AN EMPIRICAL STUDY ON FACTORS DETERMINING E-BUSINESS USAGE ON BUSINESS PERFORMANCE IN MALAYSIAN SERVICE INDUSTRY

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DECLARATION

I hereby declare that the work has been done by myself and no portion of the work contained in this thesis has been submitted in support of any application for any other degree or qualification on this or any other university or institution of learning.

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Intan Salwani Bt. Mohamed

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DEDICATION

In loving memories of my three baby angels,
went to heaven on 25th March 2005 (the twins),
and 3rd November 2009.
So precious, delicate and
premature at birth to stay with us.
Mommy loves you!

Special dedication to my newborn son,
Muhammad Darwish Bin Norzaidi

ABSTRACT

E-business usage has become a significant research area since the Internet became prominent just over a decade ago. Many researchers have studied and proposed theories and models of E-business usage and value creations in order to predict and explain a company's technology investment. Each theory or model has been proposed with different sets of determinants and moderators and most of them have been developed in advanced countries such as the United States (U.S). It was therefore questioned whether the theories and models related to E-business technology investment that have been developed, modified, and extended in the advanced countries are relevant to developing countries such as Malaysia. It was also questioned whether there might be other determinants and moderators that also play important roles in this specific environment. Therefore, this perception study examined the factors determining E-business usage and its influence on business performance in the Malaysian service industry. Focus was given to online tourism, which included online hotels and online private hospitals (for health tourism); online financial services (banking and insurance); and online transportation services (air, sea, land and rail).

In seeking empirical evidence of E-business practices and its business implications, an interactive, comprehensive and multi-dimensional theoretical model known as the E-VALUE model was introduced. The E-VALUE model assessed the drivers of E-business usage by looking at technological, organizational, and environmental (TOE) factors as suggested in the TOE model [332]. Technological characteristic were represented by independent variables named technology competence and web-functionalities. Organizational characteristics on the other hand, included four independent variables: firm size, internationalization scope, managerial beliefs, and web technology investment costs. Environmental characteristics were represented by regulatory support and pressure intensity. All these variables were used to predict E-business usage. In looking at the relationship between E-business usage and business performance, business performance was measured based on the four dimensions; impact on financial, impact on customers, impact on internal

business process and impact on learning and growth as suggested in the Balanced Scorecard [168]. However, the measurement attributes were modified in order to provide a comprehensive view from multi-dimensional disciplines; technology, accounting, and business. The E-VALUE model also tested the moderating influence of E-business experience (in number of years) on the relationship between E-business usage and business performance (known as "usage-performance" relationship).

The questionnaire survey method was used in collecting primary data. Samples were selected using stratified random sampling which yielded 165 usable questionnaires. The structural equation modelling method was used to evaluate the model. In assessing the drivers of E-business usage, technology competence, web-functionalities, firm size, and pressure intensity were found to have significant influence on the extent of E-business usage. Among these, Web functionalities appeared to be the strongest factor and had a significant positive path. It showed that higher Web functionalities led to higher E-business usage. Other significant variables had positive relationship except for pressure intensity, which was found to have significant negative relationship with E-business usage - the higher the pressure, the lower the level of E-business usage. This could be due to financial constraints related to the high costs of Web technology investment to fully implement E-business technology.

Next, E-business usage was found to have significant influence on business performance with positive relationship. Testing the moderator influence, E-business experience (in years), was found to moderate the relationship between E-business usage and business performance. It was hoped that this study would narrow down the gaps in knowledge area and furnish useful guidelines that could trigger E-business implementation in the Malaysian service industry.

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PREFACE

The Malaysian Government had invested heavily in E-business through the development of Multimedia Super Corridor (MSC) as an effort to enable Malaysia to leapfrog into the information technology economy. As a means to further accelerate the use of E-business, the Malaysian Government had included E-business as one of the agendas in the 9th Malaysian Plan which was released in 2006. In this plan, the value of E-business transactions was expected to grow at an average annual rate of 27% to reach RM 155 billion in the year 2010.

The service industry plays an increasingly important role in modern economies that are impacted by E-business development. Services such as online banking, online travel and tourism led other industries in E-business adoption in Malaysia. When it comes to the issue of E-business usage in Malaysia service industry, the implementation is still at the infancy stage (Ab. Rahim, 2010). In hospitality services for example, brick and mortar companies are worried to be involved in E-business due to the lack of success stories and information on the potential impact of E-business implementation. The bulk of literature on E-business usage and its impact on a firm's performance were conducted in western countries which have different government approach, socio economic, industrial, and cultural settings. Studies in the west have limited applicability to developing countries such as Malaysia (Zhu et. al., 2003; Jarvenpa & Leidner, 1998; Austin, 1990).

Due to the above reasons, this study had sought respondents' perception on factors determining E-business usage the influence of E-business usage on business performance in the Malaysian service industry. It is hoped that theoretical model and research findings of this study would help to narrow down the dearth of literature on factors determining E-business usage and value creations in the Malaysian service industry. Besides, the findings could be used by relevant industry associations such as Malaysia Association of Hotels (MAH), Malaysian Association of Private Hospitals, and Malaysian Institute of Transports (MITRANS) to encourage new comers in E-business activities to identify problems encountered among industry players and to determine areas to be re-engineered in the process of profiting E-business investment among industry members. As this study was supported by

Ministry of Science, Technology, and Innovation (MOSTI) Malaysia, research findings could be used by the ICT Policy and Planning Unit to further enhance the current ICT and E-business policy, strengthen E-business regulatory framework and promoting E-business to Malaysian companies.

CHAPTER 1:
INTRODUCTION

1.1 Introduction

Technological forces were changing at an ever increasing rate (Gunasekaran, Patel & Tirtiroglu, 2001). Spontaneous development in the electronic marketplace was a result of investment in Information Communication Technology (ICT). Huge potential of the Internet changed the traditions on running a business. Electronic business (E-business) had grown to be a new edge for business environment (Intan Salwani, Marthandan, Norzaidi & Chong, 2009). With the aim to accomplish their business objectives, businesses shifted to the new innovative technology (Chandran, Kang & Leveaux, 2001), and had taken ways to pursue efficiency and quality (Mougayar, 1998). E-business put across a range of commercial activities via Internet, Extranet, and Intranet such as E-shopping, E-education, E-banking, and E-financing (Raman, Kaliannan & Yu, 2007). Reviewing E-business literature (Anckar, 2005; Zhu & Kraemer, 2005; Wang & Cheung, 2005; and Norhayati, 2000) much focus were given on the pre and formal E-business adoption stage such as "intent to adopt" (Fichman, 2000), and "E-business adoption" (Wang & Cheung) instead of the post adoption issues such as "value creations" particularly in developing countries. With the aim to completely apprehend the business value of E-business venture, the comprehensive operation at the post-adoption phase emerged to be an important research area. Concerning more on the adoption and post-adoption stages regarding drivers of E-business usage and value creations, this research seeks empirical evidence from the Malaysian service industry by capturing respondent's perception on the factors determining E-business usage and its influence on firm's performance. A theoretical model was constructed in closing the knowledge gaps found in prior studies. Besides, this study tested the influence of moderator variable (E-business experience) to find out how it modified the E-business usage and firm's performance (usage-performance) relationship. This chapter discussed the definition of topic, background of study, issues and problem statement, objectives of study, scope of study, justification of the study that covers gaps of knowledge, justification of

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service industry selection and potential outcomes and practices, research contribution to new knowledge, organization of the chapters, and chapter summary.

1.2 Definition of Topic

1.2.1 E-business Definition

The digital economy era allows traditional businesses to shift their basic business functions into electronic medium. According to Rainer, Turban and Porter (2007), the process of exchanging goods and services between suppliers and customers and collaborations of business partners via electronic medium is known as E-business or E-commerce. To be more specific, Rainer et. al further defined E-commerce and E-business as "Electronic commerce (EC or e-commerce) describes the process of buying, selling, transferring, or exchanging products, services, or information via computer networks, including the Internet. E-business is somewhat broader concept. In addition to the buying and selling of goods and services, it also refers to servicing customers, collaborating with business partners, and performing electronic transactions within an organization".

As E-commerce term is sometimes considered as fairly narrow, the term E-business that covers broader online activities perspectives should be used (Turban, King, Lee, & Viehland, 2004). E-business not only focuses on "buying and selling of goods and services but also providing services to customers, collaborating with business partners and conducting online transactions within an organization" (Turban et al.). The term E-business focuses on the two keywords but with a broader perspective, i.e., the "activity" which include "buying, selling, exchanging products, services, and information, providing customers' service, collaborating with business partners, and conducting electronic transactions within an organization and the medium of transaction", i.e. the computer network.

Taken as a whole, the term E-business focuses on two keywords; the "activity" i.e. buying, selling etc., and the "medium of transaction" i.e. the computer network. In this research, the definition given by Rainer et. al (2007) would be best referred when defining E-business. However, since both terms (E-commerce and E-

business) are alike, it always being used interchangeably and defined by people and organizations in various ways (Teng, Matzain & Ken, 2000; Rainer et. al, 2007).

Three famous phrases when discussing E-business are "brick and mortar", "click and mortar", and "pure-play" E-business. In the E-business jargon, traditional businesses that offer face to face business transactions and have physical building are referred to "brick and mortar". An integration of offline and online business models is referred to "click and mortar", while businesses purely done via the Internet and without physical presence is known as "pure play" (Turban & King, 2003).

In Malaysia, the term E-commerce is commonly used in practice as compared to E-business. Government, regulatory bodies and companies refer to online activities as E-commerce. The term E-commerce is being used in the government policy planning and initiative such as "National E-commerce Strategic Direction Study" (Country Progress Report Malaysia, 2004) and "National E-commerce Expo" (Awang, 2006). However, this study would focus on E-business that brings the broader meaning.

1.2.2 E-business Usage

Usage as defined by the Oxford Advanced Learner's Dictionary (2006) refers to execution, accomplishment or realization. Therefore, E-business usage refers to "the execution, accomplishment or realization of any online activity i.e. buying, selling, exchanging products, services or information, servicing customers, collaborating with business partners and conducting electronic transactions within an organization". An E-business company existed when it conducts any online activity, several online activities or whole online activities. Online activities refer to providing online information, online sales, online services, online purchases or procurement, and joining electronic intermediaries for online sales and purchases.

Review of literature shows that the term E-business usage, implementation, adoption, and diffusion were used interchangeably without any difference in the meaning. In Zhu and Kraemer (2005), the term E-business usage is being used but in another article by Zhu, Kraemer, and Xu (2003), the word E-business adoption was

used in reference to E-business usage. Therefore, as for the current study, the term E-business usage is assumed to be equivalent to E-business implementation, adoption, or diffusion.

1.2.3 Business Performance

In reference to the three Es (also known as 3E's) management model, business performance refers to the degree to which organizations achieve their goals with economy, effectiveness and efficiency (Brewer, 2010; Robert, Steven & Karla, 1989). Economy is the measure in terms of value; which refers to how cost effective inputs can be acquired or purchased. Economy performance can also be best described in terms of financial performance such as profit and sales. Efficiency measures whether appropriate amount of resources are used in attaining the company's goal. Effectiveness, on the other hand, is the measure on whether goals are accomplished (Brewer; Roslina, 2003; Jamil, 2003; and Robert et al.).
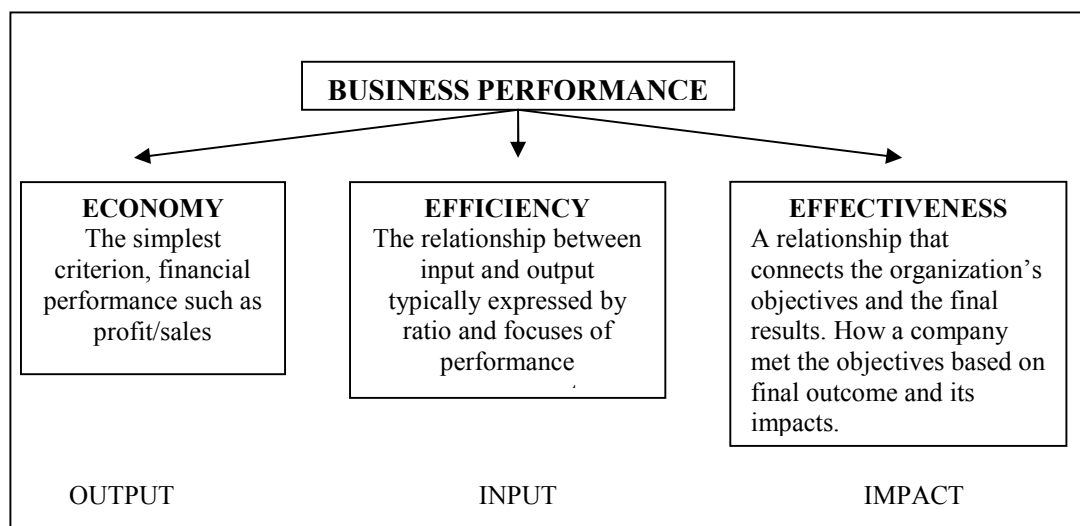
Figure 1.1: Performances: Effectiveness, Efficiency and Economy
Source: Brewer, 2010; Roslina, 2003; Jamil, 2003; Robert, Steven and Karla 1989

In today's advanced business environment, performance measures are taking an ever-greater importance. With the emergence of E-business industry and the increasingly intense competition experienced in both local and foreign market, appropriate performance indicators are needed to enable managers to act speedily to

sustain the firm's commercial viability. Appropriate performance measures provide the effective feedback on whether a firm is moving towards its ultimate goals and that can assist managers to evaluate the effectiveness of their strategies (Foong & Zainal Abidin, 1999).

In this research, business performance was measured based on four viewpoints "financial, customers, internal business process and learning and growth" as suggested in balanced scorecard by Kaplan and Norton (1995). However, measurement elements of each dimension were modified to suit the E-business technology perspectives.

1.2.4 Service Industry

In this research, the term service is defined as work done for another or others (Oxford Advanced Learner's Dictionary, 2006). Services always considered as being "intangible, perishable, and heterogeneous and usually require their consumption at the same time and in the same place as their production" (Pitt, Berthon, & Watson, 1999). To be further specific, services refers to the deal that link buyer and seller for the agreed requirement (Grosse, 1996). Industry, on the other hand, refers to commercial undertakings (Oxford Advanced Learner's Dictionary, 2006). Examples of participants in the service industry are banks, insurance and stock trading companies, hotels, resorts, transportation, and hospitals (Turban et al., 2004). In this study, focus was given to online services provided by hotels, resorts, hospitals (health tourism), banking, insurance and transportation (air, sea, land, and rail).

1.3 Background of the Study

Malaysia as a developing country, the enterprise attitude was found to be a major barrier for business to engage in E-business (Ng, 2000). In Malaysia E-business venture, local businesses were not keen to be leaders or pioneers but preferred to be followers. Fearing failure, there were businesses that dare not to invest in the unknown space of E-business (Ng). Besides, lack of information on the survivability and success highlights among Malaysian E-business participants were found as a major barrier to E-business adoption (Ainin & Noorismawati, 2003; Chow,

www.manaraa.com

2000; and Norhayati, 2000). In Ainin and Noorismawati for example, "not many success stories of E-business" (79 percent) was chosen as the major hindrance to E-business adoption followed by "not having knowledge in E-business" (72.6 percent), "low Internet access among buyers" (72.2 percent), and "lack of knowledge on E-business potential" (69.6 percent).

Aggressive movement to cope with the change of business environment is a need if Malaysian companies want to remain in the competitive business environment. Opportunities should be grabbed and risks should be taken in putting the business on the net (Paynter & Lim, 2001). Many researches were conducted in advanced countries. Austin (1990) however argued that in mature markets, theories development sometimes does not suit the markets in developing countries.

For that reason, the current research aimed at examining the factors determining E-business usage and the influence of E-business usage on business performance. Focus was given to the issue of how to deploy E-business profitably to encourage new participants besides helping the existing participants to evaluate their current standing on E-business. Furthermore, the findings of the current research were expected to provide some useful insights of E-business to industry associations and regulatory bodies.

1.4 Issues and Problem Statement

In making a decision on whether or not to invest in E-business, the issue of whether and how E-business usage influenced business performance were always being asked. The interest of service providers and customers to invest in E-business normally drives by rapid development of the electronic marketplace. In reality, there were arguments on to what extent E-business was capable to overcome challenges and to fully exploit the value added of the technology based marketplace? This was due to the fact that technology can't replace some traditional human factors which were needed in ensuring the success of businesses. Knowing the drivers to E-business usage and business performance were compulsory to ensure business prosperity.

In the view of service industry, technology was exploited in improving firm's effectiveness and efficiency. Hence, determination of E-business success depends on how creative firms adopt the technology to enhance the value of their services.

From Malaysian perspective, the stage of E-business usage was still at the formative years. E-business usage for hospitality services represented only 20.5 percent. Traditional businesses doubted to invest in E-business due to poor success evidences and information on the prospective impact of E-business implementation among Malaysian companies (Chow, 2000). For that reason, further understanding of the issues and possible positive impact of E-business should be gathered and empirically tested. Malaysian businessmen is hoped to react to the business challenges by investing in E-business. For that reason, the current research searched for empirical evidence on factors determining E-business usage and its influence on business performance in the Malaysian service industry. It is hoped that the findings would provide useful guides for the Malaysian service sector.

1.5 Objectives of the Study

The research attempted to empirically test the factors determining E-business usage on business performance of service industry in Malaysia. Factors that drive E-business usage are classified under three characteristics; technological, organizational, and environmental. E-business usage is measured based on respondent's perception, and business performance is viewed from technology, accounting, and business perspectives.

1.5.1 Specific Objectives

More specifically, the research objectives were:

i. To determine the extent to which technological factors (technology competence, and web functionalities); organizational factors (firm size, internationalization scope, web-technology costs, and managerial beliefs); and environmental factors (regulatory support, and pressure intensity) influence the level of E-business usage.

ii.   To examine the nature of relationship between E-business usage and business performance.

iii.   To investigate whether E-business experience (measured in number of years) moderate the "usage-performance" relationship.

1.6 Scope of Study

Focus was given to companies involved with online business that covered tourism (hotel, resort and medical centre), financial services (banking and insurance) and transportation (air, sea, land and rail). To enable the achievement of the aforementioned objectives, the study confined itself to the E-business implementation by click and mortar companies, excluding the pure virtual E-business players. The latter category was excluded to maintain the focus on the primary research objective. Analysis was based on click and mortar companies in the Malaysian service sector (tourism, banking and finance, and transportation). These were the leading services in the Malaysian E-business organizations.

1.7 Justifications of the Study

The research can be justified on three grounds:

i.   Gaps in the knowledge under the study

ii.   Justification for the selection of service industry

iii.   Potential outcomes and practices

1.7.1 Gaps in Knowledge Area

A great number of researches had been done on the E-business area especially in advanced countries. However, thorough literature survey concluded that gaps of knowledge existed in few aspects as follows:

i.   The absence of an interactive, comprehensive and multi-dimensional theoretical model to evaluate factors determining E-business usage on business performance. In prior research, few models were used such as Technological,

Organizational and Environmental (TOE) model, and a combination of TOE model and Resource-Based View (RBV) theory to evaluate drivers of E-business usage and business performance (Zhu & Kraemer, 2005). However, most of the research ignored the indirect effects of the factors under study which was vital to provide a multi-dimensional view of research findings.

ii.   Literature search found a gap of knowledge in E-business performance measurement method (Foong & Zainal Abidin, 1999; Kaplan & Norton, 1995; and Porter, Lawler & Hackman, 1975). When measuring E-business performance, Information Technology (IT) researchers tend to overlook certain important elements from the accounting/business point of view and researchers from social sciences background were too focused on the traditional methods of performance measurement which not really linked to the technological issues. Therefore, the development of E-business scorecard that considers both technological and traditional accounting elements in performance measurement was a solution to fill the knowledge gaps in assessing E-business performance.

iii.   The bulk of literatures were conducted in western countries which have different government approach, socio-economic, industrial and cultural settings as compared to developing countries, particularly in the service industry (Zhu et. al., 2003; Jaganathan, 1998; Jarvenpa & Leidner, 1998; and Austin, 1990). For that reason, the research findings would facilitate in narrowing the dearth of literature on drivers of E-business usage and its influence on business performance of the service industry in Malaysia.

In summary, reviewing the literature, there were limitations of understanding on factors determining E-business usage on business performance of the service industry in Malaysia. The current study was hoped to narrow the gaps in prior literature and furnish useful guidelines that could trigger E-business implementation in the Malaysian business environment by answering the research questions as follows:

i.   What factors (based on technology, organizational and environmental characteristics) predicts E-business usage?

ii.   To what extent does E-business usage influence business performance?

iii.   To what extent does E-business experience (in years) influence the "usage-performance" relationship?

1.7.2 Justification for the Selection of Service Industry

Thousands of items were available for sale on the Web such as computers, office supplies, entertainment, services and many others. There was no doubt that E-business played a greater role in the service industry. E-business usage in service industry was not anticipated to reinstate human resources but it promoted the economical advantage of a service business by supporting the workers and enhancing their ability to provide better-quality services to the client.

Turban et al. (2004) found that the most recognizable services in E-business were travel, stock trading, real estate, insurance and electronic banking. In the United States (US), the service industry gives a significant importance to the overall US economy. The US economy seems to be a service economy where two-thirds of the US Gross Domestic Product (GDP) was composed of service output and three-quarters of the employment base was provided by the service industry. E-business implementation in the US service industry was not only the key component of the US domestic economy, but increasingly trade-in services and E-business were becoming growth areas where the US firms had a comparative advantage for being given an open and non-discriminatory access to other markets (Tauzin, 2003).

The extraordinary strength among US firms in E-business activities provides the country with a new, less expensive, more competitive and more efficient means of delivering its services. This would result in a significant contribution to the trade surplus and the growth of US economy (Tauzin, 2003).

Studies by Forrester (1999; 2000) found that travel sales (in dollar volume) surpassed other Internet sales including computer software, reading materials, music, cloths, games, toys, videos, and activity goods such as sporting equipments. This was proven by looking at the supportive indicator such as top travel information Websites which were on a regular basis among the world's top most visited sites, overall

tourism spending on the Internet which amounted to US$5 billion in 1999 and was expected to increase to US$30 billion by 2001, and 75 percent of users were using online travel sites for information gathering and bookings (Forrester).

In the year 2000, a worldwide industry forecast showed that US$29 billion travel products were expected to be sold via the Internet by the year 2003. Although this amount was about four times of 1999's sales volume, it represented only 10 percent of overall travel sold (Ader, 2000). As the economic environment lengthened to drop in 2009, declined demand for the total US travel industry revenue sliding by $11 billion (a reduction from $312 billion in 2008 to $301 billion in 2009). The supply-demand equilibrium was disrupted transversely on all travel products, and recuperation was not expected until 2010. Despite the downward pressure on revenue for the overall US travel market, the online travel channel kept on developing, albeit at lower rates than in previous years. Online travel revenue would represent $111 billion, or 36 percent of travel revenue, in 2008; by 2009, online travel revenue would grow to $117 billion, or 39 percent of total US travel revenue. The development of online travel revenue was motivated by consumers' satisfaction with the channel and suppliers' push to the cost-effective online channel.

In travel related services, online travel usually consists of players such as airlines, large conventional travel companies and car rental agencies, and hotels and resorts (Turban & King, 2003). Marimari.com and asiatravel.com are examples of travel-related Websites, which provide online travel services. In hotels and travelling sectors, E-business enables direct transactions with hotels and airlines, which reduced dependency on intermediaries. Due to this, the "Malaysian Association of Tour and Travel Agents" (MATTA), promotes the members to run E-business.

E-business also introduced intelligent agents or software agents in travel services. The agents imitate the work and actions of a person in accomplishing organizational processes, such as travel approval (Bose, 1996). This will increase organizational productivity and enhance business performance. In a study by Bloch and Segev (1997), they predicted that travel agencies will disappear due to E-business implementation. Only the value-added activities of travel agencies will be done manually and these will be performed by a new mode of organization. Many

online travel services such as airline companies offer travel bargains for tickets. Several airlines allow customers to book flight tickets and check flight status through the use of cell phones.

Electronic banking which is always identified as virtual or online banking is another component of E-business implementation in the service industry. It includes business, home or on the road activities conducted virtually as a substitute of present at the bank physically (Turban et al., 2004). A study by Giap (2000) shows that online banking started in April 1995 at Security Network Bank. E-banking offers several benefits to both the service provider (i.e.: the bank) and the user (i.e.: bank's customers) by escalating the customer base and eliminating the cost of paper transaction (Gosling, 2000).

Besides online banking, online insurance is another instance of E-business application in the service industry. An increasing number of companies exercise online insurance to provide insurance policies at substantial discounts. Many insurance companies bring into play a twofold strategy by keeping human agents as well as selling online (MacSweeney, 2000).

In this study, the Malaysian service sector which consists of tourism (online hotels/resorts and hospitals with health tourism), financial services (banking and insurance) and transportation (air, sea, land and rail) are chosen as the population of interest because the researcher found that these services are the most popular online services in Malaysia but the potential of E-business is not fully exploited. For example, majority of services provided by Malaysian companies are still focusing on local customers caused by the lack of E-business experience and guidelines in this industry segment. A study by Mahani (2002) shows that services export represents only 14.9 percent of total exports. From 14.9 percent, travel services represented the highest percentage.

Malaysia's trade in services in the year 2007 increased by US$9.4 billion as compared to 2006. Over the period, double digits increased were seen in import (21.6 percent) and export (10.8 percent). Service exports include commercial services, education, healthcare and ICT. From the first nine months of 2008,

Malaysia's trade in services gained US$40.8 billion with the value of imports (US$20.2billion) and exports (US$20.6 billion) (Ministry of International Trade and Industry, 2009). As the task of the service sector shows progressive development, it would be an advantage for companies to take the challenge of globalization. Investing in E-business is a good strategy to penetrate the international markets.

The findings of the study is hoped to offer useful guidelines for brick and mortar companies in the service sector to start taking into account on E-business, for click and mortar businesses in assessing E-business usage for further action and for related bodies to enhance E-business policy and regulations.

1.7.3 Potential Outcomes and Practices

Overall, this study aims to seek empirical evidence on factors determining E-business usage on the performance of businesses in Malaysia service industry. More specific, it assessed the factors that determined the usage of E-business and the influence of E-business usage on business value (i.e.: business performance) after considering the length of time using E-business (E-business experience) as a moderator variable. The potential research outcomes and practices are as follows:

i.   This study would extend the body of knowledge in E-business area especially in the Malaysian environment by providing an interactive, comprehensive and multidimensional model to assess factors determining E-business usage on business performance of the Malaysian service industry.

ii.   Research findings would benefit traditional businesses to start considering E-business investment.

iii.   Research findings would benefit online businesses to assess their existing E-business position and to find out the areas needed for re-engineering in profiting their E-business investment.

iv.   Related bodies such as government, through Ministry of Science, Technology and Innovation (MOSTI), Ministry of Tourism (MOTOUR), Ministry of Transport (MOT), ICT related bodies such as Multimedia Development Corporation Sdn. Bhd.

(MDEC) and Malaysian Institute of Microelectronic Systems (MIMOS) should evaluate the research findings to further enhance their ICT and E-business policies, strengthen the E-business regulatory framework and cyber laws, and promoting the E-business environment to Malaysian companies.

v.   Research findings would help decision makers such as Malaysian Association of Hotels (MAH), Association of Private Hospitals in Malaysia (APHM) and Malaysian Institute of Transport (MITRANS) to encourage newcomers in E-business, to identify problems encountered among industry players (e.g. conflict between online hotels and online travel agents) and to identify possible areas for re-engineering in profiting E-business investment among industry members.

1.8 Significance Contribution to the New Knowledge

According to Chacko (2004), the Ph.D degree is awarded for an original, significant contribution to knowledge. What is "Knowledge" to which such a contribution is made? Confucious (551-479 BC) said, "When you know a thing, to hold that you know it, and when you do not know a thing, to allow that you do not know it, this is knowledge". Chacko (2004) in his book "Problem Formation and Formulation", defined knowledge as the aggregate of encounters with physical and/or mental experiences, assembled and/or abstracted for prospective application and adaptation. He also mentioned that the "significant contribution to original knowledge" expected from a Ph.D paper can be:

i.   Law

A universally valid statement(s) of conditions, consequences and/or relationships. For example, Newton Law of Gravitation.

ii.   Theory

A system of thought guided by empirical data and built up logically from a small number of fundamental assumptions (axioms), receiving peer acceptance based on replication of result-conceptually, computationally and/or conformably (experimentally/empirically).

iii.   An Interactive Model

The conceptual, computational, experimental, and/or empirical replication in such a way that a change of results and a change of resources, values developed were sufficient for decision making purpose.

A significant contribution to original knowledge in this study was the development of a multidimensional E-VALUE model that explained the factors (categorized under technological, organizational and environmental) that influenced E-business usage; how level of E-business usage influenced firm's performance; and whether E-business experience (in years) moderated the "usage-performance" relationship?

1.9 Organization of the Chapters

Discussions of this research were divided into five chapters, Chapter 1: Introduction, Chapter 2: Literature Review, Chapter 3: Research Methodology, Chapter 4: Data Analysis and Findings, and Chapter 5: Discussions and Conclusions.

Chapter 1 was the introductory chapter which discussed definition of topic, background of study, problem statement, and objectives of the study, scope of study, justification of the study, significant contribution to new knowledge and organization of the chapters.

Chapter 2 presented extensive literature review regarding E-business development, E-business as technological innovation, E-business usage, past theories and theoretical models related to E-business innovation, diffusion and value creation by digesting the online and offline resources including journals, articles, reports, documents and websites. Detailed literature review led to conceptual framework development based on Technological, Organizational and Environmental (TOE) model, Resource-Based View (RBV) theory, and E-business performance measurement by means of basic concepts of a balanced scorecard with some modifications to outfit E-business technology usage.

Chapter 3 presented the overall research process. It describes and justifies research methodologies that covered research philosophy, and research design (research problem, purpose of research, theoretical framework, research questions and hypothesis, operational definition, methodology used, assumptions, limitations and expected outcomes).

Chapter 4 discussed on data analysis which focused on four important objectives; feel for the data, testing the goodness of data, testing the hypothesis developed for the research, and testing E-VALUE model fit. Research issues and objectives were examined and analyzed. This chapter was divided into three sections; results and outcomes, and discussion of findings.

In Chapter 5, discussions and conclusions of the research findings with some recommendations were made. Assumptions, limitations, practical implementation and expectations were made in this chapter.

1.10 Chapter Summary

This chapter described the introduction, definition of topic, background of study, problem statement, objectives of study, scope of study, and justification of the study that covered gaps of knowledge, justification of service industry selection and potential outcomes and practices, research contribution to new knowledge and organization of the study. Chapter 2 would examine prior literature related to E-business development, E-business as technological innovation, E-business usage, previous theories and theoretical models related to E-business innovation, diffusion and value creation which guided the development of theoretical model for the study.

CHAPTER 2:

LITERATURE REVIEW

2.1 Introduction

E-business was a technology innovation that enabled businesses to acquire benefit of business prospects via the Internet (Zhu, 2004). Since measuring E-business prospects seemed difficult, this study may offer guidance in conducting an empirical study on the factors that determined E-business usage and the influence of E-business usage on business performance of the Malaysian service industry. In chapter 1, discussions were made on definition of research topic, research background, problem statement, objectives of study, scope of study, justification of the study that covered gaps of knowledge; justification of service industry selection; and potential outcomes and practices, research contribution to new knowledge and organization of the study. Chapter 2 next discussed on E-business development, E-business as technological innovation, E-business usage, and the theoretical framework development from multiple perspectives of findings from preceding literature on E-business usage and value creations. Discussions focused on studies that assessed the drivers of E-business usage and how it influenced a firm's performance. Besides, a discussion was also done on the potential existence of moderator variable (E-business experience) to moderate the "usage-performance" relationship related to E-business. Contrasting the usual centre of attention on adoption (adoption intention, adoption barriers) as found in the literature, this research provided a multidimensional theoretical model that focused on the adoption and post-adoption stages of E-business implementation. A theoretical model was developed by innovating three theories and model, i.e., the TOE model (Tornatzky & Fleischer, 1990), the RBV theory and the Balanced Scorecard (Kaplan & Norton, 1992). Six sections in this chapter discussed about introduction, E-business development, E-business as technological innovation, E-business usage, prior theories and models related to E-business innovation, diffusion and value creation; theoretical model of the study; and chapter summary.

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2.2 E-business Development

Defined by Davies (2004) as "the utilization of information and communication technologies to support all the activities of business", E-business application was said to be first initiated in early 1948 which was known as the Berlin airlift project. It started with a demand on a standard form to ensure well-organized items management flown to Berlin from worldwide. The demand initiated Electronic Fund Transfer (EFT), and Electronic Data Interchange (EDI) that generated efficiency between large companies throughout the United States (US) (Kalakota, Whinston & Andrew, 1996) which allowed information sharing with business partners and suppliers. With EFT innovation which was popular amongst banks, funds could be transferred electronically. EFT was used to order, instruct or authorize the debit or credit of an account by financial institutions. Computer or magnetic tape, electronic terminal and telephone were used to initiate EFT (www.cardreport.com/laws/eft.html).

Next to EFT came the technology in the early 1960s that enabled the exchange of electronic business documents (such as invoices) which was known as EDI (Turban et al., 2004). A careful definition of EDI was made by Clarke (2001) as "the exchange of documents in standardized electronic form between organizations in an automated manner directly from a computer application in one organization to an application in another". Compared to e-mail, EDI electronically transmitted the structured business messages either in the form of hardcopy or pre-printed business documents between computer applications.

With more technological advancement in networking, then came the term Internet, which stressed on the idea of several independent networks (Leiner, Cerf, Clark, Kahn, Kleinrock, Lynch, Postel, Roberts & Wolff, 2003). The resolution of Internet definition was issued on October 24, 1995 by the Federal Networking Council (FNC). Internet was defined as "the global information system that (i) is logically linked together by a globally unique address based on the Internet Protocol (IP) or its subsequent extensions; (ii) able to support communications using the Transmission Control Protocol/Internet Protocol (TCP/IP) and (iii) provides, uses or

makes accessible, either publicly or privately, high-level services layered on the communications and related infrastructure".

The term "E-business" was invented after the commercialization of Internet that attracted user's participation in WWW (Turban et al., 2004). New networks, protocols and software development stimulated the growth of E-business rapidly. 1995 was the beginning year that offered users with many up to date applications such as interactive commercials, and virtual reality experiences. Lauder and Trevor (2009), and Timmers (2001) agreed that the existence of Internet exploded E-business as it became accessible to everyone. Late October 1994 evidenced a history on the beginning of Business to Consumers (B2C) E-business for which the first banner advertisement was placed by ATT, Volvo, Sprint and others on Hotwired, the first commercial web magazine (Lauder & Travor). The two biggest names in E-business, Amazon.com, and eBay.com were created in 1995 (http://newmedia.com). In this new technological environment, business organizations can now be categorized into three; brick and mortar companies (implementing traditional business methods), click and mortar businesses (carried out E-business but conducted main business in the physical world), and pure online virtual companies (new organizations that sell products or services only online) (Turban & King, 2003). In 1999, the importance of E-business moved from B2C to Business to Business (B2B) (Turban et al.).

2.3 E-business as Technological Innovation

Not only restricted to high technology, innovation also took in new services (Siengthai & Bechter, 2001) and involved both organizational and economic changes (Afuah, 1998). In Rogers (1962), innovation was referred as initiative, practices, or a thing known by a person or other unit of adoption. Siengthai and Betcher on the other hand referred innovation as "the use of new technological and market knowledge to offer a new product or service to customers". Lower cost, improved or new product attributes or simply new product, were some of innovation's uniqueness. To remain competitive, businesses needed to practice the culture of innovation.

In Zhu et al. (2003), Information Systems (IS) innovations were classified into few categories; innovations supporting the technical tasks; and innovations that might influence the organization as a whole. IS innovations were also classified by Swanson (1994) into three categories:

i.   Type I innovation which was restricted to technical task

ii.   Type II innovation that supported business administration

iii.   Type III innovation rooted in the core of the business

Type I innovations were limited to the technical task of technology such as the development of computer hardware and technology infrastructure (the network). Type I innovations were the foundation to type II and type III innovations. With technical foundation, next came the type II innovations that supported the business administration. Development of software and programs such as EFT and EDI were examples of type II innovations that sustained the administration of a business. Type III innovations were normally rooted in an organization's core business. Based on the innovation typology as suggested by Swanson (1994), E-business could be best classified as type III innovation.

The term E-business itself was a technological innovation which is widely used in today's business environment (Davies, 2004). There existed a wide diversity of E-business definitions and conceptualization that covered a plethora of issues, applications, and business models (Molla & Licker, 2001). "Innovation is a process by which an organization builds insights about its major functions (customers, suppliers, employees, and other stakeholders); identifies potential opportunities in the market (local, national or global); chooses the suitable plan to seize them; and delivers on time, a stream of winning products or services" (Ahmed, Abdalla & Knight, 1998). As Rogers (1962) defined innovation as initiative, practices, or a thing known by a person, the definition of E-business innovation focused more on the technical aspects such as the use of ICT in supporting business activities (Davies, 2004). Set in a firm's main activity, E-business streamlined information sharing between departments, and extended basic business product and services by

leveraging the two ways of Internet connectivity to propose real time services to suppliers and customers (Zhu et al., 2003).

Development of E-business was initiated by the exploitation of Internet and Web technology that connected multiple businesses (Andreolini, Colajanni & Lancellotti, 2005). Figure 2.1 exhibited the main architecture of a dynamic E-business system.
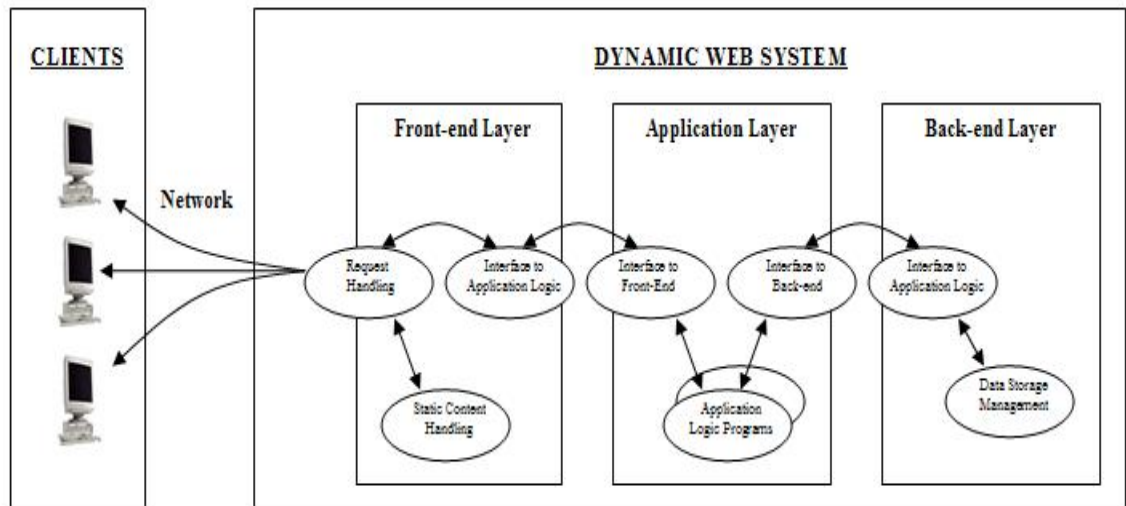
Figure 2.1: An Architecture of a Dynamic E-business System
Source: Andreolini, Colajanni and Lancellotti (2005)

Front-end, application, and back-end layers were the components of a dynamic Web system. As the interface of the Web-based services, front-end layer accepted client's request on HyperText Transfer Protocol (HTTP) connection, served static content of file systems, and functioned as interface of middle layer's application logic (Andreolini et al., 2005). The application layer handled business logic plus computed the information that was utilized in building response with a dynamic generated content. Content generation required an interaction with the back-end layer. Application layer should be able to interface the application logic with the data storage of the back-end (Andreolini et al.). The dynamic Web-based system was connected to the clients through wide area network (WAN).

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E-business integrated IT and Internet into business processes to change organizations and created a new one (Cunningham & Froschl, 1999). The new economy as characterized by the Internet and E-business had altered the ways of how goods and services were produced, exchanged and consumed (Andersen & Corlay, 2003). E-business innovation offered a platform for business organizations to plan for the business activities, addressing the marketplaces, and to collaborate with other business entity (Migiro, 2006). Existence of numerous definitions of E-business innovation in the literature made it challenging for researchers and practitioners to take further steps in studying the factors determining E-business usage and the influence of E-business usage on organizational performance (Govindarajulu, Devi, Ge, Gonzalez, Lyod & Daily, 2004).

Fundamentally, E-business was referred as the use of computer and communication technologies in automating the commercial transactions (Davies, 1994; Westland & Clark, 1999). In the supply chain, it enabled information transfer crossways the electronic networks at any stage either inside an organization, among businesses and consumers or involving public and private sectors (Turban, King, Lee, Warkentin & Chung, 2002). As discussed in chapter 1, E-business was "the use of electronic networks, the Internet, or digital technology for the process of exchanging information, buying and selling products and services, and online payments through the electronic transfer of funds" (Reedy, Schullo & Zimmerman, 2000). Cisco, Charles Schwab, Dell, General Electric, and Wal-Mart were some of the traditional firms that gained success in E-business investment. These firms were known as click and mortar businesses. In contrast, brick and mortar companies referred to companies that relied 100 percent on traditional methods of doing businesses (Turban et al., 2004).

According to Poulymenakou and Tsironis (2003), similar to E-commerce (but with broader perspectives) E-business applications could be categorized into four; business to business (B2B) when all participants were business organizations; business to customers (B2C), an E-business model for which businesses sold their products or services to individual shoppers; government-to-business (G2B), which emerged as an important policy and implementation instrument for global E-business

market and global information society expansion; and government-to-citizens (G2C), which comprised the strategic Internet utilization as a provision channel of information and services to the citizens in public service sections. In addition, viewing E-business from the perspectives of transactions nature, Turban et al. (2004) identified additional types of online interaction such as; consumer-to-business (C2B), a group that consisted of individuals who utilized the Internet to sell products or services to organizations, in addition to individuals who searched for sellers to bid on products or services they required; consumer-to-consumer (C2C), an E-business model where consumers sell directly to other consumers; and business-to-employees (B2E), an E-business model in which an organization delivered services, information, or products to its individual workers.

In relation to the current study, it focused on E-business applications from the organizational perspectives which covered B2B, B2C, G2B, C2B and B2E; with business organizations as the unit of analysis.

2.4 E-business Usage

In acquiring economic significance, a newly developed technology needed to be carried into the economy (known as innovation) and progressively be implemented by public and organizations (known as diffusion) as economic impact could only be acquired if it became widespread in the economy (Mukoyama, 2003). According to Affuah and Tucci (2001), the adoption of new technology could lead to the reinforcement of competitive advantages and surpassing existing competitors. In addition, technologies were also adopted to improve profit.

