Financial Performance, it is moderated by IT Capability when associated with Organizational Preparedness and Embeddedness of Continuity Practices. Hence, this study concludes that IT Capability is an element that could alter the strength of BCM Factors and Organizational Performance relationships experienced by the subjects involved in this study. This finding could also imply that no matter how much an organization invest on IT, enhanced performance will not materialize without improving IT Capability (Yongmei et al., 2008).

In current situation, since there is very limited literatures focusing on the relationship between BCM Factors and Organizational Performance, this study has contributed significant insights that could be beneficial for academics and future researchers.

6.4.2 Practical Implication

This study endeavors to further establish the importance of BCM as a strategic management tool that must be employed by organizations to minimize the operational risk and its impact to their critical business functions. The outcomes of this study provide sufficient empirical evidence on the relationships that exist between BCM Factors and Organizational Performance with the moderating effect of IT Capability in organizations from various sectors in Malaysia.

On top of that, the outcomes of this study have proven that BCM Factors namely External Requirement, Organization Preparedness, and Embeddedness of Continuity Practices contribute towards enhancing Organizational Performance. Hence, it is essential that

every organization, regardless of size and nature of business, to proactively enhance their capability in managing BCM in order to be prepared for dealing with interruptions more effectively that eventually leads to superior performance. Special attention should be given to specific BCM Factors that are associated with a particular Organizational Performance dimensions. For instance, in order to enhance Overall Organizational Performance, organizations need to focus on the compliance to the External Requirements and Embeddedness of Continuity Practices into the existing critical business functions and processes. This finding is consistent with Herbane et al. (2004), who postulate that the regulatory requirements enforced by the government authorities and sometimes even by customers will motivate the management to further enhance the service continuity of their information technology and systems (Herbane et al., 2004). In the context of Malaysian public sector, the government through Malaysian Administrative Modernization and Management Planning Unit (MAMPU) has issued a guideline to all government agencies to establish BCM program not later than the end of 2015. Meanwhile, the central bank, Bank Negara Malaysia has issued guidelines to all financial institutions, which highlight that the board of directors and senior management team are fully responsible on the enterprise-wide implementation of comprehensive BCM program. On the other hand, in order to inculcate the embeddedness of BCM process, organization can employ a combination of ways to communicate its relevancy, including awareness raising activities, training, and constant communication personalized to meet the needs of various target groups. Another approach to embed BCM practices in an organization is to adopt international standards or frameworks that systematically integrate it into the current critical processes (Järveläinen, 2013).

Similarly, compliance to External Requirement is an important factor to be considered by organizations in order to achieve a better Financial Performance. Whereas, as for Non-Financial Performance, the study has identified that the External Requirement and Embeddedness of Continuity Practices as important factors that may produce positive effects on the operational performance.

This study also discovers that IT Capability is significantly associated to all Organizational Performance dimensions i.e. Overall Organizational Performance, Financial Performance, and Non-Financial Performance. Hence, this study confirms the roles played by IT as a capability in enhancing Organizational Performance and elevating the competitive advantage. Therefore, organizations should strive to become technologically-oriented in order to achieve an outstanding performance and sustain in the competitive advantage.

The finding of this study also validates the moderating role of IT Capability that is in line with several empirical studies, which acknowledge IT Capability as an important moderating variable for Organizational Performance (Said et al., 2009; Shao et al., 2010; Yongmei et al., 2008). Accordingly, the senior management of the organizations should seriously consider incorporating IT Capability into its BCM program as the study revealed that the interaction of these two elements may contribute towards greater organizational performance.

6.5 Limitations of the Present Study and Suggestions for Future Studies

In some ways, it is believed that this study has contributed to the BCM body of knowledge and its effects on organizational performance in the Malaysian landscape. In conjunction, this study paves ways for future studies, which will not only complement this study but will also further enhance the research framework. Although this study finds several encouraging results, it is important to recognize that the current findings also have several limitations, which opens-up for future enhancement.

1. First, this study only focuses on the organizations certified with ISO 27001 and ISO 22301, with the rationale that these organizations are deemed to possess considerably high sense of commitment towards BCM by enhancing their capability in line with the internationally recognized standards. Currently, the number of such organizations in Malaysia is relatively small, less than 150. According to Anderson and Gerbing (1988), a sample size of 150 or more usually provides parameter estimates that have standard errors, which are small enough to be of practical usefulness. Thus, future studies may want to consider extending the scope of the study to cover other organizations even without the BCM-related certifications so as to determine the effect of the adoption of the BCM standards on the effectiveness of BCM implementation that eventually contribute to organizational performance. A comparative analysis can also be made between organizations with BCM-related certifications against those without such certification. By expanding the scope of the study, which will directly increase the size of population, it may improve the quality of data and inherently enhance the generalizability of findings. In fact, the larger the sample size, the smaller the error is, and the higher the precision of the results will be

(Cohen, 1988). Hence, this will strengthen the probability of detecting the phenomena under study.

2. Secondly, this study is limited to four dimensions of BCM Factors i.e. Management Support, External Requirement, Organization Preparedness, and Embeddedness of Continuity Practices; one moderating variable i.e. IT Capability; and two dimensions of outcome variable i.e. Financial Performance and Non-Financial Performance. The values of R^2 in regression models for IT Capability do not exceed 0.50 and this suggests that future studies should consider analyzing the influence of other moderating variables such as industry type, time period, and size of organization (Lim et al., 2004). Future study could also be expanded to analyze the influence of other predictors such as strategic management and business risk analysis (Karim, 2011), staff competency and stakeholder relationship (Hoong, 2011), and adequacy of financial support (Chow, 2000). Also, other outcome variables that can be introduced to extend the current framework could be customer and employee satisfaction (Terziovski et al., 1997), productivity (Feng et al., 2008; Naveh & Marcus, 2004; Sink, 1985), process improvement (Kamal & Agrawal, 1997) and operational performance (Jang & Lin, 2008). In addition, future study could also analyze the influence of the demographic profiles such as type of industry, size of organization and type of BCM related certification on the organizational performance contributed by BCM implementation.
3. The third recommendation relates to the methodological approach. As the survey technique adopted by this study is based on cross-sectional approach, further efforts need to be carried out to establish the effects of changes over a longer period of time

in the aspect of BCM. Using a longitudinal approach on the similar group of participants may be better at drawing the BCM effects on organizational performance and perhaps could provide a better analysis on the interrelationships among the organizations under study. In contrast a cross sectional study only focuses on a small sample at a particular time and the conclusion would be drawn with regards to certain phenomenon of a larger population. In other words, the main advantage of longitudinal approach is that it enables a study to observe changes that take place over time. Hair et al. (2007) argues that longitudinal study is a better way to seek the cause and effect relationship among variables at a different period of time. Consequently, this approach apparently can help to provide more detail on the relationship between the BCM, IT Capability, and organizational performance in Malaysian organizations. Thus, future research should consider a longitudinal study to investigate the implementation of BCM and how it influences organizational performance.

4. Fourthly, this study is conducted using a quantitative method in the design and analysis, where the information obtained is limited to the responses gathered based on the questionnaire. Hence, it is worth suggesting for future research to incorporate qualitative information because the mixed method offers more insightful and better understanding of research problems (Greene et al., 1989). It is also believed that the outcomes of this study will be more meaningful and enriched if both quantitative and qualitative methods are utilized as both can complement each other.
5. Finally, this study has employed a self-rating questionnaire in collecting data and the scale is easily subject to bias and inaccuracy. This approach raises an immediate concern because habitually it is very difficult for people to assess their own behavior

accurately. Even worst, the respondents may not be telling the truth and prone to lie when answering sensitive questions in the survey. This may conflict because this study is very much dependent on the respondents' honesty. It is a known fact that people tend to agree on socially-desirable answers and disagree more towards socially-undesirable answers rather than truthfully expressing their perceptions and opinions. Bradberry and Greaves (2005) argue that the main drawback of self-rating scales is that the researcher may not be able to guarantee the possibility of respondents to overstate their views rather than giving their honest feedbacks. In order to minimize the possibility of such bias, this study recommends future studies to consider applying multi-rating or method procedures in the data collection, as outlined by Namasivayam and Zhao (2007). Similarly, Alston (2009) recommends the use of multi-rater scales when performing behavioral survey and strongly believes that this approach could yield different results. Besides, multi-rater is an alternative way of assessing human behavior. In this case, the subordinate, peer, superior or other observers will be rating the respondent. This approach is considered a better approach since another person will observe and rate the respondent. The method should be more precise than the self-report survey as well as the observer rating may provide an insight appraisal.

6.6 Concluding Remarks

This study pioneers the attempt to examine the effect of BCM Factors on Organizational Performance. The empirical evidences of this study also recognize the important roles of IT Capability towards fostering a high resilience organization to gain competitive

advantage and organizational excellence. This study substantially contributes to the current literature on BCM, IT Capability, and organizational performance in the context of a developing country particularly Malaysia. Drawing from RBV, Crisis Management and Stakeholder theories, the research model has provided a theoretical framework for understanding the critical success factors that influence the establishment of effective BCM in an organization that eventually lead to superior performance. This study reveals that important BCM Factors such as the influence of External Requirement and Embeddedness of Continuity Practices have significant positive causal relationships with Overall Organizational Performance. The External Requirement also play an important role that is significantly associated to Financial Performance. Likewise, the influence of the External Requirement and Embeddedness of Continuity Practices assert positive causal relationship with Non-Financial Performance. Nonetheless, this study also discovers that Management Support and Organization Preparedness have no significant relationship with all dimensions of Organizational Performance in the context of Malaysian organizations.

Also, this study finds that IT Capability that comprises of three main elements (IT knowledge, IT operations, and IT objects) have significant relationships with all dimensions of Organizational Performance. These findings support the current literatures, which have established the continual importance of IT Capability in the creation of business values and sustaining competitive advantage in the digital era. In another perspective, IT Capability also has significant moderating effects on the relationship between BCM Factors (Embeddedness of Continuity Practices and the organizational readiness) and Organizational Performance dimensions (Overall Organizational

Performance and Non-Financial Performance). On the contrary, the results of the study also indicate that IT Capability does not moderate the relationship between BCM Factors and Financial Performance.

With considerations on the impact of the globalization and intense in the business competition nowadays, the outcomes of this study serve a strong basis for managers to invest in improving the BCM knowledge, processes, and infrastructure as the benefits are evident. Furthermore, this study could provide a better understanding to the decision makers on the significant roles of BCM in relation to Organizational Performance and encourage their participation at the strategic level.

This final chapter discusses and concludes the study based on the empirical results drawn from the data analysis phase. Besides the theoretical and practical contributions, this study highlights the limitations and proposes directions for future works. Towards the end, the research objectives have been substantiated with several new findings and insights, which contribute to the body of knowledge, in the field of technology management and business performance. Nonetheless, it is hoped that this study will stimulate more theory building and further researches in this area of study.

REFERENCES

Acuna, E., & Rodriguez, C. (2004). The treatment of missing values and its effect in the classifier accuracy. *Classification, Clustering and Data Mining Applications*, 639–648. Retrieved from http://academic.uprm.edu/~eacuna/IFCS04r.pdf

Alesi, P. (2008). Building enterprise-wide resilience by integrating business continuity capability into day-to-day business culture and technology. *Journal of Business Continuity & Emergency Planning*, *2*, 214–220.

Allen, D. R., & Rao, T. R. N. (2000). *Analysis of Customer Satisfaction Data*. Milwaukee, Wisconsin: American Society for Quality.

Allison, P. (1999). *Multiple regressions: A primer*. CA: Pine Forge Press.

Alonaizan, A. (2009). Developing a business continuity programme at Arab National Bank. *Journal of Business Continuity & Emergency Planning*, *3*(3), 216–222.

Alonso, F., & Boucher, J. (2001). Business Continuity Plans for Disaster Response. *CPA Journal*, *71*(11).

Al-Shammari, H., & Hussein, R. (2008). Strategic Planning in Emergent Market Organizations: an Empirical Investigation. *International Journal of Commerce and Management*, *18*(1), 47–59.

Alston, B. A. (2009). *An examination of the relationship between emotional intelligence and leadership practices*. Nova Southeastern University, Florida.

Amit, R., & Schoemaker, P. J. H. (1993). Strategic Assets and Organizational Rent. *Strategic Management Journal*, *14*, 33–46.

Anderson, J. C., & Gerbing, D. W. (1988). Structural Equation Modeling in practice: A review and recommended two-step approach. *Psychological Bulletin*, *103*, 411–423.

Arend, M. (1994). Time to dust off your contingency plan. *ABA Banking Journal*, *86*(2), 56.

Armstrong, J. S., & Overton, T. S. (1977). Estimating Nonresponse Bias in Mail Surveys. *Journal of Marketing*, *14*, 396–402. Retrieved from http://cogprints.org/5205/

Ascari, A., Rock, M., & Dutta, S. (1995). Reengineering and organizational change: Lessons from a comparative analysis of company experiences. *European Management Journal*, *13*(1), 1–30.

Attaran, M. (2003). Information technology and business-process redesign. *Business Process Management Journal*, *9*(4), 440–458. doi:10.1108/14637150310484508

Babbie, E. (2004). *The practice of social research* (10th ed.). Belmont California: Thomson/Wadsworth Learning.

Babbie, E. (2009). *The practice of social research* (12th ed.). Belmont, CA: Wadsworth.

Bandyopadhyay, K., Mykytyn, P. P., & Mykytyn, K. (1999). A framework for integrated risk management in information technology. *Management Decision*, *37*(5), 437–445. doi:10.1108/00251749910274216

Bank Negara Malaysia. (2004). GPIS1 - Guidelines on Management of IT Environment.

Bank Negara Malaysia. (2008). Guidelines on Business Continuity Management.

Bank Negara Malaysia. (2011). Guidelines on Business Continuity Management (Revised).

Baraghani SN. (2007). *Factors Influencing the Adoption of Internet Banking*. Lulea University of Technology, Sweden.

Barney, J. B. (1991). Firm Resources and Sustained Competitive Advantage. *Journal of Management*, *17*(1), 99–120.

Barney, J. B., & Arikan, R. (2001). Resource-based theories of competitive advantage: A ten-year retrospective on the resource-based view. *Journal of Management*, *27*(6), 643–650.

Barney, J. B., Wright, M., & Ketchen, D. J. (2001). The resource-based view of the firm: Ten years after 1991. *Journal of Management*, *27*, 625–641.

Baron, R. M., & Kenny, D. a. (1986). The moderator-mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*(6), 1173–82. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/3806354

Bart, C., Bontis, N., & Taggar, S. (2001). A model of the impact of mission statements on firm performance. *Management Decision*, *39*(1), 19–35.

Bartlett, J. E., Kotrlik, J. W. K. J. W., & Higgins, C. (2001). Organizational research: Determining appropriate sample size in survey research appropriate sample size in survey research. *Information Technology, Learning, and Performance Journal*, *19*(1), 43.

Barua, A., Kriebel, C. H., & Mukhopadhyay, T. (1995). Information technologies and business value: an analytic and empirical investigation. *Information Systems Research*, *6*(1), 3–23.

Bassellier, G., Reich, B. H., & Benbasat, I. (2001). Information Technology Competence of Business Managers : A Definition and Research Model. *Journal of Management Information Systems*, *17*(4), 159–182.

BCI. (2011). Dictionary of Business Continuity Management Terms. Business Continuity Institute. Retrieved from http://www.thebci.org/glossary.pdf.

Beaumaster, S. (2002). Local Government IT Implementation Issues : A Challenge for Public Administration. In *Proceedings of the 35th Hawaii International Conference on System Sciences - 2002* (Vol. 00, pp. 1–10).

Beazley, H., Boenisch, J., & Harden, D. (2002). *Continuity Management: Preserving Corporate Knowledge and Productivity When Employees Leave*. New York: John Wiley & Sons.

Belaouras, S. (2009). State of Business Continuity Preparedness. *Disaster Recovery Journal*, *22*(1). Retrieved from http://www.drj.com/index.php?option=com_content&task=view&id=2206&Itemid=676

Belluz, D. (2002, November). Modern Risk Management: Give Your Firm a Risk Profile and Gap Analysis. *Camagazine*.

Berman, S. I., Wicks, A. C., Kotha, S., & Jones, T. M. (1999). Does stakeholder orientation matter? The relationship between stakeholder management models and firm financial performance. *Academy of Management Journal*, *42*(5), 488.

Bharadwaj, A. S. (2000). A Resource-Based Perspective on Information Technology Capability and Firm Performance: An Empirical Investigation. *MIS Quarterly*, *24*(1), 169. doi:10.2307/3250983

Bharadwaj, A. S., Sambamurthy, V., & Zmud, R. W. (1999). IT capabilities: theoretical perspectives and empirical operationalization. *Management Science, Charlotte*, 378–385. doi:10.1145/352925.352962

Bhatt, G. D., & Grover, V. (2005). Types of information technology capabilities and their role in competitive advantage. *Journal of MIS*, *22*(3), 253–277.

Biemer, P. P., & Lyberg, L. E. (2003). *Introduction to Survey Quality*. Hoboken, NJ.: John Wiley & Sons, Inc.

Blos, M. F., Wee, H.-M., & Yang, J. (2010). Analysing the external supply chain risk driver competitiveness: a risk mitigation framework and business continuity plan. *Journal of Business Continuity & Emergency Planning*, *4*(4), 368–374.

Blumberg, B., Cooper, D., & Schindler, P. (2008). *Business Research Methods* (2nd Europe.). McGraw-Hill Education.