Reviewing the innovation diffusion literature (Tornatzky & Klein, 1982; Rogers, 1983) studies were found to concentrate on technology diffusion and factors influencing the decision to adopt technology (Dedrick & West, 2003). Tornatzky and Fleischer (1982) for example, studied the movement of process view initially on research and development, followed by deployment, adoption, implementation and routinization. Rogers (1982), on the other hand, was focusing on the adoption processes that classified users based on their point of adaptation (innovators, early adopters, early majority, late majority and laggards).

Reviewing the innovation diffusion literature, most theories were focusing on innovation characteristics that influenced innovations adoption and at what rate. In Tornatzky and Fleicher (1990); Davis (1989); Rogers (1983); and Tornatzky and Klein (1982), diffusion of innovation theory offered rich justifications on the decision of innovation adoption, and how technology perception and adopters' characteristics together with its environments affected the decision of innovation adoption.

Most of prior studies on E-business diffusion focused on the adoption, implementation, and usage of online technologies. In a study by Zhu, Kraemer, and Xu (2006), E-business diffusion was viewed by classifying E-business assimilation into three; initiation, adoption, and routinization. Most studies related to E-business diffusion were found to be similar to studies on other technologies diffusion.

Focusing on factors determining E-business usage on business performance, the main interest of this study was on how E-business innovation acquired economic significance when it was adopted by business organizations. The term usage in the current research referred to E-business technology diffusion. Review of literature showed that the term E-business usage, implementation, and adoption were used interchangeably when discussing E-business diffusion. Therefore in this study, the term E-business usage, implementation, adoption, and diffusion were used without any difference in meaning.

2.4.1 E-business from Global Perspective

In the early of year 2000, a study by the Thailand Development Research Institute showed that E-business in the US captured 70 percent of the world market values, followed by Europe with 14 percent, Canada 8 percent and the Asia Pacific region 5 percent (E-revolution, 2000). According to the Ministry of Economic Affairs, Chinese Taipei (2000) regarding the evaluation of Asia Pacific Economic Cooperation (APEC) member's E-business infrastructure, it was found that the US secured the highest rank; followed by Singapore at number eight, Hong Kong at number nine while Malaysia at number 32. In 2008, Finfacts.com found that the US continued to be at the highest rank, followed by Hong Kong, while Singapore moved

to rank number 6, and Malaysia at number 34 (Appendix 8). In the global perspective, from the year 2000 to 2008, the US was known as world's most "E-business-ready" country. The rankings by the Economist Intelligence Unit (EIU) in 2009 however offered some unexpected placements of the US ranking further down the list behind Denmark, Sweden, the Netherlands and Norway (Appendix 9).

Looking at the nature of transactions, B2C E-business (for which firms sell to individual shoppers) helped to break down traditional barriers of retail trade. Despite receiving media attention, B2C E-business represented only a small share of sales (Willy, 2004). The year 2003 evidenced 25 percent retail B2C E-business sales growth in the fourth quarter. Besides, rapid B2C E-business expansion was likely to reach 19 percent yearly in 2008 (Willy). This was supported by Jupiter Research which predicted an annual increase of 17 percent throughout 2008. Based on these facts, E-business had shown an increase in overall consumer sales by 1.1 percent in 2002 and up to nearly 4 percent in 2008.

Although B2C seemed to be more famous, the revenues generated were not comparable to B2B transactions (B2C only counted 20 percent of B2B revenues). As for B2B E-business, it was further developed ways of exchange compared to B2C E-business (Willy, 2004). B2B e-business expanded not only the technology sector but also affected other sectors such as manufacturing, and shipping. The global market had shown evidence on low procurement cost. EDI experience helped firms transform their B2B transactions into online businesses to stay competitive in the market. Forrester Research (1999) found that B2B E-business had been having a strong development since 1998. Gartner Research Group found that the growth of B2B was about 100-200 percent. In example, the expected growth of B2B value in 2000 was about US$430 billion and the amount was estimated to hit more than US$7 trillion in 2009 (North America US$2.8 trillion, Europe US$2.3 trillion, and Asia US$900 billion). Besides, the expected e-B2B transaction percentage in 2009 was 24 percent. Nevertheless, the prediction might need to be reconsidered due to global economic slowdown (www.articlesbase.com).

2.4.2 E-business in Asia

In the year 2000, Singapore led Asian countries in E-business development, followed by Hong Kong, whereas Malaysia was at rank number 9 (Table 2.1). Singapore's city-state nature with only 640 square kilometres and 4 million population enabled the country to develop its E-business infrastructure rapidly (Wong, 2001). In the view of E-business application, the most aggressive participants came from industries such as electronics, aerospace, logistics and transportation that had strong worldwide supply chain that connected to advanced countries (Wong).

Table 2.1: E-business Readiness Rankings: Asia and the Pacific Region

Source: Charmonman and Sriskadi (2000)

World Rank	Asia Pacific Rank	Countries/Areas	Business Environment Ranking 2002-2004	Connectivity Rating	E-business Readiness Ranking
8	1	Singapore	8.55	8	8.3
9	2	Hong Kong, China	8.52	8	8.3
16	3	Australia	8.14	8	8.1
17	4	New Zealand	8.10	8	8.1
21	5	Japan	7.43	8	7.7
24	6	Republic of Korea	7.30	7	7.2
27	7	Taipei, China	8.13	5	6.6
28	8	Thailand	7.27	5	6.1
32	9	Malaysia	6.91	5	6.0
38	10	Indonesia	6.16	5	5.6
46	11	Philippines	6.72	3	4.9
50	13	India	5.97	3	4.5
51	13	People's Republic of China	5.88	3	4.4
52	14	Sri Lanka	5.87	3	4.4

Financial system, logistics, and telecommunication infrastructure were used in ranking the E-business readiness. In 2008, Hong Kong beat Singapore to be at the highest rank in the Asia Pacific region whereas Malaysia moved two steps ahead to be at rank number 7 (Table 2.2). According to the study conducted by Finfact.com in 2008, Hong Kong had made a tremendous development in terms of connectivity for both fixed and wireless broadband access, in addition to the innovation environment. This proved the previous study done by Dedrick and Kraemer (2000), which

suggested that E-business in Asia would lag behind the US until Asia caught up in the Internet penetration. Dedrick and Kraemer believed that the percentage of households and companies that were online in Asia was perhaps a third the level of the United States and the percentage was much lower if China was included. However, in some markets such as Japan, Hong Kong and Singapore, the gap was smaller and probably would be closed soon.

Table 2.2: E-business Readiness Rankings: Asia and the Pacific Region 2008
Source: Finfacts.com (2008)

World Rank	Asia Pacific Rank	Countries	E-readiness Score (out of 10)
2	1	Hong Kong	8.91
6	2	Singapore	8.74
15	3	South Korea	8.34
16	4	New Zealand	8.28
18	5	Japan	8.08
19	6	Taiwan	8.05
34	7	Malaysia	6.16

2.4.3 E-business in Malaysia

As the most revolutionary technology that changed the business environment, E-business could have a significant influence on business performance. In Malaysia, E-business implementation among Malaysian companies was still at the early stage (Rosnafizah & Siti Salbiah, 2009). Web-based business applications were expensive and required training, equipment and human resources to implement and maintain. If the Website development for E-business was not planned, financed and monitored properly, it would become a liability instead of being an asset (Tribunella, 2001). Although many studies have been conducted in advanced countries regarding E-business usage and business performance, it was questioned whether the theories and models related to E-business technology investment that have been developed, modified, and extended in the advanced countries were relevant to developing countries such as Malaysia. It was also questioned whether there might be other determinants and moderators that also play important roles in this specific

environment. These issues highlighted the need of study on E-business usage from Malaysian perspectives to provide useful insights for the prospective E-business participants.

Enabling the implementation of E-business in Malaysia, ICT infrastructure played an important role. Malaysia government had put serious effort in investing the first-class ICT infrastructure. The country was connected to the Internet in 1990 when MIMOS Berhad launched the Internet Service Provider (ISP) JARING. The year 1995 was labelled as the establishment of the Internet age in Malaysia. A survey showed that out of 20 million populations, one percent (20,000) of Malaysians were accessible to the Internet (MIMOS & Beta Interactive, 1995).

Malaysia's second ISP which was known as TMNET was launched in 1996 by Telekom Malaysia (Rahmah & Arfah, 1999). In 1998, the growth of Internet users had reached 2.6 percent of the population. In a survey conducted by the Energy, Communications and Multimedia Ministry, it showed that in 1999, 7 percent of the Malaysian population was connected to the Internet (Lee, 2000).

The idea of Vision 2020 by Malaysia's former Prime Minister Tun Dr. Mahathir Mohamed aimed at establishing Malaysia as a developed country in year 2020. Malaysia's ICT market acted as a catalyst to achieve this vision. As ICT functioned as an important component in country's development, through MDEC, Malaysian government has set-up Multimedia Super Corridor (MSC) as an effort to enable Malaysia to leapfrog into the information economy. Aimed at moving into a borderless Information age, MSC functioned as a silicon valley that responsible in creating and promoting knowledge-based economy and society (Kaur, 2005).

With the size of Singapore, MSC stretched 15 km wide and 50 km long from Kuala Lumpur City Center (KLCC) to the Kuala Lumpur International Airport (KLIA). It placed a new government complex (Putrajaya) and technology park (Cyberjaya) which were developed by the Malaysian government through Multimedia Development Corporation (MDEC), a government corporation supervised by an implementation council (Dedrick & Kraemer, 2000).
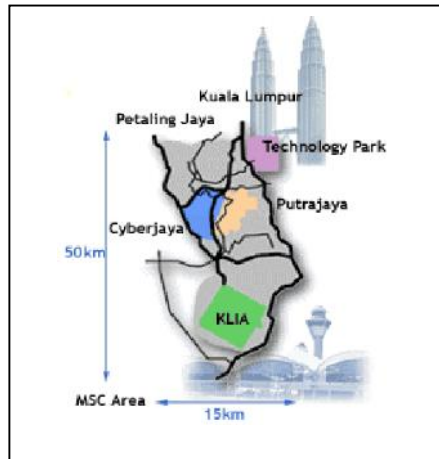
Figure 2.2: The Map of MSC Area
Source: MIMOS Berhad, (2004)

With the development of MSC, Malaysia had a bright potential in ICT industry that enabled fast growth of E-commerce and E-business. In 1997, the Inter-Agency Task Force of online business was established in order to develop the national strategic action plan and recommendation on policy regarding security, encryption technologies and transaction tracking mechanism to facilitate online businesses. Till November 1999, B2B E-business represented 75 percent to 80 percent of the total E-business transactions in Malaysia (Niles, 1999).

However, the beginning era of Malaysia's online businesses deflated in 2000 following the world's trend (www.globaltechforum.eiu.com). B2C market of Dot.com companies was the most affected for which companies that relied 100 percent on online businesses were having difficulties to survive. The setbacks however did not influenced government to promote the Internet in building the knowledge-based economy. In early 2001, a master-plan was launched to guide the transition of labour-intensive economy towards value-added economy. Malaysian government developed few agencies in regulating and advancing the Internet usage. Several acts on online intellectual property rights were passed by the parliament of Malaysia (www.globaltechforum.eiu.com). With the development of MSC and the fast expansion of ICT market, 37.1 percent of Malaysians used the Internet in 2004 of which 28.4 percent did online purchasing (Malaysian External Trade Development

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Corporation [MATRADE], 2005). With this encouraged growth, majority of Internet subscribers were eyeing on high speed broadband infrastructures. In 2008, the percentage of Internet users increased to 59 percent (Table 2.3).

Table 2.3: Internet Usage and Population Growth
Source: http://www.Internetworldstats.com/asia/my.htm

Year	Users (in millions)	Population (in millions)	Percent
2000	3.70	24.64	15.02
2005	10.04	26.13	38.42
2006	11.02	26.64	41.37
2007	13.53	27.17	49.80
2008	14.90	27.73	53.73

Although total IT spending was affected by the anticipated slowdown due to the economic situation in 2008, government and telecommunication sectors in Malaysia remained along with the major spenders in 2009. IDC expected the ICT market value for Malaysia in 2009 to be adjusted down by US$186 million, reaching US$6 billion, and the market growth reduced from 7.6 percent to 4.4 percent (Keong 2008). With regards to this, multiple ICT-related activities were conducted to support domestic demand. Several initiatives done by the Malaysian government could alleviate the negative influence of global financial crisis towards the local ICT sector. According to IDC Malaysia's associate analyst of personal systems research, the government's 2009 Malaysian Budget specifically stateed that accelerated capital allowance on ICT for small and midsized businesses (SMBs) will eventually led to increased IT hardware, software and services adoption. In addition, the government also enhanced a culture of corporate social responsibility (CSR) by granting tax deductions to private organizations that involved themselves in projects that preserved the environment. This will drive organizations to adopt Green IT usage in everyday business operations through exemplary IT systems management and procurement of IT systems. Lastly, the Budget 2009 was leading towards human

capital development which indirectly encouraged the adoption of ICT in Malaysia (www.bernama.com)

In Malaysia, Royal Selangor was the first company embarked in online business. Royal Selangor had developed its Website (www.royalselangor.com) in 1996 which provided information related to corporate information and a very concise shopping catalogue. The objective of the Website then was to promote and build the brand. Towards the end of 1997, the Internet market especially in the US was sufficiently developed. As for Royal Selangor, with the initial aims of having a business gateway in the US, it had driven Royal Selangor to do E-business. According to Chow (2000), with online business implementation, Royal Selangor was able to capture a large number of new and potential customers all over the world. The company is now earning more than what they earned from their regular physical outlets.

In the year 2002, a study done by IDC showed that more Malaysian brick and mortar companies were adopting E-business. These companies were focusing on the long-term impact of E-business in their overall business strategies and the incorporation of E-business into their existing value chains. IDC also believed that the execution of E-business by local companies had reached stage 2 (experimentation) in the E-business development pyramid (Figure 2.3).
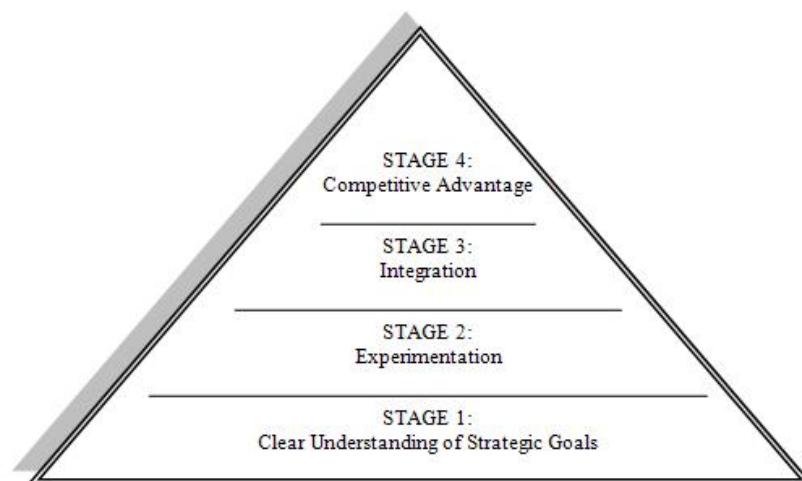
Figure 2.3: E-business Development Pyramid
Source: Developed for this Study

As shown in Figure 2.3, stage 2 was an experimentation stage where most companies had strategic goals but without a concrete E-business strategy. Through a case study, IDC had found that most companies' E-business strategies were not yet linked to their corporate strategies. A majority of companies had a different department or functional team to explore new technologies before any integration into their overall business (IDC, 2002).

Today, more and more companies in Malaysia embark in E-business. Online banking such as www.maybank2u.com, which provides a new, fast, convenient, and safe banking environment, is among the leaders in E-business. A survey by FinanceAsia Magazine on Asia's best companies 2001 showed that Malayan Banking was awarded with the best E-business strategy. The US-based research house expected Malaysia's E-banking customers to reach 1.1 million by 2004 with online banking accounts that reached 1.6 million or 23 percent of all Malaysian Internet users.

For the year 2006, as the Internet penetration in Malaysia reached 38.9 percent of the total population, E-business transactions increased from RM11.1 billion in year 2000 to RM 36.7 billion in year 2005. B2B transaction showed a strong development since 2000 as compared to B2C transactions (Table 2.4).

Table 2.4: Malaysian E-business Growth
Source: Ministry of Domestic Trade & Consumer Affairs 2006

E-business Transactions	Year 2000 (RM Billion)	Year 2005 (RM Billion)
B2B	7.70	29.30
B2C	3.40	7.40
Total	11.10	36.70

In 2006, E-business was included in the 9th Malaysian Plan with the aim to further accelerate the E-business usage. The plan showed the expected value of E-business transaction growth with the average yearly rate of 27 percent, reaching RM 155 billion in 2010. The Electronic Transaction Bill, Electronic Government

Activities Bill and the Personal Data Protection Bill were enacted to build up legal framework, further enhance public confidence in E-business transactions, and lessen online fraud.

2.4.4 E-business in Service Industry

Services were usually considered as intangible, perishable, heterogeneous, and required immediate consumption (Pitt et al., 1999). In particular, the provision of a service depended on buyers and sellers interaction (Grosse, 1996). In Malaysia's economy, service sector showed a rapid growth which employed more than half of the workforce (Alejandrro, Powell, Brads & Wohl, 2010). Drawing back the history, in early 1990s the growth of service industries in Multinational Enterprise (MNE) activities were found to be the fastest in developed and developing countries (Dunning, 1993). The dramatic increase in the trade of services was a result of technology advancement and government deregulation (Kotabe, Murray & Javalgi, 1998). ICT revolutions that enabled E-business development provided opportunities to service companies. Organizations that had the ability to perform business model re-engineering in suiting the technology advancement had the potential to lead the industry (Wymbs, 2000).

As E-business was introduced, the service sectors were now accounted for wider market reach, and efficient business operations. Prior study by Koey, Hafeez and Siddiqi (no date) found that competitive international pressure was the most influential factor of E-business diffusion in Malaysia service sector. In the midst of rapid development of Internet market, and its acceptance by the consumers, electronic distribution method seemed to gain huge market shares as compared to brick and mortar businesses. Convenience, efficient, and low costs benefits were achievable by both customers and service businesses (La & Kandampully, 2002).

A study on E-business usage in Malaysian service sector was needed to provide useful information for prospective E-business adopters who dare not to invest due to lack of successful evidence from existing E-business players. Security issues, lack of technology competency and management attitude were some of the reasons that hinder E-business investment among firms in Malaysia service sector. A

study by Koey et. al (no date) found that majority of respondents from Malaysia service industry concerned about the security issues that inhibit them to invest in E-business. "Inadequate legal protection of E-business" was found to be the highest inhibitor (65.3 percent) followed by "Data security and integrity issues" (49.3 percent), "Lack of confidence and trust" (45.5 percent), and "Business law do not support E-business" (43.2 percent). Besides, lack of technology competency in terms of "IT expert" employees (37.4 percent) was identified to inhibit firms in service sectors to embark in E-business. Negative attitude of managers was also found to be one of the major hindrances of E-business usage among Malaysian service firms. Negative attitude led to resistance to change which contributed to lack of management commitment to invest in E-business (Mohamad Rizal, Hanudin, Suddin & Noren, 2007). It was therefore a need to seek for further evidence regarding E-business usage in Malaysia service sector in order to provide more evidence and useful insights for the brick and mortar companies in making decision regarding E-business investment. The current study focused on the service industry in Malaysia attributable to the parallel development of E-business and service sector by empirically investigated the factors determining E-business usage on business performance.

As one of the most recognizable items available on the Web, sales in service industries such as travel, tourism, banking, and insurance were increased and even doubled every year (Turban & King, 2003). From a marketing point of view, service firms such as hotels and airlines were in the business of retailing their products and services either by themselves or through intermediaries.

E-business required the development of service sectors such as financial, transportation and distribution (Masuyama, 2000). Furthermore, the targeted industry was appropriate to test the proposed theoretical model on factors determining E-business usage and its influence on business performance due to significant transformation of IT usage in the service sector in Malaysia. In addition, it was believed that centre attention on single industry enabled the control of extraneous industry factors that might confound the analysis (Zhu & Kraemer, 2005).

In line with the government initiative of introducing "Visit Malaysia 2007" campaign which was launched on 31st December 2005, travel-related sectors such as hotel, health tourism and transportation were the main affected areas. Aimed at making Malaysia as a top destination, E-business was included in the campaign as a promotion and marketing strategy. The introduction of virtual tourism portal such as www.virtualmalaysia.com which highlighted Malaysia's holiday's destinations and facilities prompted tourists in planning their vacation to Malaysia. As hotels, health tourism, transportation and financial services were interrelated, these four sectors were appropriate to be used as the testing field for this research.

2.4.4.1 Financial Services

Technological advancements led to tremendous change in the banking business. According to Guru, Vaithilingam, Norhazlin and Prasad (2000), electronic banking in Malaysia was first developed in the 1980s as Automated Teller Machines (ATMs) were introduced. Next came tele-banking, followed by PC-banking in the 1990s, and Internet banking in 2000. Starting June 1st, 2000, local domestic banks were allowed to offer electronic banking (e-banking) services (Bank Negara Malaysia, 2000). Malayan Banking Berhad (Maybank) became the first local bank to introduce e-banking to customers in June 2000, which then followed by Hong Leong Bank and others. For the locally incorporated foreign owned banks, e-banking was allowed after January 1st, 2002 (Mohamad Rizal & Hanudin, 2007)

Ranked in the top 200 banks in the world, Maybank through online banking had encouraged its customers to make payments, check accounts and did other banking activities via the Internet (Norzaidi & Intan Salwani, 2007). Services offered by Maybank gradually expanded to businesses and on April 6th 2006, a collaboration between Maybank and Celcom, a mobile-phone operator, had introduced mobile commerce (m-commerce) which enabled banking transactions to be conducted via mobile phone. Since January 1st 2002, foreign banks such as Hong Kong Shanghai Banking Corporation (HSBC), Citibank, Overseas-Chinese Bank Limited (OCBC), and United Overseas Bank (UOB) were allowed to offer electronic banking (Economist Intelligence Unit, 2006). Citibank Corporation, a premier commercial bank, was one of the top foreign banks that used the same applications as Maybank

Berhad which allowed their customers to view account details, transfer funds, pay bills, view electronic statements, change addresses, get online rewards redemptions, and make credit card payments through the Internet (Norzaidi & Intan Salwani, 2007). To date, a majority of Malaysia's banks offer online banking services. Online banking allowed consumers to perform banking functions and transactions online by establishing an account and password. Online bill payment, fund transfer, chequebook application, and online account information were sample transactions of online banking. Among the E-banking products and services, Ainin, Lim and Wee (2005) discovered that account balance inquiry was rated as the most useful service by e-banking adopters.

Banks were also involved in selling other financial and non-financial services such as insurance and investment products with an intention to retain customers' loyalty and extending customers' value together with keeping low operational costs (IDC Market Research, 2000). The number of insurance companies and banks that used the Internet medium to sell insurance had increased. Majority offered standard insurance policies such as auto, home, life or health at a significant discounted price (Turban et al., 2004).

2.4.4.2 Tourism Sector

E-business innovation offered an opportunity to expose the country's assets in promoting new investments, increase growth of Malaysia tourism industry as well as contribute to economic development (Suraya, no date). Tourism was generally referred to services offered (either leisure or business) for those who travelled to and stayed outside the normal environment for which the duration was less than one year. It normally involved transport, accommodation, restaurant, cultural activities and leisure (The European E-business Report, 2004).

In Malaysia, tourism normally referred to the hotel industry which included accommodation, restaurant, cultural, and leisure activities. In the hotel industry, most of the five-star hotels had Internet applications. As airliners encouraged online purchases, hotels were adopting the same marketing strategies. Customers could book the room from their office or home or other places and obtained confirmation

via the Internet. Most payments were made through credit cards, and if lucky, the customers would enjoy discounts or free breakfast for two from the hotels. Most of customers preferred to make online purchases, since most information including images of room and other peripherals, were posted on the hotel's website. In summary, information on food, accommodation, location, contact person and services provided by the hotel was accessible from the Website (Norzaidi & Intan Salwani, 2007). Continuing advances in IT and the relative decrease of travel costs had helped the acceleration of E-business growth in tourism.

With the emergence of E-business activities and the government's initiative of introducing the "Visit Malaysia 2007" campaign, the tourism sector was connected to hotels, the health sector, and transportation through the introduction of health tourism. As the campaign mainly focused on attracting foreign tourists, collaboration existed among industry sectors. Malaysian Airlines for example, introduced a package that covered airline ticket, hotel rooms and health check-up. In addition, many private hospitals were offering tourism health packages in conjunction to their traditional services. Some hotels were having their own private hospitals and health services such as Palace of the Golden Horses and Sunway Hotels and Resorts.

2.4.4.3 Transportation

Being one of the rapid growing sectors in Malaysia's economy, transportation service had recorded a strong yearly growth (Ministry of Transport Malaysia, 2006). Nevertheless, the rising of oil price which had been a global concern over the last year increased the cost of doing business. Due to this, companies were finding ways to reduce their costs. Therefore, ICT usage was an advantage and could help to lower down or eliminate certain costs. Realizing the importance of ICT in transportation services, it had been included in the 9th Malaysian Plan (MP). To improve transportation services, funds were allocated to spread out the ICT usage. The use of electronic documentation services (EDS) was extended to cover small ports together with E-business application.

In Malaysia transportation services, the customs agency, "Jabatan Kastam Diraja Malaysia" played a very important task to inspect and clear goods at the country's entry and exit points. To ensure the smooth management of processes, the agency used EDI for document processing (Nazery Khalid, 2005). Availability of a web-based portal that enabled customs clearance was set up by a local E-business provider, Dagang Net Technologies Sdn Bhd. The system could handle the duty payments of RM 1.8 billion annually (www.dagangnet.com) and offered various value-added services (Nazery Khalid).

Basically, transportation services in Malaysia can be divided into three sub-sectors:

i.   Air Transportation

As a sub-sector of transportation services airfreight was impacted with the development of E-business technology. Basically, airfreight was represented by airfreight forwarding agents, airlines, airport ground handling agents, domestic and international airports, and courier services. For airlines, E-business had been used as a marketing strategy by introducing online purchasing in the early 2000s. As the market was limited and to enable competition between companies, utilization of IT in marketing and operation were needed to capture larger market shares (Norzaidi & Intan Salwani, 2007).

In brief, online purchases enabled customers to book via Internet and were directly connected to the airliner. Confirmation on the ticket was made on the spot, and the ticket could be printed immediately, which cost less than the usual ticket. Not only focusing on passengers, other activities that were related to transportation such as cargo were conducted online. MAS cargo for example through its extensive computerization in areas such as E-business, booking and tracking systems, and electronic booking, enabled the company to be different from competitors (Malaysia Logistics Directory, 2006).

ii.   Sea (Shipping Sub-sector)

The rising of E-business sent shock waves through the shipping industry that functioned as one of the significant contributors to the country's economic development. Over the 8th Malaysian Plan (MP) phase, the handling of cargo volume at Malaysian ports were 369.4 million tons (increased by 65 percent), with additional targeted amount of 539 million tons (46 percent increase of volume) over the 9th MP (Malaysia Logistics Directory, 2006). The use of E-business technology in ports would help to enhance the shipping sub-sector's efficiency.

In the Malaysian shipping sub-sector, E-business was used for the inter-organizational business for instance, with the Customs division regarding the pay of and import/export declaration. In addition, E-business was also implemented for intra-organizational transactions such as for B2E applications (Ang, Razman & Rusdi, 2003). A study by Ang et al., found that large shipping companies such as Malaysia International Shipping Corporation (MISC) had benefited the E-business technology. SME players in the shipping sub-sector however, were yet to see the full potential of the technology. For the current study, sea-freight covered ports of Malaysia, sea-freight forwarding agents, and shipping lines/agents.

iii.   Land and Rail

Land and rail sub-sector covered container hauliers, lorry transport agents, movers, railway services and signaling equipment. Malaysia posed an extensive land transportation system which was often being touted as one of the best in Asia (Nazery Khalid, 2005). The North-South Expressway connected major industrial areas and urban centers. Other highways also connected major development centers to seaports, airports and rail stations all over Peninsular Malaysia. For rail transportation, the well developed railway system played a major part in the country's growth. Keretapi Tanah Melayu (KTM) offered freight services by means of a network that could be accessed from seaports and Inland Container Depot (ICD) in addition to rural areas.

E-business technology usage such as the tracking system would benefit the land and rail transportation. The Global positioning system (GPS) for example, enabled the tracking of cargo to and from the ports. This would help the keeping track of the drivers' performance and improving overall business efficiency (Malaysia Logistic Directory, 2006).

2.5 Theories Related to E-business Innovation and Diffusion

A majority of prior theories on IT and IS diffusion were initiated by technology innovations. Reviews of literature highlighted the popularity of studies regarding technology diffusion among individuals, and organizations (Cooper & Zmud, 1990; Tornatzky & Fleischer, 1990; and Rogers, 1962). EFT, EDI, Enterprise Resource Planning (ERP), adoption drivers and barriers, or hindrance were among the popular research areas. The late 1990s had shown the switch of research stream towards E-business adoption.

2.5.1 Theory of Technology Diffusion

Originating from Rogers (1962) the theory was famous and popular in prior studies on innovation diffusion. It had been widely used in previous literatures ranging from anthropology, education, sociology, general economics and many others (Suraya, no date). For a technology to be adopted, Rogers divided the process of adoption into five stages; awareness, interest, evaluation, trial, and adoption.

For the awareness stage, Rogers (1962) assumed that individuals were exposed toward innovation without full information. Moving to the interest phase, individuals became interested with the new idea and seek for further information. At the evaluation stage, individuals psychologically applied the innovations either in his present or anticipated future condition, and next decided whether to try it or not. Full use of the innovation was made at the trial stage. For the adoption stage, individuals decided to carry on with the usage of the innovation.

According to Rogers (1962), new innovation adopters were classified as innovators (2.5 percent), early adopters (13.5 percent), early majority (34 percent), late majority (34 percent) and laggards (16 percent). Adopter's readiness and

capability in adopting an innovation depended on the awareness, interest, evaluation, trial, and adoption. It was theorized that innovations would reach the society as the technology was initially chosen by early adopters, followed by the majority, till the technology was regarded as common. Even though individuals were the most commonly focused in previous technology diffusion studies (Dedrick & West, 2003), researchers assumed that the studies were also related to business organizations due to the fact that top managements basically represented the organizations. Zhu et al. (2006) for instance, used the theory in investigating firms' innovation in E-business. In the contexts of technology diffusion, a model was developed by Zhu et al. in examining the influence of contextual factors on three stages of E-business adaptation; initiation, adoption, and routinization.

As the theory of technology diffusion focused mainly on individuals, further work was done by DePietro, Wiarda, and Fleischer (1990) in developing a framework to gain understanding on the adoption of technology in organizations. The three elements of change were:

i.   Technology

It included five innovation elements argued by Rogers (1983) that influenced adoption. DiPietro et al. (1990) in addition found that major innovations increased advantages but reduced compatibility of the innovation.

ii.   Organization

Formal and informal intra-organizational system for communication and control influenced adoption tendency. Firms' resources and innovativeness also played an important part.

iii.   Environment

In line with Porter (1980), firms' strategic technology decisions depended on industry characteristics for instance competition, customers' and suppliers' relationship management, and government in addition to stages of the industry life cycle.

Founded on the three contexts above, Tornatzky and Fleischer (1990) next constructed the TOE model to be used in technology adoption evaluation. The model was consistent with Rogers (1983) on the theory of innovation diffusion in organization.

2.5.2 Technological, Organizational, and Environmental (TOE) Model

The model identified three characteristic that influenced firm's adoption, implementation, and use of technological innovations (Robertson, 2005; DiPietro et al., 1990; and Tornatzky & Fleischer, 1990). The TOE model assessments were based on the followings:

i.   Technological Context

It focused on a firm's current and new technology that could influence the firm's ability to conduct E-business or other technology implementation. Past technology usage and computer facilities owned by companies were some of the construct measurements.

ii.   Organizational Context

It referred to descriptive measures of organizations for instance internationalization scope, size of organization and managerial beliefs.

iii.   Environmental Context

It focused on the environment of the business or the industry's external factors that might affect the firms for instance legal protection and government's regulation.

DePietro et al. (1990) believed that the three characteristics were expected to interact and influence technology adoption decisions. Audretsch and Mahmood (1995) also believed that industry and firm specific factors together with technology factors drove a firm's performance.

Prior studies on E-business adoption demonstrated that the TOE model was famous particularly for studies conducted in 1995 onwards. In 2003, Tan, Nah, Iacovou and Kim introduced a model named "Model of Small Business E-marketplace Adoption" (Figure 2.4) that was basically based on the TOE framework.
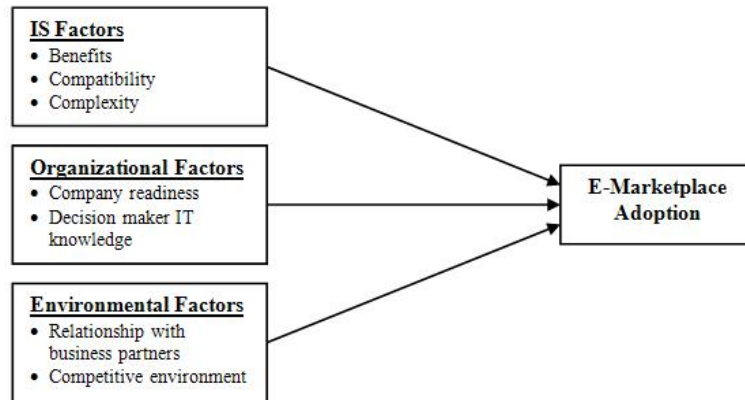
Figure 2.4: E-marketplace Adoption Model
Source: Tan, Nah, Iacovou and Kim (2003)

In another recent study, an integrated model that examined the assimilation of E-business; initiation, adoption, and routinization was developed by Zhu and Kraemer (2006). The model featured TOE contexts as prominent antecedents in the assimilation stages (Figure 2.5).
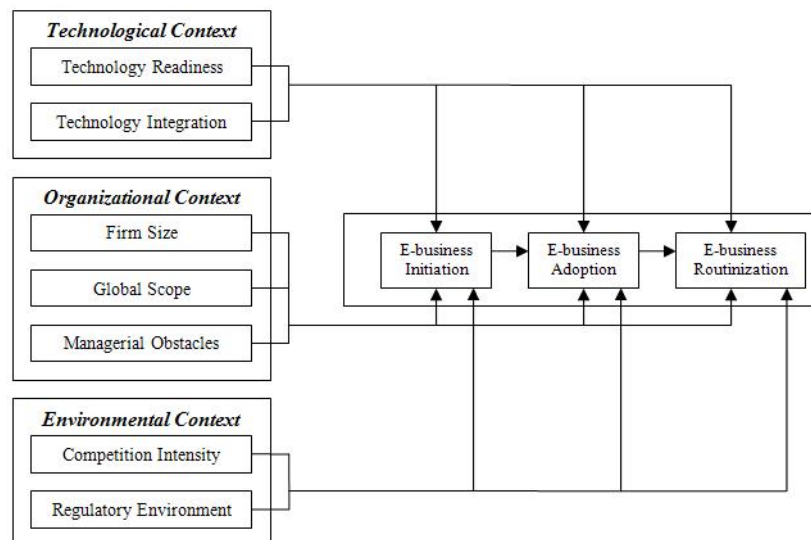
Figure 2.5: The Conceptual Model on E-business Assimilation
Source: Zhu and Kraemer (2006)

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Summarizing the literature, the TOE model was found to be famous in studies related to E-business adoption, diffusion, implementation or usage (Table 2.5):

Table 2.5: Summary of Previous Studies that Intersect with TOE Model
Source: Developed for this Study

Study	Constructs	Theoretical framework		
		T	O	E
Zhu & Kraemer, (2006) Innovation Assimilation	*Technological Context:* (Technology Readiness, Technology Integration) *Organizational Context:* (Size, Global Scope, Managerial Obstacles) *Environmental Context:* (Competition Intensity, Regulatory Environment)	√	√	√
* Robertson, (2005) Critical Drivers in B2B E-business (Literature only)	*Technological Context:* (Discontinuity of Services, Compatibility Integration, Benefits of New Technology, EDI, Asset Specificity) *Organizational Context:* (Readiness, Decision Makers IT Knowledge, Managerial Structure) *Environmental Context:* (Competitive Environment, Relationship with Business Partners, Industry Dynamics, External Resources, Industry Support, Institutional Factors)	√	√	√
Zhu & Kraemer, (2005) Usage and Value of E-business	*Technological Context:* (Technology Competence) *Organizational Context:* (Size, International Scope, Financial Commitment) *Environmental Context:* (Competitive Pressure, Regulatory Support)	√	√	√
Zhu, Kraemer, Xu and Dedrick, (2004) IT Payoff in E-business Environments	*Technological Context:* (Technology Readiness) *Organizational Context:* (Firm Size, Firm Scope) *Environmental Context:* (Competition, Government Regulation)	√	√	√
Kuan & Chau, (2001) EDI Adoption	*Technological Context:* (Perceived Direct Benefits) *Organizational Context:* (Perceived Financial Cost, Perceived Technical Competence) *Environmental Context:* (Perceived Industry Pressure, Perceived Government Pressure)	√	√	√

Study	Constructs	Theoretical framework		
		T	O	E
Thong, (1999) IS Adoption	*CEO Characteristics:* (CEO's Innovativeness and IS Knowledge) *IS Characteristics:* (Relative Advantage/Compatibility, Complexity) *Organizational Characteristics:* (Business Size, Employees IS Knowledge) *Environmental Characteristics*	√	√ √	
Chau & Tam, (1997) Open System Adoption	*Characteristics of the Innovation:* (Perceived Barriers, Perceived Important of Compliance) *Organization:* (Satisfaction with Existing System) *External Environment*		√	√
Vadapalli & Ramamurthy, (1997-1998)	*Innovation-specific Characteristics:* (Social Context and Technological Context) *Organization-specific Characteristics:* (Organization Boundaries, Transaction-cost-economic, and Organizational Cognition)	√	√	
Premkumar & Ramamurthy, (1995) EDI Adoption	*Organizational Factor:* (Internal Need, Top Management Support) *Inter-organizational Factor:* (Competitive Pressure, Exercised Power)		√	√

Note: Significant factors only (except *)

2.6 Theories and Conceptual Models in E-business Diffusion and Value Creation

New technology innovations seemed to be the drivers of economic growth. Bringing in the new technology (innovation) followed by gradual adoption by many people (diffusion) enabled it to acquire economic significance (Mukoyama, 2003). Rogers (1962), defined innovation diffusion as "the process by which an innovation was communicated through certain channels over time among the members of a social system". As important as innovation, diffusion was not a trivial process and it took a long period of time. To acquire economic impact new technology needed to be spread in the market (Mukoyama).

E-business diffusion and value creation had emerged as an interesting topic. A study by Klenow and Clare (1997) for example, found that technologies employed in a country determined the country's income variations. As E-business was viewed as a global technology innovation, and to further understand E-business diffusion, this study sought for empirical evidence on factors determining E-business usage and

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how usage influenced firm's performance. Multiple theories and models on diffusion of technology innovation and E-business value creations were drawn to seek answers to the following research questions:

i.   What factors could be used as key antecedents of E-business usage?

ii.   How E-business usage influenced business performance?

iii. Whether experiences (in number of years) in E-business activities moderated the relationship between E-business usage and business performance?

In determining how E-business usage influencef business performance, review of literature was done regarding the post adoption stage of E-business by looking at previous theories and models such as the Evolutionary Game Theory (Kauffman, Wang & Miller, 2002), the IS assessment selection model (Myers, Kappleman & Prybutok, 1997), the Data Envelopment Analysis (DEA) model and the RBV theory. However, given that organization was selected as unit of analysis, the most famous theory and model that were related to this study were the evolutionary game theory (Kauffman et al.), and RBV theory (Zhu & Kraemer, 2005; Peteraf, 1993; and Barney, 1991).

2.6.1 Evolutionary Game Theory

The theory applied the mathematical theory of games in biological context; arose from the realization that frequency dependent fitness introduced a strategic evolution. Developed by R. A. Fisher (refer The Genetic Theory of Natural Selection) in 1930, the theory aimed at explaining the estimated sex ratio equality in mammals. However, the evolutionary game theory seemed to attract interest of economists, sociologists, anthropologists, social scientists, and philosophers.

As the theory applied both the analogy of bio-diversity theory and genetic survivability in population ecology to different species in a highly competitive organic biome, it can also be applied to social science research. Kauffman, et al. (2002), tested the strategic morphing and survivability of E-business firms using the evolutionary game theory. Applying the theory to E-business context, Kauffman et

al., emphasized on how firms survived by having strategic fitness to compete in the marketplace.

Studying the application of the evolutionary game theory among DotCom companies, environmental interaction, competition, genes and mutation were found to be the predictors of success or failure among companies. The theory identified that specific character of an industry, specific firm factors and E-business specific factors were drivers to survivability of DotCom companies (Figure 2.6).
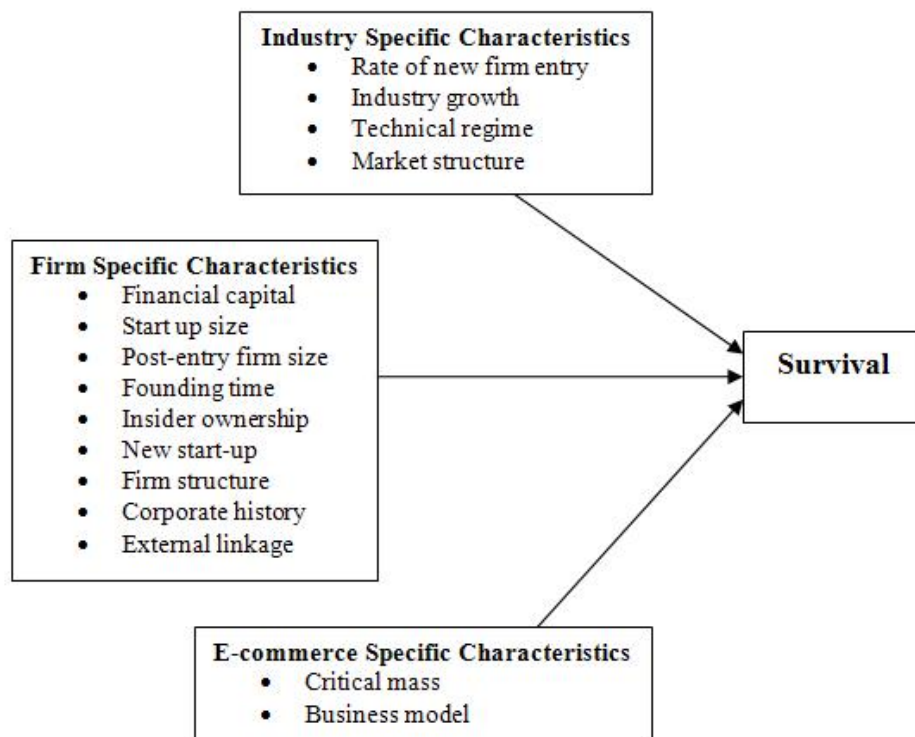
Figure 2.6: Drivers of DotCom Survival in Evolutionary Game Theory
Source: Kauffman et al. (2002)

Applying the evolutionary game theory, it was found that when abundant resources were available and when competition was not strong, firms with low-grade genes might survive. However, in a situation of limited resources, high competition might weed out firms with superior genes. In this theory, firms came to realize the success factors through exploration, experimentation, market examination, and learnt from competitors' experience (Kauffman et al., 2002).