Blyth, M. (2009). *Business continuity management: building an effective incident management plan*. New Jersey: J. Wiley.

Boehmer, W. (2009). Survivability and Business Continuity Management System According to BS 25999. *2009 Third International Conference on Emerging Security Information, Systems and Technologies*. doi:10.1109/SECURWARE.2009.29

Bontis, N. (1998). Intellectual capital: an exploratory study that develops measures and models. *Management Decision*, *48*(9), 63–76.

Bontis, N., Chua, C. K., & Richardson, S. (2000). Intellectual capital and business performance in Malaysian industries industries. *Journal of Intellectual Capital*, *1*(1), 85–100.

Borodzicz, E. P. (2005). *Risk, Crisis and Security Management*. West Sussex and Hoboken, NJ: John Wiley & Sons.

Botha, J., & Solms, R. Von. (2004). A cyclic approach to business continuity planning. *Information Management & Computer Security*, *12*(4), 328–337. doi:10.1108/09685220410553541

Bouma, J. J., & Kamp-Roelands, N. (2000). Stakeholders expectations of an environmental management system: some exploratory research. *European Accounting Review*, *9*(1), 131–144.

Bradberry, T., & Greaves, J. (2005). *The emotional intelligence quick book everything you need to know to put your EQ to work*. New York: Simon & Schuster.

Bryman, A., & Bell, E. (2007). *Business Research Methods* (2nd ed.). Oxford University Press.

Brynjolfsson, E. (1993). The productivity paradox of information technology. *Communications of the ACM*, *36*(12), 66–77.

Brynjolfsson, E., & Hitt, L. (1996). Paradox lost? Firm-level evidence on the returns to information systems spending. *Management Science*, *42*(4), 541–58.

Brynjolfsson, E., & Hitt, M. (1995). Computers as a Factor of Production: The Role of Differences Among Firms. *Journal of Economic Innovation and New Technologies, May 3*, 183–199.

BSI. (2014). ISO/IEC 27001:2013. *British Standard Institute*. Retrieved from http://www.bsigroup.com/en-GB/iso-27001-information-security/ISOIEC-27001-Revision/

Byrne, B. M. (2010). *Basic Concepts, Application, and Programming Rouledge Taylor & Francis Group*. New York.

Capron, L., & Hulland, J. (1999). Redeployment of Brands, Sales Forces, and General Marketing Management Expertise Following Horizontal Acquisitions: A Resource-Based View. *Journal of Marketing*, *63*, 41–54.

Cavana, R., Delahaye, B. L., & Sekaran, U. (2001). *Applied business research: qualitative and quantitative methods*. Singapore: Markono Print Media Ltd.

Cerullo, M. J., & Cerullo, V. (2004). Business Continuity Planning : A Comprehensive Approach. *Information Systems Management*, *21*(3), 70–78.

Cerullo, M. J., & McDuffie, R. S. (1994). Planning for disaster. *CPA Journal*, *64*(6), 34. Retrieved from http://eserv.uum.edu.my/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=bth&AN=9410052296&site=ehost-live&scope=site

Chan, Y. E. (2000). IT Value : The Great Divide Between Qualitative and Quantitative and Individual and Organizational Measures. *Journal of Management Information System*, *16*(4), 225–261.

Chapman, C., & Ward, S. (1997). *Project Risk Management - Processes, Techniques and Insights*. John Wiley & Sons.

Chatterjee, D. C., Richardson, V. J., & Zmud, R. W. (2001). Examining the Shareholder Wealth Effects of New CIO Position Announcements. *MIS Quarterly*, *25*(1), 43–70.

Chen, C., Lim, J.-H., & Stratopoulos, T. C. (2011). IT Capability and a Firm's Ability to Recover from Losses: Evidence from the Economic Downturn of the Early 2000s. *Journal of Information Systems*, *25*(2), 117–144. doi:10.2308/isys-10108

Childs, D., & Dietrich, S. (2002). *Contingency Planning and Disaster Recovery: A Small Business Guide*. Hoboken, NJ.: John Wiley & Sons.

Choudhuri, B., Maguire, S., & Ojiako, U. (2009). Revisiting learning outcomes from market led ICT outsourcing. *Business Process Management Journal*, *15*(4), 569–587. doi:10.1108/14637150910975543

Chow, W. S. (2000). Success factors for IS disaster recovery planning in Hong Kong. *Information Management & Computer Security*, *8*(2), 80–87. doi:10.1108/09685220010321326

Chow, W. S., & Ha, W. O. (2009). Determinants of the critical success factor of disaster recovery planning for information systems. *Information Management & Computer Security*, *17*(3), 248–275. doi:10.1108/09685220910978103

Christensen, C. M., & Overdorf, M. (2000). Meeting the Challenge of Disruptive Change. *Harvard Business Review*, *78*(2), 66–76.

Churchill, G. A., & Brown, T. J. (2004). *Basic marketing research* (5th ed.). Sydney: South-Western College.

Churchill, G. A., & Peter, J. P. (1984). Research Design Effects on the Reliability of Rating Scales : A Meta-Analysis, *XXI*(November).

Clark, C. E., Cavanaugh, N., Brown, C., & Sambamurthy, V. (1997). Building Change-Readiness Capabilities in the IS Organization: Insights from the Bell Atlantic Experience. *MIS Quarterly*, *21*(4), 425–455.

Clas, E. (2008). Business Continuity Plans: Key to Being Prepared for Disaster. *Professional Safety*, *53*(9), 45–48.

Coakes, S. J. (2005). *SPSS: Analysis Without Anguish: Version 12.0 for Windows*. Queensland, Australia: Wiley.

Coakes, S. J., & Steed, G. (2003). *SPSS without Anguish*. Sydney: John Wiley & Sons Australia.

Coakes, S. J., Steed, L., & Ong, C. (2009). *SPSS 16.0 for windows: Analysis without anguish*. Australia: John Wiley & Sons.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.

Conlon, R., & Smith, R. V. (2010). The role of the board and the CEO in ensuring business continuity. *Financial Executive*, *26*(9), 52–55.

Cool, K., & Schendel, D. (1988). Performance Dif- ferences Among Strategic Group Members. *Strategic Management Journal*, *9*, 207–223.

Cooper, D., & Schindler, P. (2003). *Business Research Methods* (8th ed.). McGraw Hill.

Creswell, J. W. (2009). *Research design: qualitative, quantitative, and mixed methods approaches*. Los Angeles: Sage Publications.

Creswell, J. W. (2012). *Educational research : planning, conducting, and evaluating quantitative and qualitative research* (4th ed.). Boston, MA: Pearson Education, Inc.

CyberSecurity. (2015). CNII Portal. *CyberSecurity Malaysia*. Retrieved from http://cnii.cybersecurity.my/main/about.html

Cyberview. (2009). Cyberjaya – A Haven for ICT Industry. *Cyberview Sdn Bhd*. Retrieved from http://www.smibusinessdirectory.com.my/news-archive/366-cyberjaya--a-haven-for-ict-industry.html

D'Amico, V. (2007). Master the Three Phases of Business Continuity Planning. *Business Strategy Series*, *8*(3), 214–220.

Davenport, T. H., Long, D. W. De, & Beers, M. C. (1998). Successful Knowledge Management Projects. *Sloan Management Review*, *Winter*, 43–57.

Dawis, R. V. (1987). Scale construction. *Journal of Counseling Psychology*, *34*(4), 481–489. doi:10.1037//0022-0167.34.4.481

De Vaus, D. A. (2002). *Surveys in Social Research* (5th ed.). London: Routledge.

DeCoster, J. (1998). Overview of factor analysis. Retrieved from http://www.stat-help.com/notes.html

Dess, G. G., & Robinson, R. B. (1984). Measuring Organizational Performance in the Absence of Objective Measures : The Case of the Privately-held Firm and Conglomerate Business Unit. *Strategic Management Journal*, *5*, 265–273.

Devellis, R. F. (2003). *Scale development: Theory and application* (2nd ed.). Thousand Oaks, California: Sage Publications.

Dewett, T., & Jones, G. (2001). The role of information technology in the organization: a review, model and assessment. *Journal of Management*, *27*, 313–346.

Dossi, A., & Patelli, L. (2010). You learn from what you measure: Financial and nonfinancial performance measures in multinational companies. *Long Range Planning*, *43*, 498–526.

DRI Malaysia. (2015). Education. Retrieved from http://www.dri-malaysia.org/education.aspx#.VQ0_zySwpD4

Easterby-Smith, M., Thorpe, R., & Jackson, P. (2008). *Management Research* (3rd ed.). London: Sage Publications.

Easterby-Smith, M., Thorpe, R., & Lowe, A. (2002). *Management Research: An Introduction* (2nd ed.). Sage.

Edy Sarif. (2008). Technical glitch holds up trading again. *The Star*. Retrieved from http://www.thestar.com.my/Story/?file=/2008/12/25/business/2891674&sec=business

Elliott, D., & Swartz, E. H. (1999). Just Waiting for the Next Big Bang: business continuity planning in the UK finance sector. *Journal of Applied Management Studies*, *8*(1), 43–60.

Elliott, D., Swartz, E., & Herbane, B. (2010). *Business continuity management: a crisis management approach* (2nd ed.). New York, USA: Routledge.

EPU. (2002). Knowledge - Based Economy Master Plan. Retrieved from http://www.epu.gov.my/en/pelan-induk-ekonomi-berasaskan-pengetahuan

Ernst & Young. (2008). Moving Beyond Compliance. Ernst & Young's 2008 Global Information Security Survey.

Ernst & Young. (2011). Into the cloud, out of the fog: Ernst & Young's 2011 Global Information Security Survey. Retrieved from http://www.ey.com/Publication/vwLUAssets/Into the cloud out of the fog-2011 GISS/$FILE/Into the cloud out of the fog-2011 GISS.pdf

Fahy, J. (2000). The resource-based view of the firm: Some stumbling block on the road to understanding sustainable competitive advantage. *Journal of European Industrial Training*, *24*(2 3/4), 94–104.

Feeny, D. F., & Ives, B. (1990). In Search of Sustainability : Reaping Long-term Advantage from Investments in Information Technology. *Journal of Management Information Systems*, *7*(1), 27–46.

Feeny, D. F., & Willcocks, L. P. (1998). Core IS Capabilities for Exploiting Information Technology. *Sloan Management Review*, *39*(3), 9–21.

Feng, M., Terziovski, M., & Samson, D. (2008). Relationship of ISO 9001:2000 quality system certification with operational and business performance: A survey in Australia and New Zealand-based manufacturing and service companies. *Journal of Manufacturing Technology Management*, *19*(1), 22–37. doi:10.1108/17410380810843435

Ference, G. (2001). Improving organizational performance using Survey-driven Databases'. *Cornell Hotel and Restaurant Administration Quarterly*, *42*(2), 12–27.

Fink, A., Marr, B., Siebe, A., & Kuhle, J.-P. (2005). The future scorecard: combining external and internal scenarios to create strategic foresight. *Management Decision*, *43*(3), 360–381. doi:10.1108/00251740510589751

Fink, D. (1994). A Security Framework for Information Systems Outsourcing. *Information Management & Computer Security*, *2*(4), 3–8. doi:10.1108/09685229410068235

Foster, S. P., & Dye, K. (2005). Building Continuity into Strategy. *Journal of Corporate Real Estate*, *7*(2), 105–119.

Fox, R. J., Crask, M. R., & Kim, J. (1989). Mail survey response rate: A meta-analysis of selected techniques for inducing response. *Public Opinion Quarterly*, *52*(4), 467–491.

Frahm, J., & Brown, K. (2007). First steps: linking change communication to change receptivity. *Journal of Organizational Change Management*, *20*(3), 370–387. doi:10.1108/09534810710740191

Frazier, P. A., Tix, A. P., & Barron, K. E. (2004). Testing moderator and mediator effects in counseling psychology research. *Journal of Counseling Psychology*, *51*(1), 115–134. doi:10.1037/0022-0167.51.2.157

Freeman, R. E. (1984). The politics of stakeholder theory: Some future directions. *Business Ethics Quarterly*, *4*(4), 409–421.

Freeman, R. E. (2004). *A Stakeholder Theory of the Modern Corporation.Ethical Theory and Business* (7th ed.).

Gage, T., & Reinoso, V. (2002). Leading Through Uncertain Times. *Journal of Business Strategy*, *23*(2), 10–11.

Gallagher, M. (2003). *Business Continuity Management: How to Protect your Company from Danger* (1st ed.). London: Financial Times and Prentice Hall.

Gallagher, M. (2007). Business Continuity Management Emerging Standards. *Accountancy Ireland*, *39*, 34–36. doi:Article

Garcia, A. (2008). Business Continuity: Best Practices. *eWeek*, *25*(33), 32–40.

Gay, L. R., & Diehl, P. (1992). *Research methods for business and management*. New York: Macmillan Coll Div.

Gerber, M., Solms, R. Von, & Von Solms, R. (2005). Management of risk in the information age. *Computers & Security*, *24*, 16–30. doi:16/j.cose.2004.11.002

Ghauri, P., & Gronhaug, K. (2005). *Research Methods in Business Studies: a Practical Guide* (3rd ed.). Prentice Hall.

Gibb, F., & Buchanan, S. (2006). A framework for business continuity management. *International Journal of Information Management*, *26*(2), 128–141. Retrieved from http://www.sciencedirect.com/science/article/B6VB4-4JN2P51-1/2/57980f789e3c81f88a500981a33a3b45

Gillies, A. (2011). Improving the quality of information security management systems with ISO27000. *The TQM Journal*, *23*(4), 367–376. doi:10.1108/17542731111139455

Ginn, R. D. (1999). *Continuity Planning Preventing, Surviving and Recovering from Disaster*. Oxford, England: Elsevier Science Ltd.

Glazer, R. (1991). Information- Marketing in an Intensive Environment : Strategic of Implications Knowledge as an Asset. *Joumal of Marketing*, *55*(4), 1–19.

Gold, A. H., Malhotra, A., & Segars, A. H. (2001). Knowledge management: an organizational capabilities perspective. *Journal of Management Information Systems*, *18*(1), 185–214.

Govind-Menon, A. (2008). Revisiting dynamic capability. *IIMB Management Review*, *20*(1), 22–33.

Grant, R. M. (1991). The Resource-Based Theory of Competitive Advantage: ImpHcations for Strategy Formulation. *California Management Review*, *33*, 37–40.

Green, K. W., & Inman, R. A. (2007). The impact of JIT-II-selling on organizational performance. *Industrial Management & Data Systems*, *107*(7), 1018–1035. doi:10.1108/02635570710816720

Greene, J. C., Caracelli, V. J., & Graham, W. F. (1989). Toward a Conceptual Framework for Mixed-Method Evaluation Designs. *Educational Evaluation and Policy Analysis*, *11*(3), 255–274.

Guadagnoli, E., & Velicer, W. (1998). Relation of sample size to the stability of components patterns. *Psychological Bulletin*, 265–275.

Gupta, V. K. (2012). Flexible strategic framework for managing forces of continuity and change in retail banking business processes in India. *Business Process Management Journal*, *18*(4), 553–575. doi:10.1108/14637151211253729

Guyon, B., Sheridan, C., & Donnellan, B. (2012). Developing a Sustainable IT Capability : Lessons From Intel's. *MIS Quarterly Executive*, *11*(2), 61–74.

Hägerfors, A., Samuelsson, S., & Lindström, J. (2010). Business continuity planning methodology. *Disaster Prevention and Management*, *19*(2), 243–255. doi:10.1108/09653561011038039

Hair, J., Babin, B., Money, A., & Samouel, P. (2003). *Essentials of Business Research Methods*. Wiley.

Hair, J., Black, W. C., Babin, B. J., Andersen, R. E., & Tatham, R. L. (2006). *Mutilvariate data analysis* (6th ed.). Upper Saddle River, NJ: Pearson Prentice Hall.

Hair, J., Black, W. C., Babin, B. J., Andersen, R. E., & Tatham, R. L. (2010). *Mutilvariate data analysis* (7th ed.). Upper Saddle River, NJ: Pearson Prentice Hall.

Hair, J., Money, A. H., Page, M., & Samouel, P. (2007). *Editors, Research Methods for Business*. West Sussex, England: John Wiley & Sons.

Hammer, M., & Champy, J. (1993). *Reengineering the Corporation*. (1st, Ed.). New York, USA: Harper Collins Inc.

Hansen, G. S., & Wernerfelt, B. (1989). Determinant of firm performance in relative importance of economic and organizational factors. *Strategic Management Journal*, *36*(10), 1246–1255.

Hashim, S. (2010a). Business Continuity Management : Public Sector BCM Implementation.

Hashim, S. (2010b). Info EG: Business Continuity Management.

Hau, K. T., & Marsh, H. W. (2004). The use of item parcels in structural equation modelling: non-normal data and small sample sizes. *The British Journal of Mathematical and Statistical Psychology*, *57*(Pt 2), 327–51. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/15511312

Healey, M. (2005). Linking research and teaching to benefit student learning. *Journal of Geography in Higher Education*, *29*(1), 183–201.

Hecht, J. (2002). Business Continuity Management. *Communications of the Association for Information Systems*, *10*, 444–450.

Hendricks, K. B., & Singhal, V. R. (2005). Association Between Supply Chain Glitches and Operating Performance. *Management Science*, *51*(5), 695–711. doi:10.1287/mnsc.1040.0353

Heng, G. M. (1996). Developing a suitable business continuity planning methodology. *Information Management & Information Security*, *4*(2), 11–13.