In comparison to the TOE model, the Evolutionary Game Theory seemed to be similar as industry specific characteristics could be represented by environmental characteristics while both firm specific characteristics and E-business specific characteristics were related to organizational characteristics and technological characteristics. It was therefore concluded that the Evolutionary Game Theory intersected the TOE model when used to study E-business usage.

2.6.2 Resource-based View (RBV) Theory

Development of the RBV theory helped researchers to understand a firm's achievement of sustainable competitive advantages which was not yet believed could be achieved by a firm with unique resources (Saffu, 2004; Caldeira & Ward, 2001, Hamel & Prahald, 1996; Conner & Prahalad, 1996; Barney, 1991; Conner, 1991; and Barney, 1986,). Applying the concept of the RBV theory, a business was developed from resources and capabilities owned by a company (Dollinger, 1999). Resources referred to "anything that could be thought of as strength or a weakness of the firm" (Wernerfelt, 1984). In prior studies the RBV theory was used in analyzing IT potentials (Matta, Fuerst & Barney, 1995). It explained that technology was not as important as organization skills in leveraging IT. Good performance was achievable by firms in similar market by exploiting limited resources.

In Zhu (2004) the RBV theory was applied as a foundation to link E-business usage and performance. Focus was given to how companies leveraged E-business investment in creating exclusive Internet-enabled potential that established the overall effectiveness of E-business firms. Even if some arguments might be raised up as E-business had existed in the market (EDI and EFT) did not generate value, a counterargument arose that despite of how commodity-like the technology was, the architecture that removed barrier of system incompatibility and made it possible to build a platform to launch E-business was for no reason a commodity (Keen, 1991; and Powell & Micallef, 1997). The uniqueness of E-business lied on its capabilities of hard to copy resources (Smith, Bailey & Brynjolfsson, 2001; and Malone & Laubacker, 1998). Sharing of information and the existence of online community led to E-business performance rewards (Lederer, Mirchandani & Sims, 2001).

When discussing about E-business usage and value creations, Zhu and Kraemer (2005) integrated both the TOE framework and the RBV theory in assessing E-business usage and value creations by organizations. According to Zhu and Kraemer, E-business leveraged Internet's unique characteristics in improving business performance. Their study investigated E-business functions that made use of Internet's unique characteristics that enabled value creations. E-business capabilities were classified as front-end functionalities and back-end integration.

Front-end referred to interactions' interface such as seller's portal, electronic catalogues, shopping cart, search engine and payment gateway (Turban & King, 2003). In contrast, back-end referred to activities related to order aggregation and fulfilment, inventory management, procurement, payment processing, packaging, and delivery (Turban & King). The RBV theory was applied by Zhu and Kraemer (2005) to investigate post–adoption variation of E-business usage and value creations. It was established that both front-end functionalities and back-end integration predicted E-business value creations with back-end integration having a much stronger impact.

2.7 Summary on Theories Related to E-business Innovation, Diffusion and Value Creation

In looking at E-business innovation and diffusion, the theory of technology diffusion by Rogers (1962), and the TOE model by Tornatzky and Fleischer (1990) were used extensively in prior studies (Figure 2.7). However, in relation to organization as the unit of analysis, the TOE model was the most famous (Zhu & Kraemer, 2006; Robertson, 2005; Zhu & Kraemer, 2005; and Zhu, 2004).
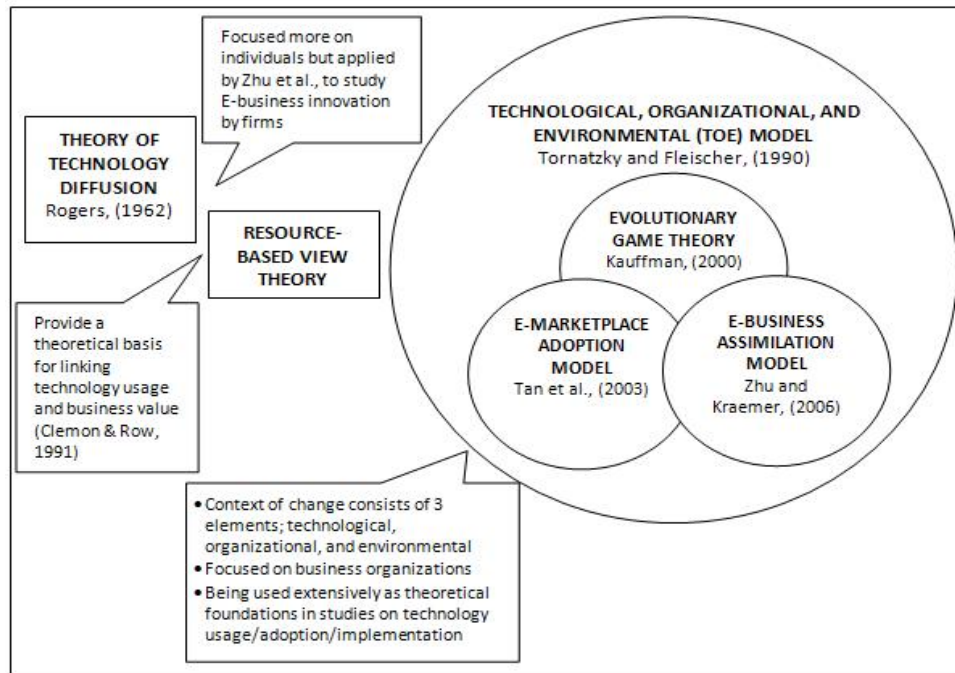
Figure 2.7: Summary on Prior Theoretical Models Related to E-business Innovation, Diffusion and Value Creation
Source: Developed for this Study

In prior studies, what seemed missing in the literature related to the use of the TOE model was the empirical assessment on indirect effects of the constructs under study. This violated the initial work of DePietro et al. (1990), that developed an influential framework to understand technology adoption by looking at three elements; technology, organization, and environment that interacted to influence technology adoption.

Another argument was on the function of the TOE framework in a broader perspective. Dedrick and West (2003) for example, assumed that the TOE framework was only being used as an analytical tool to distinguish between inherent innovation qualities and the motivations, capabilities and broader environmental context of adopting organizations but not a depiction of framework or theory. As a result, the integration of TOE with other theories to study E-business usage and value creation added more significant value. Zhu and Kraemer (2005) for instance, integrated the TOE framework with the RBV theory in investigating the post-adoption variations in E-business usage and value creations. Analyzed from a resource-based view, E-

business value creation stemmed from the unique characteristics of the Internet, the front-end functionalities and the back-end integration (Zhu, 2004). However, indirect effects and the influence of moderating variable were not included in the study.

Reviewing the literature on technology diffusion and value creation, it was found that the RBV theory had been used extensively compared to the evolutionary game theory. The evolutionary game theory was quite similar to the TOE model. As in Kauffman et al. (2002), the drivers of DotCom survival in the evolutionary game theory were categorized into three; industry specific characteristics (similar to environmental context in the TOE model); firms specific characteristics (similar to organizational context in the TOE model); and E-business specific characteristics (similar to technological context in the TOE model). Seeing this as a repetition, and due to lack of literature on the evolutionary game theory when looking at factors determining E-business usage on a firm's performance, the researcher believed that the TOE model was more reliable to study the drivers of E-business usage. In addition, the combination of both the TOE model and the RBV theory could propose meaningful results on how E-business influenced business performance.

2.8 E-business Usage and Business Performance

As companies were intensively investing in E-business, the main issue that came up was "does this investment pay off?" The main objective of investing in E-business was to improve performance (Zhu & Kraemer, 2005). In Lebas and Euske (2002), performance referred to "doing today what will lead to measure value outcomes tomorrow".

A study on "Electronic Commerce Top Research Questions", Benbast, Ivest and Picolli (2000) found that investigating the success of E-business was among the famous research issues. The ability of E-business to improve business performance was evidenced by Clayton and Criscuolo (2002). Their study had shown that click and mortar companies tend to gain influence on performance as compared to brick and mortar businesses. Khan and Motiwalla (2002) studied "The influence of E-business on corporate performance: An empirical investigation in United States" and discovered that out of 44 samples, 64 percent believed that E-business impact on

ROI was favourable, 18 percent neutral, and 18 percent unfavourable. In prior studies related to E-business and value creation, E-business had proven to improve customer service, inventory control, marketing, distribution, operation costs and cycle time reductions, and increased market reach (Ratnasingam, 2002; Senn, 2000; Riggins & Rhee, 1998; and Nath, Akmanligil, Hjelm, Sakag & Schultz, 1998).

2.8.1 Business Performance Measurement

The word "performance" was commonly used in many aspects of business. As defined by most dictionaries, performance was termed as the quantification of the organizations' capabilities of operation in terms of quality and functions. In today's advanced business environment, performance measures were taking an ever-greater importance. In general, the measurement of business performance focused on how businesses were conducted that helped them survive and thrive (Kellen, 2003).

Business performance measurement helped businesses to set business objectives and provide feedback regarding the progress to achieve the objectives (Simmons, 2000). Performance-monitoring systems were used in many activities such as the formulation of budget, to allocate resources, and to motivate employees (Norzaidi & Intan Salwani, 2007). Kopczynski and Michael (1999) believed that performance measurement functioned as recognizing good achievements and identifying areas of potential improvements.

As in Robert (2003), performance measurement could be categorized based on its purposes. Robert outlined eight features of performance measurement such as to evaluate, to control, to budget, to motivate, to promote, to celebrate, to learn and to improve (Table 2.6).

Table 2.6: Characteristics of Performance Measures for Different Purposes

Source: Robert (2003)

The Purpose	The Manager's Question that the Performance Measure Can Help Answer	To Help Achieve This Purpose, Managers Need
Evaluate	How well is my agency performance?	Outcome, combined with inputs and with the effects of exogenous factors.
Control	How can I ensure that my subordinates are doing the right thing?	Inputs that can be regulated
Budget	On what programs, people, or projects should my agency spend the money?	Efficiency measures (specifically outcomes or outputs divided by inputs).
Motivate	How can I motivate line staff, managers, non-profit and for-profit collaborators, stakeholders, and citizens to do the things necessary to improve performance?	Almost-real-time outputs compared with production targets
Promote	How I can convince political superiors, legislators, stakeholders, journalists, and citizens that my agency is doing a good job?	Easily understood aspects of performance about which citizens really care
Celebrate	What accomplishments are worthy of the important organizational ritual of celebrating success?	Periodic and significant performance target that, when achieved, provide people with a real sense of personal and collective accomplishment
Learn	What is working or not working?	Disaggregated data that can reveal deviances from the expected
Improve	What exactly should who do differently to improve performance?	Inside-the-black-box relationships that connect changes in operations to changes in outputs and outcomes.

Performance measurement enabled accountability of organization and introduced consequences on performance. Citizens and customers were able to judge the value provided by the government. Besides, managers were provided with data for performance improvement. Planning, evaluating, organizational learning, driving improvement efforts, decision-making, allocating resources, controlling, facilitating the authority delegation, and promoting accountability were examples of performance measurement purposes (Norzaidi & Intan Salwani, 2007).

A measurement system comprised multiple measures (Kellen, 2003). In general, measures were quantitative values used in making comparisons over time (Simmons, 2000). Comparisons were done on preset target but did not require having exact value and could be compared with a specific target. It was clear that measures could be objective or subjective. However, the issue related to performance

measurement lied on the attributes of measurement that provided accurate measures of performance globally as noted in Neely, Gregory and Platts (1995), "different measurement frameworks had been developed and that others had provided criteria for the design of a measurement system. However, a generally applicable systematic approach to performance measurement had not been developed. Different types of systems required specific measurements' characteristics and therein lay the difficulty in creating such a general approach. Thus, previous work had sought to develop various performance measure frameworks for different types of systems that shared certain characteristics."

From the accounting perspective, there were two measurement procedures to determine a company's performance; financial and non-financial measures (Simmons, 2000; and Hilton, 1999). Derived from financial statements such as profit and loss account or balance sheet (Simmons), financial measures summarized the results of past actions and the measurement of company's strategy implementation and execution (Hilton, 2000). Typical financial objectives were something that related to profitability, growth and shareholders' value. Accountants traditionally focused on financial measures to evaluate a firm's performance. However, new technology adoption such as E-business could result in business success in two basic ways; efficiency gains via process innovations, and the creation of new products or services (Kamien & Schwartz, 1982). In both cases, firms that succeeded in these endeavours should experience financial impacts such as increasing turnovers, profits, and market shares. However, although financial measures were very important, to some extent, financial performance criteria were being augmented by non-financial measures (Atkinson, Rainwater & Smeeding, 1995). Non-financial measures concentrated on current activities which acted as the drivers to future financial performance.

A study by Kaplan and Norton (1995) found that no single measure could offer a clear performance goal. According to Foong and Zainal Abidin (1999) there was no evidence to show that financial measures were more important than non-financial measures. The emphasis on the traditional budgetary control measures, namely budget versus actual and cost variances, were even lower than certain non-

financial measures such as customer complaints, percentage of on-time delivery or percentage of defective units.

In a real business environment, managers normally wanted a fair view of financial and non-financial measures. Effective management required an unbiased perspective of performance measurement that provided the results of previous actions, and non-financial measures regarding customer satisfaction, internal processes, and organization's innovation and improvement (Intan Salwani, Khairul Anuar & Rosmini, 1999). According to Porter, Lawler and Hackman (1975), both performance measurement methods should be aligned to a firm's strategies to enable more effective monitoring of firm's critical success factors.

From the accounting perspective, a balanced scorecard was the famous performance measurement system initiated by Kaplan and Norton (1992). In a balanced scorecard, performance measurement was done based on four perspectives; financial, customers, internal business process, and learning and growth. "Financial perspective" examined whether strategy execution contributed to company's improvement. "Customer perspective" defined value proposition applied by firms in satisfying customers and generating sales to the targeted customers. "Internal business process" concerned on the processes which created and delivered value proposition to the customers. This perspective focused on activities and processes needed to provide effective and efficient value expected by customers. Lastly, "learning and growth" focused on the firm's intangible assets such as skills required in supporting value creations.

2.8.2 Performance Measurement in E-business

Appropriate performance measures would provide effective feedback on whether the firm was moving towards its ultimate goals, and would assist managers to evaluate effectiveness of their strategies (Foong & Zainal Abidin, 1999). The emergence of E-business together with an increasing intense of competition in both local and international markets, appropriate performance indicators were needed to enable managers to act speedily to sustain the firms' commercial viability. E-business technology introduced new business principles as well as strategies to

achieve these principles. As a result, some traditional performance measures were no longer applicable (Donkor, 2003).

In Zhu et al. (2004), E-business value was measured based on three dimensions; impact on commerce; impact on internal efficiency and impact on coordination. Zhu (2004) on the other hand measured firm performance by looking at four dimensions; revenue generation; cost reduction; asset return; and inventory turnover. Firms' performance measurement in Zhu however seemed to be focused solely on financial measures. All these four dimensions served as dependent variables. However, it was argued that financial measure was adequate in determining business performance. A study by Kaplan and Norton (1992) brought into being that senior executives relied on multiple measures to gain clear performance target. A fair presentation of financial and operational measures was required by managers. The finding by Kaplan and Norton was supported by Yau (2002) for which business performance was measured based on financial and operational perspectives. In Yau (2002), six dimensions were used to measure business performance in E-business which included operation efficiency, cost saving, inventory control, supply chain, customer focus, and supplier relationship.

Intel (2003) conversely had proposed seventeen standard measures for E-business value. All these seventeen attributes were categorized under four dimensions; cash cycle, efficiencies, stability, and optimizing markets. Prior to this, Alexander (2000) had provided a list of 11 attributes to measure business performance. Believing that actions and the anticipated improvements in performance needed quantifiable points of comparison, Alexander had suggested the following attributes:

i.   measuring "look to buy" ratios for customers;

ii.   measuring e-customer satisfaction;

iii.   measuring e-customer retention;

iv.   measuring the lifetime value of customers;

v.   measuring brand awareness;

vi.   measuring brand quality;

vii.   measuring responsiveness to "e" request;

viii.   measuring first-contact issue resolution;

ix.   measuring e-service recovery performance;

x.   measuring "look to commit" ratio for employees (the percentage of potential hires to those that actually become employees); and

xi.   measuring the percent of revenues that come from repeat e-customers.

Reviewing the literature, gaps of knowledge in E-business performance measurement method were discovered. Researchers from the IT background tended to ignore certain important elements from the accounting/business point of views and researchers from social sciences background were too focused on the traditional methods of performance measurement which were not really linked to the technological issues.

2.9 Gaps in Knowledge Area

Although E-business technology advancement attracted researchers and managers, literatures on E-business were limited especially on usage and performance from the organizational viewpoint (Govindarajulu et al., 2004) and also in developing countries and service industries. Unavailability of an integrated research model was said to cause a fractured research stream (Chan, 2000). Therefore, a theory driven conceptual model that was fit to analyze IT and firm performance was urgently needed (Melville, Kraemer & Gurbaxani, 2004). The matter was nearly resolved by integrating the TOE model and the RBV theory (Figure 2.8) (Zhu & Kraemer, 2005), but there were still gaps of knowledge existing in the integrated model.
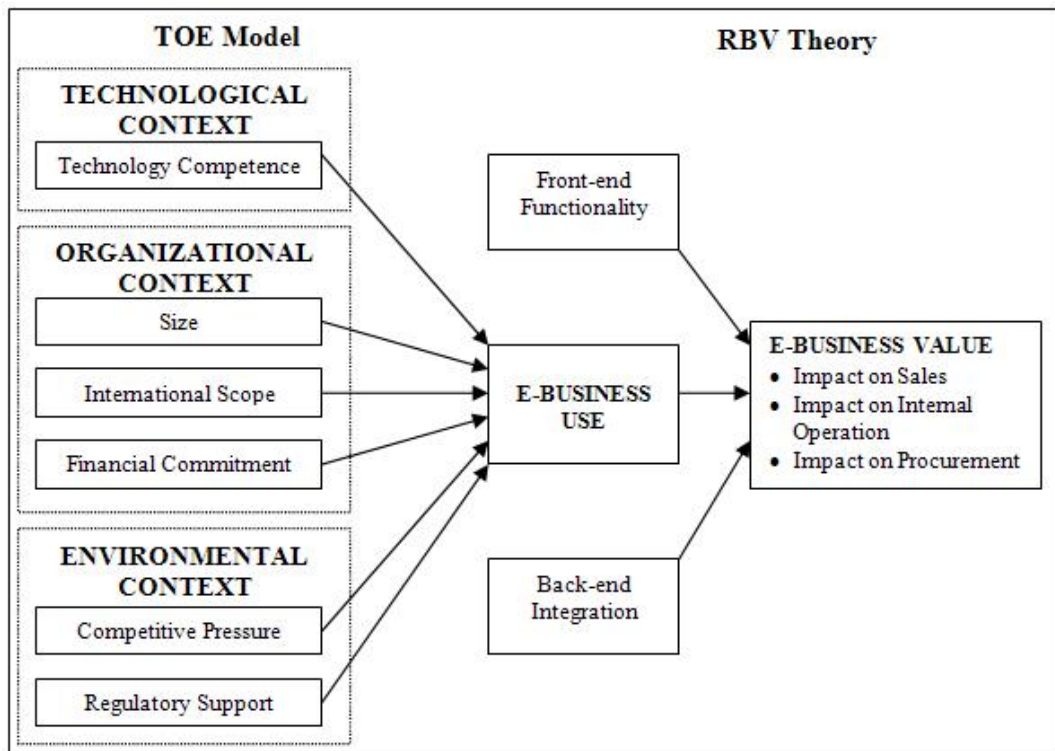
Figure 2.8: An Integrated Model of E-business Use and Value
Source: Zhu and Kraemer (2005)

With reference to the above model, Zhu and Kramer (2005) found that within the TOE framework, four variables (technology competence, size, financial commitment, competitive pressure, and regulatory support) significantly predicted E-business usage for which technology competence had the strongest influence. Looking at the influence of E-business usage towards value creation, three variables were tested (E-business usage, front-end functionality and back-end integration). All three variables were found to be significant.

Although Zhu and Kraemer (2005) closed several gaps that existed in prior studies, there were some arguments as follows:

i.   Potential variables (managerial beliefs and pressure intensity) that could significantly predict E-business usage were missing in the literature.

ii.   Past studies showed that front-end functionalities and back-end integration were regressed directly to E-business value. Those variables actually referred to web-functionalities, and would influence E-business usage.

iii.   The effect of moderator (E-business experience) on the "usage-performance" relationship was missing.

iv.   Business performance measurement was not multidimensional to provide balanced perspectives from the accounting, business and technology point of views. Prior studies focused only on the impact of sales, impact on internal operations, and impact on procurement. Other vital dimensions and attributes were ignored.

In closing the gaps above, there was a need to test the direct and indirect influence of the variables. Furthermore, it was argued that the relationship between independent and dependent variable might be influenced by the existence of moderating variable. Another argument on the study by Zhu and Kraemer (2005) was on the method for measuring performance in E-business. It was believed that performance measurement in a multidimensional theoretical model needed to have a balanced perspective from both the technology and accounting view. These led to the development of a theoretical model (E-VALUE) model that examined factors determining E-business usage on business performance. E-VALUE model was constructed by combining the TOE model, the RBV theory that sought empirical evidence on factors determining E-business usage on business performance, and the revision of the balanced scorecard (which was known as E-business scorecard) to suit technological innovation of performance measurement. All four perspectives of the balanced scorecard were employed in this study with some modifications of measurement attributes.

2.10 Development of E-VALUE Model

Constructing the E-VALUE model (Figure 2.10) required thorough review of literature to identify the specific constructs. Considering significant factors, the study reviewed the literature related to E-business drivers, E-business usage and value creation. It was found that past studies centred on the TOE model and the RBV

theory or by integrating both model and theory, the advancement made in the current study was on the integration of TOE model, RBV theory, and E-business scorecard in providing multi-dimensional theoretical model. Consideration was given on the pre and post adoption of E-business usage; direct and indirect effects; the influence of moderator; and providing unbiased views of constructs, dimensions and elements from the accounting, business and IT point of views. The E-VALUE model was hoped to close the knowledge gaps in the literature.
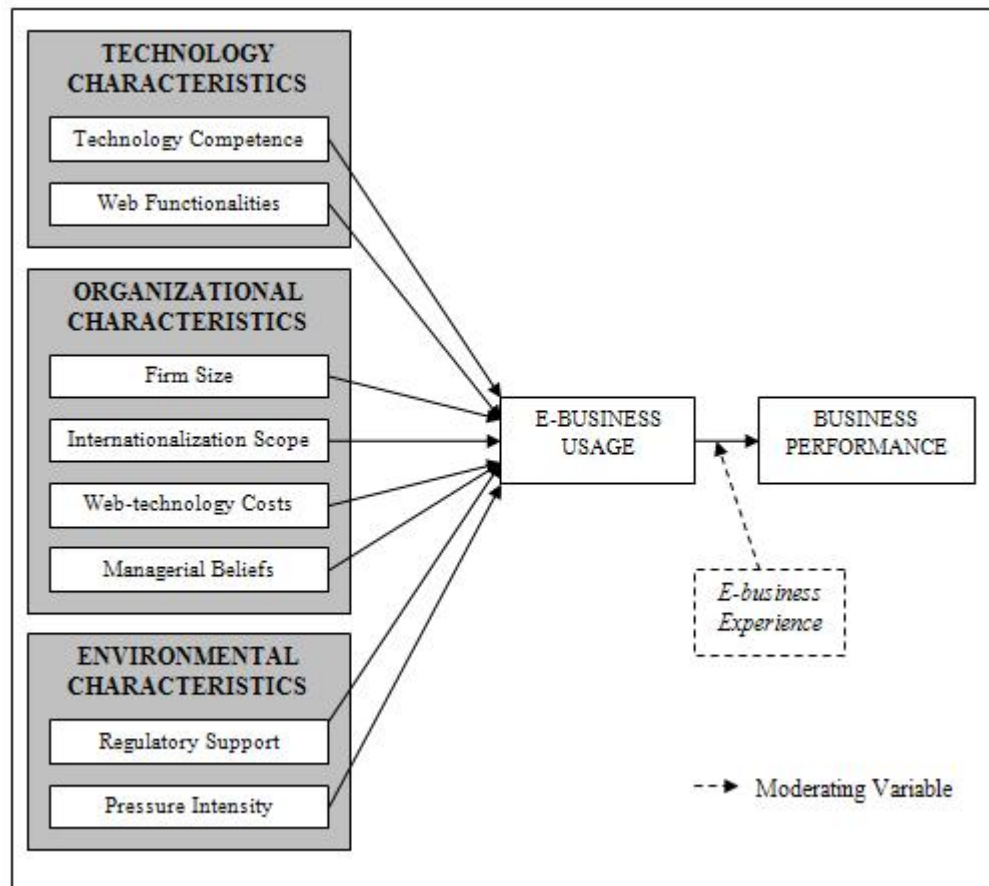
Figure 2.9: Proposed E-VALUE Model
Source: Developed for this Study

2.10.1 Drivers to E-business Usage

In the E-VALUE model, drivers to E-business usage were classified into three contexts based-on the TOE model; technological, organizational and environmental. This was consistent with Zhu et al. (2006) who studied the innovation

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assimilation, and Robertson (2005), who focused on the critical drivers in B2B E-business.

2.10.1.1 Technological Context

Technological Context depicted a firm's internal and external technologies (Zhu et al., 2004). Reviewing prior studies, IS adoption success was found to be driven by technology resources (Bharadwaj, 2000; Crook & Kumar, 1998; and Kuan & Chau, 2001). An empirical investigation on the relationship linking advanced IT and performance (Bharadwaj, 2000) indicated that high IT capabilities of a firm (i.e., physical IT infrastructure components, human IT resources, and IT-enabled capabilities) outperformed a control sample of firms in various profit and cost-based performance measures. For the current study, technology competence represented the independent variable in the technological context.

i.   Technology Competence

The concept of technology competence was associated to the firm's specific technologies, execution of technology related tasks, and routines (Scupola, no date). Not only physical assets, technology competence also constituted intangible resources as IT expertise and knowledge were complementary to physical assets (Helfat, 1997). According to Mata et al. (1995), and Bharadwaj (2000), technology resources were represented by infrastructure, human resources and knowledge. A study by Grant and Mukerji (2005) proposed a model that linked IT resources and IT routines through IT capabilities to the creation of opportunities for new advantages. In their study, Grant and Mukerji referred highly skilled managerial and technical employees and IT infrastructure as their IT resources.

Technology infrastructure functioned as the foundation of E-business (Robertson, 2005). It referred to the technologies that enabled the Internet-related businesses (Aguiar & Reis, 2008). Technology infrastructure established E-business platform. Firms that better adopted and used information system (IS) with a good IT infrastructure development were able to understand technology trends and properly manage technology acquisition, implementation and utilization (Caldeira & Ward,

2003). Together with technology infrastructure, knowledge and skills of IT human resources were exploited in the development of E-business (Zhu & Kraemer, 2005). In Zhu (2004), IT infrastructure was found to predict E-business capability. In competence based theories, firms' capability in acquiring, assimilating and exploiting technology innovation relied on their human resource portfolio (IT expertise) (Szulanski, 1996; Arora & Gambardella, 1994; and Cohen & Levinthal, 1990) Knowledge in contrast, referred to the technology know how among employees in the business organizations (Aguiar & Reis, 2008).

Technology competence was measured by referring to firm's technology infrastructure, IT human resources and knowledge which enabled firms to develop and implement E-business. Questions were asked on the percentage of employees who used computer at work, the percentage of employees who had information technology qualification and number of technology facilities used by the organization before E-business implementation.

ii.   Web-functionalities

Functioned as an interface, front-end (or the website) enabled communication between sellers and buyers and was found to significantly influence E-business usage. Equipped with the latest interactive technology such as live chat, e-catalogue and three dimensional modelling, those technologies enhanced customer's control during online shopping and dragged them towards online purchasing (Young, 1984). Besides, front-end functionalities enabled delivery of real-time product information, offered customization and assisted customers using online account administration that led to recuperating transactional efficiencies and widened the existing channel (Zhu & Kraemer, 2002).

Back-end conversely, referred to the activities that were related to order fulfilment, inventory management, procurement, payment processing, packaging and delivery (Turban et al., 2004). Integration however, helped to fit the pieces, linking unrelated systems and fragmented resources to allow firms to take full advantage of their existing investment (Zhu, 2004). Back-end integration included the integration of web-based front system (known as front-end) with the corporate databases and the

back-end IS. The integration facilitated the process of order fulfilment and logistics management. All these were done by exploiting the Internet that enabled transfer of invoice data, EDI links, and inventory data sharing with suppliers (Zhu, 2004).

In prior studies (Zhu & Kraemer, 2005; and Wen, Lim & Huang, 2003), front-end and back-end were found separated as two independent variables which were regressed towards business performance. When discussing E-business portal however, both were found to fall under web-functionalities (Turban et al., 2004). For that reason, this study used the term "web-functionalities" as an independent driver to E-business usage. Measurement of "Web functionalities" was based on both front-end and back-end system.

2.10.1.2 Organizational Context

i.   Firm Size

Firm size was used in measuring several dimensions that led to innovation. As larger firms were believed to have greater resources, it would enable the experiment of new innovation and to acquire sufficient financial resources in implementing the innovation (Karakaya & Khalil, 2004). In Damanpour (1992), a study on organizational size and innovation found that larger firms had a number of advantages compared to small firms on the followings:

- Larger firms were likely to have more slack resources in facilitating EPS adoption;

- Larger firms were more prone to gain economies of scale;

- Larger firms were said to have high capabilities in managing early stage investment risks; and

- Besides, larger firms were more powerful in bringing together trading partners to join the technology adoption.

Sciadas (2004) had proven the importance of firm size in a study on E-business usage. Although small firms did well in basic E-business connectivity, they

lagged behind when it came to applications that were more sophisticated. In the SME industry for example, Karakaya & Khalil (2004) established that company size positively predicted Internet adoption. Prior study on how size effect drove E-business development and value creation (European E-business Report, 2004), it was found that powerful E-business solutions that were affordable for larger firms were more likely to benefit from efficiency gains.

ICT infrastructure diffusion and the improvement of E-business software solutions to automate business processes (such as ERP solutions) were found to increase steadily by company size. These translated into more serious, efficient, and sophisticated electronic business practices which contributed to value creation. In a study on "determinants of Internet adoption in small and medium-sized enterprises" (Karakaya & Khalil, 2004), firm size positively influenced the overall Internet-adoption measure. Another study by Barua, Konana, Whinston and Yin (2001) established that as company size increased, the relationships between E-business drivers and financial performance; and operational excellence and financial performance became stronger. This was consistent with Hensler, Rutherford and Springer (1997), in which firm size positively influenced the likelihood of a firm's survival. A study by Konings and Roodhooft (2002) also found that firm size was a significant factor that drove business performance. In their study, E-business was found to have no effect on total factor productivity in small firms but had positive effects on performance in large firms.

However, Sciadas (2004) believed that size must be examined in conjunction with sector of activity. For some industries, small firms were more connected than large firms. In Zhu and Kraemer (2005) it was found that firm size had a significant negative path leading to the dependent construct, E-business usage. Using partial least square (PLS) method in testing the conceptual model on drivers to E-business use, Zhu and Kraemer believed that the negative path of firm size was resulted from the burden of structural inertia which might possibly be caused by old systems and entrenched organizational structure. Again in 2006, Zhu et al. found firm size to have significant negative path to E-business routinization ($p<0.05$) in their study on organization's E-business assimilation based on the view of technology diffusion.

As firm size was still being debated to have positive and negative relationship with E-business usage, firm size was considered as an important construct under study. It was hoped that this study would provide meaningful findings on firm size from the perspective of the service industry in Malaysia.

For this study, the number of employees measured the firm size based on the European E-business Report (2004) which was categorized into four; micro (0-9 employees), small (10-49 employees), medium (50-249 employees), and large ($\geq$ 250 employees).

ii.   Internationalization Scope

In E-business, brick and mortar companies that depended heavily on the physical processes had moved to relying on digital assets and information flow (Zhu & Kraemer, 2005). Since business processes were now conducted through the Internet, it opened a platform for global connectivity which offered greater business scope (Zhu et al., 2006). Reviewing the technology diffusion literature, it was found that greater internationalization scope led to greater IT demand (Hitt, 1999; and Dewan & Kraemer, 1998).

As the adoption predictor, the role of a firm's internationalization can be explained from two perspectives (Aguiar & Reis, 2008); the costs and synergy perspectives. From the costs perspective, the effect of business globalization through E-business could be explained by looking at the transaction cost (Williamson, 1983). According to Chopra and Meindl (2001), in traditional businesses, firms with greater scope had higher internal coordination costs, higher search costs and higher inventory holding costs. Expanding in a heterogeneous market might expose companies to an increase in transaction costs (Gurbaxani & Whang, 1991). As a result of new channels development in a new region, companies needed to search for customers, and new business partners (Teece, 1980). Besides, firms were exposed to demand uncertainty that led to high inventory holding costs (Zhu & Kramer, 2002). However, with the introduction of E-business that helped to reduce the internal coordination costs through business digitalisation (Hitt, 1999), lower search costs for both buyers and sellers or suppliers and customers (Bakos, 1998; and Malone, Yates

& Benjamin, 1987), and improved inventory management, it was believed that firms with wider scope were more motivated in adopting E-business. With E-business innovation, firms could cut the cost of transactions (Garicano & Kaplan, 2001), minimize suppliers' and customers' search costs, and decrease market friction by increasing information transparency (Zhu, 2004). Besides costs implications, E-business enabled companies that had greater scope to benefit from the synergy between web-based and traditional business process (Aguir & Reis). For instance, the use of web-based search would help users to locate physical stores, web-based graphical user interfaces would improve user-friendliness, and the linking of various databases by common Internet protocols and open standards.

In this study, internationalization scope was defined as the geographical extent of the firm's operation and its trading globalization. E-business eradicated the geographical restrictions of running businesses. It allowed business expansions for wider market penetration (Khan & Motiwalla, 2002). With E-business, firms were able to move to the global market.

The insights that emerged from the literature recommended that greater incentives in initiating and adopting E-business could be found among firms with greater global scope. This was supported with a finding by Zhu et al. (2006), which established internationalization scope to positively link to E-business assimilation.

In this study, a firm's internationalization scope which fell under organizational context was measured by looking at the geographical scope and trading globalization. Under the geographical scope, respondents were required to give information on their geographical extent of business operations; and information on their establishment. For trading globalization, respondents were asked the percentage of the firm's outside sales and procurement spending, and the overall activities' percentage from outside Malaysia.

iii.   Web-Technology Investment Cost

Web technology investment cost referred to the extent of management's beliefs regarding E-business value creations. Technology investment increased costs

and management concerned (Heo & Han, 2003). However, the consistent relationship between IT investment especially in E-business and organizational performance was rarely discussed in prior literature (Farbey, Land & Targett, 1999; Hitt & Brynjolfsson, 1996; Brynjolfsson, 1993; and Saunders & Jones, 1992). Caldeira and Wald (2003) argued that high financial commitment on IT did not guarantee that the investment would succeed. In contrast, Zhu and Kraemer (2005) assumed that higher investment led to greater usage and could benefit performance. Reviewing the literature, Web technology investment costs was referred as financial commitment on costs and expenses in relation to installing and implementing any enhancements in supporting technology innovation (Karakaya & Khalil, 2004; and Iacovou, Benbasat & Dexter, 1995).

For the current study, Web technology investment costs were referred to the financial commitment on hardware, software, system integration, and human resources training. It also accounted for the associated subsequent costs and expenses for enhancements. Web technology investment costs were measured by looking at the budget of an IS and web-based spending (as a percentage of total revenue).

iv.   Managerial Beliefs

According to Rogers (1983), the adoption of technology innovation needed to be initiated with innovation awareness and realization of its importance. This meant a decision making process should happen prior to technology adoption. With knowledge development on specific technology, the key decision makers had to be convinced on the appropriateness of the technology (Affuah & Tucci, 2001). According to a study on innovations and organizations conducted by Zaltman, Duncan and Holbeck (1973), managerial belief found to be the first stage in innovation adoption process. At this stage, the management identified the objective of business change and searched for new innovation that suited the objective before the adoption decision (Gallivan, 2001).

The implementation and usage of the innovation occured once it was adopted. To successfully adopt e-services, Scupola (no date) had identified that top management beliefs could offer visions and guidelines regarding opportunities and

risks associated with technology adoption. Management beliefs acted as a signal to the importance of e-services. This would influence employees to explore ways to leverage the technology's functionalities to improve firm efficiency, routines, and business value or cost reduction.

Managerial belief whether positive or negative was an important antecedent that needed to be evaluated in strategic planning (Child, 1972). In prior literature, few studies found that management interpretation and judgements regarding organization and environment force played a critical role to explain strategic choice (Coltman, Devinney & Midgley, 2003) and drove technology innovation (Igbaria, Zinatelli & Cayave 1998). Similar to Gould (2001), senior management support was found to be the main driver of a successful E-business. The findings were also consistent with Quinn, Baruch and Zien (1997), for which top management leadership were found to be the most critical single factor in stimulating innovation.

Another finding by Rajagopalan and Spreitzer (1996) also concluded that managerial beliefs (i.e. managerial cognitions and action) were found to be important constructs to explain strategic change and firm performance. This supported prior findings by Ginsberg and Venkataraman (1992) in which managerial evaluation regarding the influence of technological innovation significantly predicted new technology adoption. A number of studies also found that changes in managerial beliefs led to the strategic changes in firms (Webb & Dawson, 1991; and Child, 1987).

In short, an insight that materialized from prior studies suggested that managerial belief was an important antecedent towards technology innovation and implementation. In this research, managerial beliefs represented top management acts regarding E-business. The study sought the answer on to what extent did managerial beliefs influence E-business usage. In this study, the measurements of managerial beliefs were as follows:

- Perceived increasing importance of E-business;

- E-business increased market share;

- E-business increased efficiency;

- E-business improved knowledge sharing;

- E-business improved communications; and

- E-business enhanced customer service.

2.10.1.3 Environmental Context

i.   Regulatory Support

In Zhu et al. (2003), regulatory environment was found to be a predictor of innovation diffusion. As new technology emerged in the market that influenced innovation in business transactions, new policy and regulatory framework needed to be formulated to avoid abuses. Not to forget, support by government would assist E-business usage. Zhu and Kraemer (2005) found that regulatory support was an important environmental construct that affected E-business usage. Support by government in terms of policy development was also theorized to influence the diffusion of IT (Umnath & Campbell, 1994). Empirical investigation by Dasgupta, Agarwal, Ioannidis and Gopalakrishnan (1999) revealed that controlled government policies contributed to low IT usage. Issues such as security and privacy, legal protection and business laws developed concerns among companies to participate in online business (Kraemer et al., 2006).

As for the current study, regulatory support referred to governments' responsibility in encouraging E-business usage by developing laws and incentives for E-business. To test whether regulatory support affected E-business usage in Malaysia service industry, respondents were asked on E-business incentives provided by the government, the extent to which E-business was required by government purchase, to what extent did business laws support E-business, the extent of legal protection for online purchasing and the overall regulatory support for E-business activities.

ii.   Pressure Intensity

Based on a threshold model in the field of sociological studies, decision on engaging in a specific behaviour was said to rely on competitors (Krassa, 1988). Zhu et al. (2006) and Porter (1985) measured competition intensity by looking at three markets; local, national, and international markets that affected firms in terms of competition. In Zhu et al., competition intensity was found to significantly influence E-business initiation ($p<0.02$) and E-business adoption ($p<0.01$) in a positive way; and significantly predicted E-business routinization ($p<0.05$) with a negative path.

Internal and external factors were used to classify drivers of E-business investment by firms (Windrum & Berranger, 2003). As in Quayle (2002), and Martin (2001), customer pressure, competitive pressure, and key suppliers were classified as external factors that drove E-business adoption. Improved knowledge-sharing, cost reduction, and increased efficiency were categorized as internal drivers towards E-business adoption intention (Daniel & Wilson, 2002; and Martin, 2001).

For the current study, pressure intensity was identified as a driver to E-business usage. The researcher believed that the term "pressure intensity" gave clearer meaning as compared to competition intensity (which only focused on competitors) and internal or external drivers (which was too general). To measure pressure intensity, this study focused on customer pressure, supplier pressure, and pressure by competitors.

2.10.2 E-business Usage, Implementation, or Adoption

As mentioned in Chapter 1, review of literature showed that the term E-business usage, implementation, and adoption were used interchangeably without any difference in the meaning. Zhu and Kraemer (2005), for example, used the term E-business usage in one of their research but in another article by Zhu et al. (2003), the term E-business adoption was used to refer to E-business implementation. Therefore, for the current study, E-business usage was assumed to be equivalent to E-business implementation or E-business adoption. It was increasingly and widely accepted that embracing and adopting E-business applications was important (Asing

et al., 2008). Many organizations started to develop or adopt E-business with the aim to increase efficiency, save time and reduce cost (Scupola, no date). However, the complexity of E-business reflected the model development to test the drivers of performance (Coltman et al, 2003).

In a prior study by Migiro (2006), E-business adoption was measured by looking at accessibility of Internet facilities, Web usage, e-marketing, online sales and purchasing, e-communication with business partners, online information access, and the use of ICT tools for business information processing.

In this study, E-business usage was measured by looking at respondents' perception regarding online activity distributions. The measurement of online activity distribution was based on five attributes:

- Perceived percentage of consumer sales conducted online;

- Perceived percentage of business to business sales conducted online;

- Perceived percentage of supplies for consumption ordered online;

- Perceived percentage of equipment for business use ordered online; and

- Overall perceived percentage of online activities (as percentage of total business activities) implemented by the company

As a rule of thumb, e-activities was said to play a significant role in companies if it represented about 20-25 percent of the economic activity (The European Business Report, 2004).