Heng, G. M. (2012). *Business Continuity Management Specialist Series: A Manager's Guide to ISO 22301 Standard for Business Continuity Management System* (1st ed.). Singapore: GMH Pte Ltd.

Henri, J., Laval, U., Hoque, Z., Maurice, J., Séguin, F., & Thibodeau, N. (2004). Performance Measurement and Organizational Effectiveness : Bridging the Gap. *Managerial Finance*, *30*(6).

Herbane, B. (2010a). Small business research: Time for a crisis-based view. *International Small Business Journal*, *28*(1), 43–64. doi:10.1177/0266242609350804

Herbane, B. (2010b). The evolution of business continuity management: A historical review of practices and drivers. *Business History*, *52*(6), 978–1002. doi:10.1080/00076791.2010.511185

Herbane, B., Elliott, D., & Swartz, E. M. (2004). Business Continuity Management: time for a strategic role? *Long Range Planning*, *37*(5), 435–457. doi:10.1016/j.lrp.2004.07.011

Hermann, C. F. (1963). Some Consequences of Crisis Which Limit the Viability of Organizations. *Administrative Science Quarterly*, *8*(1), 61. doi:10.2307/2390887

Hillman, A. J., & Keim, G. D. (2001). Shareholder Value, Stakeholder Management, and Social Issues. *Strategic Management Journal*, *22*(2), 125–139.

Hitt, L. M., & Brynjolfsson, E. (1996). Productivity, Profit, and Consumer Welfare: Three Different Measures of Information Technology. *MIS Quarterly*, *20*(2), 121–142.

Hoong, L. L. (2011). Factors Influencing the Success of the Disaster Recovery Planning Process : A Conceptual Paper. In *Research and Innovation in Information Systems (ICRIIS), 2011 International Conference*.

Hoong, L. L., & Marthandan, G. (2013). Enablers of Successful Business Continuity Management Process, *7*(10), 86–97.

Hoong, L. L., & Marthandan, G. (2014). Critical Dimensions of Disaster Recovery Planning. *International Journal of Business and Management*, *9*(12), 145–158. doi:10.5539/ijbm.v9n12p145

Hox, J., & Boeije, H. (2005). Data Collection, Primary vs. Secondary.pdf. *Encyclopedia of Social Measurement*, *1*, 593–599.

Hughes, G. D. (1969). Some Confounding Effects of Forced-Choice Scales. *Journal of Marketing Research*, *6*, 223–226.

Hulland, J. (1999). Use of partial least squares (PLS) in strategic management research: A review of four recent studies. *Strategic Management Journal*, *20*(2), 195–204.

Hurley-Hanson, A. E. (2006). Organizational responses and adaptations after 9-11. *Management Research News*, *29*(8), 480–494. doi:10.1108/01409170610692806

Hussey, J., & Hussey, R. (1997). *Business Research: A Practical Guide for Undergraduate and Postgraduate Students*. Palgrave: Basingstoke.

Idris, F. (2011). Total quality management (TQM) and sustainable company performances: Examining the relationship in Malaysian firms. *International Journal of Business and Society*, *12*(1), 31–52.

ISO. (2009). International Organization for Standardization: Managing for the sustained success of an organization - A quality management approach. Geneva: ISO.

ISO. (2012). ISO 22301:2012. International Standard Organization.

Israel, G. D. (2009). Determining Sample Size. University of Florida.

Ivancevich, D. M., Hermanson, D. R., & Smith, L. M. (1998). The Association of Perceived Disaster Recovery Plan Strength with Organizational Characteristics. *Journal of Information Systems*, *12*(1), 31.

Jacks, T., Palvia, P., Schilhavy, R., & Wang, L. (2011). A framework for the impact of IT on organizational performance. *Business Process Management Journal*, *17*(5), 846–870. doi:10.1108/14637151111166213

Jackson, C. (1999). Reengineering the Business Continuity Planning Process. *Data Security Management*.

Jafari, M., Chadegani, A., & Biglari, V. (2011). Effective risk management and company's performance: investment in innovations and intellectual capital using behavioural and practical approach. *International Research Journal of Finance and Economics*, *3*(15), 780–786. doi:10.5897/JEIF11.123

Jalil, S. A. (2009). Raising Business Continuity Management Awareness in Malaysia.

Jang, W.-Y., & Lin, C.-I. (2008). An integrated framework for ISO 9000 motivation, depth of ISO implementation and firm performance: The case of Taiwan. *Journal of Manufacturing Technology Management*, *19*(2), 194–216. doi:10.1108/17410380810847918

Järveläinen, J. (2013). IT incidents and business impacts: Validating a framework for continuity management in information systems. *International Journal of Information Management*, *33*(3), 583–590. doi:10.1016/j.ijinfomgt.2013.03.001

Jelinek, G. a, Mountain, D., O'Brien, D., Rogers, I. R., Wilkes, G., Wenban, J., … Martin, P. J. (1999). Re-engineering an Australian emergency department: can we

measure success? *Journal of Quality in Clinical Practice*, *19*(3), 133–8. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/10482320

Jordan, E. (1999). IT contingency planning: management roles. *Information Management & Computer Security*, *7*(5), 232–238. doi:10.1108/09685229910292853

Kalla, S. (2010). Statistical validity. Retrieved from http://www.experiment-resources.com/statistical-validity.html

Kamal, R., & Agrawal, D. (1997). Re-engineering the Direct Marketing Organization Structure. *Journal of Direct Marketing*, *11*(2), 59–69.

Kane, G. C., & Alavi, M. (2007). Information Technology and Organizational Learning: An Investigation of Exploration and Exploitation Processes. *Organization Science*, *18*(5), 796–812. doi:10.1287/orsc.1070.0286

Kanji, G. K. (2002). *Measuring Business Excellence*. London: Routledge.

Kaplan, R. M., & Saccuzzo, D. P. (2009). *Psychological testing: Principles, applications, and issues* (7th ed.). United States: Wadsworth Cengage Learning.

Kaplan, R. S., & Norton, D. P. (1992). The balanced scorecard--measures that drive performance. *Harvard Business Review*, *70*(1), 71–9. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/10119714

Kaplan, R. S., & Norton, D. P. (1996). *The Balanced Scorecard: Translating Strategy into Action* (1st ed.). Boston, MA: Harvard Business Review Press.

Karakasidis, K. (1997). A Project Planning Process for Business Continuity. *Information Management and Computer Security*, *5*(2), 72–78.

Karim, A. J. (2011). Business Disaster Preparedness: An Empirical Study for measuring the Factors of Business Continuity to face Business Disaster. *International Journal of Business & Social Science*, *2*(18), 183–192. Retrieved from http://search.ebscohost.com/login.aspx?direct=true&db=bth&AN=66726542&site=ehost-live

Kenny, J. (2006). Strategy and the learning organization: a maturity model for the formation of strategy. *The Learning Organization*, *13*(4), 353–68.

Ketokivi, M. A., & Schroeder, R. G. (2004). Perceptual measure of performance: Fact of fiction. *Journal of Operation Management*, *22*(3), 247–264.

Kirvan, P. (2009). Are mandatory business continuity management standards good business? Search Compliance. Retrieved from

http://searchcompliance.techtarget.com/tip/Are-mandatory-business-continuity-management-standards-good-business

Kline, R. B. (2011). *Principles and practice of structural equation modeling* (3rd ed.). New York: The Guilford Press.

KPMG. (2006). Information Security and Business Continuity: When Business is Not as Usual!

KPMG. (2012). *2011 - 2012 KPMG LLP Global Business Continuity Management Program Benchmarking Study*.

KPMG. (2014). *The 2013-2014 Continuity Insights and KPMG LLP Global Business Continuity Management (BCM) Program Benchmarking Study*.

Krejcie, R. V, & Morgan, D. W. (1970). Determining sample size for research activities. *Education and Psychological Measurement*, *30*, 607–610.

Krell, E. (2006). Business Continuity: Creating a Framework for Success. *CMA Management*, *79*(8), 30–33.

Krosnick, J. A., & Fabrigar, L. R. (1997). *Survey measurement and process quality*. New York: John Wiley & Sons, Inc.

Kubitscheck, V. (2001). Business Discontinuity-A Risk Too Far. *Balance Sheet*, *9*(3), 33–38.

Kudyba, S., & Diwan, R. (2002). Research Report: Increasing Returns to Information Technology. *Information Systems Research*, *13*(1), 104–111.

Landauer, T. K. (1995). *The Trouble with Computers*. Cambridge, MA: MIT Press.

Laurent, W. (2007). Business Continuity Dashboards. *DM Review*, *17*(6), 30.

Lee, N., & Lings, I. (2008). *Doing Business Research: A Guide to Theory and Practice* (1st ed.). Sage.