2.10.3 E-business Experience (Moderating Variable)

Kauffman et al. (2002) studied on how firms survived by using the Evolutionary Game Theory. It was found that through a trial and error process, firms learned on what strategies to adopt in generating profits. Similar to the mutation process, firms realized what worked better by exploration, experimentation, examining the reaction of market and financial performance, as well as gaining

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information from competitors' experience (Kauffman et al.). Realizing this, E-business experience was believed to have strong contingent effect on the independent variable (IV) – dependent variable (DV) relationship (Figure 2.10). Therefore, this study tried to find how the presence of moderating variable modified the "usage–performance" relationship.
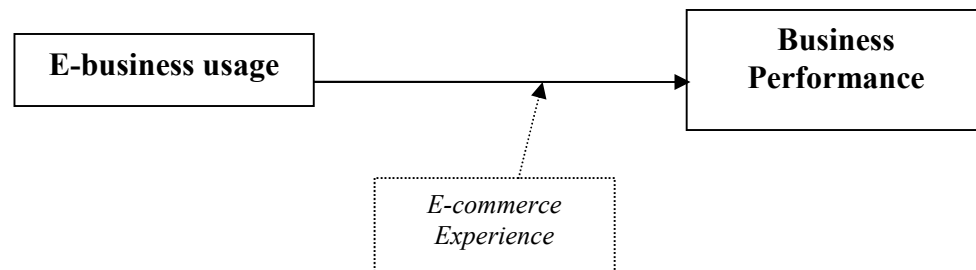
Figure 2.10: Moderating Variable – E-business Experience
Source: Developed for this Study

In this study, the measurement of moderating variable (E-business experience) was based on the time length a firm engaged in E-business activities. The basis used in measuring length of time was based on the number of years.

2.10.4 Measuring E-business Performance

In this study, E-business scorecard (Table 2.7) was developed as a measurement of E-business performance for click and mortar companies. E-business scorecard applied the concept of Balanced Scorecard (Kaplan & Norton, 1992) which focused on financial, customers, internal business process and learning and growth.

Originally, a Balanced Scorecard supplied top managers with a fast and comprehensive measure of the traditional business performance (Kaplan and Norton, 1992). E-business scorecard however, considered both technological and traditional accounting elements in performance measurement; and also focused on the post-adoption stage of E-business adoption i.e., "the impact", as a solution to the knowledge gap in assessing E-business performance.

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Table 2.7: E-business Scorecard – Performance Measurement Tool for Click and Mortar Companies

Source: Developed for this Study

CONSTRUCT	DIMENSIONS & ATTRIBUTES	REFERENCES
BUSINESS PERFORMANCE	**IMPACT ON FINANCIAL** • Profitable • Increase the Return on Investment (ROI) • Contribute to the revenue • Operational cost reduction • Reduced the cost of acquiring a new customer • Reduced the cost for customer relationship management • Reduced the procurement costs • Reduced the inventory costs **IMPACT ON CUSTOMER** • Online customers repeat their web purchases • Reduced the number of customer complaints • Generate new customers **IMPACT ON INTERNAL BUSINESS PROSES** • Increase on-time delivery of services • Reduce the number of problems with customer reservations processing • Reduce the number of E-business issues reported in internal audit report • Reduce the number of E-business issues reported in external audit report • Increased staff productivity • Improved coordination with suppliers **IMPACT ON LEARNING AND GROWTH** • Increase sales • Widened sales area • Improved customer service	• Zhu & Kraemer, (2005) • Zhu, Dedrick & Xu, (2003) • Wen, Lim & Huang, (2003) • Turban & King, (2003) • Taylor, (2003) • Grey, Katircioglu, Bagchi, Shi, Gallego, Seybold & Stefanis, (2003) • Rao, Perry & Frazer, (2003) • Khan & Motiwalla, (2002) • Barua, Konana, Whinston & Yin (2001) • Kaplan & Norton, (1996) • Hasan & Tibbits, (no date)

In E-business scorecard, business performance was measured by looking at four perspectives as follows:

i.   Impact on Financial

Measurement of financial impact would indicate the company's financial performance. The most traditionally used financial performance indicators were operating costs and return on investment (ROI). In Donkor (2003) for example,

financial impact was measured by looking at returns, financing and revenue from sales.

ii.   Impact on Customer

In traditional Balanced Scorecard, customer perspectives stressed on "how do customers see us (the business)?" (Kaplan & Norton, 1992). However, E-business Scorecard emphasized on "what are the impact of E-business on customers?".

iii.   Impact on Internal Business Process

Since customer-based measures were significant, it had to be translated into measures regarding what process and competencies that companies must excel in (Kaplan & Norton, 1992). In the case of how E-business usage gave an impact on business performance, this study focused on the factors that affected cycle time, quality, employee skills, and productivity as suggested by Kaplan and Norton.

iv.   Impact on Learning and Growth

In facing strong global competition, there was a call for companies to continually improve the current products and processes, and introducing new products or services with extended functions (Kaplan & Norton, 1992). In looking at how E-business gave an impact on business performance through its impact on learning and growth, focus were given on looking at capability of a company innovating, improving, and learning, for instance penetration of new markets and create more value for customers.

2.11 Chapter Summary

Chapter 2 discussed the prior studies that focused theoretical and conceptual framework development derived from diverse views and suggestions from previous research on E-business usage and value creation. Discussions were made on the followings; introduction, E-business innovation and diffusion, E-business diffusion and value creation, theoretical model of the study, E-business in the service industry and chapter summary. In looking at E-business innovation, diffusion and value creation, discussions were made on various theories and models with the aim to

develop a comprehensive and multidimensional theoretical model. Through detail reviews on prior literature, an E-VALUE model was developed to assess factors determining E-business usage on business performance. Table 2.8 exhibited the gaps found in the literature and the proposed innovations in relation to E-business usage and value creations.

Table 2.8: Gaps in Prior Studies and Proposed Innovations in Relation to the Integrated Model of E-business Use and Value

Source: Developed for this study

Gaps in prior studies related to E-business usage and value creations	Innovations in the proposed E-VALUE model to overcome the missing links and gaps in knowledge area existed in prior studies
1. The absence of important variables such as managerial beliefs and pressure intensity (as suggested in the literature) that could have significant influence on E-business usage	1. The addition of two new variables; managerial beliefs, and pressure intensity.
2. In prior studies, front-end functionalities and back-end integration were regressed directly to E-business value. Both variables were actually referred to web-functionalities, and will influence E-business usage.	2. Front-end functionalities and back-end integration were renamed as web functionalities, and regressed towards E-business Usage.
3. The absence of moderator effect which could have a strong contingent effect on the relationship between E-business usage and business performance.	3. Moderator variable (E-business experience) was included to test whether its inclusion could modify the original relationship between E-business usage and business performance.
4. The measurement of business performance was not comprehensive enough from the accounting point of view. Prior studies focused only on three factors; the impact of sales, impact on internal operations, and impact on procurement. Other important dimensions and attributes were ignored.	4. Business performance was measured based on the four perspectives in balanced scorecard as suggested by Kaplan and Norton (1992). However, with some modification in the measurement attributes to suit the needs of performance measurement from technological and accounting points of view, this study introduced "E-business scorecard" as a comprehensive and multidimensional performance measurement tool.

Next, Table 2.9 showed the outline of the Concepts, Dimensions and Attributes for the E-VALUE Model. In suggesting the particular constructs and attributes, the current study focused on significant factors established in literature.

Table 2.9: Summary of Concepts, Dimensions and Attributes for the Theoretical Model

Source: Developed for this study

CONCEPT/CONSTRUCT	DIMENSIONS	MEASUREMENTATTRIBUTES
TECHNOLOGY COMPETENCE Physical assets, and intangible resources that associated to the firm's specific technologies, the execution of tasks that related to the technology, and the routines required to use the technology. (Helfat, 1997)	TECHNOLOGY INFRASTRUCTURE Technologies that enabled the Internet-related businesses to be conducted (Aguiar & Reis, no date) and HUMAN RESOURCES AND KNOWLEDGE The function of IT human resources to use their knowledge and skills to develop E-business applications. Knowledge referred to the technology know how among employees in the business organizations (Zhu & Kraemer, 2005)	• Number of prior technology facilities (EFT, EDI, Intranet, Extranet, and etc.) • Percent of computer usage by employees • Percent of employees with IT qualifications
WEB-FUNCTIONALITIES Front-end functionalities and back-end integration (Turban et al., 2004)	FRONT-END FUNCTIONALITY The portion of an E-seller's business process through which customers interact and BACK END INTEGRATION The activities related to order fulfilment, inventory management, procurement, payment processing, packaging	• Website supports services review • Website supports consumer customization • Website supports account management • Website supports registry of online community • Web applications electronically integrated with back-office systems • Company's databases electronically integrated with suppliers • Company's databases electronically integrated with partners

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		and delivery (Turban et al., 2004)	
FIRM SIZE Number of employees in the firm (European E-business Report, 2004)			• Micro (below 10) • Small (10-49) • Medium (50-249) • Large (250 and above)
INTERNATIONALIZATION SCOPE The geographical extent of the firm's operations in the global market and its trading globalization. (Zhu et al., 2004)	GEOGRAPHICAL SCOPE The geographic extent of business operations. (Zhu & Kraemer, 2005) and TRADING GLOBALIZATION Business activities from international market (Zhu & Kraemer, 2005)	• Number of organization establishment • Local and international establishment • Location of headquarters • Percentage of sales from international market • Percentage of procurement spending from international market *(Procurement refers to direct purchases of raw materials for the production of finished products to be sold to the customer; and indirect purchases that involve goods and services that are not part of the finished product)* • Percentage of overall business activities from international market
WEB TECHNOLOGY INVESTMENT COSTS Financial condition or financial resources available to pay for installation costs, implementation of any subsequent enhancements, and ongoing expenses to support the adoption and use of a new technology innovation (Iacovou, Benbasat & Dexter, 1995; Karakaya & Khalil, 2004).	IS BUDGET Set-up costs of E-business system such as hardware, software and training costs and WEB-BASED SPENDING Costs for subsequent enhancement of technology innovation (Iacovou, Benbasat & Dexter, 1995; Karakaya & Khalil, 2004).	• Firm's IS budget as a percentage of total revenue • Firm's web-based spending as a percentage of total revenue

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MANAGERIAL BELIEFS Top management action to E-business technology innovation. (Igbaria et al., 1998)		• Perceived increasing importance of E-business • E-business increased market share • E-business increased efficiency • E-business improved knowledge sharing • E-business improved communications • E-business enhanced customer service
REGULATORY SUPPORT Government regulations that could affect innovation diffusion and to encourage E-business usage through the establishment of laws and incentives (Williamson, 1983)		• High E-business incentives provided by government • E-business required by government purchase • Business laws supports E-business • There are legal protection for online purchasing • Overall regulatory support for E-business activities
PRESSURE INTENSITY Decisions to engage in a particular behaviour that depended on perceived number of similar others in the environment that have already done likewise. (Krassa, 1998)		• Customer pressure • Supplier pressure • Pressure by competitors
E-BUSINESS USAGE The adoption of E-business innovation by business organizations. Also referred as implementation, diffusion, and adoption. (Zhu et al., 2003)	ONLINE ACTIVITY DISTRIBUTIONS	• Perceived percentage of consumers sales conducted online • Perceived percentage of B2B sales conducted online • Perceived percentage of supplies for consumptions ordered online • Perceived percentage of equipment for business use ordered online • Overall perceived percentage of online activities (as percentage of total business activities) implemented by the company
E-BUSINESS EXPERIENCE Length of time firm engaged in E-business (Kauffman et al., 2002)		• Number of years in E-business
BUSINESS PERFORMANCE An integral component to how businesses were conducted and how they caused themselves to act in a manner that helped them	IMPACT ON FINANCIAL Impact that is related to profitability, growth and shareholder's value (with financial value)	• Profitable • Increase the Return on Investment (ROI) • Contribute to the revenue • Operational cost reduction • Reduce the cost of acquiring a

survive and thrive (Kellen, 2003).	(Kaplan & Norton, 1992)	new customer • Reduce the cost for customer relationship management • Reduce the procurement costs • Reduce the inventory costs
	IMPACT ON CUSTOMER The impact on time, quality, performance and service that are related to customers (Kaplan & Norton, 1992)	• Online customers repeat their web purchases • Reduce the number of customer complaints • Generate new customers
	IMPACT ON INTERNAL BUSINESS PROCESS Measures of what process and competencies that companies must excel (Kaplan & Norton, 1992)	• Increase on-time delivery of services • Reduce the number of problems with customer reservations processing • Reduce the number of E-business issues reported in internal audit report • Reduce the number of E-business issues reported in external audit report • Increase staff productivity • Improve coordination with suppliers
	IMPACT ON LEARNING AND GROWTH Continual improvements to existing products and processes, and the ability to introduce new products or services with expanded capabilities (Kaplan & Norton, 1992)	• Increase sales • Widen sales area • Improve customer service

To begin with, this chapter firstly reviewed the literature on E-business development, E-business as technological innovation, E-business usage, prior theories and theoretical models on E-business innovation, diffusion and value creation. As majority of prior studies on E-business usage and value creations employed the TOE model and the RBV theory or the integration of both, this study

contributed to knowledge enhancement by integrating the TOE model, the RBV theory, and E-business scorecard to provide a multi-dimensional perspective of theoretical model. In view of the adoption and post adoption of E-business usage; direct and indirect effects; effect of moderator; and given unbiased perspectives of constructs, dimensions and elements from IT, accounting, and business points of view, it was expected that the E-VALUE model is capable to seal the knowledge gaps exited in earlier studies by answering the research questions on; (i) What factors (based on technology, organizational and environmental characteristics) can be used as key antecedents of E-business usage?; (2) To what extent does E-business usage influence business performance?; and (3)To what extent does E-business experience (in years) influence the relationship between E-business usage and business performance? Chapter 3 would next discuss the methodology of the study.

CHAPTER 3:
RESEARCH METHODOLOGY

3.1 Introduction

The current study aimed at examining factors determining E-business usage on business performance within the service industry in Malaysia. In chapter 2, discussions had been made on literature related to E-business development, E-business as technological innovation, E-business usage, and prior theories on E-business innovation, diffusion and value creation. Knowledge gaps to measure the after effect of E-business usage was identified which in turn directed to the development of the E-VALUE model. Grounded in the TOE framework, the RBV theory and the balanced scorecard as discussed in chapter 2, the E-VALUE model emphasized on the assessment of factors determining E-business usage and how E-business usage created value in terms of business performance. In chapter 3, discussions were made on the methodology that covered the introduction, research philosophy, research design, and chapter summary.

3.2 Research Philosophy

In pure science, social sciences, or business and management fields, understanding research philosophy was very important for which failure to think on philosophical issues of a research could affect the quality of a research. Understanding the research philosophy could help to clarify and choose the research design (Smith, Thorpe & Lowe, 2002). The two modes of research strategies that were often being employed were the qualitative (intensive), and quantitative (extensive) research (Sayer, 1992). Qualitative research referred to the "one in which the researcher usually made knowledge claims based on constructivist perspectives" (Cresswell, 2003). It involved "inquiry such as narratives, phenomenology, ethnographies, grounded theory studies, or case studies" (Siti Fatimah Bahari, 2010). Besides, it emphasized more on words as compared to quantitative data analysis (Bryman, 2004). Quantitative research conversely "is one in which the researcher

primarily used post positivist claims for developing knowledge for example; cause and effect thinking, reduction to specific variables and hypothesis and questions, use of measurements and observations, and the test of the theories" (Cresswell, 2003). The common strategies employed in quantitative research design were experiment and survey, and predetermined instrument in data collection that produced statistical data (Siti Fatimah Bahari). Quantitative research always focused on the quantitative aspects in collecting and analyzing data. For the current study, quantitative research (questionnaire survey) was employed in the research strategy.

3.3 Research Design

Known as the art and science of planning procedures, research design aimed at getting the most accurate and valid findings (Vogt, 1993) that glued the research project together (William, 2006). Functioning as a guideline to collect and analyze data (Churchill, 1988), research design represented important components of a research project such as samples, measurement, programs, and assignment methods that worked together in addressing the central research questions (William). The current study followed Hussey and Hussey (1997) in organizing the research design as exhibited in Figure 3.1.
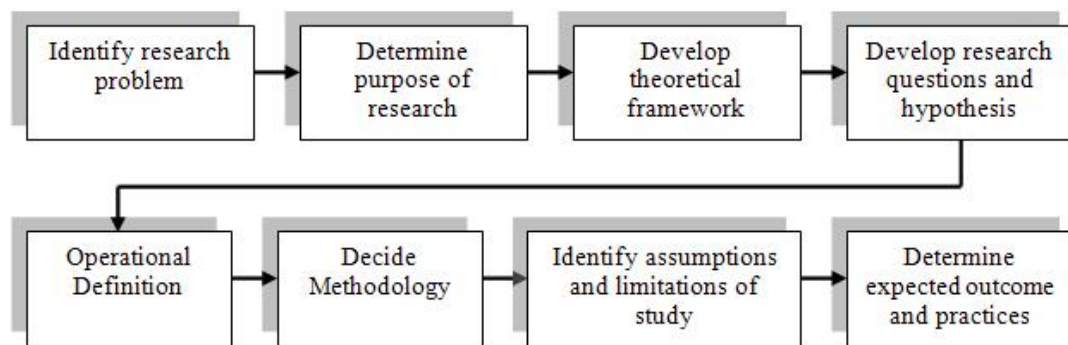
Figure 3.1: Organization of Research Design
Source: Hussey and Hussey (1997)

3.3.1 Research Problem

Thorough review on prior studies related to E-business adoption, implementation or usage and its influence on business performance or value creation

were made in searching for knowledge gaps. Reviewing the literature on innovation diffusion literature, it was found that E-business adoption, use and value came out as a favourite research topic in the discipline of information system (IS). E-business success had attracted the interests of many pundits (Molla & Licker, 2001), from science and social sciences background. According to Carr (2003), the issue of E-business value creation had always been a debatable issue (Xu, Zhu & Gibbs, 2004). Despite the existence of many prior studies related to E-business in, the knowledge gaps seemed to exist on the followings:

i.   There was an absence of a multidimensional theoretical model for evaluating E-business success (Govindarajulu et al., 2004; and Molla & Licker, 2001). Zhu and Kraemer (2002) believed that difficulties to develop measures and to collect data led to the dearth of empirical evidences in E-business usage and value creations. Realizing that there was a need on thorough and empirical relevant framework to examine E-business use and value creations, an integrated model of TOE and RBV was developed by Zhu and Kraemer (2005). However, from the researcher's point of view, the model developed in prior studies could be further improved in terms of looking at the indirect effects of the factors under study and the influence of the moderator; which were believed to be important in providing a multidimensional view of research findings.

ii.   Literature search showed the existence of knowledge gaps in E-business performance measurement method. When measuring E-business performance, Information Technology (IT) researchers tended to ignore certain important elements from the accounting or business point of view. In Zhu and Kraemer (2005), and Lu and Zhang (2003) for example, E-business impact on firm's value was measured mainly on three dimensions; sales; internal operations, and procurement. What was missing in the literature from the accounting perspective was the focus on financial impact especially regarding ROI. Other aspects that related to accounting matters such as E-business issues reported in internal and external audit reports were not included when measuring E-business performance. In contrast, researchers from social sciences background tended to focus more on the traditional methods of performance measurement which was poorly linked to the technological issues.

Literature review showed that in measuring E-business performance, elements regarding E-business technology such as online reservations processing and online customer's relationship management seemed to be not familiar in social science research papers (Zhu & Kraemer, 2005). Therefore, the use of E-business scorecard, a modification of the balanced-scorecard that considered both technological and traditional accounting elements in performance measurement, would help to fill in knowledge gaps in assessing E-business performance.

iii.   The bulk of E-business literature related to usage and performance were conducted in western countries which experienced differences in cultural, industrial, socio economics and governmental settings. Though a cross-country survey comparing developed and developing countries had been done by Zhu and Kraemer (2005), the study focused on retail industry, and the samples from developing countries were only limited to Brazil, China, Mexico and Taiwan. Less attention was given to developing Asian countries such as Malaysia, and not to mention the service industry in particular. As research in western countries had limitation to be applied to developing countries (Jaganathan, 1998), it was hoped that findings of the current study contributed to knowledge advancement on factors determining E-business usage on business performance of the service industry in Malaysia.

3.3.2 Research Purpose

As mentioned above, this study sought empirical evidence of factors determining E-business usage on business performance in the Malaysian service industry. The study focused on online tourism, financial and transportation service sectors in seeking empirical evidences of E-business practice and its implications on service industry in Malaysia. The E-VALUE model assessed the technological, organizational, and environmental factors that drove E-business usage.

The study also tested the E-VALUE model regarding the influence of E-business usage on business performance from four perspectives; financial, customer, internal business process, and learning and growth. In testing the E-VALUE model, consideration was also given to the influence of moderating variable, E-business experience (measured by number of years) with the aim to further understand how E-

business value creations varied depending on company's length of time engaging in E-business. The outcome of the study was expected to narrow down the knowledge gaps by introducing the E-VALUE model in evaluating E-business usage and value creations.

3.3.3 Theoretical Framework

Collections and innovations of prior theories and models that highlighted positivistic research helped the researcher in developing the theoretical framework. Referred as "a conceptual model on how one theorized or made logical sense of the relationships among the several factors under study" (Sekaran, 2003), it discussed and helped the hypothesis development with the aim to further understand the situation.

As the theoretical framework identified the relationships of constructs (variables), it was helpful to further understand the concept of constructs or variables. Cooper and Schindler (2003) referred variable as a symbol that could be assigned with numerals or values that enabled observation and measurement (Hussey & Hussey, 1997). Also known as construct or the property being studied, variables were classified into four (Sekaran, 2003):

i.   Dependent Variable

Based on Hussey and Hussey (1997), the values of dependent variable were predicted by independent variable. Empirical investigation on other variables that influenced dependent variable enabled researchers to seek for answers of an issue (Sekaran, 2003).

ii.   Independent Variable

Acted as a predictor (either positive or negative), independent variables enabled values manipulation of dependent variable (Hussey & Hussey, 1997). The increase in a unit of independent variable could lead to an increase or decrease in dependent variable (Sekaran, 2003).

iii.   Moderating Variable

Moderating variable acted to influence independent variable (IV)–dependent variable (DV) relationship. Functioning as the third variable, it modified the original IV–DV relationship (Cooper & Schindler, 2003; and Sekaran, 2003).

iv.   Intervening Variable

It referred to "one that surfaced between the time the independent variables started operating to influence the dependent variable and the time their impact is felt on it" (Sekaran, 2003). It was influenced by the original independent variable, and affected the original dependent variable (Robson, 1993).

In the current study business performance was the variable of primary interest. In assessing the factors determining E-business usage on business performance, business performance and other variables that influenced business performance were quantified and measured. Based on detailed literature reviews on E-business usage and value creation, a comprehensive model named E-VALUE (Figure 3.2) was developed. The E-VALUE model was used to represent hypothesized interrelationship of the studied factors.

Due to the fact that not all needs could be fulfilled by a single model (Norzaidi, 2008), the E-VALUE model was an option for researchers and industry practitioners to evaluate the investment in E-businesses based on respondents' perception. With the basis foundation of the TOE model, the RBV theory and the balanced scorecard, the E-VALUE model represented the network of dependent, independent, and moderator variables in examining the factors determining E-business usage and how E-business usage influenced a firm's performance with consideration on direct and indirect effects.

In the E-VALUE model, technology competence, web functionalities, firm size, internationalization scope, web-technology investment costs, managerial beliefs, regulatory support, and pressure intensity were classified as independent variables. Those variables were examined to predict business performance (dependent variable). For the current study, E-business usage represented both

dependent and independent variables. It also fulfilled the function of intervening variable as defined by Robson (1993), for which it might be affected by dependent variables, and also affecting the original dependent variable, business performance.
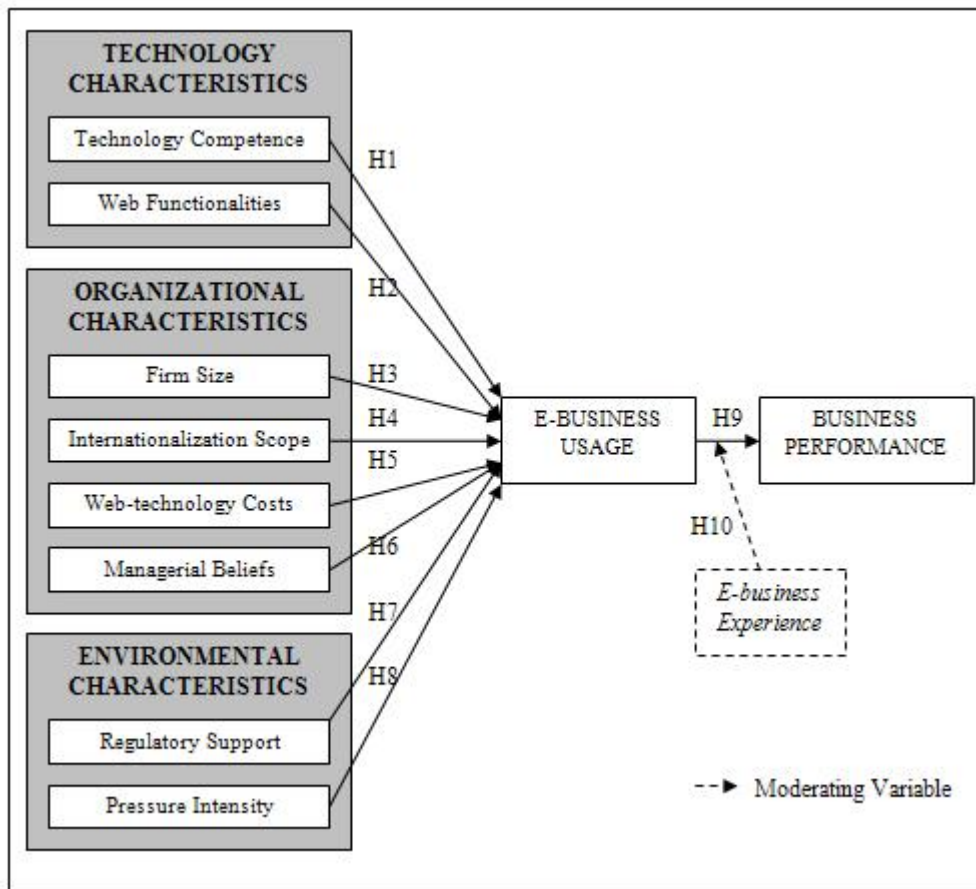
Figure 3.2: Proposed Schematic Diagram of E-VALUE Model
Source: Developed for the study

For better understanding on the factors that determined E-business usage, a theoretical model was developed for which the TOE framework that originated from the "technology innovation and information systems" was used as the basis (Tornatzky & Fleischer, 1990). Grouped into technology, organization, and environment characteristics, the independent variables identified three fractions of firm's context which constructed the TOE model. Eight independent variables that were categorized into three characteristics were involved in the TOE model (see Figure 3.3). Those variables were expected to be the predictor of E-business usage.
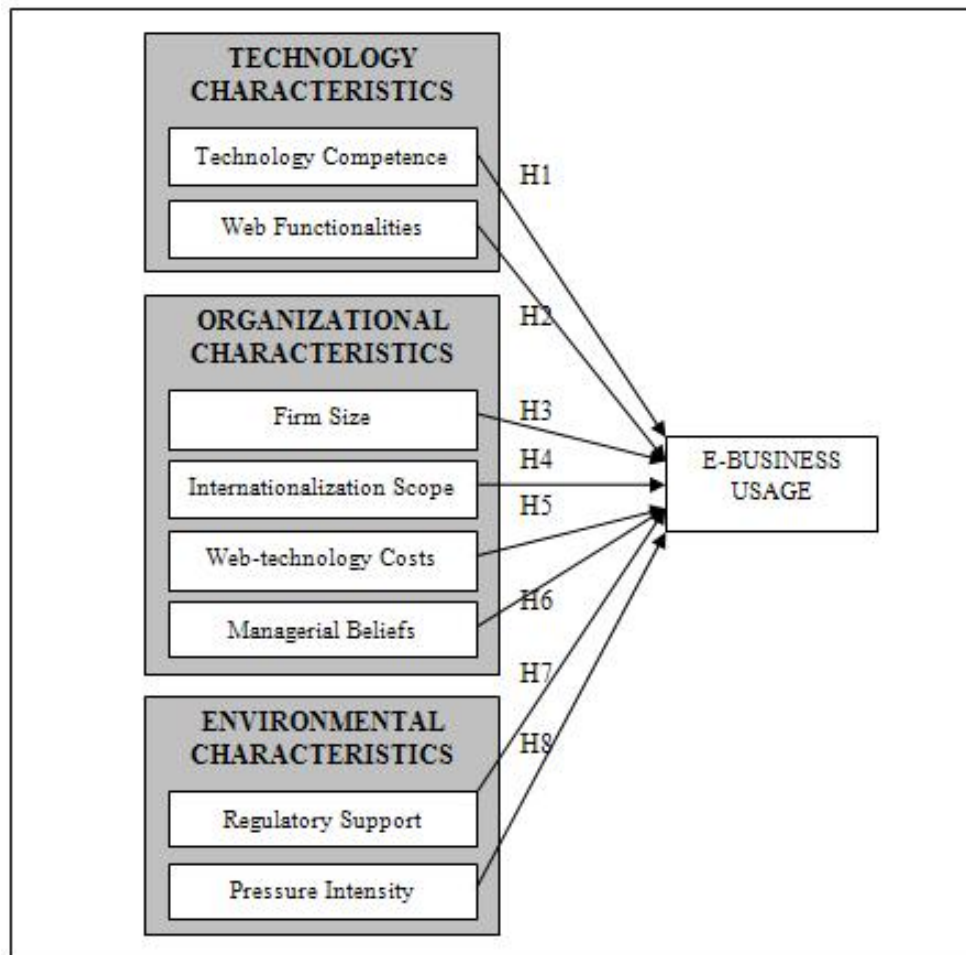
Figure 3.3: Technological, organizational and environmental factors that drove E-business usage
Source: Developed for the study

In looking at whether E-business usage predicted value creation, the length of time using E-business (or known as E-business experience) was identified as moderating variable. It was believed that E-business experience had significant contingent effect on IV–DV relationship (Figure 3.4).
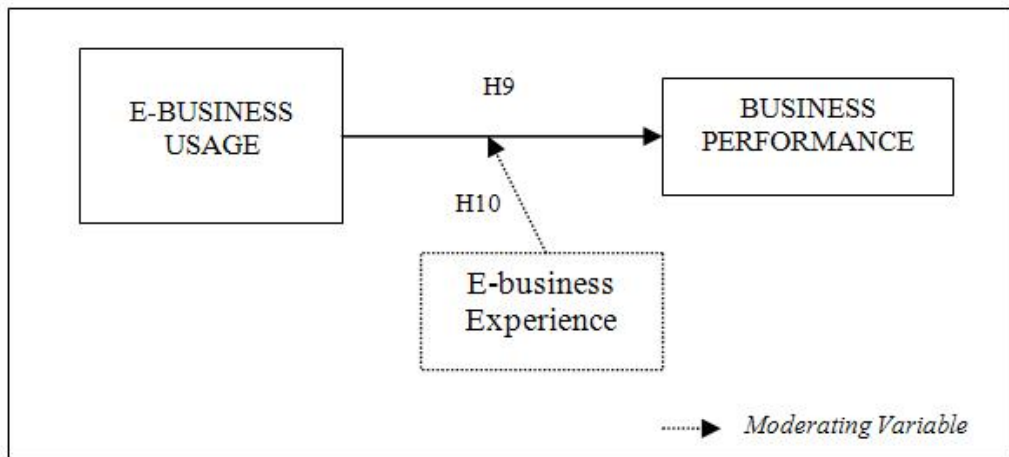
Figure 3.4: Factors Influencing Business performance
Source: Developed for the study

Applying the concept of the balanced scorecard (Kaplan & Norton, 1993), the current study examined the variable of primary interest (business performance) based on four perspectives (see Figure 3.5).
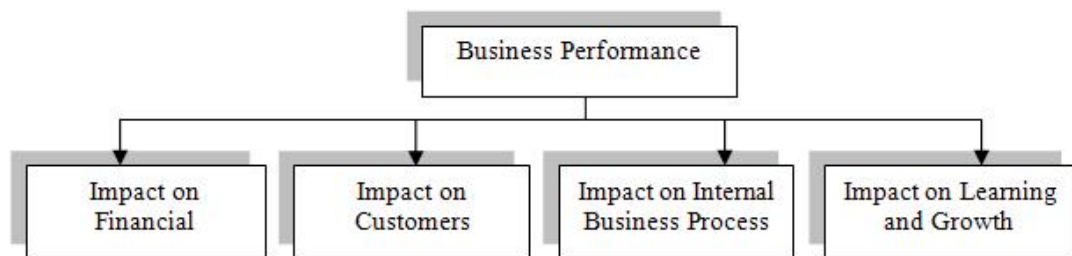
Figure 3.5: Measuring E-business Performance using Balanced Scorecard
Source: Developed for the study

The measurement attributes were modified to provide multidimensional views of performance measurement based on technology, accounting and business perspectives.

3.3.4 Research Questions and Hypotheses Development

Knowledge gaps in prior studies had limited our understanding on factors determining E-business usage on business performance in the Malaysian service industry. The current study was hoped to narrow down the knowledge gaps and

furnish useful information and strategies in helping new E-business participants by providing answers to the research questions as below:

i.   What factors functioned as key antecedents of E-business usage?

ii.   How E-business usage influenced business performance?

iii.   Whether E-business experiences (in number of years) moderated the "usage-performance" relationship of E-business?

Hypotheses was referred to "an idea or proposition which can be tested for associated or causality by deducing logical consequences which could be tested against empirical evidence" (Hussey & Hussey, 1997). Discussions on theoretical perspectives led the researcher to believe that E-business usage was predicted by multiple factors that acted as drivers to the level of E-business usage, and might influence firm's performance. Development of hypotheses enabled the researcher to predict the above mentioned relationships:

3.3.4.1 Hypothesis 1

Prior studies evidenced that technology resources acted as a significant factor in successful IS adoption (Kuan & Chau, 2001; and Crook & Kumar, 1998). In Mata et al. (1995); and Bharadwaj (2000), infrastructures, human resources and knowledge were said to be the components of technology resources. E-business service was said to be developed on the basis foundation of technology infrastructure (Robertson, 2005). Competence based theories suggested that companies' capabilities in acquiring, assimilating and exploiting new technical knowledge was relied on human resources portfolio (Szulanski, 1996; Arora and Gambardella, 1994; and Cohen & Levinthal, 1990). For the current research, technology competence was referred to technology infrastructures and IT human capitals that enabled E-business applications. Technology infrastructure established the platform for E-business development. Next, the knowledge and skills of IT human capital were used in developing E-business (Zhu & Kraemer, 2005). As technology competence seemed to be important towards E-business usage, hypothesis 1 (Figure 3.6) was developed:

Figure 3.6: Hypothesis 1
Source: Developed for the study

$H_0 1$: No significant relationship existed between technology competence and E-business usage.

$H_A 1$: Technology competence significantly predicted E-business usage.

3.3.4.2 Hypothesis 2

As part of the components that built web-functionalities, front-end was represented by visible content, for instance, page layout and user interface. Known as "the portion of an e-seller's business process through which customers interacted" (Turban & King, 2003), it basically referred to seller's web sites that interfaced the business organizations and customers. Wen et al. (2003) found that front-end functionalities successfully predicted E-business. Interactive technologies for example live chat, and interactive catalogues empowered online shoppers to control their shopping experience, and drew them deeper towards online purchasing (Young, 1984). Front-end functionalities enabled businesses to serve customers efficiently that led to effective transactions delivery, widened business sales, and contributed to performance enhancement (Zhu & Kraemer, 2002).

Back-end referred to activities supporting online ordering and fulfilment, inventory management, procurement, payment processing, packaging and delivery (Turban & King, 2004). Divided as front-end and back-end, those variables were tested to predict E-business value and it was found that back-end (that was not easy to duplicate) had stronger influence on E-business performance (Turban & King, 2003). Looking back at the definition, both variables actually referred to web-functionalities. In this study, both variables were renamed as Web functionalities, and regressed towards E-business usage. To test whether Web-functionalities influenced E-business usage, hypothesis 2 (Figure 3.7) was developed.

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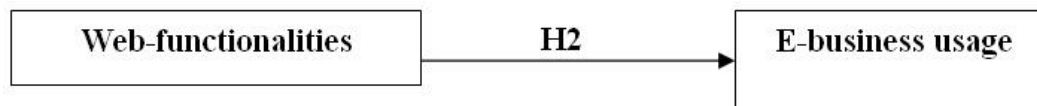
Figure 3.7: Hypothesis 2
Source: Developed for the study

H_02: No significant relationship existed between Web-functionalities and E-business usage.

H_A2: Web-functionalities significantly predicted E-business usage.

3.3.4.3 Hypothesis 3

Cost reduction resulted from business process improvement drove firms towards E-business implementation despite the firm size (The European E-business Report, 2004) but the high cost requirement for technology investment was a major barrier for small businesses. Larger firms were said to have gained more benefits as they were able to afford high technology solutions (The European E-business Report). Reviewing the literature on technology diffusion, it was discovered that the firm size was popular (Zhu et al, 2004; and Damanpour, 1992). Due to the fact that firm size represented company's precious resources (Zhu & Kraemer, 2005), a hypothesis (Figure 3.8) related to size effect was developed. Measured based on a firm's number of employees, firm size was classified into four; micro, small, medium, and large.
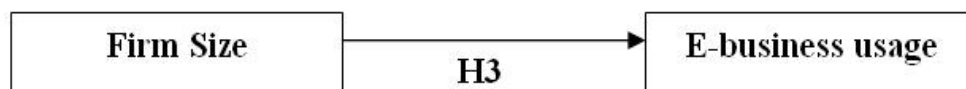
Figure 3.8: Hypothesis 3
Source: Developed for the study

H_03: No significant relationship existed between firm size and E-business usage.

H_A3: Firm size significantly predicted E-business usage.

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3.3.4.4 Hypothesis 4

A technology diffusion literature highlighted internationalization scope as an important construct. A larger scope was said to trigger high IT demand (Hitt, 1999; and Dewan & Kraemer, 1998). Basically internationalisation scope was referred as geographical context of a firm's business activities including business operations and trading globalization. The availability of E-business that erased the geographic limitation of business activities enabled firms to connect with the global market to widen their shares (Khan & Motiwalla, 2002). In testing the relationship between internationalization scope and E-business usage, hypothesis 4 (Figure 3.9) was developed.

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┌─────────────────────────────┐              ┌──────────────────┐
│  Internationalization Scope  │─────────────▶│  E-business usage │
└─────────────────────────────┘      H4       └──────────────────┘
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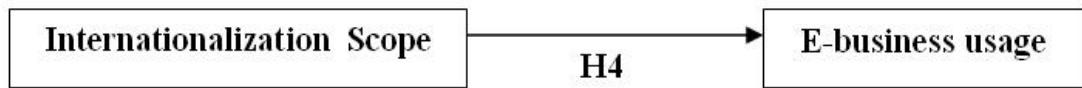
Figure 3.9: Hypothesis 4
Source: Developed for the study

$H_0 4$:   No significant relationship existed between internationalization scope and E-business usage.

$H_A 4$:   Internationalization scope significantly predicted E-business usage.

3.3.4.5 Hypothesis 5

Lack of studies on the influence of web technology investment costs on E-business usage made it important to be explored. High costs incurred in technology investment did not guarantee that a firm would succeed when invested in IT innovation (Caldeira, Crag & Wald, no date). Zhu and Kraemer (2005) however believed that a greater extent of usage could be achieved with high IT investment. Web technology investment costs referred to companies' financial commitment on developing E-business such as costs of hardware, software, and human resources training. Hypothesis 5 (Figure 3.10) was developed to identify the relationship between Web technology investment costs and E-business usage.

| Web Technology Investment Costs | H5 → | E-business usage |

Figure 3.10: Hypothesis 5
Source: Developed for the study

$H_0 5$: No significant relationship existed between Web technology investment costs and E-business usage.

$H_A 5$: Web technology investment costs significantly predicted E-business usage.

3.3.4.6 Hypothesis 6

The top management was responsible in driving the technology innovation (Igbaria et al., 1998). Support from top management contributed to the success of E-business (Gould, 2001; and Quinn et al, 1997). For the current study, managerial beliefs referred to the action of the top management towards E-business technology in creating a firms' value. To investigate the relationship between managerial beliefs and E-business usage, hypothesis 6 (Figure 3.11) was developed.

| Managerial Beliefs | H6 → | E-business usage |

Figure 3.11: Hypothesis 6
Source: Developed for the study

$H_0 6$: No significant relationship existed between managerial beliefs and E-business usage.

$H_A 6$: Managerial beliefs significantly predicted E-business usage.

3.3.4.7 Hypothesis 7

Technology advancement required new policies and regulations framework to be formulated to prevent technology abuse that could lead to technology withdrawal (www.comnetmt). For E-business to thrive, a legal framework was required in facilitating the use of and access to fundamental E-business infrastructures (Country

Progress Report Malaysia, 2004). Regulatory support significantly contributed to a country's E-business development. Defined as the government's responsibility to support E-business usage by developing E-business laws and granting incentives, regulatory support was found to be a critical environmental that could influence E-business usage (Zhu & Kraemer, 2005). In testing whether regulatory support predicted E-business usage, hypothesis 7 (Figure 3.12) was developed.

Figure 3.12: Hypothesis 7
Source: Developed for the study

$H_0 7$:   No significant relationship existed between regulatory support and E-business usage

$H_A 7$:   Regulatory support significantly predicted E-business usage

3.3.4.8 Hypothesis 8

In the sociology field, threshold models suggested that the decision to engage relied on competitors' presence in the market (Krassa, 1988). Quayle (2002); and Martin (2001) for example, discovered that pressure from customer, supplier and competitors drove E-business implementation. Those drivers could be classified as pressure intensity. To discover whether pressure intensity predicted E-business usage, hypothesis 8 (Figure 3.13) was developed.
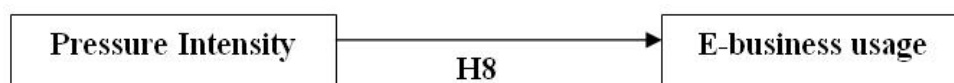
Figure 3.13: Hypothesis 8
Source: Developed for the study

$H_0 8$:   No significant relationship existed between pressure intensity and E-business usage.

$H_A 8$:   Pressure intensity significantly predicted E-business usage.