Li, E. Y., Chen, J. S., & Huang, Y. H. (2006). A framework for investigating the impact of IT capability and organisational capability on firm performance in the late industrialising context. *International Journal of Technology Management*, *36*(1/2/3), 209. doi:10.1504/IJTM.2006.009969

Li, M. L., & Ye, L. R. (1999). Information technology and firm performance: linking with environmental, strategic and managerial. *Information & Management*, *35*(1), 43–51.

Liang, T. P., You, J. J., & Liu, C. C. (2010). A resource-based perspective on information technology and firm performance: a meta analysis. *Industrial Management & Data Systems*, *110*(8), 1138–1158. doi:10.1108/02635571011077807

Lim, J., Richardson, V. J., & Roberts, T. L. (2004). Information Technology Investment and Firm Performance : A Meta-Analysis. In *Proceedings of the 37th Hawaii International Conference on System Sciences - 2004* (Vol. 00, pp. 1–10).

Lin, O. A. (2008). Business Continuity Planning: A Global Overview & Status in Malaysia. In *Pre-Conference for the 3rd Asian Ministerial Conference on Disaster Risk Reduction*.

Lindström, J., Samuelsson, S., & Hägerfors, A. (2010). Business continuity planning methodology. *Disaster Prevention and Management*. doi:10.1108/09653561011038039

Lingeswara, R., & Tammineedi, S. (2012). Key Issues, Challenges and Resolutions in Implementing Business Continuity Projects. *ISACA Journal*, *1*, 20–23.

Liu, P., Lei, L., & Zhang, X. F. (2004). Comparison Study of Missing Value Processing Methods. *Computer Science*, *31*(10), 155–156.

Lodge, M. (2009). The public management of risk: The case for deliberating among worldviews. *Review of Policy Research*, *26*(4), 395–408.

Lomas, E. (2010). Information governance: information security and access within a UK context. *Records Management Journal*, *20*(2), 182–198. doi:10.1108/09565691011064322

Low, S. P., Liu, J., & Sio, S. (2010). Business continuity management in large construction companies in Singapore. *Disaster Prevention and Management*, *19*(2), 219–232. doi:10.1108/09653561011038011

Luftman, J., & Zadeh, H. S. (2011). Key information technology and management issues 2010–11: an international study. *Journal of Information Technology*, *26*(3), 193–204. doi:10.1057/jit.2011.3

Lyles, M. a, & Salk, J. E. (1996). Knowledge Acquisition from Foreign Parents in International Joint Ventures: An Empirical Examination in the Hungarian Context. *Journal of International Business Studies*, *27*(4), 877–903. doi:10.1057/palgrave.jibs.8490155

Mahmood, M. A., & Mann, G. J. (1993). Measuring the Organizational Impact of Information Technology Investment: An Exploratory Study. *Journal of Management Information Systems*, *10*(1), 98–122.

Mahoney, J. T., & Pandian, R. (1992). The Resource- Based View Within the Conversation of Strategic Management. *Strategic Management Journal*, *13*, 363–380.

Malhotra, A., Gosain, S., & El Sawy, O. A. (2005). Absorptive capacity configurations in supply chains: Gearing for partner-enabled market knowledge creation. *MIS Quarterly*, *29*(1), 145–187.

Malhotra, N. K., Hall, J., Shaw, M., & Oppenheim, P. (2006). *Marketing research: An applied orientation* (3rd ed.). Frenchs Forest: Prentice Hall.

MAMPU. Pelaksanaan dan Pensijilan ISMS Dalam Sektor Awam. Surat Pekeliling Am Bil. 3 Tahun 2010 MAMPU.BPICT.700-4/3/5 Jld. 2 (6) (2010).

MAMPU. Surat Pekeliling Pelaksanaan PKP sektor Awam (2010).

Manheim, J. B., & Rich, R. C. (1995). *Empirical Political Analysis: Research Methods in Political Science*. Longman. Retrieved from http://books.google.com.my/books?id=y8mBAAAAMAAJ

Marsh. (2010). *2010 EMEA Business Continuity Benchmark Report*.

Martin, W. J. (1988). *The information society*. London: Aslib. Retrieved from http://books.google.com.my/books?id=-g3bAAAAMAAJ

Maskell, B. (1992). Performance measurement for world class manufacturing. *Management Accounting*, 32–33.

Maxwell, J. (1996). *Qualitative Research Design: An Interactive Approach*. Thousand Oaks, CA: Sage Publications.

McBurney, D. H., & White, T. L. (2010). *Research Methods* (8th ed.). Belmont, CA: Wadsworth.

Mcloughlin, R. (2008). What one must know about achieving BS25999-2 certification, *3*(2), 105–111.

Melville, N., Kraemer, K. and Gurbaxani, V. (2004). Information technology and organizational performance: an integrative model of IT business value. *MIS Quarterly*, *28*(2), 283–322.

Meso, P., & Smith, R. (2000). A resource-based view of organizational knowledge management systems. *Journal of Knowledge Management*, *4*(3), 224–234. doi:10.1108/13673270010350020

Mills, J., Platts, K., & Bourne, M. (2003). Applying resource-based theory: Methods, outcomes and utility for managers. *International Journal of Operations & Production Management*, *23*(2), 148–166. doi:10.1108/01443570310458429

Mitcham, C., & Mackey, R. (1983). *Philosophy and Technology: Readings in the Philosophical Problems of Technology*. New York: The Free Press.

Mithas, S., Ramasubbu, N., & Sambamurthy, V. (2011). How information management capability influences firm performance. *MIS Quarterly*, *35*(1), 237–256.

Mitra, S., & Chaya, A. K. (1996). Analyzing Cost-Efectiveness of Organizations: Impact of Information Technology Spending. *Journal of Management Information Systems*, *13*(2), 29–57.

Mitroff, I. I. (2001). Crisis Leadership. *Executive Excellence*, *18*(8), 19.

Mitroff, I. I. (2004). Think like a sociopath, act like a saint. *Journal of Business Strategy*, *25*(5), 42–53. doi:10.1108/02756660410558933

Mohan, L., & Rai, S. (2006). Business Continuity Model : A Reality Check for Banks in India. *Journal of Internet Banking and Commerce*, *11*(2), 1–5.

Moore, T., & Lakha, R. (2006). *Tolley's Handbook of Disaster Management: Principles and Practice* (Third.). Oxford: LexisNexis.

Morwood, G. (1998). Business continuity: awareness and training programmes. *Information Management & Computer Security*, *6*(1), 28–32. doi:10.1108/09685229810207425

Mostafa, M. M., Sheaff, R., Morris, M., & Ingham, V. (2004). Strategic preparation for crisis management in hospitals: empirical evidence from Egypt. *Disaster Prevention and Management*, *13*(5), 399–408. doi:10.1108/09653560410568525

MOSTI. (2013, October). Blueprint for the Implementation of Strategic ICT Roadmap for Malaysia. doi:10.1093/toxsci/kft059

Namasivayam, K., & Zhao, X. (2007). An investigation of the moderating effects of organizational commitment on the relationships between work-family conflict and job satisfaction among hospitality employees in India. *Tourism Management*, *28*(5), 1212–1223.

Naveh, E., & Marcus, a. (2004). When Does the ISO 9000 Quality Assurance Standard Lead to Performance Improvement? Assimilation and Going Beyond. *IEEE Transactions on Engineering Management*, *51*(3), 352–363. doi:10.1109/TEM.2004.830864

Neely, A. (2002). *Business Performance Measurement: Theory and Practice*. Cambridge: Cambridge University Press.

Neuman, W. L. (2006). *Social research methods qualtative and quantitative approaches* (6th ed.). Boston: Pearson.

Noel Capon, & Glazer, R. (1987). Technology : Marketing A Strategic Coalignment. *Joumal of Marketing*, *51*(3), 1–14.

Norusis, M. J. (1999). *Guide to data analysis*. New Jersey: Prentice Hall.

NST. (2013). Powering Putrajaya And Cyberjaya. *News Straits Times*, p. 37. Retrieved from http://www.putrajaya.gov.my/community/news/powering_putrajaya_and_cyberjaya

Nunally, J. C. (1978). *Psychometric Theory* (2nd ed.). New York: McGraw-Hill.

Nura, A. A., & Osman, N. H. (2012). A Toolkit on effective decision making measurement in organizations. *International Journal of Humanities and Social Science*, *2*(4), 296–303.

Pallant, J. (2001). *SPSS Survival Manual: A Step by step guide to data analysis using SPSS for windows* (3rd ed.). England: McGraw Hill Open University Press.

Pallant, J. (2005). *SPSS survival manual: A step by step guide to data analysis using SPSS for Windows*. Sydney: Allen & Unwin.

Pallant, J. (2007). *A Step-by-Step Guide to Data Analysis Using SPSS for Windows* (3rd ed.). Sydney: Allen and Unwin.

Panko, R. R. (1987). Directions And Issues in End User Computing. *Infor*, *25*(3), 181–197.