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3.3.4.9 Hypothesis 9

The intention of investing in E-business was to enhance business performance (Zhu & Kraemer, 2005). It was proved that firms that invested in E-business technology gained better performance (Clayton & Criscuolo, 2002). As in Khan and Motiwalla (2002) who studied "The influence of E-business on corporate performance: An empirical investigation in United States" out of 44 respondents, 64 percent found that E-business impact on ROI was favourable, 18 percent neutral and 18 percent unfavourable. As finding from western studies was hard to be applied in developing countries, the current study sought further support whether E-business usage predicted business performance. To answer this question, hypothesis 9 (Figure 3.14) was developed.
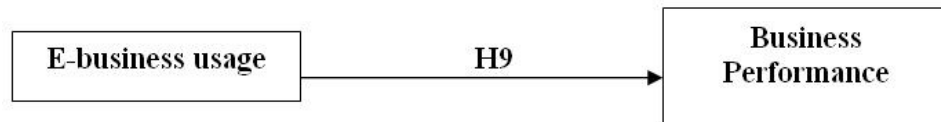
Figure 3.14: Hypothesis 9
Source: Developed for the study

$H_0 9$:   No significant relationship existed between E-business usage and business performance.

$H_A 9$:   E-business usage significantly predicted business performance.

3.3.4.10 Hypothesis 10

According to Baron and Kenny (1986); and Frasier, Tix and Barron (2004), moderating variable surfaced in between predictor and criterion variable. It modified the correlation in two ways:

i.   changes in the correlation strength

ii.   changes in the causality direction (either negative or positive)

Prior study by Kauffman et al. (2002) on firm's survivability using evolutionary game theory concluded that trial and error process resulted firms to

realize the survivability factors through exploration, experimentation, examination of market and performance feedback, and competitors' experience. For the current study, moderator variable E-business experience (measured in number of years) was tested to identify whether its inclusion would significantly moderate the "usage-performance" relationship. For this purpose, hypothesis 10 (Figure 3.15) was developed.
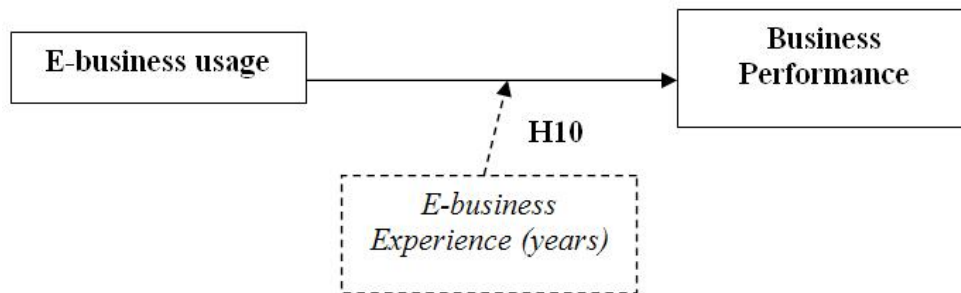
Figure 3.15: Hypothesis 10
Source: Developed for the study

$H_0 10$: E-business experience (years) had no significant influence on the relationship between E-business usage and business performance

$H_A 10$: The relationship between E-business Usage and Business Performance was significantly moderated by E-business Experience

3.3.5 Operational Definition

Operational definition was defined as "specific testing or measurement criteria" (Cooper & Schindler, 2003). In operational definition, measurement of a concept was based on the dimensions represented by the concept. Dimensions were then interpreted into elements that were able to be observed and measured to further develop measurement index for the concept (Sekaran, 2003).

In this study, there were 11 constructs or variables which covered dependent, independent, mediating, and moderating variables. Table 3.1 showed the operational definition of variables.

Table 3.1: Operational Definition of Constructs

Source: Developed for the study

CONSTRUCTS	ITEMS	INDICATORS
Technological Context: **Technology Competence (IV)** Definition: Technology competence referred to technology infrastructure and IT human resources that enabled the development and implementation of E-business References: (Zhu & Kraemer, 2005; Zhu, 2004; Kuan & Chow, 2001; Bharadwaj, 2000; Crook & Kumar, 1998)	TC1 TC2 TC3	Percentage of employees use computer at work Percentage of employees have IT qualifications Number of technology facilities used prior to E-business usage: EFT, EDI, Intranet, Extranet or others
Web Functionalities (IV) Definition: Web functionalities refer to both front-end and back-end components of a website References: (Wen, Lim & Huang, 2003; Turban & King, 2004; Zhu & Kraemer, 2005)	WF1 WF2 WF3 WF4 WF5 WF6 WF7	Website supports services review Website supports consumer customization Website supports account management Website supports registry of online community Web applications electronically integrated with back-office systems Company's databases electronically integrated with suppliers Company's databases electronically integrated with partners
Organizational Context: **Firm Size (IV)** Definition: Firm size represents important aspects of an organization such as resource availability, decision agility and prior technology experience. References: (Zhu & Kraemer, 2005; Karakaya & Khalil, 2004; Sciadas, 2004; European E-business Report, 2004; Barua et al., 2001; Hensler et al., 1997; Damanpour, 1992; Konings & Roodhooft, 2002)	SZ1	Number of employees

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Internationalization Scope (IV): Definition: Geographical extent of the firm's operation and its trading globalization. References: (Zhu & Kraemer, 2005; Khan & Motiwalla, 2002; Chopra and Meindl, 2001; Hitt, 1999; Dewan & Kraemer, 1998)	IS1 IS2 IS3 IS4	Geographical extent of operations: More than one establishment, establishments outside Malaysia and headquarters outside Malaysia Percent of total sales from outside Malaysia Percent of procurement spending from outside Malaysia Percent of business activities from outside Malaysia
Web Technology Costs (IV) Definition: Financial commitment by companies in setting up E-business system which requires investment in hardware, software system integration and employee training References: (Zhu & Kraemer, 2005; Karakaya & Khalil, 2004; Iacovou et al., 1995)	WT1 WT2	Firm's IS budget as a percent of total revenue Firm's web-based spending as a percent of total revenue
Managerial Beliefs (IV) Definition: The extent of top management acts towards E-business technology innovation References: (Coltman et al., 2003; Gallivan, 2001; Gould, 2001; Igbaria, 1998; Quinn et al., 1997; Rajagopalan & Spreitzer, 1996; Ginsberg & Venkataraman, 1992; Zaltman et al., 1973; Child, 1972)	MB1 MB2 MB3 MB4 MB5 MB6	Perceived increasing importance of E-business Increased market share Increased efficiency Improved knowledge sharing Improved communications Enhanced customer service
Environmental Context: **Regulatory Support (IV)** Definition: Government's role to encourage E-business usage by establishing E-business laws and providing incentives	RS1 RS2 RS3 RS4	High E-business incentives provided by government E-business required by government purchase Business laws supports E-business There are legal protection for online purchasing

References: (Kraemer et al., 2006; Zhu & Kraemer, 2005; Zhu et al., 2003; Dasgupta et al., 1999; Umnath & Campbell, 1994) **Pressure Intensity (IV):** Definition: Decisions to engage in a particular behaviour depends on perceived number of similar others in the environment References: Daniel & Wilson, 2002; Quayl, 2002; Martin, 2001	PI1 PI2 PI3	Customer pressure Supplier pressure Pressure by competitors
E-business Usage (IV/DV/Intervening): Definition: Execution, accomplishment or realization of any online activity References: (Migiro, 2006; Zhu & Kraemer, 2005; Asing et al., no date)	AD1 AD2 AD3 AD4	Perceived percentage of consumers sales conducted online Perceived percentage of B2B conducted online Perceived percentage of supplies for consumption ordered online Perceived percentage of equipment for business use ordered online
Business Performance (DV): Definition: The degree to which organizations achieve their goals with economy, effectiveness and efficiency References: (Zhu & Kraemer, 2005; Clayton & Criscuolo, 2002; Khan & Motiwalla, 2002; Ratnasingam, 2002; Senn, 2000; Benbast et al., 2000; Riggins & Rhee, 1998; Nath et al, 1998)	FI1 FI2 FI3 FI4 FI5 FI6 FI7 FI8 CI1 CI2 CI3 IBP1 IBP2 IBP3 IBP4 IBP5	Financial Impact: Online business activities are profitable Online business activities increase ROI Online business activities contribute to revenue Online business activities reduced the operational cost Online business activities reduced the cost of acquiring new customers Online business activities reduced CRM costs Online business activities reduced procurement costs Online business activities reduced inventory costs Impact on Customers: Online customers repeat their web purchases Online business activities reduced the number of customer complaints Online business activities generate new customers Impact on Internal Business Process: Increase on time delivery of services Reduce number of problems with customer reservation processing Reduce number of E-business issues reported in audit report Increased staff productivity Improved coordination with suppliers

E-business Experience (MV) Definition: The length of time that firm engaged in E-business activities Reference: (Kauffman et al., 2002)	EBE	Number of years in E-business

IV- Independent Variable, DV- Dependent Variable, MV- Moderating Variable

3.3.6 Justification for the Methodology

3.3.6.1 Sampling Procedure

Sampling referred to selecting from the population an adequate number of elements to allow generalization. As fundamental element of a quantitative study, a representative or good sample ensured the ability of results to be generalized to the population. Therefore, sample bias must be avoided by ensuring sample adequacy and sample randomness (Sekaran, 2003; and Hussey & Hussey, 1997). To determine whether the study needed to utilize population survey or sample survey, the rule of thumb by Johnson and Christensen (2010) was followed. Johnson and Christensen suggested that population survey was only recommended for a small population number (100 or less). Since the total population of the study was 731 (more than 100), sample survey was employed instead of population survey.

The population of this study involved online firms in tourism (hotels, resorts and hospitals), financial (banking and insurance), and transportation (air, sea, land and rail) (figure 3.16).

As in June 2006, 456 online hotels and resorts were found registered in the Malaysia Virtual Tourism portal. 35 online tourism hospitals were registered with the Malaysia Association of Private Hospitals until September 2006. Financial services (banking and insurance), was one of the leading services in the Malaysian E-business environment. The directory of Malaysian Central Bank as at 30th June 2006 showed that there were 33 banks and 36 insurance companies that implemented E-business (www.bnm.gov.my). Another sector related to online services was transportation.

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The Malaysian logistics directory for the year 2006 had listed 171 transportation companies that were involved in E-business. Considering these three sectors in the service industry that provided online services, the number of population was found to be 731.

As population was represented by multiple stratum, the current study employed stratified random sampling (Figure 3.16) due to its efficiency in avoiding misrepresentation of population members (Sekaran, 2003; and Hussey & Hussey, 1997). Determination of sample size was derived from a table by Sekaran (Appendix 3) which found that a sample of 254 to be drawn form a population of 731. However, the existence of sub-sample led to the requirement of minimum sub-sample of 30 based on Roscoe, (1975). Therefore, a sample of 260 needed to be drawn (see figure 3.17).
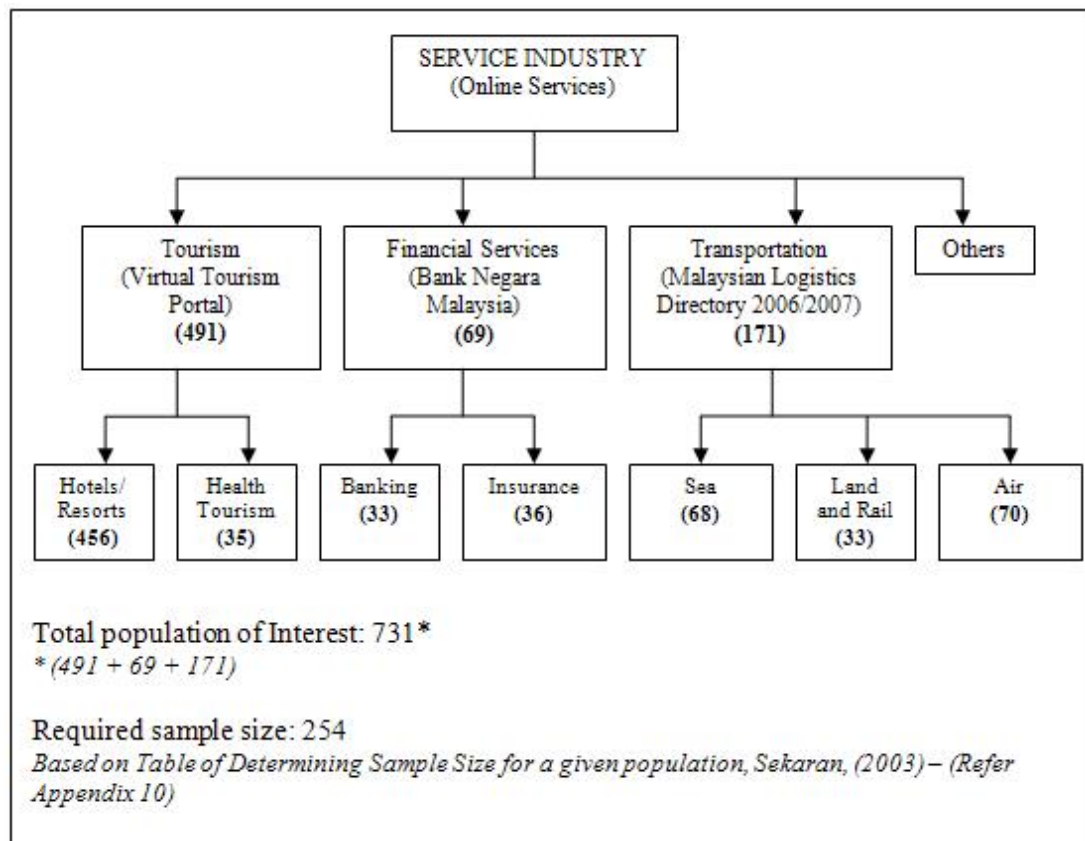
Figure 3.16: Population Determination
Source: Developed for the study

A selection of random sample (260 companies) fulfilled the requirement of appropriate sample size by Roscoe (1975), for which sample sizes should be in between 30 to 500. A sample that exceeded 500 contributed to Type II errors (Sekaran, 2003), for which the findings were accepted where in fact it should be rejected. For instance, in a large sample size (more than 500) significance level could be reached even for a weak relationship. Therefore, generalization of conclusions to the whole population was impossible. As the sample size (260) of the current study was in between 30 to 500, it could be said that Type II errors were avoided.
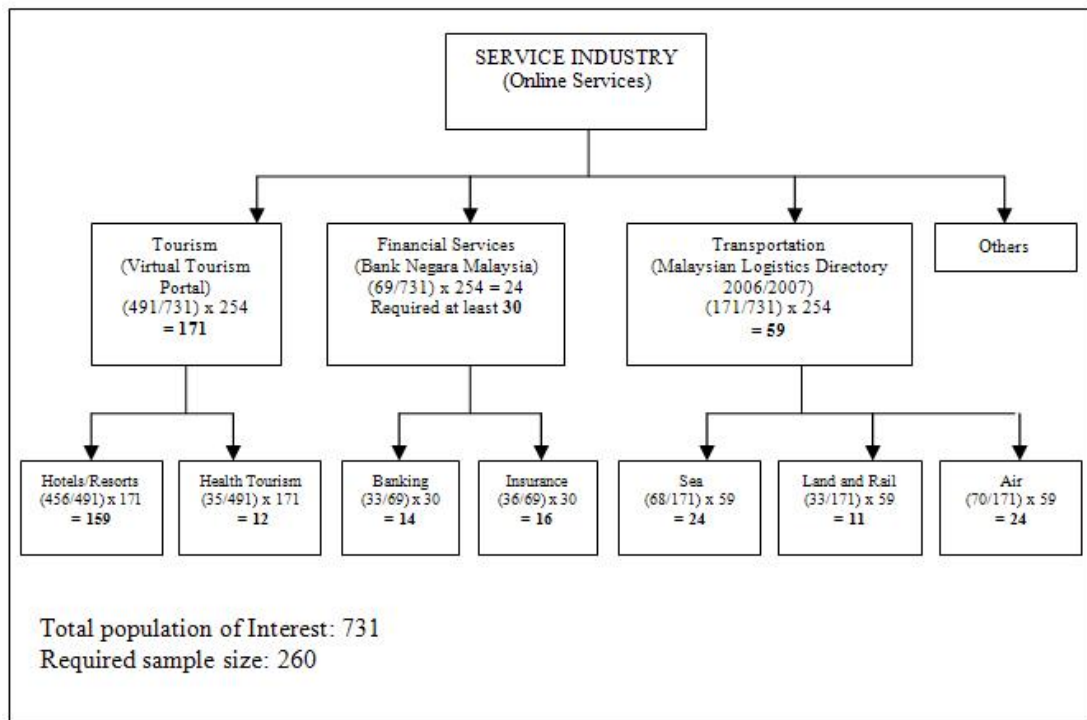
Figure 3.17: Stratified Random Sampling
Source: Developed for the study

In selecting the sample, three stratum were extracted from the population of interest; tourism, financial services, and transportation sectors. Calculations in figure 3.17 enabled the researcher to draw 171 companies from the tourism sector, 30 companies from financial services, and 59 companies from the transportation sector. To randomly select the companies to represent each sector, random numbers for each sub sector (Appendix 4) were generated from a website www.randomizer.org.my. The companies were then numbered according to sub sector. For example; hotel and

resorts were numbered from 1 to 456. Since the 159 respondents were needed for hotels and resorts, all 159 hotels and resorts were selected based on the random number provided by the software (Appendix 4).

3.3.6.2 Data Measurement Scale

Data was classified as qualitative (focused on qualities and non-numerical features), and quantitative (discrete or continuous that could be in numerical type) (Hussey & Hussey, 1997). Measurement was known as "the assignment of numbers to empirical events in compliance with a set of rules with the goal to provide the highest quality and lowest error data for hypothesis testing" (Cooper & Schindler, 2003). Data scale was required for measurement as it represented the item in the spectrum of possibilities.

Known as a method of assigning number or symbol to an object to communicate characteristics of numbers to the properties in question (Phillips, 1971), scaling was a tool to distinguish individuals based on their differences regarding the variable of interest (Sekaran, 2003). Mathematical rules could be used in manipulating the assigned values in the measurement process. The four basic scales were; nominal, ordinal, interval and ratio (Cooper & Schindler, 2003; Sekaran, 2003; and Hussey & Hussey, 1997).

The nominal scale allowed the researcher to assign subjects to at least two mutually exclusive groups such as male and female (Cooper & Schindler, 2003). These two groups (male and female) were known as dichotomous (StatsDirect Limited, 2007). The assignment of code numbers "1" and "2" to both groups served as a simple and convenient category labels with no intrinsic value (Sekaran, 2003). Among the four, nominal scale had the lowest impact. The scale suggested zero order relationship without arithmetic origin. Despite its lowest impact, nominal scale was useful for exploratory work especially if the research intended to discover relationships instead of secure precise measurement (Cooper & Schindler). Question A1 (industry sector) was a sample of nominal scale (Figure 3.18).

SECTION A: DEMOGRAPHIC INFORMATION

For question A1 and A2, please **tick** (/) your preferred answer

A1. Industry Sector: ☐ Banking   ☐ Insurance   ☐ Hotel/Resort   ☐ Medical Center   ☐ Sea Transportation

☐ Land & Rail Transportation   ☐ Air Transportation   ☐ Others (Please Specify) _____

Figure 3.18: Nominal Scale
Source: Developed for the study

Ordinal scale was used in classification of item to signify more or less characteristics (where categories had logical or ordered relationship). Ordinal scale enabled researcher to measure the degree of difference. It included nominal scale character with order indicator (Cooper & Schindler, 2003). Examples of ordinal data were opinions and preference scales.

For interval scales, items were ranked one step further as the distance between points was equal (such as degree in Celsius or Fahrenheit). It also enabled arithmetic calculation of collected data. Sample of interval scale (see Figure 3.19) allowed the measurement of distance between any two points (Sekaran, 2003).

Strongly Disagree   Disagree   Undecided   Agree   Strongly Agree
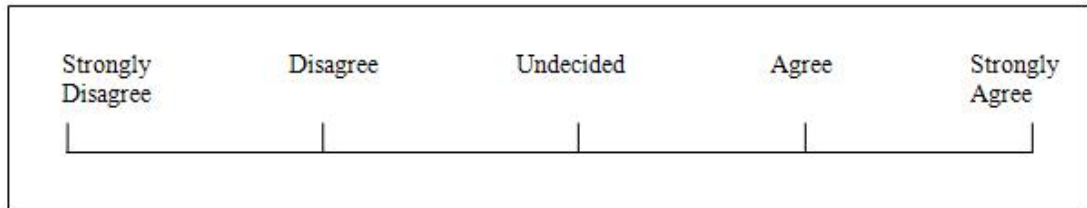
Figure 3.19: Interval Scale
Source: Sekaran (2003)

A ratio scale data had equidistant and a meaningful zero point. It was the most powerful scale with its unique zero origin plus tapped the proportions of differences between points (Sekaran, 2003). For example, the weight for two individual; a person weighing 80 kilograms (kg) was twice as heavy as one who weighed 40 kilograms. However, in the case of measuring temperature which seemed to have ratio properties, temperature was not a ratio scale because 30°C was not twice as hot as 15°C. Temperature can best be classified as interval scale. Ratio scales included all features of nominal, ordinal and interval scales. It represented the

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highest level of precision (Hussey & Hussey, 1997). For ratio scale, any statistics can be used on data collected in this form.

For business research purposes however, data measurement scale was not limited only to the four as discussed above (nominal, ordinal, interval and ratio) but can be classified in many ways such as categorical and comparative or rating and ranking scale (Cooper & Schindler, 2003). Rating scale was normally in the form of "like – dislike", "low – moderate – high" or other detail categories. As discussed in section 3.3.6.2, rating scale enabled the assignment of numerical value to an opinion such as in continuum rating scale (Hussey & Hussey, 1997). Continuum rating scale was used in obtaining numerical values of qualitative data. The two ends of a continuum were labelled with two words. Respondents were required to choose their choice along the scale (e.g.: 7 point scale). Scale length was always a debatable issue (Emory & Cooper, 1991). More points were said to lead to greater sensitivity (Choi, 2005). Three to seven point scales were commonly applied in research (Day, 1940).

As such, this study relied mainly on the continuum rating scale. However, other scales were also being used such as nominal scales, interval scales and ratio scales especially when the data collected were re-coded or transformed. Data transformation was a mathematical operation that changed the measurement scale of a variable in order to suit the statistical tests or method (StatsDirect Limited, 2007).

3.3.6.3 Instrumentation

In testing the conceptual model and the associated hypothesis, a survey was done to seek respondents' perception on factors determining E-business usage on business performance for which data collection relied mainly on questionnaire distribution. Questionnaire was defined as "a pre-formulated written set of questions to which respondents recorded their answers" (Sekaran, 2003). It was an efficient instrument when research requirements, expectations, and measurement of variables were clear. Questionnaires listed carefully structured questions chosen after doing considerable test to elicit dependable reply from the sample (Hussey & Hussey, 1997).

The questionnaire (Appendix 5) was developed based on a comprehensive literature search and the content validity was sought by an expert panel regarding content, scope and purpose. In avoiding bias, the study followed the guidelines of best practices as suggested by Hussey and Hussey 1997; Czaja and Blair 1996; and Salant and Dillman 1994 as follows:

i.   The instrument was limited to four pages.

ii.   A simple and clear explanation of research objectives was introduced.

iii.   Simple instructions were included.

iv.   The questionnaire used common wording and simple English – undefined abbreviations and complex terms were avoided. Simple English was used in explaining Jargons and technical terms.

v.   Subjective tones that could lead to questions and format bias were avoided.

vi.   In avoiding non-response errors, a simple and interesting to be answered questionnaire was designed.

vii.   Development of questions concerned on gaining respondent's willingness to respond with a careful and accurate answer.

viii.   Similar qualities and relevance were the basis used in grouping the questions.

ix.   Questions were designed to be relevant, easy to answer and interesting.

x.   Questions developed were applicable and answerable.

xi.   A mutually exclusive choices was a must in preventing response inaccuracies.

The above "best practices" of the questionnaire design were included into the questionnaire. Prior to final dissemination, pre-test and revisions were done to refine the four page questionnaire.

Open and close ended questions were used. Open-ended question (Figure 3.20) referred to questions for which respondents gave a personal response or opinion (Hussey & Hussey, 1997).

A3. When does your company start e-business? (Year): _____

Figure 3.20: Open-ended Questions

Source: Developed for the study

Close-ended questions (Figure 3.21) conversely, asked respondents to choose the alternative answers provided (Sekaran, 2003). Interpretations of close-ended questions were much easier as the questions were standardized and therefore could easily be analyzed. Besides, less time was needed in completing the questions. The respondents were required to select the answer that closely represented their viewpoints.

SECTION A: DEMOGRAPHIC INFORMATION
For question A1 and A2, please **tick** (/) your preferred answer
A1. Industry Sector: ☐ Banking ☐ Insurance ☐ Hotel/Resort ☐ Medical Center ☐ Sea Transportation
☐ Land & Rail Transportation ☐ Air Transportation ☐ Others (Please Specify) _____

Figure 3.21: Closed-ended Questions

Source: Developed for the study

Close-ended questions could be in many forms such as multiple choice answer and rating scale answer. In multiple choice answers (Figure 3.22), respondents were asked to select their answer from the predetermined responses or categories.

B4. INTERNATIONALIZATION SCOPE
Geographical Scope
IS1. Please **tick** (/) the box that describes the geographic extent of your operations (tick as many as apply):
☐ Your organization has more than one establishment
☐ Your organization has establishments outside Malaysia
☐ Your organization has headquarters outside Malaysia

Figure 3.22: Multiple Choice Answers

Source: Developed for the study

In rating scale, an opinion was translated into a numerical value (Hussey & Hussey, 1997). In obtaining the numerical values of qualitative data, continuum rating scale (Figure 3.23) was used for which the two ends continuum (with seven points likert scale) were represented by two words (i.e.: never and high). Respondents were required to circle their preference.

D2. IMPACT ON CUSTOMER (Please **circle** your answer)	Never						High
CI1. E-business customers repeat their web purchases	0	1	2	3	4	5	6
CI2. E-business activities reduced the number of customer complaints	0	1	2	3	4	5	6
CI3. E-business activities generate new customers	0	1	2	3	4	5	6
CI4. Overall, E-business activities have positive impact on customers	0	1	2	3	4	5	6

Figure 3.23: Rating Scale Questions Using a Continuum
Source: Developed for the study

Combinations of open and closed-ended questions were asked and organized as below:

i.   Section A: Demographic Information

Question A1 was asked to identify the industry sector either financial (banking / insurance), transportation (sea / land & rail / air) or tourism (hotel / resorts / hospitals or medical centre with health tourism). Question A2 provided information regarding respondent's position. Since the questionnaire sought answers from IS or non-IS managers, question A2 was used to check for possible survey bias. Question A3 was an open-ended question that sought information on when the company started E-business. This would help the researcher to identify the E-business experience of a company which would be tested as moderator variable that could influence the "usage-performance" relationship.

Figure 3.24: Demographic information
Source: Developed for the study

ii.   Section B: Drivers for E-business Usage

Applying the concept of the TOE model, section B classified eight drivers under technological, organizational, and environmental contexts:

a.   Technological Context

In sub-section B1 (Figure 3.25), three questions (TC1, TC2 and TC3) measured "technology competence".

Figure 3.25: Technology competence
Source: Developed for the study

Question TC1 sought information on employees' level of computer usage. Question TC2 provided data regarding employees' IT qualifications. For question TC3, prior technology facilities used by company before E-business adoption were sought.

In sub-section B2 (Figure 3.26), seven questions (WF1-WF7) together with WF8 that sought respondent's opinion on the company's overall web-functionalities measured "web-functionalities".

Figure 3.26: Web-functionalities
Source: Developed for the study

b.   Organizational Context

Sub-section B3 (Figure 3.27), gained information of "firm size" measured by number of employees (SZ1).

Figure 3.27: Firm size
Source: Developed for the study

In sub-section B4 (Figure 3.28), four items; geographical scope (IS1), and trading globalization (IS2-IS4) measured "internationalization scope".

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Figure 3.28: Internationalization Scope
Source: Developed for the study

In sub-section B5 (Figure 3.29), "web-technology investment costs" was measured by two items; information system budget (WT1) and web-based spending (WT2) as a percentage of total revenue.

Figure 3.29: Web-Technology Investment Cost
Source: Developed for the study

In sub-section B6 (Figure 3.30), "managerial beliefs" was measured based on the extent managerial belief factors (MB1-MB6) influenced E-business usage and the overall influence of managerial beliefs towards E-business usage (MB7).

Figure 3.30: Managerial Beliefs
Source: Developed for the study

c.   Environmental Context

In sub-section B7 (Figure 3.31), "regulatory support" was measured by four elements (RS1-RS4) that incorporated government incentives and regulatory framework. RS5 next, gathered information on the overall influence of regulatory support on E-business usage.

Figure 3.31: Regulatory Support
Source: Developed for the study

In sub-section B8 (Figure 3.32), "pressure intensity" was measured by three questions (PI1-PI3); customer, supplier and competitor's pressures. Question PI4 gave the overall overview of how pressure intensity influenced E-business.

Figure 3.32: Pressure Intensity
Source: Developed for the study

iii.   Section C: E-business Usage

Section C represented the measurement of independent/dependent/ intervening variable "E-business usage" (Figure 3.33) which covered the extent of E-business usage and online activity distributions. For E-business usage, respondents were required to tick facilities provided by the company's website while for online

www.manaraa.com

activity distributions, five questions were asked (AD1-AD5) regarding the company's online activities.

Figure 3.33: E-business Usage
Source: Developed for the study

iv.   Section D: Business Performance

Section D represented the dependent variable, and business performance. Divided into four sub-sections; impact on financial (Figure 3.34); customer (Figure 3.35) internal business process (Figure 3.36), and learning and growth (Figure 3.37), the measurement elements for each sub-section was developed from various theories on performance measurement that concerned technology, management and accounting aspects.

Figure 3.34: Impact on Financial
Source: Developed for the study

Figure 3.35: Impact on Customer

Source: Developed for the study

Figure 3.36: Impact on Internal Business Process

Source: Developed for the study

Figure 3.37: Impact on Learning and Growth

Source: Developed for the study

Overall, this study comprised mainly on close-ended questions with multiple-choice answers and continuum rating scale that allowed the respondents to answer them with ease. The close-ended questions made it easier for the answers to be formulated and tabulated. Open-ended questions were used to probe deeper into the subjects when necessary.

3.3.6.4 Pilot Test

The data collection phases of the research process typically began with a pilot test as it helped the development of survey questionnaire (Sekaran 2003; Cooper & Schindler 2003; Hussey & Hussey, 1997; and Babbie, 1973). The aim of conducting a pilot test was to identify flaws in design and instrumentation. The best advice in a pilot test was that subjects were to be drawn by simulating the procedures and protocols in data collection. This would provide the researcher an overall view of questionnaires, respondents and actual test administration. Besides, a pilot test enabled the measurement of validity and reliability of instrument. Validity sought the answer to whether the findings represented what it appeared to be (Robson, 1993). Reliability reflected finding's credibility (Hussey & Hussey, 1997). Some of the other advantages for conducting a pilot test were as follows (Sproull, 1995):

i.   helped determine the appropriateness of research questions and hypothesis;

ii.   enabled checking of data collection method;

iii.   information gathered enabled procedures modification prior to the real test;

iv.   checking the appropriateness of statistical test; and

v.   enhanced researcher's reputation for thoroughness

As said by Cooper & Schindler (2003), the pilot group might range in between 25 to 100 respondents but did not have to be statistically selected. Rossi, Wright and Anderson (1983), found that 20 to 50 respondents were adequate in discovering a questionnaire's error.

In the current research, 50 questionnaires for the pilot test were sent to the respondents from tourism, financial and transportation sectors for which 32 responses were received. The questionnaire was addressed to the Human Resource Manager, for dissemination to the respective person. A cover letter that stated "The questionnaire is to be completed by any of the followings: CEO, President, Managing Director, CIO, CTO, Vice President of Information System, Information System Manager/Director/Planner, Other Manager in Information System

Department, Business Operations Manager/COO, Administration/Finance Manager/CFO or other respective personnel related to E-business" was attached to the questionnaire. From the date the questionnaires were posted, one month was given for respondents to return the completed questionnaire. However, it was found that one month was not enough because the postage process for sending and receiving the questionnaires took about two weeks. Since the questionnaire was addressed to the Human Resource or Public Relations Manager, the inter-department documents flow required more time. The researcher had also received few phone calls asking for extension due to reasons such as respective person in-charge was outstation or on leave. To avoid such problems during the final data collection, the one month was extended to one and half month, allowing the extra two weeks for the postage process.

The operational definition of constructs in table 3.1 was then finalized after conducting the pilot test. Cronbach's alpha was used to measure internal consistency. As no exact minimum of cronbach's alpha score, the study applied 0.6 as the cut-off point (Jones, LoPresti, Naphtali & Whitney, 1999). Following the rule of thumb 0.6, one attribute, geographical scope (IS1) was dropped. Table 3.2 depicted Cronbach's alpha score of each construct.

Table 3.2: Cronbach's Alpha
Source: Computed Data Analysis

CONSTRUCTS	NO. OF INDICATORS	CRONBACH'S ALPHA
Technology Competence	3	0.648
Web-functionalities	7	0.948
Internationalization Scope	4	0.760
Web Technology Costs	2	0.925
Managerial Beliefs	6	0.936
Regulatory Support	4	0.920
Pressure Intensity	3	0.941
E-business Usage	4	0.958
Business Performance	20	0.987

3.3.6.5 Data Collection Procedures

Questionnaires were used as the instrument for data collection and were sent to Human Resource Manager for distribution at selected companies under study. These personnel were chosen because they were at a higher position and normally involved in policy setting besides knowing the overall aspects and performance of the companies. Questionnaires were administered by mail. Although better response rate could be attained by hand distribution, time and cost limitations were the major constraints. The companies in the sample size were located all over Malaysia and it was impossible for the researcher to distribute the questionnaires by hand in a limited time and budget. According to Eunson (1994), the major problem with mail questionnaires was that they had a low response rate. To ensure a higher success rate, the following steps were taken as suggested by Coopers and Schindler 2003; Sekaran 2003; Hussey and Hussey 1997; and Robson 1995:

i.   Questionnaires attached with high quality self-addressed envelope and stamps were sent to respondents. The method could encourage responses as it simplified the return process.

ii.   A cover letter specifying the objectives and importance of the survey; confidentiality assurance and encouraged reply were attached (Appendix 6).

iii.   Questionnaire was supported by a letter from ICT Policy and Planning Unit, MOSTI Malaysia (Appendix 7) with an intention to persuade responses. With this approach, companies put more attention for which if they were unable to reply within the required period, they requested for an extension. As for the companies that were unable to participate in the survey, a formal letter with reasons was sent to the researcher with a copy to MOSTI (Appendix 8).

iv.   To ensure that the researcher could be contacted if there were any enquiries regarding the questionnaires, the researcher's information such as phone number and e-mail address was provided.

v.   To avoid problems due to technical terms when answering the questionnaire, a list that defined the technical terms (Appendix 9) was included as a reference for respondents.

vi.   Questionnaires for the pilot test were distributed in March 2006, and the final questionnaire distribution was made in between May to July 2006. These periods were chosen to avoid festive holidays and year-end period. Companies were busy with accounts closing during the year-end and this could lead to low responses (Robson, 1995).

3.3.6.6 Data Processing

The five steps to be done prior to data analysis included; editing data, handling blank responses, coding, categorizing and entering data.

i.   Editing data

Editing data was a requirement if it involved open-ended questions (Sekaran, 2003). For the current study, responded questionnaire was examined regarding incompleteness and inconsistencies. Out of 165 responses, five were found to have blank responses on the demographic information, two on the geographical scope and two on the business performance part.

ii.   Handling Blank Responses

According to Sekaran (2003), blank responses might be due to many reasons such as vague questions, unknown answer by respondents, secrecy of information and many others. To handle blank responses, the researcher needed to calculate the percentage of blank responses as compared to the total questions for each questionnaire was identified. This was done to follow the rule of thumb by Sekaran, for which if unanswered questions met 25 percent of the questionnaire, it should be excluded. In this study, blank responses found did not exceed the 25 percent rule. The blank responses were handled as follows:

- Two questionnaires were found to have blank responses regarding the year the company started E-business. This was solved by referring to the companies' websites to find the answer.

- There were two questionnaires that had blank responses for question A1, the industry sector. However, the assignment of code for each questionnaire helped to solve this problem.

- For blank responses regarding the question on geographical scope, a follow-up call was made to get the needed information.

- For the continuum rating scale questions regarding the items to measure business performance, an approach as suggested by Sekaran (2003) was followed. Sekaran suggested that for interval-scaled item with mid-point, blank responses could be replaced by mid-point.

iii.   Data Coding

Data coding simplified data entry and data analysis. For question A1 (industry sector) data coding was done based on three sectors, tourism, financial services and transportation services. Question A2 on respondent's position was coded as, "IT managers" and "non-IT managers" and; data on geographical scope GS1 was coded into three scales of 1 (lowest) to 3 (largest) based on the extent of operation.

iv.   Data Categorization

Prior to data analysis, data categorization was useful especially when all items were grouped together to measure concepts by using transform and RECODE function in SPSS (Sekaran, 2003). For instance, to measure business performance, instead of classifying measurement items under four perspectives, it could also be grouped together to provide overall evaluation on business performance.

v.   Data Entry

With advancement in technology such as the use of web-based questionnaire, the data entry process could be done automatically when respondents answered the questionnaire. However, questionnaires in this study relied mainly on the mail distribution method. Therefore, manual data entry was done using SPSS software.

3.3.6.7 Data Analysis Procedure

Analyzing data involved data reduction, summaries development, patterns identification and the application of statistical technique. In managing the responses, researchers were required to develop diverse functions, explore networks among variables, interpret the findings, determine if the results were consistent with hypothesis and theories and finally make recommendation based on data interpretation (Coopers & Schindler, 2003).

In this study, data coding and analysis were done by Statistical Package for Social Sciences (SPSS) version 12.01 and Analysis of Moment Structure (AMOS) Graphic 5.0. At the analysis stage, appropriate descriptive and inferential statistics were used. According to Zikmund (1994), the statistical method chosen depended on measurement scale, number of variables, and type of questions. Keller and Warrack (1997) stated that knowing the type of data being measured was important because it determined type of statistical techniques.

In analyzing the data, this study focused on four important objectives; feel for the data, testing the goodness of data, testing the hypothesis developed for the research, and testing the E-VALUE model fit.

i.   Feel for the Data

It gave ideas on the quality of scales, data coding, and data entry (Sekaran, 2003). Central tendency and dispersion were used in checking feel for data. The mean, range, standard deviation, and variance in the data provided an overview of items and measurement quality regarding the responded questionnaire.

ii.   Testing Goodness of Data

Goodness of data related to testing reliability and validity of measures. This study conducted a pilot test to ascertain the instrument's reliability and validity. Validity and reliability were critical elements to produce a quality and reliable research. In conducting this research, Cronbach's alpha (Cronbach & Meehl, 1995) test was used in measuring internal consistency reliability.

a.   Reliability Analysis using Cronbach's Alpha

Cronbach's alpha referred to "a reliability coefficient that indicated how well the items in a set were positively correlated to one another. It was computed in terms of the average intercorrelations among the items measuring the concept" (Sekaran, 2003). Value closer to 1 showed higher internal consistency reliability. The rule of thumb of 0.60 as specified by Jones et al. (1999) as the cut off point was followed.

b.   Validity

Validity referred to "the extent to which the research findings accurately represented the real situation" (Hussey & Hussey, 1997) for which "a test measures what we actually wished to measure" (Cooper & Schindler, 2003). According to Coolican (1992), a valid test existed when it demonstrated or measured what the researcher thought or claimed it did. Validity could be undermined due to faulty of research procedures, poor sampling and inaccurate measurement. Research validity could be assessed based on content validity and construct validity.

•   Content Validity

The content validity of a questionnaire referred to the representativeness or sampling adequacy of the content (Norzaidi, 2008). Content validity was "a function of how well the dimensions and elements of a concept had been delineated" (Sekaran, 2003). Face validity was the minimum index of content validity (Sekaran, 2003; and Burns & Bush, 2000), the extent to which people believed that the survey measured the proper area.

As for the current study, to examine the content validity, prior studies were used in evaluating each construct. Either adapted from the previous scales or expert panel, a pilot test was conducted to acquire sufficient content validity.

- Construct Validity

Construct validity gave evidence on the extent to which the measure fitted the theories which was evaluated based on convergent and discriminant validity. Convergent validity assessed the consistency across multiple operationalizations (Zhu & Kraemer, 2005). In a case where a concept that was measured by two different instruments were highly correlated, convergent validity was said to be established. Discriminant validity on the other hand was established when "based on theory, two variables were predicted to be uncorrelated and the scores obtained by measuring them were indeed empirically found to be so" (Sekaran, 2003).

A factor analysis uncovered the dimensions of a variable (Ives, Olson & Baroudi, 1983) and was used to test construct validation. A minimum requirement of 100 cases was needed to run factor analysis (Garson, 2006), subjects should be a minimum of five times the number of variables or 100 (Hatcher, 1994). The current research studied 12 variables. Following the rule of thumb, the factor analysis could be conducted based on the following calculations; the number of subjects should be 60 (5x12) or 100, whichever was higher. Therefore, with a response of 165 (>100), the factor analysis could be conducted.

3.3.6.8 Hypothesis Testing

As explained in 3.3.4, as an idea or proposition, hypotheses were tested for association or causality (Hussey & Hussey, 1997). The relationship among variables was established through logical reasoning in the theoretical framework and was ready to be tested. Hypothesis testing was conducted to determine whether or not the hypotheses were substantiated.

In this study, the E-VALUE model that represented the hypotheses of the study was tested using structural equation modelling (SEM) technique. SEM simultaneously estimated the relationships between multiple independent, dependent

and latent variables. It encouraged confirmatory, rather than exploratory, modelling and therefore suited the theory testing, rather than theory development. As the current study aimed at testing the hypothesis which was represented in the form of the E-VALUE model in order to seek for empirical evidences on factors determining E-business usage on business performance; for which one of the objectives was to test the influence of moderator; and with latent variable (technology competence, and internationalisation scope) measured by multiple indicators, SEM was chosen as the statistical analysis method.

3.3.6.9 Testing the E-VALUE Model Fit

The advantage of using the SEM was that it enabled the assessment of model fit. In assessing the fit of the proposed model to the actual data, fit indices were used to determine whether to accept or reject the proposed E-VALUE. The acceptance of the proposed model led to path coefficient interpretation. The three types of fit indices were; absolute, incremental and parsimonious:

i.   Absolute Fit Indices

Chi-square, relative chi-square, and the root mean square error of approximation (RMSEA), were commonly used.

a.   Chi-Square

The chi-square statistics was utilized in testing the difference between the predicted and the observed relationships (correlation/covariance). It was the chi-square fit index divided by degree of freedom, to avoid dependency on sample size. Since a close fit was predicted, a non-significant chi-square was required. This meant that if a model chi-square was <0.05, the proposed model was rejected. In short, the chi-square value shouldn't be significant when the model fit was good (Garson, 2006).

The chi-square test however was sensitive for instance, power increased together with an increase in sample size. It enabled detection of small discrepancies between the observed and predicted covariance and suggested that the model did not

fit the data (Guarino, 2004). Kline (1998) stated that to ensure adequate fit, 3 or less was acceptable.

b. Relative Chi-Square

Relative chi-square was also recognized as normal chi-square, for which the chi-square fit index was divided by degrees of freedom to make it less dependent on sample size. Relative chi-square should be in the 2:1 or 3:1 range for an acceptable model. Kline (1998) indicated that 3 or less was acceptable.

c. Root Mean Square Error of Approximation (RMSEA)

The root mean square error of approximation (RMSEA) was the average of the residuals between the observed correlation/covariance from the sample and the expected model estimated from the population. Moreover, the RMSEA was the discrepancy per degree of freedom. By convention, there was a good model fit if the RMSEA was less than or equal to 0.08 while values greater than 0.10 were unacceptable.

ii. Incremental Fit Indices (IFI)

IFI measured fit relative to the independence model, which assumed that no relationships existed in the data. The independence model was the worst possible model. These measures, with values ranging from zero to one, indicated how much better the hypothesized model fitted in comparison to the baseline that assumed that there were no relationships in the data. Values of 0.95 or greater were deemed acceptable.

a. Comparative Fit Index (CFI)

CFI compared the existing model fit with a null model that assumed the latent variables in the model were uncorrelated; which was the independent model. CFI varied from zero to one, with a CFI close to one indicated a very good fit (Garson, 2006).

iii.   Parsimonious Fit Indices

This fit index adjusted the estimated in providing model comparisons with different numbers of estimated parameters in determining the impact of parameters addition (Guarino, 2004). When comparing models, the higher parsimony measure represented the better fit (Garson, 2006).

a.   Parsimony Comparative of Fit Index (PCFI)

The parsimony comparative of fit index (PCFI) was used to test model fitness. PCFI was equal to PRATIO times CFI.

3.3.7 Assumptions

It was assumed that prior literature which led to framework development was valid and assisted the researcher in developing methodology, and reporting effective findings. Besides, positive assumptions were also made regarding information validity and representativeness that were collected through questionnaire.

3.3.8 Limitation

The study focused only on online tourism (hotels, resorts and hospitals), financial services (banking and insurance), and transportation services (air, land, rail and sea). Therefore, a generalization of conclusions could not be made to the whole service sector.

3.3.9 Expected Outcomes and Practices

This study aimed at seeking empirical evidences on factors determining E-business usage on business performance in the Malaysian service industry. More specifically, the study assessed the influencing drivers of E-business usage and how E-business usage influenced business performance after considering length of time using E-business as moderating variable. It was hoped that the study could generate outcomes and practices as below:

i.   Knowledge enhancement in Malaysia's E-business service sector was acquired with the development of a multidimensional theoretical foundation that

provided empirical evidence on factors determining E-business usage on business performance.

ii.   Research outcomes were useful to encourage traditional businesses to invest in E-business.

iii.   The findings were useful for E-business firms in evaluating the current study of the business and could help to determine areas needed for business process change (automation, improvement, or re-engineering) in maximizing the profits.

iv.   Research outcome functioned as useful inputs to regulatory bodies related to E-business such as MOSTI, MDEC, or MIMOS. Government incentives, legal framework, and policy related to E-business should be strengthened to attract more participants

3.4 Chapter Summary

Discussions in chapter 3 were on methodology employed in the research which covered the introduction, research philosophy, research design, and chapter summary. Chapter 4 next presented the data analysis.

4.1 Introduction

Chapter 3 discussed the methodology of the study which focused on the research design (research problem, purpose of research, theoretical framework, research questions and hypothesis, operational definition, methodology used, assumptions, limitations, and expected outcomes and practices). This chapter next discussed data analysis and findings with focus on four important objectives; examining the feel for data, testing the goodness of data, testing the hypotheses developed for the research, and testing the E-VALUE model fit.

4.2 Data Analysis: An Overview

Before conducting data analysis for hypothesis testing, it is suggested that some preliminary steps are conducted in ensuring that data achieved good quality for further analysis. Figure 4.1 exhibited the five steps in data analysis: (1) getting data ready for analysis, (2) getting a feel for the data, (3) testing the goodness of data, and (4) testing the hypothesis, and since this study used structural equation modelling in testing the hypothesis; another step is added, (5) testing the model fit.
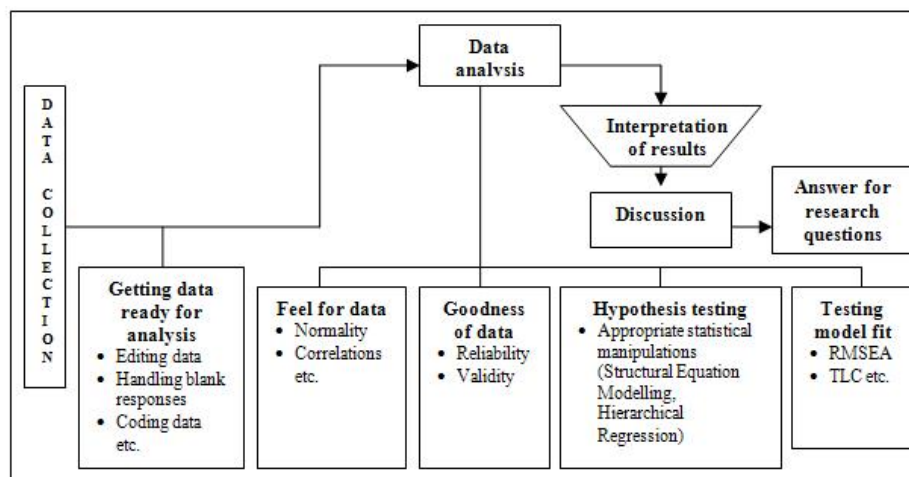
Figure 4.1: Flow Diagram for Data Analysis Process

Source: Sekaran, (2003)

4.3 Getting Data Ready for Analysis

4.3.1 Preparing the Data: Examining Response Rate and Handling Blank Responses

Response rate was referred to as "the proportion of subjects in a statistical study who respond to a researcher's questionnaire" (http://dictionary.bnetcom) which is also similar to a definition of response rate by Market Directions Analytical Group, (2001), "the proportion of persons included in the sample who actually complete the questionnaire or interview".

An issue arose when the response rate is said to be low as it led to the rise of sampling bias. Due to the fact that many believe that response rate reflected the survey quality (with an assumption that high response rate resulted in high result accuracy) (Rea & Parker 1997; Aday 1996; Babbie 1990; and Backstrom & Hursh 1963), few studies were found to challenge the presumption. In Visser, Krosnick, Marquette and Curtin (1996) for example, it was found that low response rates (near 20%) resulted in more precise measurements as compared to high response rates (near 60 or 70%). This was supported by Keeter et al. (2006) of which a survey of 25% response rate when compared to a survey with higher response rate of 50% yielded a result that was statistically indistinguishable.

The above findings suggested that there was no assurance that a low response rate led to low survey accuracy. The researcher was therefore cautioned that response rate did not necessarily differentiate reliably between accurate and inaccurate data.

As this study employed the mail distribution method, the study followed the rule of thumb by Hussey and Hussey (1997) regarding the minimum requirement of 10% response rate should be acquired in avoiding sample bias. In addition, the current study followed the guidelines from a "table for determining returned sample size for a given population size for continuous and categorical data" by Bartlett, Kotrlik, & Higgins (2001) that required the minimum responded sample size (responses received) of 102 for a population of 700. A returned sample size of 104

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was needed for a population of 800 (Table 4.1). Therefore, the 165 responses fulfilled the requirement.

Table 4.1: Table for Determining Minimum Responded Sample Size For a Given Population Size for Continuous and Categorical Data

Source: Bartlett, Kotrlik, and Higgins (2001)

Population Size	Sample Size					
	Continuous data			Categorical data		
	alpha=.10 t=1.65	alpha=.05 t=1.96	alpha=.01 t=2.58	p=.50 t=1.65	p=.50 t=1.96	p=.50 t=2.58
100	46	55	68	74	80	87
200	59	75	102	116	132	154
300	65	85	123	143	169	207
400	69	92	137	162	196	250
500	72	96	147	176	218	286
600	73	100	155	187	235	316
700	75	102	161	196	249	341
800	76	104	166	203	260	360
900	77	105	170	209	270	382
1000	79	106	173	213	278	399
1500	83	110	183	230	306	461
2000	83	112	189	239	323	499
4000	83	119	198	254	351	570
6000	83	119	209	259	362	598
8000	83	119	209	262	367	613
10000	83	119	209	264	370	623

Following Hussey and Hussey (1997), 22.57 percent of response rate denoted the avoidance of sample bias which meant it adequately represented the population. As the population for this study was 731, based on table 4.1 above, 104 responses was needed as the minimum requirement of returned sample size by Bartlett et al. (2001). Figure 4.2 illustrated the overall overview of population, sample and responses of this study.
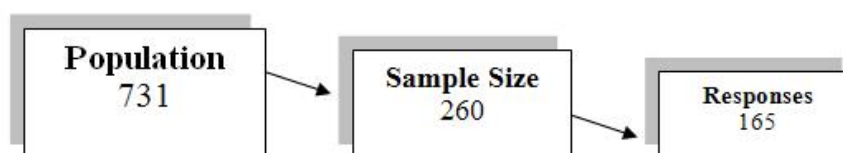
Figure 4.2: Population, Sample Size, and Responses of the Study

Source: Developed for this Study

Hoyle (1995) ruled out a requirement of sample size to be between 100 to 200 to gain confidence in the goodness of fit test for SEM. Another rule of thumb regarding the use of SEM in examining the measurement quality and to examine predictive relationship simultaneously was suggested by Loehlin (1992). At least 100 cases or responses should be collected. As the current study received 165 returned questionnaires, it granted the use of SEM in testing the proposed E-VALUE model.

In this study, 165 responses were received. Out of 165 responded questionnaires, five were found to have blank responses on the demographic information, two on the geographical scope, and two on the business performance part.

As discussed in chapter 3, in handling blank responses, for each questionnaire, the percentage of blank responses were compared to the total questions. This was done to follow the rule of thumb by Sekaran (2003), for which if 25 percent of questionnaire items were unanswered, the questionnaire should be excluded. In this study, blank responses were found to not exceed the 25 percent rule. Therefore, no questionnaires with blank responses were discarded. All blank responses were handled as discussed in chapter 3.

4.4 Feel for Data

By conducting tests regarding feel for data, it furnished information such as initial facts of how fine the scales were, and also an overview of the data coding and data entry (Sekaran, 2003). In this study, testing feel for data was done by examining the central tendency and dispersion. As suggested by Sekaran, the analysis was organized into three; (1) the frequency distribution of demographic variables; (2) normality, the mean, standard deviation, range, and variance of dependent and independent variables, and; (3) an inter-correlation matrix of the variables.

4.4.1 Frequency Distribution of Demographic Variables

For this study, click and mortar organizations in the service industry represented the unit of analysis. Respondents of the study varied concerning a

number of demographic variables such as industry sector, firm size and respondent position.

Table 4.2: Sample Characteristics (N=165)
Source: Developed for this study

	Frequency	Percentage %	Cumulative Percentage %
Industry Sector:			
Financial Services	38	23	23
Transportations	31	18.8	41.8
Tourism	96	58.2	100
Firm Size (Number of Employees):			
10-49 (Small)	17	10.3	10.3
50-249 (Medium)	67	40.6	50.9
250 and above (Large)	81	49.1	100
Respondent Position:			
IT Managers (CIO/CTO/VP of IS; IS Manager, Director, Planner; Other Manager in IS Department)	50	30.3	30.3
Non-IT Managers (CEO, President, Managing Director; Business Operations Manager, COO; Administration/Finance Manager, CFO)	115	69.7	100

Table 4.2 demonstrated the sample descriptions for the study. Each of these demographic variables was discussed as below:

i.   Industry Sector

The sample comprised companies from three sectors; financial (23 percent), transportation (18.8 percent), and tourism (58.2 percent). The pie chart in figure 4.3 showed that the tourism sector demonstrated the highest percentage, followed by financial services, and transportation.
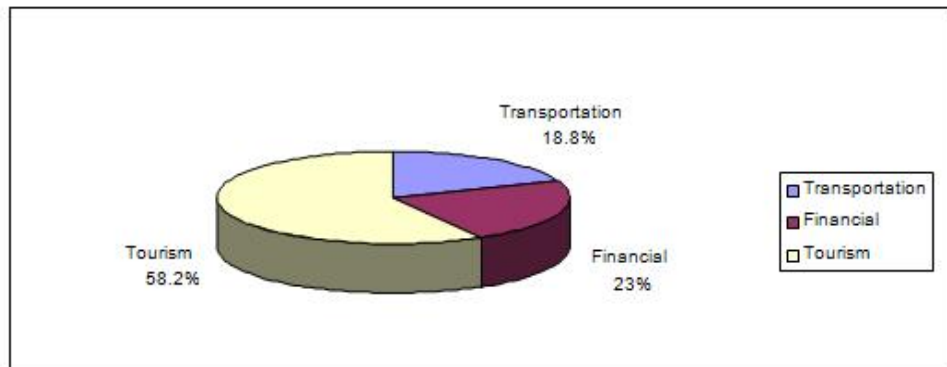
Figure 4.3: Pie chart for Industry Sector
Source: Computed Data Analysis

ii.   Firm Size

Figure 4.4 showed that from the 165 responded questionnaires, data on number of employees (a measurement of firm size) demonstrated that a majority of the firms was categorized under large size (49.1 percent), followed by medium size (40.6 percent), and only a small number was classified under small size firm (10.3 percent).
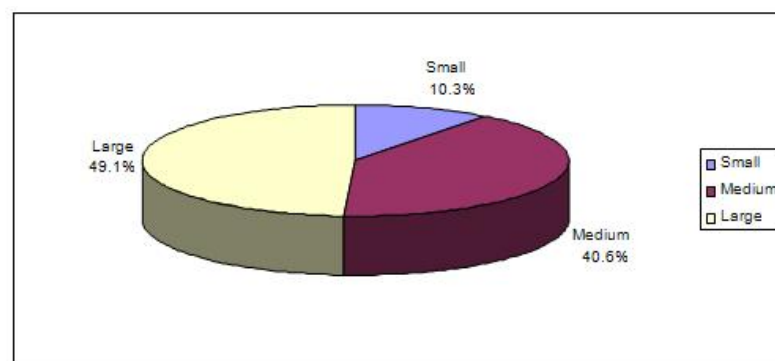
Figure 4.4: Pie chart for Firm Size
Source: Computed Data Analysis

iii.   Respondent's Position

In looking at respondent's position, classification was based on category of Managers (IT Managers or Non-IT Managers). As shown in figure 4.5, 69.7 percent of respondents were Non-IT Managers, and only 30.3 percent represented IT Managers.

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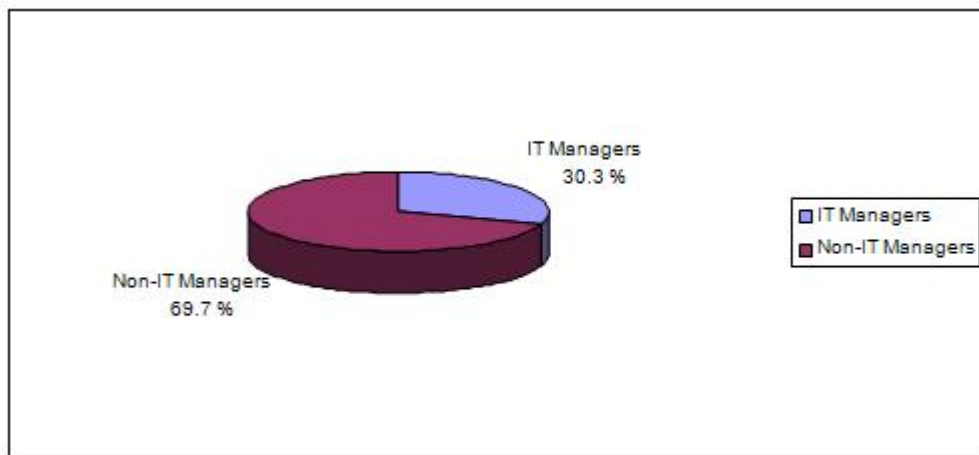
Figure 4.5: Pie chart for Respondent's Position
Source: Computed Data Analysis

To ensure no bias existed between IT Managers and Non-IT Managers in answering the questionnaires, the data set was tested against the respondent's position (IT and non-IT managers). As suggested by Zhu et al. (2004), IS managers had always being expected to be biased in believing that E-business positively influence firms' performance. For that reason the current study ran a bias test to seek for any difference in the answers given by IT managers (CIO, CTO, VP of IS, IS manager, IS director, IS planner, and other managers in IS department) and non-IT managers (CEO, president, managing director, COO, business operations manager, CFO, administration/finance manager, and other managers) regarding the attributes that measure E-business performance.

In testing the null hypothesis that no significant difference existed between the two groups, the statistical test of Kolmogorov-Smirnov (KS) was used (Zhu et al., 2004; Norusis, 2002; and Boes, Graybill & Mood, 1974). The KS test established whether the two datasets (IT managers vs. non-IT managers) differed significantly.

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Table 4.3: KS Test Statistics (a)

Source: Computed Data Analysis

		Business Performance (BPER)
Most Extreme Differences	Absolute	.225
	Positive	.028
	Negative	-.225
Kolmogorov-Smirnov Z		1.330
Asymp. Sig. (2-tailed)		.058

a Grouping Variable: Respondents Position (IS Managers vs. Non-IS Managers)

In the KS test, small significance values (<.05) indicated that the two groups differed in either shape or location. Since the significance value of 0.058 was larger than 0.05 (Table 4.3), no bias was said to exist between IT Managers and Non-IT Managers in answering the questionnaires.

iv.   E-business Experience (years)

Looking at the number of E-business experience, the lowest number was found to be 1 year and 11 years was the highest. However, a majority of respondents (21.2 percent) were under 3 years of experience. Table 4.4 showed the frequency distribution of E-business experience (in number of years).

Table 4.4: E-business Experience

Source: Computed Data Analysis

No. of Years	Frequency	Percent	Cumulative Percent
1	7	4.2	4.2
2	18	10.9	15.2
3	35	21.2	36.4
4	19	11.5	47.9
5	20	12.1	60.0
6	22	13.3	73.3
7	12	7.3	80.6
8	10	6.1	86.7
9	13	7.9	94.5
10	6	3.6	98.2
11	3	1.8	100.0
Total	165	100.0	

4.4.2 Normality Test

A normality test was conducted as the preliminary examination of data to ensure that data was from normally distributed population. Descriptive statistics (skewness and kurtosis) were used in testing the data. Various opinions can be found concerning the acceptable level of skewness (distribution's symmetry) and kurtosis (the clustering of scores toward the centre of a distribution) for a particular variable. Following the rule of thumb that both skewness and kurtosis should fall in the acceptable range of ±1.0 (Hisham, 2008; and Miles & Shevlin, 2001), the result demonstrated that all data was normally distributed (Table 4.5).

Table 4.5: Normality Test

Source: Developed for this study

Constructs	N	Skewness		Kurtosis	
	Statistic	Statistic	Std. Error	Statistic	Std. Error
TECHCOMP					
TC1	165	-.262	.189	-.986	.376
TC2	165	-.170	.189	-.709	.376
TC3	165	-.644	.189	-.367	.376
WEBFUNC					
WF1	165	-.030	.189	-.783	.376
WF2	165	.095	.189	-.733	.376
WF3	165	.086	.189	-.564	.376
WF4	165	.036	.189	-.696	.376
WF5	165	.069	.189	-.752	.376
WF6	165	.047	.189	-.769	.376
WF7	165	.209	.189	-.370	.376
ISCOPE					
IS1	165	.905	.189	-.218	.376
IS2	165	.312	.189	-.796	.376
IS3	165	.875	.189	-.020	.376
IS4	165	.775	.189	-.076	.376
MBEL					
MB1	165	-.012	.189	-.952	.376
MB2	165	.000	.189	-.979	.376
MB3	165	-.005	.189	-.860	.376
MB4	165	.001	.189	-.781	.376
MB5	165	-.026	.189	-.718	.376
MB6	165	.011	.189	-.745	.376
WEBINV					
WT1	165	-.397	.189	-.711	.376
WT2	165	-.055	.189	-.635	.376
REGSUP					
RS1	165	.036	.189	-.436	.376

RS2	165	-.258	.189	-.496	.376
RS3	165	.001	.189	-.834	.376
RS4	165	.014	.189	-.973	.376
PRESSURE					
PI1	165	-.009	.189	-.582	.376
PI2	165	.017	.189	-.716	.376
PI3	165	-.226	.189	-.995	.376
EBU					
AD1	165	.003	.189	-.320	.376
AD2	165	.086	.189	-.068	.376
AD3	165	-.053	.189	.003	.376
AD4	165	.061	.189	-.286	.376
*BPERFORM					
FI1	165	-.236	.189	-.999	.376
FI2	165	-.139	.189	-.986	.376
FI3	165	-.270	.189	-.995	.376
FI4	165	-.278	.189	-.996	.376
FI5	165	-.345	.189	-.938	.376
FI6	165	-.381	.189	-.975	.376
FI7	165	-.485	.189	-.989	.376
FI8	165	-.104	.189	-.982	.376
CI1	165	.001	.189	-.421	.376
CI2	165	-.077	.189	-.119	.376
CI3	165	-.388	.189	.248	.376
IBP1	165	-.147	.189	-.571	.376
IBP2	165	-.293	.189	-.616	.376
IBP3	165	-.302	.189	-.507	.376
IBP4	165	-.512	.189	-.731	.376
IBP5	165	-.249	.189	-.739	.376
LG1	165	-.474	.189	-.102	.376
LG2	165	-.426	.189	-.249	.376
LG3	165	-.552	.189	-.094	.376
Valid N (listwise)	165				

* Items measuring business performance are next recoded into four; financial, customers, internal business process, and learning and growth

Key:

TECHCOMP	: Technology Competence
WEBFUNC	: Web Functionalities
SIZE	: Firm Size
ISCOPE	: Internationalization Scope
WEBINV	: Web Technology Investment Costs
MBELIEF	: Managerial Beliefs
REGSUP	: Regulatory Support
PRESSURE	: Pressure Intensity
EBU	: E-business Usage
BPER	: Business Performance

4.4.3 Correlation "r"

Correlation "r" measured how closely two variables were related (the association of the variables). "Pearson Product Moment Correlation Coefficient" was normally being used for which the score should be between -1.00 and +1.00. The score of +/- 1.00 represented a perfect positive or negative correlation, which indicated that both variables form an identical pattern. Davis (1971) suggested the analysis of correlation strength should be based on the depiction below (Table 4.6):

Table 4.6: Analysis of Correlation Strength
Source: Davis, (1971)

Correlation "r"	Correlation Magnitude
1.0	Perfect
0.70 – 0.99	Very high
0.5 – 0.69	Substantial
0.30 – 0.49	Moderate
0.10 – 0.29	Low
0.01 – 0.09	Negligible

Another cut-off point for "r" came from Jensen (2005), which stated that if two variables showed a correlation coefficient of 0.90 or greater, one variable needed to be eliminated. The current study used the work of Jensen to analyze the correlation of variables. Table 4.7 illustrated the correlation matrix between variables.

Correlations

		TECHCOMP	WEBFUNC	SIZE	ISCOPE	WEBINV	MBELIEF	REGSUP	PRESSURE	EBU	BPER
TECHCOMP	Pearson Correlation	1.000	.007	.001	.016	.017	-.030	.016	-.184*	.202**	.069
	Sig. (2-tailed)		.927	.987	.555	.825	.639	.840	.018	.009	.375
	N	165.000	165	165	165	165	165	165	165	165	165
WEBFUNC	Pearson Correlation	.007	1.000	-.037	.342**	.585**	.441**	.597**	.023	.610**	.773**
	Sig. (2-tailed)	.927		.215	.000	.000	.000	.000	.765	.000	.000
	N	165	165.000	165	165	165	165	165	165	165	165
SIZE	Pearson Correlation	.001	-.037	1.000	-.072	-.263**	-.265**	-.163*	.051	-.038	-.054
	Sig. (2-tailed)	.987	.215		.358	.001	.001	.036	.437	.624	.490
	N	165	165	165.000	165	165	165	165	165	165	165
ISCOPE	Pearson Correlation	.046	.342**	-.072	1.000	.411**	.128	.238**	-.247**	.418**	.337**
	Sig. (2-tailed)	.555	.000	.358		.000	.101	.002	.001	.000	.000
	N	165	165	165	165.000	165	165	165	165	165	165
WEBINV	Pearson Correlation	.017	.585**	-.263**	.411**	1.000	.376**	.421**	-.182*	.542**	.443**
	Sig. (2-tailed)	.825	.000	.001	.000		.000	.000	.019	.000	.000
	N	165	165	165	165	165.000	165	165	165	165	165
MBELIEF	Pearson Correlation	-.030	.441**	-.265**	.128	.376**	1.000	.456**	.190*	.322**	.330**
	Sig. (2-tailed)	.699	.000	.001	.101	.000		.000	.014	.000	.000
	N	165	165	165	165	165	165.000	165	165	165	165
REGSUP	Pearson Correlation	.016	.597**	-.163*	.238**	.421**	.456**	1.000	.096	.430**	.617**
	Sig. (2-tailed)	.840	.000	.036	.002	.000	.000		.221	.000	.000
	N	165	165	165	165	165	165	165.000	165	165	165
PRESSURE	Pearson Correlation	-.184*	.023	.051	-.247**	-.182*	.190*	.096	1.000	-.391**	.138
	Sig. (2-tailed)	.010	.765	.407	.001	.019	.014	.221		.000	.077
	N	165	165	165	165	165	165	165	165.000	165	165
EBU	Pearson Correlation	.202**	.610**	-.038	.418**	.542**	.322**	.430**	-.391**	1.000	.576**
	Sig. (2-tailed)	.009	.000	.624	.000	.000	.000	.000	.000		.000
	N	165	165	165	165	165	165	165	165	165.000	165
BPER	Pearson Correlation	.069	.773**	-.054	.337**	.443**	.330**	.617**	.138	.576**	1.000
	Sig. (2-tailed)	.375	.000	.490	.000	.000	.000	.000	.077	.000	
	N	165	165	165	165	165	165	165	165	165	165.000

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

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

Key:

TECHCOMP	: Technology Competence
WEBFUNC	: Web Functionalities
SIZE	: Firm Size
ISCOPE	: Internationalization Scope
WEBINV	: Web Technology Investment Costs
MBELIEF	: Managerial Beliefs
REGSUP	: Regulatory Support
PRESSURE	: Pressure Intensity
EBU	: E-business Usage
BPER	: Business Performance

Overall, no correlations were found to go beyond 0.9 to indicate high correlation. In a situation of a small significance level (less than 0.05) correlation was considered significant and both variables were said to be linearly related. If a relative large significance level was acquired (for example, 0.50) correlation was said to be not significant and both variables were not linearly related. Correlations were used for testing multicollinearity.

4.4.4 Multicollinearity

In data analysis, it was assumed that no correlation existed among independent variables (Jensen, 2005). The violation of the assumption resulted in the existence of multicollinearity (when two or more independent variables were very much correlated). For that reason, at least one independent variable needed to be removed from the equation. In a fitted regression model, multicollinearity created quality and stability problems. Multicollinearity problem can be solved by excluding explanatory variables. For instance, if x_1 and x_2 were highly correlated (say correlation was equal to or larger than 0.90), one variable was to be deleted since the other variable conveys essentially all the information needed. This followed the rule of thumb set by Jensen which stated that if two variables have a correlation coefficient of 0.90 or above, one of the variables must be eliminated from the equation. The use of correlation matrix was the easiest way to detect. In this study, the correlation matrix (see Table 4.6) showed that no variables exceeded the cut-off point 0.90. Hence, the problem of multicollinearity did not exist.

4.5 Testing Goodness of Data

4.5.1 Reliability Test

A reliability test examined the consistency of respondents in answering the questionnaire items. Construct reliability was used to measure "the degree to which items were free from random error to further yield consistent results" (Sekaran, 2003). If items were independent measures of the similar concept, they were correlated with one another. In testing the inter-item consistency reliability Cronbach's coefficient alpha was the most popular method that was normally used for multipoint-scaled items. It was believed that higher coefficient led to better measurement (Sekaran).

Table 4.8 exhibited the results of Cronbach's alpha test of the current study. The rule of thumb used referred to the score of 0.7 or more (Sekaran, 2003). However, based on Budd (1987), adding questions to a construct increased Cronbach's alpha by 0.3. Thus, this could be the reason of highly reported

Cronbach's alpha in some existing MIS instruments (Goodhue, 1998). In a case of early stage research, Nunnally (1978) agreed that the score of 0.50 – 0.60 would suffice. As there was no specific cut off value, the rule of thumb of 0.7 (Sekaran, 2003) was followed as the basis of lower level of acceptability. Table 4.8 demonstrated the Cronbach's alpha score of each construct.

Table 4.8: Internal Consistency of the Construct
Source: Computed data analysis

CONSTRUCTS	CRONBACH'S ALPHA
Technology Competence	0.897*
Web Functionalities	0.968
Internationalization Scope	0.792*
Web Technology Investment Costs	0.905
Managerial Beliefs	0.850
Regulatory Support	0.893
Pressure Intensity	0.864
E-business Usage	0.928
Business Performance	0.978

Overall Cronbach' Alpha = 0.966
Firm size excluded due to single attribute of measurement (number of employees)
* Standardized Item Alpha (multiple-item scales used in quantifying the construct) (Gliem & Gliem, 2003)

Table 4.8 showed the scores for each construct and the overall cronbach' alpha score fulfilled the requirement of at least 0.7 (Sekaran, 2003). In conclusion, the results were consistent as the random error was avoided.

4.5.2 Construct Validity

The application of construct validation was due to the reason that content validity evidence alone was inadequate as it focused only on the test context but descriptions and decisions were totally relied on respondent's responses regarding the test items (Tu, 2002). The extraction technique of principal component analysis and the

varimax method of rotation were used in examining the 165 responses. Running the exploratory factor analysis had resulted in the factor loading with eigenvalues more than 1.0. According to Chong (2005), items that tended to show high factor loadings (≥.40) intended to measure similar construct. All explanations on factor loadings were discussed in sub-section 4.5.

In determining good dimensions, Kaiser-Meyer-Olkin (KMO) measures of sampling adequacy were used together with the anti-image matrices correlation as the indicators. KMO varied in between 0 to 1.0 for which value ranging from 0.5 to 1.0 signify that factor analysis was practical. All factors were found to have a cut-off point higher than 0.50 (the recommended value). The score signified the adequacy of sampling to carry on factor analysis for which identity matrix was achieved based on the bartlett test. Since the factors were significant, factor analysis was useful.

Table 4.9: KMO and Bartlett's test for Sphericity Measures
Source: Computed Data Analysis

Construct	KMO Test	Bartlett's test (sig.)
Technology competence	0.671	≤ 0.001
Web functionalities	0.905	≤ 0.001
Internationalisation Scope	0.681	≤ 0.001
Managerial beliefs	0.780	≤ 0.001
Web technology investment costs	0.500	≤ 0.001
Regulatory support	0.782	≤ 0.001
Pressure intensity	0.732	≤ 0.001
E-business usage	0.807	≤ 0.001
Business performance	0.841	≤ 0.001

*Firm size excluded due to single attribute of measurement (number of employees)

4.5.3 Exploratory Factor Analysis (EFA)

Exploratory factor analysis (EFA) helped to determine the factor structure according to how participant responded to the questionnaire (Suhr, no date). In a situation where measurement attributes of a factor were based on literature in various related fields (such as Internet, E-commerce, E-business, or technology usage), EFA was conducted in reducing the variables and in detecting the structure of the relationships among variables (variable classifications) based on the responded questionnaires in the studied field. Besides, EFA was a need in generating factor scores to represent values of the underlying constructs to be used in further statistical

analysis (DeCoster, 1998). There were few methods used to conduct factor analysis such as principal components and maximum likelihood. The principal components analysis with varimax rotation was the famous method used in research (Emory & Cooper, 1991). The method reduced the factors in ensuring that variables had high loadings. Rotation simplified the interpretation of the analysis (http://www.ncl.ac.uk/iss/statistics/docs/ factornalysis.html).

To enable valid measures to be developed and to reduce the items into sizable factor, factor analysis should be used. In the current study, both methods (principal components analysis with varimax rotation and maximum likelihood) were employed. When item-total correlation was low, it concluded that the item came from different domain and therefore deletion was needed in reducing error and unreliability (Nunnally, 1978). Thus, eigenvalues and variance explained (percent) were considered as important values in the factor analysis.

Items with similar loading on two factors and items with loading less than 0.40 were removed (Chong, 2005). Data collected from survey was used for factor analysis.

4.5.3.1 EFA for Independent Variable – Technology Competence

The three items for technology competence were loaded onto one factor. The eigenvalue was 2.496 and 83.195 percent of the total variation was explained. All factor loadings exceeded 0.4. This factor was labelled as technology competence. The factor loading matrix for technology competence was demonstrated in Table 4.10.

Table 4.10: Factor Loadings Matrix for Independent Variable – Technology Competence

Source: Computed Data Analysis

Items	Factor Loadings
1	0.948
2	0.956
3	0.827
Eigenvalue	2.496
Variance (%)	83.195

Items:
1. TC1 (% employees use computer at work)
2. TC2 (% employees have IT qualifications)
3. TC3 (Prior technology usage)

4.5.3.2 EFA for Independent Variable – Web-functionalities

Seven items for Web-functionalities were loaded onto one factor. The eigenvalue was 5.872 and 83.885 percent of the total variation was explained. All factor loadings exceeded 0.4. This factor was labelled as Web-functionalities. Factor loading matrix for Web-functionalities was demonstrated in Table 4.11.

Table 4.11: Factor Loadings Matrix for Independent Variable – Web-functionalities

Source: Computed Data Analysis

Items	Factor Loadings
1	0.831
2	0.909
3	0.947
4	0.960
5	0.946
6	0.932
7	0.881
Eigenvalue	5.872
Variance (%)	83.885

Items:

1. WF1 (Website support service catalogue)
2. WF2 (Website support consumer customization)
3. WF3 Website support account management)
4. WF4 (Website support registry of online community)
5. WF5 (Web applications electronically integrated with back-office system)
6. WF6 (Company databases electronically integrated with suppliers)
7. WF7 (Company databases electronically integrated with partners)

4.5.3.3 EFA for Independent Variable – Internationalisation Scope

Next, the four items for internationalisation scope was loaded onto one factor. The eigenvalue was 2.528 and 63.205 percent of the total variation was explained. All factor loadings exceeded 0.4. This factor was labelled as internationalisation scope. The factor loading matrix for internationalisation scope was demonstrated in Table 4.12.

Table 4.12: Factor Loadings Matrix for Independent Variable –
Internationalisation Scope
Source: Computed Data Analysis

Items	Factor Loadings
1	0.509
2	0.872
3	0.833
4	0.902
Eigenvalue	2.528
Variance (%)	63.205

Items:

1. IS1 (Geographical extent of operations)
2. IS2 (% of outside sales)
3. IS3 (% of outside procurement spending)
4. IS4 (% of business activities from outside Malaysia)

4.5.3.4 EFA for Independent Variable – Managerial Beliefs

As shown in table 4.13, managerial beliefs consisted six items, loaded onto one factor with eigenvalue 3.498 and explained 58.295 percent of the total variation. All factor loadings exceeded 0.4. This factor was labelled as managerial beliefs.

Table 4.13: Factor Loadings Matrix for Independent Variable – Managerial Beliefs

Source: Computed Data Analysis

Items	Factor Loadings
1	0.795
2	0.591
3	0.880
4	0.827
5	0.807
6	0.638
Eigenvalue	3.498
Variance (%)	58.295

Items:
1. MB1 (Perceived increasing importance of E-business)
2. MB2 (Increased market share)
3. MB3 (Increased efficiency)
4. MB4 (Improved knowledge sharing)
5. MB5 (Improved communications)
6. MB6 (Enhanced customer service)

4.5.3.5 EFA for Independent Variable – Web-technology Investment Costs

As shown in table 4.14, Web technology investment costs consisted of two items that loaded onto one factor showing eigenvalue 1.827 and explained 91.37 percent of the total variation. All factor loadings were more than 0.4. This factor was labelled as Web technology investment costs.

Table 4.14: Factor Loadings Matrix for Independent Variable – Web Technology Investment Costs

Source: Computed Data Analysis

Items	Factor Loadings
1	0.956
2	0.966
Eigenvalue	1.827
Variance (%)	91.370

Items:
1. WTIC1 (IS budget as % of total revenue)
2. WTIC2 (Web-based spending as % of total revenue)

4.5.3.6 EFA for Independent Variable – Regulatory Support

Table 4.15 demonstrated factor loadings for the four items that were loaded onto one factor, with eigenvalue 3.039 and explained 75.971 percent of the total variation. All factor loadings exceeded 0.4. This factor was labelled as regulatory support.

Table 4.15: Factor Loadings Matrix for Independent Variable – Regulatory Support

Source: Computed Data Analysis

Items	Factor Loadings
1	0.869
2	0.901
3	0.891
4	0.823
Eigenvalue	3.039
Variance (%)	75.971

Items:
1. RS1 (High E-business incentives provided by government)
2. RS2 (E-business required by government purchase)
3. RS3 (Business laws support E-business)
4. RS4 (Legal protection for online purchasing)

4.5.3.7 EFA for Independent Variable – Pressure Intensity

As shown in table 4.16, pressure intensity consisted of three items that were loaded onto one factor with an eigenvalue of 2.377 and explained 79.223 percent of the total variation. All factor loadings exceeded 0.4. This factor was labelled as pressure intensity.

Table 4.16: Factor Loadings Matrix for Independent Variable – Pressure Intensity

Source: Computed Data Analysis

Items	Factor Loadings
1	0.909
2	0.874
3	0.888
Eigenvalue	2.377
Variance (%)	79.223

Items:
1. PRESSURE1 (Customer pressure influence E-business adoption)
2. PRESSURE2 (Supplier pressure influence E-business adoption)
3. PRESSURE3 (Pressure by competitors influence E-business adoption)

4.5.3.8 EFA for Dependent Variable – E-business Usage

As shown in table 4.17, E-business usage consisted of four items that were loaded onto one factor with an eigenvalue of 3.310 and explained 82.751 percent of the total variation. All factor loadings exceeded 0.4. This factor was labelled as E-business usage.

Table 4.17: Factor Loadings Matrix for Independent Variable – E-business Usage

Source: Computed Data Analysis

Items	Factor Loadings
1	0.849
2	0.952
3	0.953
4	0.880
Eigenvalue	3.310
Variance (%)	82.751

Items:
1. AD1 (perceived % of consumer sales conducted online)
2. AD2 (perceived % of B2B sales conducted online)
3. AD3 (perceived % of supplies for consumptions ordered online)
4. AD4 (perceived % of equipment for business use ordered online)

4.5.3.9 EFA for Dependent Variable – Business Performance

As shown in table 4.18, business performance consisted of four items that were loaded onto one factor with an eigenvalue of 3.308 and explained 82.694 percent of the total variation. All factor loadings exceeded 0.4. This factor was labelled as business performance.

Table 4.18: Factor Loadings Matrix for Independent Variable – Business Performance

Source: Computed Data Analysis

Items	Factor Loadings
1	0.919
2	0.942
3	0.945
4	0.827
Eigenvalue	3.308
Variance (%)	82.694

Items:
1. FI (Impact on financial)
2. CI (Impact on customers)
3. IBP (Impact on internal business process)
4. LG (Impact on learning and growth)

4.6 Measurement Model – Confirmatory Factor Analysis (CFA)

In hypothesis testing, this study employed two steps of data analysis using AMOS software; the measurement model and structural equation model. The measurement model assessment was done by means of confirmatory factor analysis (CFA) with maximum likelihood estimation (MLE). CFA was particularly useful in the scales validation to measure specific construct and was used in establishing the validity of a single factor model with the closest fit to the data (DeCoster, 1998).

Based on Churchill (1992), a good measurement model was represented by a high reliability and validity. The detailed discussion on the single factor test, model identification, the model fit and path coefficient are as follows:

4.6.1 Single-factor Test

Unidimensionality validity test concerned with the extent to which the items/indicators reflected one underlying construct. As all of the items in this research were from the established measurement, CFA with MLE was performed. Items with factor loading 0.40 and above were retained. All items demonstrated correlations less than one, and no negative error variances. Table 4.19 indicated that the value of GFI were higher than the proposed value (>=0.90), which fulfilled the requirement. Other values such as IFI, TLI, AGFI, and CFI were also adequate.

Table 4.19: Model Fit Statistics: Single Factor
Source: Computed Data Analysis

Single Factor (Construct)	GFI (>= 0.90)	IFI (>=0.95)	TLI (Closer to 1 is better)	AGFI (Closer to 1 is better)	CFI (Closer to 1 is better)
Technology Competence	1.000	1.002	1.007	0.999	1.000
Web Functionalities	0.988	0.999	0.997	0.944	0.999
Internationalization Scope	0.983	0.987	0.961	0.897	0.987
Managerial Beliefs	0.987	0.993	0.979	0.935	0.993
Regulatory Support	0.989	0.994	0.982	0.935	0.994
Pressure Intensity	0.987	0.991	0.973	0.925	0.991
E-business Usage	1.000	1.001	1.009	0.997	1.000
Business Performance	0.999	1.001	1.007	0.992	1.000

Indicators:

Goodness-of-fit Index (GFI)

• Requirement of GFI to be equal to or greater than 0.90 to accept the model.

Incremental Fit Index (IFI)

• IFI indicated how much better the hypothesized model fits in comparison to the baseline that assumed there were no relationships in the data. Values of 0.95 or greater were deemed acceptable.

Tucker-Lewis Coefficient (TLI)

• TLI value closed to 1 indicated a very good fit

Adjusted Goodness-of-fit Index (AGFI)

• AGFI varied from 0 to 1. Value closed to 1 indicated better fit

Incremental Fit-comparison to baseline measure (Comparative Fit Index-CFI)

• Compared the existing model fit with a null model, assumed the latent variables in the model were uncorrelated. CFI value closed to 1 indicated a very good fit

Next, the significance of factor loading was used to assess convergent validity. All factor loadings of items were within the required range of 0.4 and above (Hair, Anderson, Tatham & Black, 1999). For each single model, GFI >=0.9, IFI>=0.95, TLI, AGFI, and CFI close to 1 signified a good model fit and suggested that the measurement was reliable and valid.