Parasuraman, A., Zeithaml, V. A., & Malhotra, A. (2005). E-S-QUAL: A Multiple-Item Scale for Assessing Electronic Service Quality. *Journal of Service Research*, *7*(3), 213–233. doi:10.1177/1094670504271156

ParvizRad, P. (2002). From performance measurement to performance management. In *3rd international conference on performance management*. Tehran.

Payne, C. F. (1999). Contingency plan exercises. *Disaster Prevention and Management Volume*, *8*(2), 111–117.

Pearson, C. M., & Clair, J. A. (1998). Reframing Crisis Management. *The Academy of Management Review*, *23*(1), 59–76. doi:10.2307/259099

Pearson, G., & Woodman, P. (2012). The 2012 Business Continuity Management Survey. Chartered Management Institute.

Permatasari, S., & Hin, C. T. (2008). Bursa Malaysia Shares Fall After Worst Systems Glitch. *Bloomberg*. Retrieved from http://www.bloomberg.com/apps/news?pid=newsarchive&sid=azyDBBlCCjEs

Peteraf, M. A. (1993). The cornerstone of competitive advantage: a resource-based view. *Strategic Management Journal*, *14*(3), 179–191.

Peterson, C. A. (2009). Business continuity management & guidelines. *2009 Information Security Curriculum Development Conference on - InfoSecCD '09*, 114. doi:10.1145/1940976.1940999

Petroni, A. (1999). Managing information systems' contingencies in banks: a case study. *Disaster Prevention and Management*, *8*(2), 101–110. doi:10.1108/09653569910266139

Phillips, R., Freeman, R. E., & Wicks, A. C. (2003). What stakeholder theory is not. *Business Ethics Quarterly*, *13*(4), 479–502.

Pitt, M. (2010). Coughs, Sneezes and the Progress of Diseases. *Human Resource Management International Digest*, *18*(1).

Pitt, M., & Goyal, S. (2004). Business continuity planning as a facilities management tool. *Facilities*, *22*(3/4), 87–99. doi:10.1108/02632770410527824

Pollard, D., & Hotho, S. (2006). Crises, scenarios and the strategic management process. *Management Decision*, *44*(6), 721–736. doi:10.1108/00251740610673297

Powell, T. C., & Dent-Micallef, A. (1997). Information Technology as Competitive Advantage: The Role of Human, Business, and Technology Resources. *Strategic Management Joumal*, *18*(5), 375–405.

Prahalad, C. K., & Hamel, G. (1990). The Core Competence of the Corporation. *Harvard Business Review*, *68*(3), 79–92.

Prasad, V. K., Ramamurthy, K., & Naidu, G. M. (2001). The Influence of Internet – Marketing Integration on Marketing Competencies. *Journal of International Marketing*, *9*(4), 82–110.

Rai, A., Patnayakuni, R., & Patnayakuni, N. (1997). Technology Investment and Business Performance. *Communication of ACM*, *40*(7), 89–97.

Rai, A., Pavlou, P. A., Im, G., & Du, S. (2012). Interfirm IT Capability Profile And Communications For Cocreating Relational Value: Evidence From The Logistics Industry. *MIS Quarterly*, *36*(1), 233–262.

Raj, C. (2008). Of technical glitches & conspiracy theories. *Malaysian Business*.

Randeree, K. (2012). A business continuity management maturity model for the UAE banking sector. *Business Process Management Journal*, *18*(3), 472–492. doi:10.1108/14637151211232650

Randeree, K., Mahal, A., & Narwani, A. (2012). A business continuity management maturity model for the UAE banking sector. *Business Process Management Journal*, *18*(3), 472–492. doi:10.1108/14637151211232650

Rasmussen, J. L. (1988). Evaluating Outlier Identification Tests: Mahalanobis D Squared and Comrey Dk. *Multivariate Behavioral Research*, *23*(2), 189–202.

Reardon, J., Hasty, R., & Coe, B. (1996). The Effect of Information Technology on Productivity in Retailing. *Journal of Retailing*, *72*(4), 445–461.

Remenyi, D., Williams, B., Money, A., & Swartz, E. (1998). *Doing Research in Business and Management: An Introduction to Process and Method*. London: Sage Publications.

Richard, P. J., Devinney, T. M., Yip, G. S., & Johnson, G. (2009). Measuring Organizational Performance: Towards Methodological Best Practice. *Journal of Management*, *35*(3), 718–804.

Ringim, K. J. (2012). The Moderating Effect of IT Capability on the Relationship between Business Process Reengineering Factors and Organizational Performance of Banks. *Journal of Internet Banking and Commerce*, *17*(2).

Robbins, S. P., & Coulter, M. (2012). *Management* (11th ed.). New Jersey: Pearson Prentice Hall.

Rockart, J. F. (1979). Chief executives define their own data needs. *Harvard Business Review*, *57*(2), 81–93. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/10297607

Rogers, E. W., & Wright, P. M. (1998). *Measuring Organizational Performance in Strategic Human Resource Management : Looking Beyond the Lamppost*. Cornell University ILR School.

Rohde, R., & Haskett, J. (1990). Disaster Recovery Planning For Academic Computing Centers. *Communications of the ACM*, *33*(6), 652–657.

Roscoe, J. T. (1975). *Fundamental Research Statistics for the Behavioural Sciences* (2nd ed.). New York: Holt, Reinhart & Winston.

Rosenthal, P. H., & Sheniuk, G. (1993). Business Resumption Planning: Exercising the Disaster Management team. *Journal of Systems Management*, *44*(6), 12–16.

Ross, J. W., Mathis, C., & Dale, B. (1996). Develop Long-Term Competitiveness through IT Assets. *Sloan Management Review*, *38*(1), 31–42.

Rosso, A. (2011, August). ISO 27001 Primer. *Collector*, *77*(1), 31–35.

Rothberg, M. L. (1989). Disaster Plans: Added Complexity. *Computer Decisions*, *21*(2), 16.

Ruighaver, A. B., Ahmad, A., & Hadgkiss, J. (2012). Incident response teams – Challenges in supporting the organisational security function. *Computers & Security*, *31*(5), 643–652. doi:10.1016/j.cose.2012.04.001

Russ, F. A., & McNeilly, K. M. (1995). Links among satisfaction, commitment, and turnover intentions: The moderating effect of experience, gender, and performance. *Journal of Business Research*, *34*, 57–65.

Said, J., Hui, W. S., Taylor, D., & Othman, R. (2009). Customer-Focused Strategies And Information Technologycapabilities : Implications For Service Quality Of Malaysian Local Authorities. *International Review of Business Research Papers*, *5*(3), 241–256.

Salant, P., & Dillman, D. (1994). *How to conduct your own survey*. USA: John Wiley & Sons.

Saleem, S. (2011). Do effective risk management affect organizational performance. *European Journal of Business and Management*, *3*(3), 258–268.

Santhanam, R., & Hartono, E. (2003). Issues in Linking Information Technology Capability to Firm Performance. *MIS Quarterly*, *27*(1), 125–153.

Saunders, M., Lewis, P., & Thornhill, A. (2000). *Research Methods for Business Students* (2nd ed.). Harlow, England: Prentice Hall.

Saunders, M., Lewis, P., & Thornhill, A. (2007). *Research Methods for Business Students* (4th ed.). Harlow, England: FT Prentice Hall.

Saunders, M., Lewis, P., & Thornhill, A. (2009). *Research Methods for Business Students* (Fifth.). Harlow, England: Pearson Education Limited.

Savage, M. (2002). Business continuity planning. *Work Study*, *51*(5), 254–261. doi:10.1108/00438020210437277

Sawalha, I. H. S. (2013a). Crisis and disaster management in Jordanian hotels: practices and cultural considerations. *Disaster Prevention and Management*, *22*(3), 210–228. doi:10.1108/DPM-09-2012-0101

Sawalha, I. H. S. (2013b). Organisational performance and business continuity management: a theoretical perspective and a case study. *Journal of Business Continuity & Emergency Planning*, *6*(4), 360–73. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/23835428

Saxby, C. L., Parker, K. R., Nitse, P. S., & Dishman, P. L. (2002). Environmental scanning and organizational culture. *Marketing Intelligence & Planning*, *20*(1), 28–34. doi:10.1108/02634500210414747

Schnitt, D. L. (1993). Reengineering the Organization Using Information Technology. *Journal of Systems Management*, *44*, 14–20.

Sekaran, U. (2000). *Research methods for business: A skill-building approach* (3rd ed.). New York, NY: John Wiley & Sons, Inc.

Sekaran, U. (2003). *Research methods for business: A skill building approach* (4th ed.). New York, NY: John Willey & Sons.

Sekaran, U., & Bougie, R. (2010). *Research methods for business: A skill building approaches*. Chichester: John Wiley & Sons Ltd.

Selden, S., & Perks, S. (2007). How a structured BIA aligned business continuity management with Gallaher ' s strategic objectives. *Journal of Business Continuity & Emergency Planning*, *1*(4), 348–355.