4.7 Model Identification

An additional requirement of using SEM was that each equation be properly identified (Morgon, Sergeant, Ellis, Ousley & Jarret, 2001). Identification referred to the idea that there was at least one unique solution for each parameter estimated in an SEM model. Model identification can be derived from the following formula:

$$df = [P*(P+1)]/2 - (\text{no. of estimated parameter})$$

df = Degree of freedom
P = No. of measured variables

If $df > 0$, model is over identified
If $df = 0$, model is just identified
If $df < 0$, model is under identified

Figure 4.6: Model Identification
Source: Roziah Mohd Janor (2009)

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Typically, most people used SEM to work with a model that was over identified. As stated in figure 4.6 above, an over identified model had positive df, and may not fit as well as a model that was just identified. Hence, the model was identified if there were fewer free parameters to be estimated than variances and covariances of the researcher model. In this study, df = 246 (Appendix 10). Since the df = 246 (df >0), for that reason, the E-VALUE model was an over identified model.

4.8 Hypotheses Testing

The theoretical model of the study was tested using covariance-based SEM (AMOS method) due to the reasons that the method emphasized the model fit and overall variance-covariance matrix that was suitable in testing the full model. In seeking the empirical evidences on factors determining E-business usage on business performance, the theoretical model of the study led to the development of 10 hypotheses. The results were as below:

Table 4.20: Summary of Hypothesis Testing
Source: Computed Data Analysis

Null Hypothesis	Causal Relationship	B[1]	P[2]	Result[3]
H_01	TECHCOMP→EBU	0.125	0.005	Reject
H_02	WEBFUNC→EBU	0.453	***	Reject
H_03	SIZE→EBU	0.116	0.015	Reject
H_04	ISCOPE→EBU	0.088	ns	Accept
H_05	WEBINV→EBU	0.075	ns	Accept
H_06	MBEL→EBU	0.101	ns	Accept
H_07	REGSUP→EBU	0.112	ns	Accept
H_08	PRESSURE→EBU	-0.389	***	Reject
H_09	EBU→BP	0.364	***	Reject
H_010	EB Experience on EBU→BP	0.552	***	Reject

[1]Regression Coefficient,
[2]Statistical Significant of the Test ($\alpha = 0.05$, *** = <0.001)
[3]Results on Null Hypothesis Test
ns = non-significant

Overall, looking at drivers to E-business usage, Web functionalities was found to have the strongest influence followed by pressure intensity, technology competence, and firm size. Subsequently, E-business usage significantly influenced

business performance, and E-business experience moderated the "usage-performance" relationship (Appendix 11 & 12). Details of analysis for each hypothesis were discussed next.

4.8.1 Technology Competence

Both technological infrastructures together with IT human resources were components of technology competence that enabled E-business advancement and implementation. Technology infrastructure acted as a foundation that enabled the development of E-business and next, welcomed the usage of knowledge and skills of IT human resources in developing E-business (Zhu & Kraemer, 2005). For this study, technology competence was measured by the percentage of employees that used computer at work, percentage of employees that acquired information technology qualifications, and number of technology facilities used prior to E-business implementation (EFT, EDI etc.). Hypotheses H_01, and H_A1 were developed to identify whether technology competence predicted E-business usage.
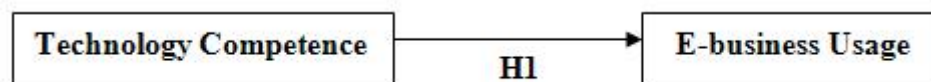
Figure 4.7: Hypothesis 1
Source: Developed for the study

H_01:   No significant relationship existed between technology competence and E-business usage.

H_A1:   Technology competence significantly predicted E-business usage.

Analysis in table 4.20 showed that technology competence had significant positive influence on the extent of E-business usage ($p<0.05$). The estimate of standardized regression weight (ß=0.125) showed that when technology competence increased by 1 standard deviation, E-business usage increased by 0.125 standard deviation. As a result, H_01 was rejected in favour of H_A1.

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Technological competency of the firms was represented by two components; technological infrastructures and knowledgeable IT workers. These two components acted as the basic components that determined the achievement of the firms' E-business investments. Prior study by Intan Salwani, Marthandan, Norzaidi and Normah (2008), found that technology competence had significant positive relationship with E-business usage in the tourism industry. Furthermore, the finding of the current study was also consistent with Zhu, Kraemer, and Xu (2007) which found the integration, adoption, and routinization of E-business for developing countries were predicted by technology readiness, and had significant positive relationship for developed and developing countries (with higher impact in developing countries).

4.8.2 Web Functionalities

In looking at the influence of web functionalities on E-business usage, table 4.20 demonstrated that web functionalities significantly explained the variance in E-business usage ($p<0.001$). The estimate of standardized regression weight ($\beta=0.453$) explained that when web functionalities increased by 1 standard deviation, E-business usage increased by 0.453 standard deviation. Thus, $H_0 2$ was rejected in favour of $H_A 2$.
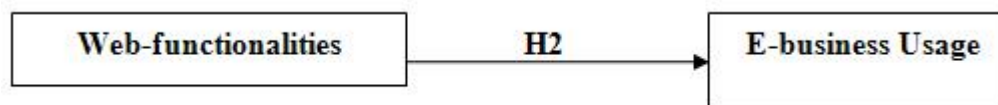
Figure 4.8: Hypothesis 2
Source: Developed for the study

$H_0 2$: No significant relationship existed between web-functionalities and E-business usage.

$H_A 2$: Web-functionalities significantly predicted E-business usage.

From the Web usability perspective, Web functionalities represented the ways on how website tools assisted customers in doing the transactions. According to

Hawkins (2003), web functionalities involved routines that fulfilled users' expectation or the involvement of new services that were limited in terms of imagination or budget. As an example, the simplicity to select and to buy an item from E-business websites could reduce unsuccessful sales, even if it enabled businesses to recognize returned customers which could speed up repeat purchases. If a website had a huge number of pages, the search function was very useful. Besides, adding a variety of tools in serving customers' needs was a key success in maintaining users' stickiness on the site. Furthermore, it should include secure E-business environment, enable order tracking, sales history, reports viewing, and provide more value added services that reduced manual tasks.

From the market share viewpoint, Zhu and Kraemer (2005) found that high E-business investment costs led to high Web functionalities, which next contributed to a greater extent of usage and market reach. As E-business eradicated the geographical boundaries of traditional businesses, higher investment in web-functionalities put forward higher business opportunities through globalization. This would be a solid reason why a significant positive relationship existed in connecting web-functionalities and E-business usage.

4.8.3 Firm Size

The number of employees was used in measuring the firm size. The firm size represented some main aspects of the business for instance, the availability of resources, the agility of decision and prior technology usage (Zhu & Kraemer, 2005). Hypotheses $H_0 3$, and $H_A 3$ were developed regarding the firm size effect on E-business usage. Firm size demonstrated a significant positive relationship towards E-business usage ($ß=0.116$), ($p<0.05$) (Table 4.20). Thus, $H_0 3$ was rejected in favour of $H_A 3$.
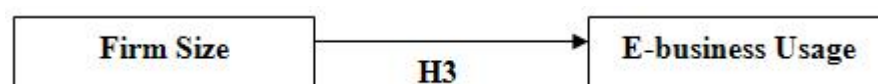
Figure 4.9: Hypothesis 3
Source: Developed for the study

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$H_0 3$:   No significant relationship existed between firm size and E-business usage.

$H_A 3$:   Firm size significantly predicted E-business usage

Firm size was frequently cited in prior innovation studies (Damanpour, 1992). The current study found that firm size predicted E-business usage. This was consistent with the recent studies by Hollenstein (2004), and Bertschek and Fryges (2002) that also reported E-business adoption was predicted by firm size. Looking back to early studies on technology adoption, Hannan and McDowell (1984) which examined the relationship between the decision to adopt new technology (ATM machine) and its determinants, discovered that larger banks registered a higher conditional probability of adopting this new ATM technology. This could signify the relevancy of firm size in technology adoption decision.

One possible reason on why firm size predicted E-business usage was motivated by a study that related to theories of the firm by Kumar, Rajan, and Zingales, (1999). The study found that, on average, larger firms were facing larger markets, which may perhaps, have contributed to larger business opportunities. In view of E-business opportunities, larger firms might contribute to higher web technology connectivity, which would next expand the market segment of a company which possibly led to greater E-business usage. Another reason why a firm size predicted E-business usage could be because of the nature of the firm's innovativeness in Malaysia. According to Malaysian Science and Technology Information Centre (MASTIC) (2007), large-sized firms were significantly more innovative than smaller-sized firms. This could also be implied to E-business as it was a technology-driven innovation.

4.8.4 Internationalisation Scope

As trading globalization and geographical extent of the firm's operation referred to "internationalization scope", it brought together business expansion by eliminating geographical boundaries of firms' market (Khan & Motiwalla, 2002). The current study however found that no significant relationship existed between

internationalisation scope and E-business usage ($p>0.05$, $ß=0.088$) (Table 4.20). Thus, H_04 was not rejected.

Figure 4.10: Hypothesis 4
Source: Developed for the study

H_04:   No significant relationship existed between internationalization scope and E-business usage.

H_A4:   Internationalization scope significantly predicted E-business usage.

Finding showed that internationalization scope was not a predictor of E-business usage. This was in line with prior studies by Zhu et al. (2006) which compared two samples (i.e.; developed countries, and developing countries). Both samples provided empirical evidence that global scope has no significant influence on E-business technology adoption. Although Kumar et al. (1999) found that on average, larger firms were facing larger markets, which may perhaps have contributed to larger business opportunities while Intan Salwani et al, (2009b) found that higher firm size led to higher web technology investment which could next expand the market segment of a company and possibly led to greater E-business usage, it could only be true perhaps for local market. As the result of the current study showed a small value of positive relationship, the reason why internationalization scope had no significant relationship with E-business usage could be explained by looking at some arising issues in market globalization. Contradictory features of local setting in both infrastructure and socio-economic resulted a significant level of dissimilarity in the acceptance and development of E-business across countries (Efendioglu, Yip, & Murray, 2005). Cultural issues which incorporated knowledge on local environment, brand stability, channels of distribution, and service infrastructure were hard to be replicated (Porter, 1986).

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To further discuss on cultural issues, one should understand that running a business globally not only related to having a website that offered products and services. The present physical, financial and information processes owned by business organizations formed the backbone of E-business (Kraemer, Gibbs, & Dedrick, 2002). According to Porter (1986), priceless resources owned by local firms enabled them to be competitive in local market. The incorporated factors such as local knowledge, strong brand names, distribution channels and service infrastructure that was hard to be replicated by international firms provided advantages in B2C E-business. This implied that fewer opportunities were available for the international firms in the local market. These might be the reasons why internationalization of scope had no significant influence on E-business usage.

4.8.5 Web Technology Investment Costs

"Web technology investment costs" referred to E-business set-up costs which include financial commitment in hardware, software and employee training. In this study, hypotheses H_05, and H_A5 were developed to discover whether web technology investment costs predicted E-business usage.

Figure 4.11: Hypothesis 5
Source: Developed for the study

H_05: No significant relationship existed between web technology investment costs and E-business usage.

H_A5: Web technology investment costs significantly predicted E-business usage.

Analysis in table 4.20 demonstrated that Web technology investment costs had no significant positive relationship with E-business usage. The analysis revealed that Web-technology investment costs had very little effect on E-business usage ($p > 0.05$, $ß = 0.075$). Thus, H_05 was not rejected.

This finding supported the study by Xanthidis and Nicholas (2004) for which they found that although high investment in Internet infrastructure in Greece had grown significantly and the digital foundations were there, E-business was yet to reach measurable levels. This could have been due to technology avoidance especially when innovative culture did not exist (Spais & Vasileiou, 2008). In addition, security, privacy and confidentiality issues prolonged, impacting the users of computer technology. According to a survey by Koprowski (2005), "unauthorized access to network data" plus "theft of data on devices" was identified to be the most endpoint security concerns.

4.8.6 Managerial Beliefs

Managerial beliefs referred to the act of top management regarding E-business technology innovation. Their belief on the usefulness of E-business towards firms' value creations was tested in order to seek for empirical evidence on whether managerial beliefs significantly influenced E-business usage. Hence, hypotheses $H_0 6$, and $H_A 6$ were developed.

Figure 4.12: Hypothesis 6
Source: Developed for the study

$H_0 6$:   No significant relationship existed between managerial beliefs and E-business usage.

$H_A 6$:   Managerial beliefs significantly predicted E-business usage.

Result in table 4.20 indicated that managerial beliefs had very little effect on E-business usage with non-significant positive relationship ($p > 0.05$, ß=0.101). Thus, $H_0 6$ was not rejected.

It seemed that the managerial decision on the timing of E-business adoption (early or later) was not trivial. Although early adoption created significant demand and technological risks, it could generate fruitful rewards. Santos and Peffers (1998)

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investigated the automated teller machine (ATM) adoption decision. The study sought answers whether decisions of bank managers were triggered by the effort of marketing done by technology vendors, competitors' activities or both. The results suggested that the main influencing factor came from imitation of industry competitors, followed by the effort of marketing by technology vendors which found to be important for the early years technology introduction. If the same reasons were applied to E-business environment, for which decision making by management was made based on the three factors, it could signify the reason why managerial beliefs had very little effect on E-business usage. As suppliers and customers were the most important, and directly related to a business, any decision to invest in technology should be driven by both parties, not by imitating the competitors or due to the influence of technology vendors. There were less benefits of going online if the suppliers were still on brick and mortar businesses, and customer readiness was not in place.

4.8.7 Regulatory Support

Regulatory support referred to the function of government in encouraging E-business usage by developing laws and incentives on E-business. To seek for empirical evidence whether regulatory support in Malaysia affected E-business usage, hypothesis $H_0 7$, and $H_A 7$ were developed.

Figure 4.13: Hypothesis 7
Source: Developed for the study

$H_0 7$:   No significant relationship existed between regulatory support and E-business usage.

$H_A 7$:   Regulatory support significantly predicted E-business usage.

Table 4.20 exhibited that regulatory support was not a predictor of E-business usage ($p > 0.05$, $\beta = 0.112$). Thus, $H_0 7$ was not rejected. According to Kraemer et al.,

(2006), security and privacy issues, loose business law and inadequate legal protection were found to be the common hindrance factors for businesses to invest in E-business. However, non-significant positive relationship of the current study might give an idea that there might be indirect relationship of regulatory support towards E-business usage that can be explored in future research. For example, one possibility would be the influence of regulatory support on managerial beliefs which might next influence financial commitment on Web-technology investment. Higher Web-technology investment could further enhance Web-functionalities which were found as the strongest factor in determining E-business usage (see discussion in 4.8.2).

4.8.8 Pressure Intensity

Pressure intensity was measured by looking at pressure by customers, pressure by suppliers, and pressure by competitors in context of E-business usage. To discover whether pressure intensity significantly influenced E-business usage, hypothesis $H_0 8$, and $H_A 8$ were developed.
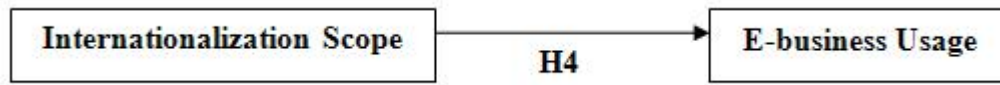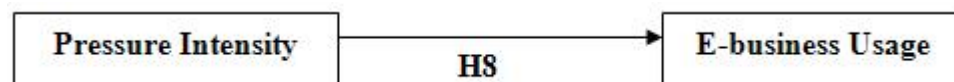

Figure 4.14: Hypothesis 8
Source: Developed for the study

$H_0 8$:   No significant relationship existed between pressure intensity and E-business usage.

$H_A 8$:   Pressure intensity significantly predicted E-business usage.

The result in table 4.20 signified that pressure intensity had significant negative relationship with E-business usage ($p < 0.001$, $\beta = -0.389$). Thus, $H_0 8$ was rejected in favor of $H_A 8$. An increase in pressure intensity by 1 standard deviation, E-business usage decreased by 0.389 standard deviations. This signified that higher pressure resulted lower level of E-business usage. Financial constraint might be the reason because investment in E-business technology required high costs. Low web-technology investment meant companies were unable to fulfill the needs of suppliers

and customers. In contrast, as customers and suppliers aimed at costs minimization and profit maximization in E-business utilization, if companies failed to meet these requirements, it led to customer and supplier withdrawal. Suppliers and customers shifted to new businesses for improved services, costs minimization, and profit maximization.

This finding was supported by Cristobal, Flavian and Guinaliu (2007) who studied on e-service quality and customers' loyalty, and established that the growing level of competition that could be observed on the Internet required the analysis of factors that could fully explain which aspects largely determined consumer loyalty. Amongst these explanatory factors, perceived quality of a website or the degree of satisfaction of the individual with the said website could be relevant. Companies should build up user-friendly websites to create customer's satisfaction and loyalty framework. Besides, managers should act fast towards customers' issues and complaints. Not to forget the website should provide secure shopping environment for customers in order to avoid customer or supplier withdrawals.

4.8.9 E-business Usage

The main purpose of E-business investment was to get better business performance (Zhu & Kraemer, 2005). In this study, E-business usage was measured by looking at online activity distributions that comprised the percentage of online consumer sales, the percentage of online business to business sales, the percentage of online order for supplies, and the percentage of online order of equipment for business use. To identify the extent to which E-business usage influenced business performance, $H_0 9$, and $H_A 9$ were developed.
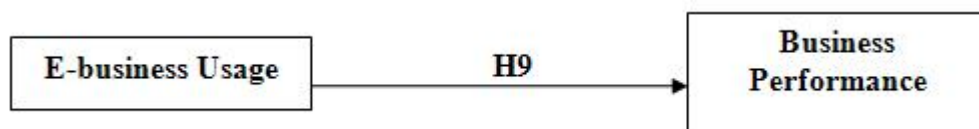
Figure 4.15: Hypothesis 9
Source: Developed for the study

$H_0 9$: No significant relationship existed between E-business usage and business performance.

$H_A 9$: E-business usage significantly predicted business performance.

E-business usage was found to have significant positive relationship with business performance (p<0.001, ß =0.364) (Table 4.20). Thus, $H_0 9$ was rejected in favour of $H_A 9$. When there was an increase in E-business usage by 1 standard deviation, business performance increased by 0.364 standard deviations.

As SEM provided information on direct, indirect and total effect of variables, table 4.21 exhibited the direct, indirect and total effects for E-business usage.

Table 4.21: Direct Effects, Indirect Effects and Total Effects of E-business Usage
Source: Computed Data Analysis

	E-business Usage		
	Direct Effects	Indirect Effects	Total Effects
Business Performance	0.364	0.000	0.364

The standardized direct (unmediated) effect of E-business usage on business performance is 0.364. That is, due to the direct (unmediated) effect of E-business usage on business performance, when E-business usage went up by 1 standard deviation, business performance went up 0.364 standard deviations. This was an addition to any indirect (mediated) effect that E-business usage may have on business performance. However, this study found that there was no indirect (mediated) effect of E-business usage on business performance.

The standardized total (direct and indirect) effect of E-business usage on business performance was 0.364. This was due to direct (unmediated) only. When there was an increase in E-business usage by 1 standard deviation, business performance increased by 0.364 standard deviations.

In conclusion, table 4.21 showed that E-business usage did not function as a mediator of business performance.

4.8.10 E-business Experience (Years)

Moderator variable referred to a variable that modified the correlation of the predictor and criterion variables (Baron & Kenny, 1986; Frasier et al., 2004). Changes could be (1) in correlation strength (stronger/weaker) (2) in direction of causality (negative or positive) between predictor and outcome variable. The current study sought empirical evidence whether a moderating variable (E-business experience) affected the relationship of the IV (E-business usage) on the DV (business performance). In other words, the moderator was tested (E-business experience) whether it interacted with the IV (E-business usage) to predict outcome scores of business performance. Thus, certain levels of a moderator under certain conditions of the IV (E-business usage) might predict different levels of the DV (business performance). To test this, $H_0 10$, and $H_A 10$ were developed as follows:
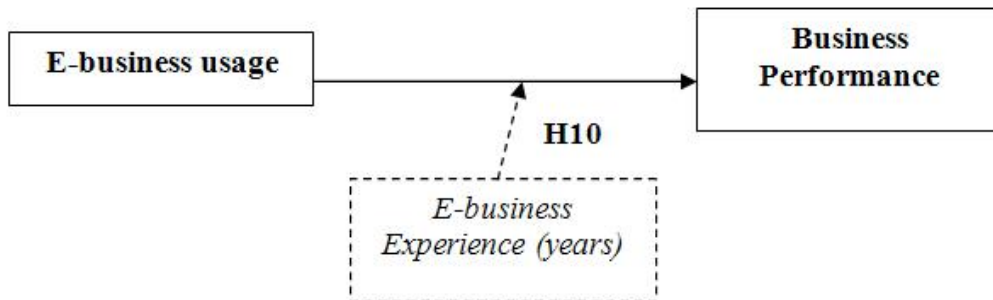
Figure 4.16: Hypothesis 10
Source: Developed for the study

$H_0 10$: E-business experience (years) had no significant influence on the relationship between E-business usage and business performance

$H_A 10$: The relationship between E-business Usage and Business Performance was significantly moderated by E-business Experience

SEM was used to analyze the influence of E-business experience (years) on the "usage-performance" relationship. The use of SEM to conduct moderation was relatively straightforward (easier than mediation), which can be illustrated as below:

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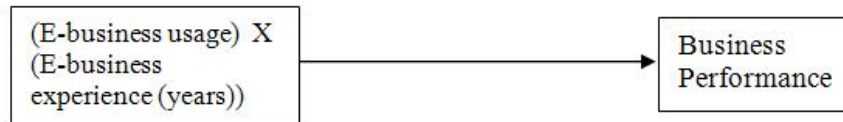
Figure 4.17: Testing Moderator using SEM
Source: Developed for the study

Changes in R^2 signified the influence of moderator variable E-business experience (years) in the model. The inclusion of moderator (for which the interaction was calculated based on [E-business usage] x [E-business experience in years]) had resulted an increase in R^2 of business performance from 51.1 percent to 59.8 percent (8.7 percent increase in R^2, $p<0.05$). Thus, $H_0 10$ is rejected in favour of $H_A 10$. E-business experiences (measured in number of years) have significant influence on "usage–performance" relationship. The finding was in line with Kauffman et al. (2002) that studied the survivability of e-commerce firms by applying the evolutionary game theory. It was found that realization of strategies came through a process of "trial and error". The exploration, experimentation and examination of market and performance feedbacks, and the experience gathered through a period of time enabled firms to realize what worked better and what did not.

4.9 Evaluating E-VALUE Model Fit

"Analysis of Moment Structures" (AMOS) with maximum likelihood was used for data analysis. In making a decision for a model to be accepted or rejected, goodness of fit test was used. Generally, multiple fit measures were available in structural equation model. Hence, multiple model fit measurements were suggested in prior study (Segars & Groover, 1993). Some of these measures were depicted in Table 4.22.

Table 4.22: Goodness-of-fit Measures of E-VALUE Model

Source: Computed Data Analysis

Goodness-of-fit-measure	Recommended value	Approximate boundary as a good fit of E-VALUE model
Chi-square, ratio	$p > 0.05$	0.258
Relative Chi-square	< 3.00	1.039
CFI	Closer to 1.0 is better	0.997
TLI	Closer to 1.0 is better	0.996
IFI	≥ 0.95	0.997
RMSEA	< 0.08	0.015

* See (Appendix 18) for detail results

Relative Chi-Square
- Chi-square fit index divided by degrees of freedom. 3 or less is acceptable (Kline, 1998).

Incremental Fit-comparison to baseline measure (Comparative Fit Index-CFI)
- Compare the existing model fit with a null model, assumes the latent variables in the model are uncorrelated. CFI value close to 1 indicates a very good fit (Garson, 2006).

Tucker-Lewis Coefficient (TLI)
- The Tucker-Lewis Coefficient. TLI value close to 1 indicates a very good fit (Byrne, 1994).

Incremental Fit Index (IFI)
- With values ranging from zero to one, IFI indicates how much better the hypothesized model fits in comparison to the baseline that assume that there are no relationships in the data. Values of 0.95 or greater are deemed acceptable (Byrne, 1994).

Root Mean Square Error of Approximation (RMSEA)
- The average of the residuals between the observed correlation/covariance from the sample and the expected model estimated from the population. A good model fit if RMSEA is less than or equal to 0.08 (Byrne, 1994).

In this study, a maximum likelihood method was used. Results indicated that the model fitted well (chi-square = 554.824; p=0.258). χ^2/DF, CFI, TLI, IFI, and RMSEA (Appendix 13) were also used to further strengthen the analysis of model fit. χ^2/DF was found to be 1.039 (fulfil the rule of thumb that χ^2/DF should be less than 3.0). The CFI of 0.997 and TLI of 0.996 were in adequate level with a value closer to 1.0, indicating a good fit (McDonald & March, 1990). Next, for values ranging from zero to one, IFI indicated how much better the hypothesized model fitted in comparison to the baseline that assumed that there were no relationships in the data. Values of IFI 0.997, which were greater than 0.95 was deemed acceptable for a good fit. Nonetheless, the RMSEA of 0.015 was good enough for a model fit (Browne and Cudeck, 1993). Therefore, the E-VALUE model was acceptable.

4.10 Summary of Results

Looking at the drivers of E-business usage; technology competence, web-functionalities, firm size, and pressure intensity were found to be predictors of E-business usage. Web-functionalities appeared to be the strongest predictor ($\beta = 0.453$) followed by pressure intensity ($\beta = -0.389$), technology competence ($\beta = 0.125$), and firm size ($\beta = 0.116$). Other factors including internationalization scope, Web technology investment costs, managerial beliefs, and regulatory support were found to have non-significant relationship (see table 4.23 for summary of hypotheses testing).

With R^2 of 54.9 percent (squared multiple correlations = 0.549), it was estimated that the predictors of E-business usage explained 54.9 percent of its variance (Figure 4.18).

Further analysis on the "usage–performance" relationship indicated that E-business usage significantly influenced business performance (in a positive way). The higher the usage, the better the performance. Moderator variable E-business experience was found to significantly influence the "usage-performance" relationship. The inclusion of moderator variable, E-business experience (years) in the model, had resulted an increase in R^2 of business performance from 51.1 percent to 59.8 percent. Based on SEM results, the predictors of business performance explained 59.8 percent of its variance (Figure 4.18).

Table 4.23: Summary of Results – Hypotheses Testing

Source: Developed for the Study

Hypotheses	Results
Hypothesis 1	
$H_0 1$: No significant relationship existed between technology competence and E-business usage.	Reject $H_0 1$; Accept $H_A 1$
$H_A 1$: Technology competence significantly predicted E-business usage.	
Hypothesis 2	
$H_0 2$: No significant relationship existed between web-functionalities and E-business usage.	Reject $H_0 2$; Accept $H_A 2$
$H_A 2$: Web-functionalities significantly predicted in E-business usage.	
Hypothesis 3	
$H_0 3$: No significant relationship existed between firm size and E-business usage.	Reject $H_0 3$; Accept $H_A 3$
$H_A 3$: Firm size significantly predicted E-business usage	
Hypothesis 4	
$H_0 4$: No significant relationship existed between internationalization scope and E-business usage.	Do not reject $H_0 4$
$H_A 4$: Internationalization scope significantly predicted E-business usage.	
Hypothesis 5	
$H_0 5$: No significant relationship existed between web technology investment costs and E-business usage.	Do not reject $H_0 5$
$H_A 5$: Web technology investment costs significantly predicted E-business usage.	
Hypothesis 6	
$H_0 6$: No significant relationship existed between managerial beliefs and E-business usage.	Do not reject $H_0 6$
$H_A 6$: Managerial beliefs significantly predicted E-business usage.	
Hypothesis 7	
$H_0 7$: There is no significant relationship between regulatory support and E-business usage.	Do not Reject $H_0 7$
$H_A 7$: Regulatory support significantly explains the variance in E-business usage.	
Hypothesis 8	
$H_0 8$: No significant relationship existed between pressure intensity and E-business usage.	Reject $H_0 8$; Accept $H_A 8$
$H_A 8$: Pressure intensity significantly predicted E-business usage.	
Hypothesis 9	
$H_0 9$: No significant relationship existed between E-business usage and business performance.	Reject $H_0 9$; Accept $H_A 9$
$H_A 9$: E-business usage significantly predicted business performance.	
Hypothesis 10	
$H_0 10$: E-business experience (years) had no significant influence on the relationship between E-business usage and business performance	Reject $H_0 10$; Accept $H_A 10$
$H_A 10$: The relationship between E-business Usage and Business Performance was significantly moderated by E-business Experience	
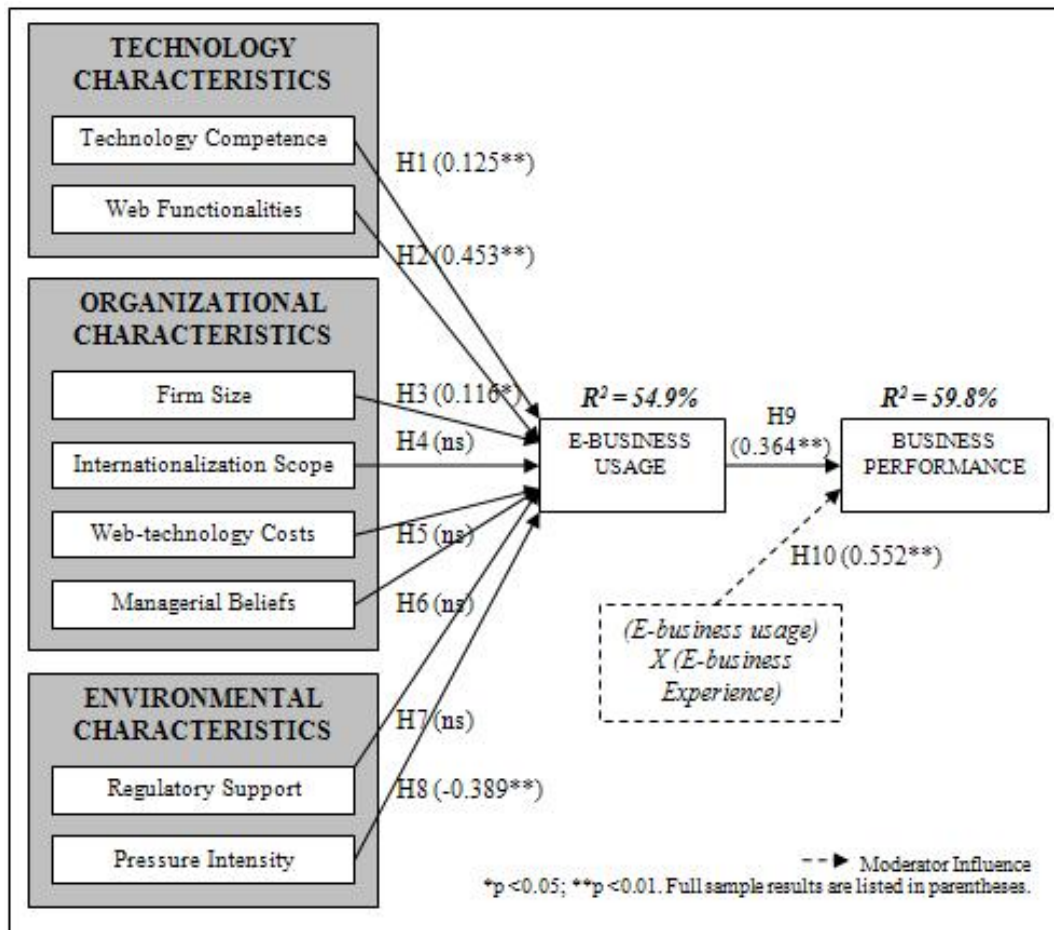
Figure 4.18: E-VALUE Model, and Full Results Based on SEM Analysis
Source: Developed for this Study

As for model identification, since df > 0 (df=246), the model was over-identified. Finally, it was found that the proposed model fitted well and was acceptable (see table 4.22).

4.11 Chapter Summary

This chapter describes data analysis and findings which focus on four important objectives; feel for the data, testing the goodness of data, testing the hypothesis developed for the research, and testing E-VALUE model fit. The next chapter looks into the discussion and conclusion of the study.

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CHAPTER 5:
DISCUSSION AND CONCLUSION

5.1 Introduction

Chapter 4 discussed the analysis, and findings of the study which focused on four important points; feel for the data, testing the goodness of data, testing the hypothesis developed for the research, and testing the E-VALUE model fit. This chapter summarised the findings of the study in addressing research questions, discussing the significant contribution to new knowledge, the contribution of the study in closing the gaps of knowledge existed, and discussion on the practical implications of research findings, limitations of the study, suggestions for future research works, and conclusion.

5.2 Findings

The research met the objectives set. It provided knowledge enhancement in the Malaysian service industry by identifying the potential of E-business in value creations, and how E-business experience significantly influence the "usage-performance" relationship. Furthermore, the use of the E-VALUE model as it contributed to knowledge enhancement demonstrated its applicability to assess E-business issues. Based on examination of click and mortar firms at various levels of experience in E-business, the study presented a multidimensional view of both the adoption and post-adoption E-business diffusion and value creations.

Knowledge enhancement was made by providing empirical evidences on issues related to E-business in the service industry in Malaysia. The results suggested that E-business usage was predicted by technology competence, Web-functionalities, firm size, and pressure intensity. Other factors (internationalization scope, managerial belief, Web technology investment costs, and regulatory support) were found to have non-significant positive relationship. Looking at how E-business usage influenced business performance, significant positive relationship was established. Besides, years of E-business experience was found to significantly moderate the

"usage-performance" relationship. The E-VALUE model was concluded to be an over-identified model and the model fitted well with the data. Hence, the E-VALUE model could be considered as a multi-dimensional theoretical model in evaluating factors determining E-business usage on business performance in the Malaysian service industry. Section 5.2.1 discussed details of the findings.

5.2.1 Significant Variables

5.2.1.1 Technology Competence as Driver to E-business Usage

In many of Internet adoption studies, technology competence was found to predict Internet adoption, especially among SMEs. In Karakaya and Khalil (2004), with regard to Internet usage, SMEs appeared to be more advanced especially in using electronic mail to support their operations. Furthermore, prior studies on IS implementation (Kuan & Chau, 2001; and Crook & Kumar, 1998) established technological resources (infrastructure, human resources and knowledge) to be important factors, particularly as the basic foundation of E-business service and could be used to predict firm's technological competency (Robertson, 2005; Bharadwaj, 2000; and Mata et al., 1995). As for the current study, seeing that technology competence assisted the growth and operation of E-business, the result of the study supported prior studies by Zhu and Kraemer (2005) which brought into being that technology infrastructure acted as a platform for E-business development especially in knowledge and skills practices of IT personnel in developing E-business applications.

5.2.1.2 Web-functionalities as Driver to E-business Usage

Looking at drivers to E-business usage, this study was found to provide empirical evidence that Web-functionalities was found to be the strongest factor that influenced E-business usage ($\beta=0.43$). Significant positive relationship between Web-functionalities and E-business usage corroborated finding by Thong (1999) which found that IS characteristic, "complexity" had significant positive influence of IS adoption. As prior study by Thong focused on complexity of IS, empirical findings of the influence of Web-functionalities on E-business usage in current study,

and its function as the most influential drivers to E-business usage provided significant contribution to E-business literature.

5.2.1.3 Firm Size as Driver to Ecommerce Usage

In the study of innovation diffusion, firm size had always been a factor considered (Zhu et al., 2004; and Damanpour, 1992). Past studies presented empirical evidences that new technology was more likely to be adopted by large companies (Hollenstein, 2004; Bertschek & Frygers, 2002; Davies, 1979; and Mansfield, 1968). The reasons lay on the company's ability to invest in higher fixed costs on technology infrastructure and systems development (The European E-business Report, 2004). Although increase in efficiency and transaction cost reduction were the major drivers for companies to put into practice E-business regardless of the size bands, more benefits were enjoyed by large companies. This was due to the nature of firm size that represented some significant elements of the business, for instance the availability of resources, decision agility and knowledge on prior technology (Zhu & Kraemer, 2005). For that reason this study hypothesized that size (as measured by the number of employees) significantly influenced firm's E-business usage.

5.2.1.4 Pressure Intensity as Driver to E-business Usage

With a significant negative path, pressure intensity was found to be the second strongest factor. It meant higher pressure from customers, suppliers and competitors and led to lower level of E-business usage. Financial constraint on high cost required for E-business investment could be the reason as it led to low Web-technology investment for which businesses were unable to fulfil the needs of suppliers and customers. Regarding the E-business exploitation, the objectives of customers and suppliers in contrast were more on cost minimization and profit maximization. Therefore, when customers and suppliers put on pressures to the company regarding E-business facilities, and if the companies were unable to meet the demand (due to financial constraints), these led to supplier and customer withdrawal. Suppliers and customers moved to other businesses in seeking for improved services that offer profit maximization.

E-business boosted up competition intensity. Business customers were able to reach and evaluate alternatives available in the market. In this situation businesses were no longer to compete with common known competitors but competition was now among global companies (with similar products or services) that participated in E-business (Stalk & Trudeau, 2000). Competitive pressure had shown a significant increase during the past years which directed to an increase of cost pressure. In lowering competitive pressure, online technologies acted as a tool in increasing the Research and Development (R&D) efficiency. Moreover, online technology usage could be used to restructure company processes (R&D, production, and marketing) helped to deal with the increased cost pressure.

From the customers' perspectives, Kotler and Keller (2005) accentuated that customers had a tendency to be value-maximized, and would therefore calculate approximately which offer would bring most perceived value, and would act on it. For that reason, Backlund and Holmqvist (2006) stressed that the competitive business in E-business atmosphere triggered an alarm for companies to keep their customers satisfied. Satisfying customers could be achieved not only by delivering to them the value they anticipated but learning to go ahead of their expectations. Backlund and Holmqvist in their study on "Exceeding customer expectations: an online and offline perspective" found that companies had to differentiate against competitors and to exceed customer expectations in order to continue to exist in online business.

The finding of the current study met the concept of customer value in Huber, Herrman and Morgan (2001), which pointed out that customer value as a theoretical construction that captured customers' perspectives of a service. Satisfaction of customers led to commercial success. This was supported by the theory of Customer Value by Albrecht (1995). Akin to the theory of Maslow's Hierarchy of Needs, the theory of Customer Value (Figure 5.1) segregated customers in four hierarchical stages; basic, expected, desired, and unanticipated.
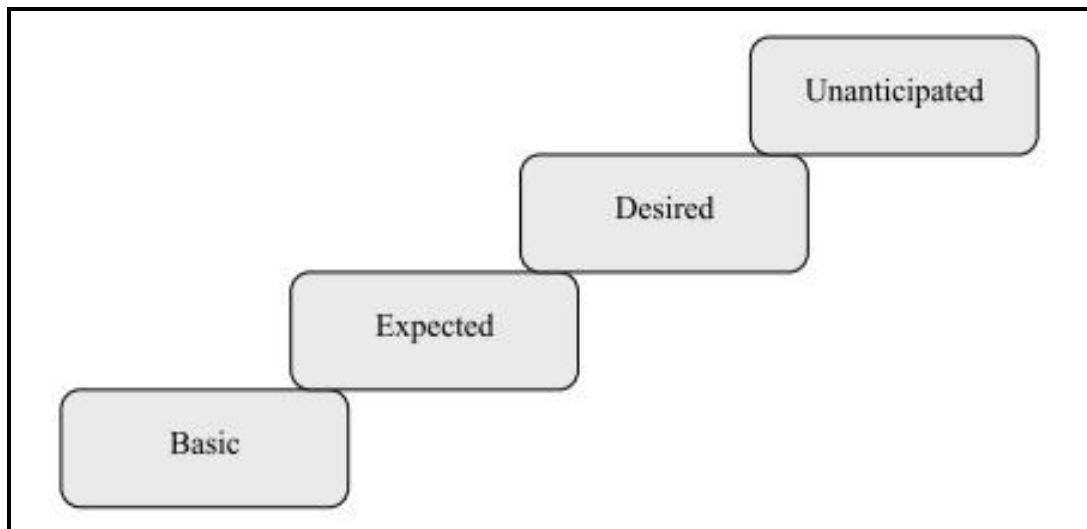
Figure 5.1: Theory of Customer Value
Source: Adapted from Albrecht (1995)

In his theory, Albrecht described that the "basic" level contained the basic components of a company's value package to the customers, which enabled the company to be in the business. The second stage was on the "expected" value that referred to "what customers find normal for a company and its competitors". Next, the third stage "desired" level, referred to "added value known by customers" which they intended to have, but did not expect, based on the competitors' performance. Lastly, the final stage referred to "unanticipated" values that went beyond expectations and desire that customers might have when doing business with a company. According to this theory, a company must at least master the first two stages of the hierarchy and must go beyond mere customer satisfaction and deliver value at the desired or unanticipated level in order to differentiate themselves.

Pressure from suppliers could exist with regard to system requirements. In Small Medium Enterprises (SMEs) for example, smaller companies were exposed to pressure (mainly by larger firms) to adjust their ICT solutions or data exchange format to comply with supplier's requirements (Selhofer, 2007).