Sener, I., Varoglu, A., & Aren, S. (2011). Board composition and organizational performance: environmental characteristics matter. *Journal of Global Strategic Management*, *5*(2), 124–136.

Seow, K. (2009). Gaining senior executive commitment to business continuity: Motivators and reinforcers. *Journal of Business Continuity & Emergency Planning*, *3*(3), 201–208.

Shaluf, I. M., Ahmadun, F., & Said, A. M. (2003). A review of disaster and crisis. *Disaster Prevention and Management*, *12*(1), 24–32. doi:10.1108/09653560310463829

Shao, Z., Feng, Y., Choudrie, J., & Liu, Y. (2010). The Moderating effect of a chief information officer's competence on IT investment and firm performance. In *Paper*

presented at the Pacific Asia Conference on Information Systems (pp. 1112–1123). Taipei, Taiwan.

Sharma, S., Durand, R. M., & Gur-arie, O. (1981). Identification and Analysis of Moderator Variables. *Journal of Marketing Research*, *18*(August), 291–300. doi:10.2307/3150970

Sheffi, Y., & Rice, J. B. (2005). A Supply Chain View of the Resilient Enterprise A Supply Chain View of the Resilient Enterprise. *MIT Sloan Management Review*, *47*(1).

Sink, S. (1985). *Productivity Management: Planning, Measurement and Evaluation, Control and Improvement*. Hoboken, NJ.: John Wiley and Sons, Inc.

SIRIM. MS 1970 Business Continuity Management - Framework (2007).

SIRIM. (2014). Management Certification Online Search. Retrieved from http://www.malaysian-certified.com.my/MgmtCertification.aspx

Škrinjar, R., Bosilj-Vukšic, V., & Indihar-Štemberger, M. (2008). The impact of business process orientation on financial and non-financial performance. *Business Process Management Journal*, *14*(5), 738–754. doi:10.1108/14637150810903084

Socka, G. (1998). When disaster strikes. *CMA Magazine*, *72*(9), 12. Retrieved from http://eserv.uum.edu.my/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=bth&AN=1389349&site=ehost-live&scope=site

Solms, R. Von, & Botha, J. (2004). A cyclic approach to business continuity planning. *Information Management & Computer Security*. doi:10.1108/09685220410553541

Song, M., Benedetto, C. A., & Nanson, R. W. (2007). Capabilities and financial performance: The moderating effect of strategic type. *Journal of Academic Marketing Science*, *35*(1), 18–34.

SPRING Singapore. (2005). TR19 Technical Reference for Business Continuity Management. Singapore.

Starr, R., Newfrock, J., & Delurey, M. (2003). Enterprise Resilience : Managing Risk in the Networked Economy. *Strategy and Business*, *30*, 73–79.

Steven, J. (1996). *Applied Multivariate Statistics for the Social Science*. New Jersey: Lawrence Erlbaum Associates.

St-Germain, R., Aliu, F., Lachapelle, E., & Dewez, P. (2012). Whitepaper: Societal Security Business Continuity Management System. Professional Evaluation and Certification Board.

Sun, H. (2000). Total quality management, ISO 9000 certification and performance improvement. *International Journal of Quality & Reliability Management*, *17*(2), 168–179.

SunGard. (2012). ISO 22301 : A Framework for Business Process Definition.

Swartz, E., Elliott, D., & Herbane, B. (1995). Out of sight, out of mind: the limitations of traditional information systems planning. *Facilities*, *13*(9/10), 15–21. doi:10.1108/02632779510095581

Tabachnick, B. G., & Fidell, L. S. (2007). *Using Multivariate Statistics* (5th ed.). New York: Allyn and Bacon.

Tammineedi, R. L. (2010). Business Continuity Management: A Standards-Based Approach. *Information Security Journal: A Global Perspective*, *19*(1), 36–50. doi:10.1080/19393550903551843

Tangem, S. (2004). Performance measurement: from philosophy to practice. *International Journal of Productivity and Performance Management*, *53*(8), 726–737.

Terziovski, M., Samson, D., & Dow, D. (1997). The business value of quality management systems certification. Evidence from Australia and New Zealand. *Journal of Operations Management*, *15*(1), 1–18.

The Star. (2006). Hong Leong Bank trying to fix computer glitch. *18th October*. Retrieved from http://www.thestar.com.my/story/?file=/2006/10/18/nation/15756974&sec=nation

Tippins, M. J., & Sohi, R. S. (2003). IT Competency and Firm Performance: Is Organizational Learning a Missing Link? *Strategic Management Journal*, *761*(March), 745–761.

Toigo, J. W. (1996). *Disaster Recovery Planning: For Computers and Communication Resouces* (1st ed.). New York: John Wiley & Sons.

Vaid, R. (2008). How are Operational Risk and Business Continuity Coming Together as a Common Risk Management Spectrum? *Journal of Business Continuity & Emergency Planning*, *2*, 330–340.

Van, B., Gerrit, H., Gary, L., & Kacker, M. (2002). Informants in Organizational Marketing Research : Why Use Multiple Informants and How to Aggregate Responses. *Journal of Marketing Research*, *39*(4), 469–478.

Van Dalen, D. B. (1979). *Understanding educational research: an introduction*. McGraw-Hill. Retrieved from http://books.google.com.my/books?id=k5p27w2IjhMC

Vancoppenolle, G. (2007). *The Definitive Handbook of Business Continuity Management Second Edition*. (A. Hiles, Ed.). England: John Wiley & Sons Ltd.

Venclova, K., Urbancova, H., & Vydrova, H. V. (2013). Advantages and Disadvantages of Business Continuity Management. *International Science Index*, *7*(4), 134–138.

Venkatraman, N., & Ramunujam, V. (1986). *Measurement of Business Economic Performance: An Examination of Method Convergence*. Massachusetts.

Viner, P. (2007). *Operational Risk Management IN: The Definitive Handbook Of Business Continuity Management.* (A. Hiles, Ed.) (2nd ed.). England: John Wiley & Sons Ltd.

Wade, M., & Hulland, J. (2004). The Resource-Based View and Information Systems Research: Review, Extension and Suggestions for Future Research. *MIS Quarterly*, *28*(1), 107–142.

Wan, S. (2009). Service impact analysis using business continuity planning processes. *Campus-Wide Information Systems*, *26*(1), 20–42. doi:10.1108/10650740910921546

Weick, K. E. (1988). Enacted Sensemaking in Crisis Situation. *Journal of Management Studies*, *Vol. 25*(4), 305–317.

Weill, P. (1992). The Relationship between Investment in Information Technology and Firm Performance: A Study of the Value Manufacturing Sector. *Information Systems Research*, *3*(4), 307–333.

Wong, N. W. (2009). Journal of Business Continuity & Emergency Planning. *Henry Stewart Publications*, *4*(1), 62–68.

Wong, W. N. Z. (2009). The strategic skills of business continuity managers: putting business continuity management into corporate long-term planning. *Journal of Business Continuity & Emergency Planning*, *4*, 62–68.

Woodman, P. (2007). Business Continuity Management. Chartered Management Institute.

Woodman, P. (2008). Business Continuity Management 2008. London: Chartered Management Institute.

Woodman, P., & Hutchings, P. (2010). Disruption & Resilience: The 2010 Business Continuity Management Survey. Chartered Management Institute.

Yammarino, F. J., Skinner, S. J., & Childers, T. L. (1991). Understanding Mail Survey Response Behavior. *Public Opinion Quarterly*, *55*(4), 613–639.

Yen, D. C., Chou, D. C., & Hawkins, S. M. (2000). Disaster recovery planning: a strategy for data security. *Information Management & Computer Security*. doi:10.1108/09685220010353150

Yiu, K., & Tse, Y. Y. (1995). A Model for Disaster Recovery Planning. *IS Audit & Control Journal*, *5*, 45–51.

Yongmei, L. I. U., Hongjian, L. U., & Junhua, H. U. (2008). IT Capability as Moderator Between IT Investment and Firm Performance. *Tsinghua Science and Technology*, *13*(3), 329–336.

Zhang, M., Sarker, S., & McCullough, J. (2008). Measuring Information Technology Capability of Export-Focused Small or Medium Sized Enterprises in China. *Journal of Global Information Management*, *16*(3), 1–25. doi:10.4018/jgim.2008070101

Zhang, M., Sarker, S., & Sarker, S. (2008). Unpacking the effect of IT capability on the performance of export-focused SMEs: a report from China. *Information Systems Journal*, *18*(4), 357–380. doi:10.1111/j.1365-2575.2008.00303.x

Zikmund, W. G. (1991). *Business Research Methods* (3rd ed.). Orlando, FL: Dryden.

Zikmund, W. G. (2003). *Business research methods* (7th ed.). Thompson.

Zikmund, W. G., Babin, B. J., Carr, J. C., & Griffin, M. (2010). *Business research methods* (9th ed.). Canada: South-Western Cengage Learning.