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5.2.1.5 E-business Usage as Driver to Business Performance

In looking at the factors determining E-business usage and its influence on business performance, usage was being tested to function as dependent variable (when assessing drivers to E-business usage), independent variable (when looking at "usage-performance" relationship), and mediator variable (when evaluating the indirect relationship) (Figure 5.2).
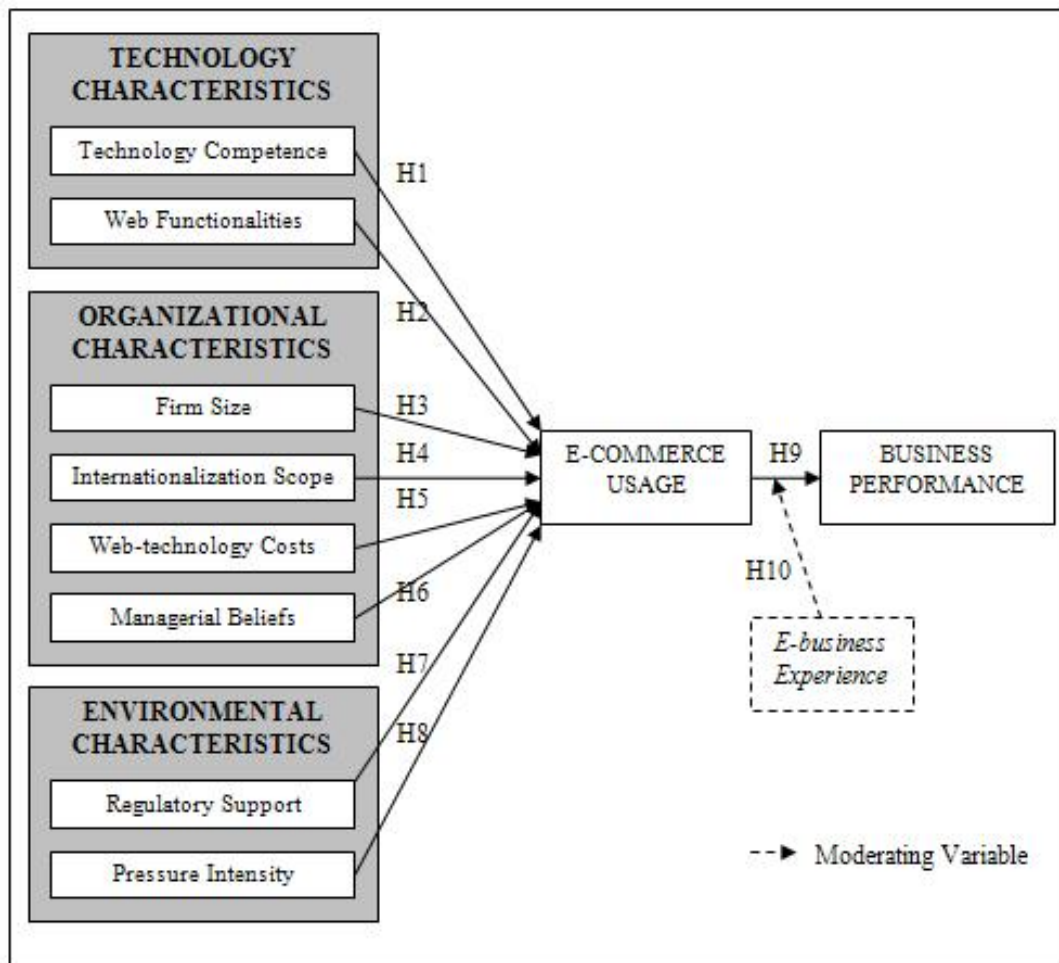
Figure 5.2: Tested E-VALUE Model
Source: Developed for this Study

In prior studies, the importance of the link between IT usage and firm's performance had long been discussed (Delone & McLean, 1992; and Keen & Scott, 1978). Prior study on "Performance Impacts of Information Technology: Is Actual Usage the missing link?" by Devaraj and Kohli (2003) suggested that actual usage of

the technology was found to be an important driver of IT impact as compared to the investment in technology. Actual usage was found to be a key variable in explaining the impact of technology on performance while omission of this variable might result a missing link in IT payoff analysis. Markus (1995) and Weill (1992) also suggested that technology's impact on organizational performance may be mediated through another variable such as usage.

In this study, the functions of E-business usage as dependent and independent variable were tested. As discussed before, four drivers (technology competence, Web-functionalities, firm size, and pressure intensity) predicted E-business usage for which 54.9 percent of variations in usage were explained by all four variables. On the other hand, E-business usage was not the mediator of business performance as its value of direct effect, 0.363 was larger than the value of direct effect, 0.000. However, a significant linear relationship (β=0.364) could be seen between E-business usage and business performance.

Results suggested that E-business usage and business performance were closely linked. The findings reflected firm's planning in enhancing E-business technology utilization. In other words, findings suggested that firms should start looking towards E-business investment without delay. Besides, external parties such as the government and industry associations should take part in encouraging E-business investment. Awareness campaign and availability of E-business incentives could provide support to the firms.

5.2.1.6 E-business Experience (years) as Moderator Variable

Research findings demonstrated that experience in E-business plays a significant role as a moderator in the "usage-performance" relationship. This was evidenced by 8.7 percent increased in R^2 value of business performance. As supported by Kauffman et al. (2002), the trial and error process experienced by a firm as a result of E-business implementation would benefit the firm by gaining experience on what strategies paid off and what did not. Implementing evolutionary game theory approach, Kauffman et. al. found that through exploration, experimentation, examination of market feedback and performance feedback, and the

learning process based on others' experiences would enable firms to realize what worked better and what did not. These supported the finding on why "usage-performance" relationship was moderated by E-business experience.

5.2.2 Non-significant Variables

Findings exhibited that internationalization scope, managerial beliefs, Web technology investment costs, and regulatory support did not predict E-business usage. One potential reason of these non-significant positive relationships would be the possibility of indirect effects among variables in predicting E-business usage. There was no doubt that E-business enabled firms to go global. Hence, to reach the international market firms were required to have comprehensive Web-functionalities. Looking back on the finding that Web functionalities acted as the strongest factor that influenced E-business usage, to enable firms to have high Web functions require high investment in Web technology. As Web technology investment costs in general communicated the degree of top management beliefs that E-business led to firms' value creations, and since technology investment was a source of increasing cost, it gave concern to the top management on the decision whether or not to invest and if yes, to what extent the investment should be committed (Heo & Han, 2003). Here comes the issue on to what extent did top management believe that E-business was profitable? Again the issue of competitive advantage of the investment, security, privacy and confidentiality issues, and of course return on investment (ROI) would be the key concern. One of the factors that could possibly influence management decision to invest in E-business would be the extent of regulatory support such as the enactment of cyber laws, infrastructure readiness provided by the government and of course some other incentives such as tax exemption or tax incentives. The indirect relationships among these non-significant variables in predicting E-business usage could be an interesting research topic that should be explored in future research.

5.2.3 Summary of Key Findings

In summary, this study met the general objective, finding out the factors determining E-business usage on business performance of the service industry in Malaysia. All three specific objectives were answered as follows:

In determining the extent to which technological, organizational and environmental factors influenced the level of E-business usage, four variables were found to significantly influence E-business usage (technological context – technology competence, and Web-functionalities; organizational context – firm size; and for environmental context – pressure intensity). Overall, 54.9 percent of variance in E-business usage was explained by the four variables.

In determining the nature of "usage-performance" relationship, E-business usage was found to have significant positive relationship with business performance.

In determining whether E-business experience (years) moderated the "usage-performance" relationship, E-business experience was found to moderate the relationship, evidenced by an increase of R^2 of business performance from 51.1 percent to 59.8 percent (an increase of 8.7 percent).

Furthermore, this study helped to narrow the knowledge gaps and provided useful information and guidelines that could trigger E-business usage in the Malaysian business environment by answering the research questions.

Research question (i) that sought an answer on the factors that drive E-business usage, the empirical evidence provided in this study concluded that four variables namely technology competence, Web technology investment costs, firm size, and pressure intensity were found to be significant drivers of E-business usage.

In research question (ii) E-business usage was found to have significant influence on business performance.

Research question (iii) that examined whether E-business experience influenced "usage-performance" relationship, it was found that the relationship was moderated by E-business experience.

5.3 Significant Contribution to New Knowledge

This study contributed to the new knowledge with the introduction of the E-VALUE model (Figure 5.3) in narrowing the research gaps when studying factors determining E-business usage on business performance.
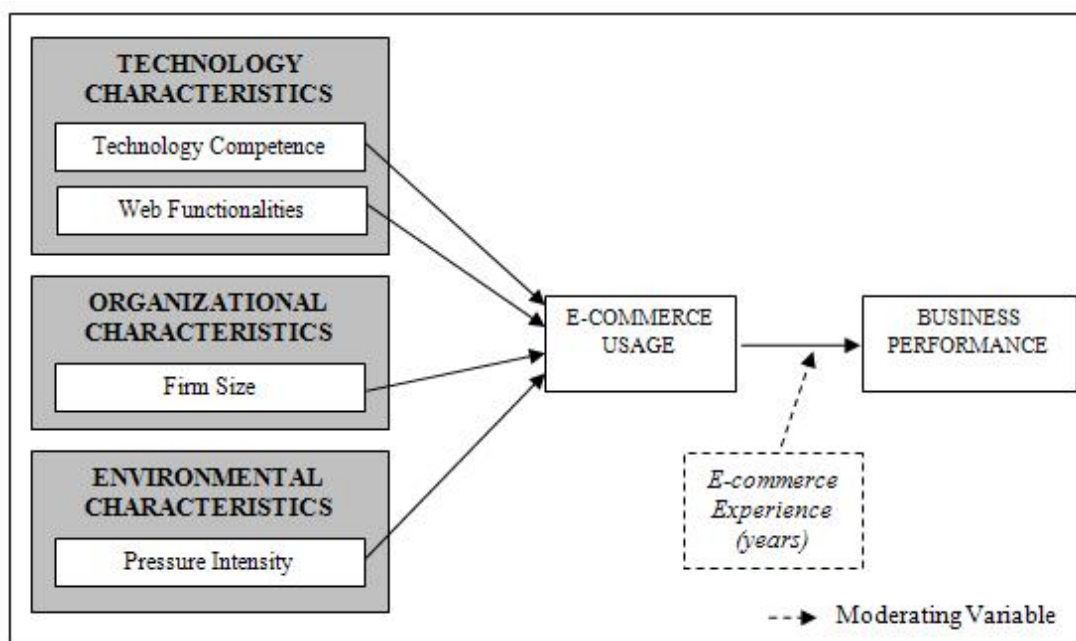
Figure 5.3: E-VALUE Model – Significant Contribution to New Knowledge

Source: Developed From Computed Data Analysis

The E-VALUE model provided a holistic view of factors that acted as drivers to E-business usage, and how E-business usage influenced business performance by considering E-business experience (in number of years) as moderator. Data analysis in chapter 4 established four drivers (technology competence, Web functionalities, firm size, and pressure intensity) to significantly influence E-business usage. In looking at how usage influenced business performance, results found that higher usage led to higher performance. In addition, test on moderator influence of E-business experience on the "usage-performance" relationship found that E-business experience moderated the relationship and the inclusion of E-business experience in the E-VALUE model gave higher R^2. R^2 statistics provided information on a model's goodness of fit.

The E-VALUE model was based upon a unified integrated framework; the TOE model, the RBV theory, and the balanced scorecard (with modification of measurement attributes to suit the E-business environment). Thus, combining the variables and testing them in a single model had generated a clearer picture, and multi-dimensional views in testing causal relationship between variables. The E-VALUE model was developed based on extensive reviews of literature in order to

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close the gaps of knowledge by answering all three research questions as discussed in section 5.2.3 above.

5.4 Closing the Gaps

All three objectives of the study were met. Research findings significantly contributed to the service industry regarding E-business potentials and knowledge advancement. E-VALUE model usage in the current study had established its applicability regarding E-business issues. Empirical evidences from the current E-business companies provided a multidimensional views and outcomes of E-business usage.

Overall, the application of the proposed E-VALUE model in investigating the factors determining E-business usage on business performance emerged to close the gaps in prior studies as follows (Table 5.1):

Table 5.1: The Application of E-VALUE Model in Closing the Gaps in Knowledge Area Existed in Prior Studies

Source: Developed for this Study

Gaps in prior studies related to E-business usage and value creations	The application of E-VALUE model in closing the gaps in knowledge area existed in prior studies
1. The missing of potential variables; managerial beliefs, and pressure intensity (as suggested in the literature) that could have important influence on E-business usage.	1. Managerial beliefs, and pressure intensity were included in the study. Findings: Pressure intensity was found to have significantly influenced E-business usage.
2. In prior studies, front-end functionalities and back-end integration were regressed directly to E-business value. Both variables were actually refers to Web-functionalities, and will influence E-business usage.	2. Front-end functionalities and back-end integration were renamed as Web functionalities, and regressed towards E-business usage. Finding: Web-functionality was found to be the strongest factor that influences the level of E-business usage.
3. The absence of moderator effect which could have a strong contingent effect on the	3. Moderator variable (E-business experience) was included to test whether its inclusion

| relationship between E-business usage and business performance. | could change the original relationship between E-business usage and business performance.

Finding: E-business experience was found to moderate the relationship between E-business usage and business performance. |
| --- | --- |
| 4. The measurement of business performance was not comprehensive enough from the accounting point of view. Prior studies focused only on three factors; the impact of sales, impact on internal operations, and impact on procurement. Other important dimensions and attributes were ignored. | 4. The measurement attribute based on the four perspectives in the balanced scorecard as suggested by Kaplan and Norton (1992) were modified to close the gaps found in between technology and accounting points of view by introducing "E-business scorecard" as a comprehensive and multidimensional performance measurement tool.

Finding: Uni-dimensionality test using confirmatory factor analysis had shown a good fit of single model (with an adaptation of four dimensions from balanced scorecard) in assessing business performance. |

The introduction of additional significant variables (Web functionalities and pressure intensity); consideration of moderator effect; and the use of multidimensional indicators in measuring business performance have made E-VALUE model a comprehensive and multidimensional theoretical model in evaluating E-business usage and value creation in service industry.

5.5 Practical Implications of Research Findings

Results suggested that E-business usage, years of E-business experience, and business performance were interrelated. The findings signified that E-business technology should not be ignored if a company looked towards profit maximisation. Focus should be more on how to deploy it profitably instead of whether to deploy it or not. Continuous assessment on E-business suitability based on suppliers' and customers' needs should be done.

Strong emphasis must be given to Web-functionalities in order to facilitate the E-business transactions. It is imperative to have a team of knowledgeable IT personnel to oversee the firms' E-business initiatives. In the Malaysian tourism

industry for example, some travel agencies expressed their concern with the unpredictable circumstances and risks that may occur when adopting E-business technology. This was partly a reflection of the lack of relevant knowledge about E-business (Raja Mazhatul Yasmin, 2007). In dealing with this issue, continuous effort from associations such as MATTA could solve this problem and increase confidence level by providing compulsory training courses targeted at agencies that need special skills and guides regarding E-business implementation. For example, Malaysia Association of Hotels (MAH) had taken an initiative in providing training to the members regarding the development of E-business. The initiative taken could lead to minimising the costs of investment especially among small firms. Besides, research findings from the current study would help related associations in the service industry such as MATTA, MAH, Malaysians Institute of Transport (MITRANS) and Association of Private Hospitals Malaysia (APHM) to evaluate E-business investments on the followings:

   i.   to encourage and advise new comers in E-business activities;

   ii.   to identify problems encountered among industry players; and

   iii.   to determine areas needed for re-engineering process to ensure profitability of E-business investment among industry members.

As this study was supported by the ICT Policy and Planning Unit, Ministry of Science, Technology and Innovation (MOSTI), Malaysia (Appendix 7), the research findings would help MOSTI to further enhance the current ICT and E-business policy, strengthen E-business regulatory framework and promote E-business to Malaysian companies. Plan and policies with the intention of advancing E-business usage should depend on accumulated empirical evidence on the existing E-business associated practices, problems, and potentials.

5.6 Limitations of Current Study

This study focused on click and mortar companies in the service industry (tourism, financial, and transportation) as the unit of analysis. Thus, the findings might not be entirely applicable to other sub-sectors in the service industry. With

regard to some other limitations that will be discussed next, the researcher was aware that the validity of conclusions and generalizations of this research finding might be affected.

5.6.1 Survey

The major disadvantage of using survey concerns the validity and reliability of responses. Survey only reflects respondents' verbal descriptions of their feelings about something. Accuracy of responses is hardly acquired. This is always true for behaviour contrary to generally accepted norms of society. It is hard for a person to indicate their engagement in behaviour that seems to be wrong in their group. Therefore, results interpretation need to consider this serious limitation.

Questionnaire development needs to be done very carefully. As in Oppenheim (1996), 'the ability to write plain English will help, but that will not be sufficient'. A well designed questionnaire will induce the accuracy and completeness of information that lead to reliable and relevant data.

According to Walsh & Wigen (2003), common weaknesses of using questionnaire survey during data collection are; low response rate (which may affect the validity of generalization of the results), who actually fills in the questionnaire remains anonymous (it is assumed that respondents are honest in answering the questions but this may not always be true), and costly especially for mail questionnaire distributions.

5.6.2 Time Limitation

Conducting research systematically takes time (Zikmund, 1994). As a consequence, it was not possible for the researcher to incorporate all players in the service industry. Therefore, focus was only given to three sub-sectors in the service industry (tourism, financial, and transportation).

5.6.3 Secrecy of Information

Secrecy of information was another limitation of the study (especially in relation to business performance assessment). Few hotels (especially those affected

by tsunami in 2006) were reluctant to participate in the study as they treated their information as confidential. As a supporting letter from the Ministry of Science, Technology and Innovation was attached to the questionnaire, respondents who were reluctant to participate in the survey sent a letter to the Ministry explaining the reasons of their withdrawal from the study (Appendix 8).

5.7 Future Research

This study had allowed the researcher to provide empirical evidence concerning the drivers to E-business usage, how E-business usage influence business performance, and the function of E-business experience (in years) as moderator in the "usage-performance" relationship. Future researchers are encouraged to do advance exploratory thoughts and concepts discussed in the current study. Recommendations for potential future research include empirical investigations into the followings:

i.   The use of broad dataset from developed, developing, and newly industrialized countries to find out cross-countries differences.

ii.   Inclusion of other moderator variables such as industry sector and E-business implementation stage (Clear understanding of strategic goals, experimentation, integration, and competitive advantage stages).

iii.   Consideration on larger sample size in future research could help to provide clearer understanding on the relationships among variables. Interesting insights could also be yielded if the retest of survey instrument is done in other industry sectors or in other countries. In grasping the details, longitudinal study is recommended rather than cross-sectional study. This is due to time dimensional issues for which business performance would be best measured over time.

iv.   Further analysis could be done on the potential relationship between non-significant factors that could have the possibility of establishing indirect relationships in predicting E-business usage.

5.8 Conclusion

Knowledge advancement was acquired by addressing E-business drivers and the influence of E-business usage on business performance (with the inclusion of E-business experience as a moderator). A multi-dimensional perspective was acquired with the implementation of an integrative E-VALUE model that provided empirical evidences that helped to cover the knowledge gaps existed in prior studies. With the addition of two important variables (Web functionalities and pressure intensity) which found to be important in technology diffusion literature, the consideration of moderator variable (E-business experience), and comprehensive performance measurement which considered both technology and accounting perspectives, it is believed that E-VALUE model is a more realistic and reliable model in looking at the factors determining E-business usage on business performance in the Malaysian service industry.

The findings supported prior studies and therefore, generalisation of conclusion should not be an issue. Not only found to be useful to the tourism sector, financial and transportation services, the findings could also provide useful insights to other service-based industries that have an intention to invest in E-business. Besides, the findings supplied useful information to E-businesses in evaluating the company's existing E-business initiative besides assessing the needs of re-engineering (if possible) to ensure the maximisation of profits regarding E-business investment. Furthermore, it encouraged traditional businesses to invest in E-business. To survive in today's hypercompetitive world, a fast action towards rapid changes in business environment is a must (Intan Salwani et al, 2009). Opportunities and risks on changing the traditional business into a business on the net should be taken by the firms in order to compete in the global business environment which could lead to higher profit maximisation (Paynter & Lim, 2001).

5.9 Chapter Summary

This chapter described the findings of significant and non significant variables of this study in addressing objectives of study and research questions, discussed the significant contribution to new knowledge of the study, the

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contribution of the study in closing the gaps of knowledge existed, and discussed the practical implications of research findings, limitations of the study, suggestions of future research works, and conclusion.

APPENDICES

Appendix 1

E-business Readiness Rankings: Asia and the Pacific Region 2008

Source: Finfacts.com (2008)

2008 e-readiness rank (of 70)	2007 rank	Country	2008 e-readiness score (of 10)	2007 score
1	2	United States	8.95	8.85
2	4	Hong Kong	8.91	8.72
3	2	Sweden	8.85	8.85
4	9	Australia	8.83	8.46
5	1	Denmark	8.83	8.88
6	6	Singapore	8.74	8.60
7	8	Netherlands	8.74	8.50
8	7	United Kingdom	8.68	8.59
9	5	Switzerland	8.67	8.61
10	11	Austria	8.63	8.39
11	12	Norway	8.60	8.35
12	13	Canada	8.49	8.30
13	10	Finland	8.42	8.43
14	19	Germany	8.39	8.00
15	16	South Korea	8.34	8.08
16	14	New Zealand	8.28	8.19
17	15	Bermuda	8.22	8.15
18	18	Japan	8.08	8.01
19	17	Taiwan	8.05	8.05
20	20	Belgium	8.04	7.90
21	21	Ireland	8.03	7.86
22	22	France	7.92	7.77
23	24	Malta	7.78	7.56
24	23	Israel	7.61	7.58
25	25	Italy	7.55	7.45
26	26	Spain	7.46	7.29
27	27	Portugal	7.38	7.14
28	28	Estonia	7.10	6.84
29	29	Slovenia	6.93	6.66
30	32	Greece	6.72	6.31
31	31	Czech Republic	6.68	6.32
32	30	Chile	6.57	6.47
33	34	Hungary	6.30	6.16
34	36	Malaysia	6.16	5.97
35	33	United Arab Emirates	6.09	6.22

* New to the annual rankings in 2008. Note: A four-decimal score is used to determine each country's rank.
Source: Economist Intelligence Unit, 2008.

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Appendix 2

E-readiness Rankings and Scores 2009

Source: Economist Intelligence Unit (2009)

Economist Intelligence Unit e-readiness rankings and scores, 2009

2009 rank (of 70)	2008 rank	Country	2009 score (of 10)	2008 score	2009 rank (of 70)	2008 rank	Country	2009 score (of 10)	2008 score
1	5	Denmark	8.87	8.83	36	36	Slovakia	6.02	6.06
2	3	Sweden	8.67	8.85	37	37	Latvia	5.97	6.03
3	7	Netherlands	8.64	8.74	38	34	Malaysia	5.87	6.16
4	11	Norway	8.62	8.60	39	41	Poland	5.80	5.83
5	1	United States	8.60	8.95	40	40	Mexico	5.73	5.88
6	4	Australia	8.45	8.83	41	39	South Africa	5.68	5.95
7	6	Singapore	8.35	8.74	42	42	Brazil	5.42	5.65
8	2	Hong Kong	8.33	8.91	43	43	Turkey	5.34	5.64
9	12	Canada	8.33	8.49	44	49	Jamaica	5.33	5.17
10	13	Finland	8.30	8.42	45	44	Argentina	5.25	5.56
11	16	New Zealand	8.21	8.28	46	50	Trinidad & Tobago	5.14	5.07
12	9	Switzerland	8.15	8.67	47	48	Bulgaria	5.11	5.19
13	8	United Kingdom	8.14	8.68	48	45	Romania	5.07	5.46
14	10	Austria	8.02	8.63	49	47	Thailand	5.00	5.22
15	22	France	7.89	7.92	50	53	Jordan	4.92	5.03
16	19	Taiwan	7.86	8.05	51	46	Saudi Arabia	4.88	5.23
17	14	Germany	7.85	8.39	52	58	Colombia	4.84	4.71
18	21	Ireland	7.84	8.03	53	51	Peru	4.75	5.07
19	15	South Korea	7.81	8.34	54	55	Philippines	4.58	4.90
20	20	Belgium	7.71	8.04	55	52	Venezuela	4.40	5.06
21	17	Bermuda	7.71	8.22	56	56	China	4.33	4.85
22	18	Japan	7.69	8.08	57	57	Egypt	4.33	4.81
23	23	Malta	7.46	7.78	58	54	India	4.17	4.96
24	28	Estonia	7.28	7.10	59	59	Russia	3.98	4.42
25	26	Spain	7.24	7.46	60	63	Ecuador	3.97	4.17
26	25	Italy	7.09	7.55	61	62	Nigeria	3.89	4.25
27	24	Israel	7.09	7.61	62	61	Ukraine	3.85	4.31
28	27	Portugal	6.86	7.38	63	60	Sri Lanka	3.85	4.35
29	29	Slovenia	6.63	6.93	64	65	Vietnam	3.80	4.03
30	32	Chile	6.49	6.57	65	68	Indonesia	3.51	3.59
31	31	Czech Republic	6.46	6.68	66	64	Pakistan	3.50	4.10
32	38	Lithuania	6.34	6.03	67	67	Algeria	3.46	3.61
33	30	Greece	6.33	6.72	68	70	Iran	3.43	3.18
34	35	United Arab Emirates	6.12	6.09	69	66	Kazakhstan	3.31	3.89
35	33	Hungary	6.04	6.30	70	69	Azerbaijan	2.97	3.29

Note: A four-decimal score is used to determine each country's rank.

Source: Economist Intelligence Unit, 2009.

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Appendix 3

Table of Determining a Sample Size by a Given Population
Source: Sekaran (2003)

N	S	N	S	N	S	N	S
10	10	150	108	460	210	2200	327
15	14	160	113	480	214	2400	331
20	19	170	118	500	217	2600	335
25	24	180	123	550	226	2800	338
30	28	190	127	600	234	3000	341
35	32	200	132	650	242	3500	346
40	36	210	136	700	248	4000	351
45	40	220	140	750	254	4500	354
50	44	230	144	800	260	5000	357
55	48	240	148	850	265	6000	361
60	52	250	152	900	269	7000	364
65	56	260	155	950	274	8000	367
70	59	270	159	1000	278	9000	368
75	63	280	162	1100	285	10000	370
80	66	290	165	1200	291	15000	375
85	70	300	169	1300	297	20000	377
90	73	320	175	1400	302	30000	379
95	76	340	181	1500	306	40000	380
100	80	360	186	1600	310	50000	381
110	86	380	191	1700	313	75000	382
120	92	400	196	1800	317	100000	384
130	97	420	201	1900	320		
140	103	440	205	2000	322		
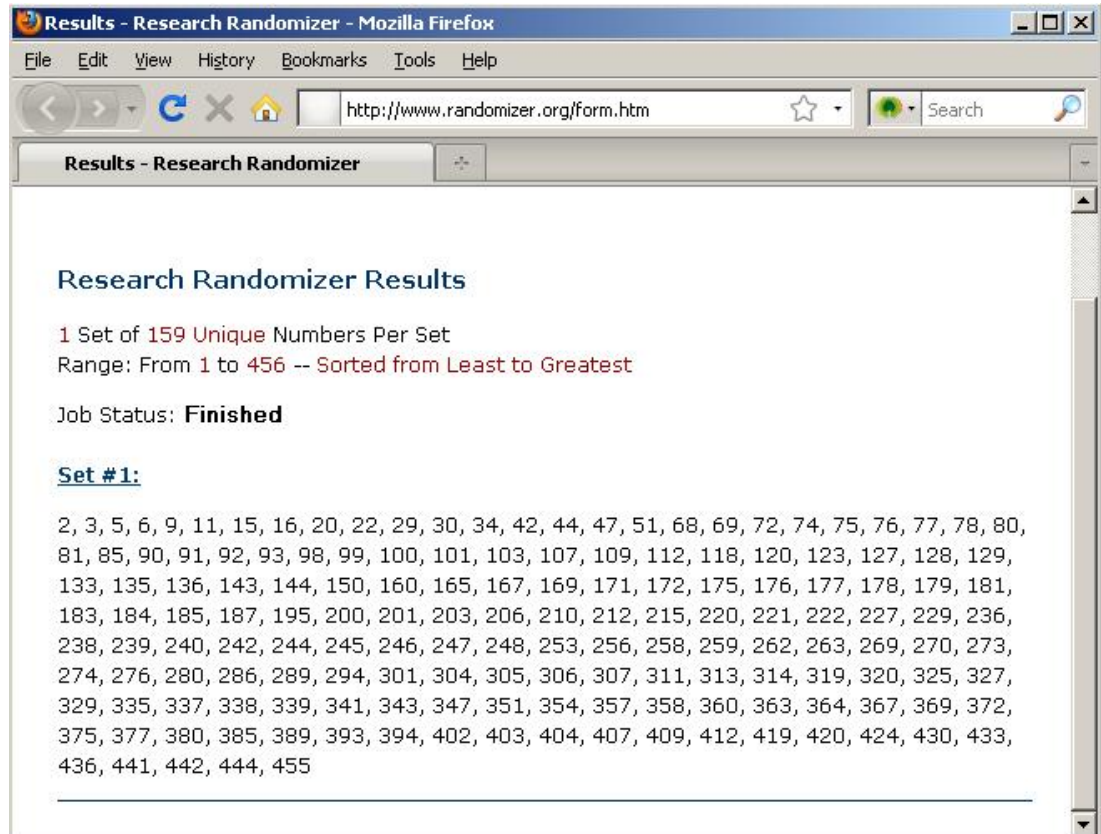
N is population size

S is sample size

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Appendix 4

Sample of Random Number Table

Source: www.randomizer.org

Results - Research Randomizer - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://www.randomizer.org/form.htm   Search

Results - Research Randomizer

Research Randomizer Results

1 Set of 159 Unique Numbers Per Set
Range: From 1 to 456 -- Sorted from Least to Greatest

Job Status: **Finished**

Set #1:

2, 3, 5, 6, 9, 11, 15, 16, 20, 22, 29, 30, 34, 42, 44, 47, 51, 68, 69, 72, 74, 75, 76, 77, 78, 80, 81, 85, 90, 91, 92, 93, 98, 99, 100, 101, 103, 107, 109, 112, 118, 120, 123, 127, 128, 129, 133, 135, 136, 143, 144, 150, 160, 165, 167, 169, 171, 172, 175, 176, 177, 178, 179, 181, 183, 184, 185, 187, 195, 200, 201, 203, 206, 210, 212, 215, 220, 221, 222, 227, 229, 236, 238, 239, 240, 242, 244, 245, 246, 247, 248, 253, 256, 258, 259, 262, 263, 269, 270, 273, 274, 276, 280, 286, 289, 294, 301, 304, 305, 306, 307, 311, 313, 314, 319, 320, 325, 327, 329, 335, 337, 338, 339, 341, 343, 347, 351, 354, 357, 358, 360, 363, 364, 367, 369, 372, 375, 377, 380, 385, 389, 393, 394, 402, 403, 404, 407, 409, 412, 419, 420, 424, 430, 433, 436, 441, 442, 444, 455

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Appendix 5

<p align="center">Survey Questionnaire</p>

□ □ □ □

AN EMPIRICAL STUDY ON FACTORS DETERMINING E-BUSINESS USAGE ON BUSINESS PERFORMANCE IN MALAYSIAN SERVICE INDUSTRY

INSTRUCTIONS:
- Please answer **ALL** questions and simply **tick (/)**, **fill in** or **circle** one of your preferred choice of answer
- There is no right or wrong answer but your careful consideration of each response, based on your own experiences and beliefs is sought
- All information will be treated as **CONFIDENTIAL** and only statistical aggregations will be reported
- For further enquiry, please contact: 013-3688791 (Intan Salwani), E-mail: intansm@hotmail.com or intan838@johor.uitm.edu.my

SECTION A: DEMOGRAPHIC INFORMATION

For question A1 and A2, please tick (/) your preferred answer

A1. Industry Sector: ☐ Banking ☐ Insurance ☐ Hotel/Resort ☐ Medical Center ☐ Sea Transportation
☐ Land & Rail Transportation ☐ Air Transportation ☐ Others (Please Specify) _____

A2. What is your position at the company?

☐ CEO, President, Managing Director ☐ Other Manager in Information System Department
☐ CIO/CTO/VP of Information System ☐ Business Operations Manager, COO
☐ Information System Manager, Director, Planner ☐ Administration/Finance Manager, CFO
☐ Others (Please Specify): _____

A3. When does your company started E-business? (Year): _____

SECTION B: DRIVERS FOR E-BUSINESS USAGE

TECHNOLOGICAL CONTEXT

B1. TECHNOLOGY COMPETENCE *(Please tick (/) your answer)*

TC1. Percentage of employees that use computer at work

☐ Below 10% ☐ 10%-20% ☐ 21%-30% ☐ 31%-40% ☐ 41%-50%
☐ 51%-60% ☐ 61%-70% ☐ 71%-80% ☐ 81%-90% ☐ 91%-100%

TC2. Percentage of employees that have Information Technology qualifications

☐ Below 10% ☐ 10%-20% ☐ 21%-30% ☐ 31%-40% ☐ 41%-50%
☐ 51%-60% ☐ 61%-70% ☐ 71%-80% ☐ 81%-90% ☐ 91%-100%

TC3. Technology facilities used by your company prior to E-business implementation:

☐ Electronic Fund Transfer (EFT) ☐ Intranet
☐ Electronic Data Interchange (EDI) ☐ Extranet
☐ Others (Please Specify): _____

B2. WEB-FUNCTIONALITIES *(Please circle your answer)*

	Never						High
WF1. Website supports services review	0	1	2	3	4	5	6
WF2. Website supports consumer customization	0	1	2	3	4	5	6
WF3. Website supports account management	0	1	2	3	4	5	6
WF4. Website supports registry of online community	0	1	2	3	4	5	6
WF5. Web applications electronically integrated with back-office systems	0	1	2	3	4	5	6
WF6. Company databases electronically integrated with suppliers	0	1	2	3	4	5	6
WF7. Company databases electronically integrated with partners	0	1	2	3	4	5	6
WF8. Overall web-functionalities implemented by company	0	1	2	3	4	5	6

ORGANIZATIONAL CONTEXT

B3. FIRM SIZE *(Please tick (√) your answer)*

SZ1. Number of employees:

☐ Below 10 ☐ 10 - 49 ☐ 50 - 249 ☐ 250 and above

B4. INTERNATIONALIZATION SCOPE

Geographical Scope

IS1. Please **tick** (√) the box that describes the geographic extent of your operations (tick as many as apply):

☐ Your organization has more than one establishment

☐ Your organization has establishments outside Malaysia

☐ Your organization has headquarters outside Malaysia

Trading Globalization

IS2. Approximately, what percent of your total sales are from outside Malaysia?

☐ None ☐ Below 5% ☐ 5% - 10% ☐ 11% - 25% ☐ 26% - 50% ☐ Above 50%

IS3. Approximately, what percent of your procurement spending is from outside Malaysia?

☐ None ☐ Below 5% ☐ 5% - 10% ☐ 11% - 25% ☐ 26% - 50% ☐ Above 50%

IS4. Percentage of business activities from outside Malaysia?

☐ None ☐ Below 5% ☐ 5% - 10% ☐ 11% - 25% ☐ 26% - 50% ☐ Above 50%

B5. WEB TECHNOLOGY INVESTMENT COSTS *(Please tick (√) your answer)*

WT1. What is the firm's information system budget, as a percentage of total revenue?

☐ Below 20% ☐ 21%-40% ☐ 41%-60% ☐ 61%-80% ☐ 81%-100%

WT2. What is the firm's web-based spending, as a percentage of total revenue?

☐ Below 20% ☐ 21%-40% ☐ 41%-60% ☐ 61%-80% ☐ 81%-100%

B6. MANAGERIAL BELIEFS *(Please circle your answer)*

	Never						High
MB1. Perceived increasing importance of E-business	0	1	2	3	4	5	6
MB2. E-business increased market share	0	1	2	3	4	5	6
MB3. E-business increased efficiency	0	1	2	3	4	5	6
MB4. E-business improved knowledge sharing	0	1	2	3	4	5	6
MB5. E-business improved communications	0	1	2	3	4	5	6
MB6. E-business enhanced customer service	0	1	2	3	4	5	6
MB7. Overall, to what extent does managerial beliefs influence the E-business usage?	0	1	2	3	4	5	6

ENVIRONMENTAL CONTEXT

	Never						High

B7. REGULATORY SUPPORT *(Please **circle** your answer)*

RS1. High E-business incentives are provided by government	0	1	2	3	4	5	6
RS2. E-business is required by government purchase	0	1	2	3	4	5	6
RS3. Business laws support E-business	0	1	2	3	4	5	6
RS4. There are legal protections for E-business	0	1	2	3	4	5	6
RS5. Overall regulatory support for E-business activities	0	1	2	3	4	5	6

B8. PRESSURE INTENSITY *(Please **circle** your answer)*

To what extent does the following factor influence the E-business usage?

PI1. Customer pressure	0	1	2	3	4	5	6
PI2. Supplier pressure	0	1	2	3	4	5	6
PI3. Pressure by competitors	0	1	2	3	4	5	6
PI4. Overall, to what extent does pressure intensity influence the E-business usage?	0	1	2	3	4	5	6

SECTION C: E-BUSINESS USAGE

C1. ONLINE ACTIVITY DISTRIBUTIONS *(Please **tick** your answer)*

AD1. Approximately, what is the perceived percentage of your consumer sales conducted online?

☐ None ☐ Below 5% ☐ 5% - 10% ☐ 11% - 25% ☐ 26% - 50% ☐ Above 50%

AD2. Approximately, what is the perceived percentage of your business to business sales conducted online?

☐ None ☐ Below 5% ☐ 5% - 10% ☐ 11% - 25% ☐ 26% - 50% ☐ Above 50%

AD3. Approximately, what is the perceived percentage of your supplies for consumptions ordered online?

☐ None ☐ Below 5% ☐ 5% - 10% ☐ 11% - 25% ☐ 26% - 50% ☐ Above 50%

AD4. Approximately, what is the perceived percentage of your equipment for business use ordered online?

☐ None ☐ Below 5% ☐ 5% - 10% ☐ 11% - 25% ☐ 26% - 50% ☐ Above 50%

AD5. Overall, what is the perceived percentage of online activities (as % of total business activities) implemented by your company?

☐ None ☐ Below 5% ☐ 5% - 10% ☐ 11% - 25% ☐ 26% - 50% ☐ Above 50%

SECTION D: E-BUSINESS PERFORMANCE

	Never						High

D1. IMPACT ON FINANCIAL *(Please **circle** your answer)*

FI1. E-business activities are profitable	0	1	2	3	4	5	6
FI2. E-business activities increase the Return on Investment (ROI)	0	1	2	3	4	5	6
FI3. E-business activities contribute to the revenue	0	1	2	3	4	5	6
FI4. E-business activities reduced the operational cost	0	1	2	3	4	5	6
FI5. E-business activities reduced the cost of acquiring a new customer	0	1	2	3	4	5	6
FI6. E-business activities reduced the cost for customer relationship management	0	1	2	3	4	5	6
FI7. E-business activities reduced the procurement costs	0	1	2	3	4	5	6
FI8. E-business activities reduced the inventory costs	0	1	2	3	4	5	6
FI9. Overall, E-business activities have positive financial impact	0	1	2	3	4	5	6

	Never						High
D2. IMPACT ON CUSTOMER (Please circle your answer)							
CI1. E-business customers repeat their web purchases	0	1	2	3	4	5	6
CI2. E-business activities reduced the number of customer complaints	0	1	2	3	4	5	6
CI3. E-business activities generate new customers	0	1	2	3	4	5	6
CI4. Overall, E-business activities have positive impact on customers	0	1	2	3	4	5	6

	Never						High
D3. IMPACT ON INTERNAL BUSINESS PROCESS (Please circle your answer)							
To what extent do E-business activities affect the followings?							
FP1. Increase on-time delivery of services	0	1	2	3	4	5	6
FP2. Reduce the number of problems with customer reservations processing	0	1	2	3	4	5	6
FP3. Reduce the number of E-business issues reported in internal audit report	0	1	2	3	4	5	6
FP4. Reduce the number of E-business issues reported in external audit report	0	1	2	3	4	5	6
FP5. Increased staff productivity	0	1	2	3	4	5	6
FP6. Improved coordination with suppliers	0	1	2	3	4	5	6
FP7. Overall, E-business activities have positive impact on internal business process	0	1	2	3	4	5	6

	Never						High
D4. IMPACT ON LEARNING AND GROWTH (Please circle your answer)							
LG1. E-business activities increase sales	0	1	2	3	4	5	6
LG2. E-business activities widened sales area	0	1	2	3	4	5	6
LG3. E-business activities improved customer service	0	1	2	3	4	5	6
LG4. Overall, E-business activities have positive impact on learning and growth	0	1	2	3	4	5	6

Thank You for Your Co-operation

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Appendix 6

<div align="center">

Cover Letter Indicating the Aim of the Survey

MULTIMEDIA ⬤ UNIVERSITY®

FACULTY OF MANAGEMENT
MULTI MEDIA UNIVERSITY
CYBERJAYA

</div>

Date:

Ref:

Name

Dear,

PERMISSION TO CONDUCT A SURVEY

The Faculty of Management, Multimedia University Cyberjaya is currently conducting a survey on "An Empirical Study on Factors determining E-business usage on business performance in Malaysia Service Industry". Your company has been selected to participate in the survey. We would be much appreciated if you could give us permission to conduct the survey. For your information, this study is supported by Ministry of Science, Technology and Innovation (MOSTI) Malaysia.

It is our assurance that all information provided would be treated as STRICTLY CONFIDENTIAL and will be used for research purpose only. Your company's name will remain anonymous and will not be identified in the entire study. At the end of the study, we would share with you a summary of the result, if you so indicate. Any questions regarding the study can be forwarded to:

Puan Intan Salwani Mohamed, MMU, H/P: 013-3688791, e-mail: intansm@hotmail.com
Puan Azizah Hamzah, MOSTI, Phone: 603-8885 8000, Fax: 603-8888 9070

Thanking you for your most valued cooperation.

Yours sincerely,

Intan Salwani Mohamed
Faculty of Management
Multimedia University
Jalan Multimedia
63100 Cyberjaya
Selangor

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Appendix 7

Supporting Letter by ICT Policy and Planning Unit, Ministry of Science, Technology and Innovation (MOSTI), Malaysia

KEMENTERIAN SAINS, TEKNOLOGI DAN INOVASI MALAYSIA
Aras 1-7, Blok C5, Parcel C, Pusat Pentadbiran Kerajaan Persekutuan
62662 Putrajaya, Malaysia

MINISTRY OF SCIENCE, TECHNOLOGY AND INNOVATION, MALAYSIA
Level 1-7, Block C5, Parcel C, Federal Government Administrative Centre
62662 Putrajaya, Malaysia

603-8885 8000 (Tel.)
603-8888 9070 (Fax)
www.mosti.gov.my

MOSTI.010.010DICT001 (2)
25 Januari 2006

KEPADA SESIAPA YANG BERKENAAN

Y.Bhg. Dato'/Tuan/Puan,

SURAT SOKONGAN: KAJIAN ILMIAH OLEH
PUAN INTAN SALWANI MOHAMED

Dengan segala hormatnya saya merujuk kepada perkara di atas.

2.   Ingin dimaklumkan bahawa Puan Intan Salwani Mohamed, Pensyarah Universiti Teknologi MARA (UiTM), sedang mengikuti pengajian peringkat Ijazah Kedoktoran (Ph.D) di Universiti Multimedia. Tajuk kajian yang dijalankan oleh beliau ialah *"The impact of e-business on firm's performance: A study on service industry in Malaysia".*

3.   Sehubungan dengan ini, Kementerian Sains, Teknologi dan Inovasi (MOSTI) selaku Kementerian yang dipertanggungjawabkan dalam memartabatkan bidang sains dan teknologi khususnya ICT sebagai salah satu asas pembangunan negara, menyokong kajian yang dijalankan oleh beliau. MOSTI percaya bahawa hasil kajian beliau ini akan sedikit sebanyak dapat membantu dalam perancangan strategi-strategi ICT negara.

4.   Kerjasama Y.Bhg. Dato'/tuan/puan ini diahului dengan ucapan terima kasih.

Sekian.

"BERKHIDMAT UNTUK NEGARA"
"CEKAP, TEPAT, KUALITI MENINGKAT"

Saya yang menurut perintah,

(AZIZAH HAMZAH)
b.p. Ketua Setiausaha
Kementerian Sains, Teknologi dan Inovasi

Appendix 8

<center>Sample Letter by Respondent to Withdraw from the Survey</center>

AVILLION
PORT DICKSON
MALAYSIA

HRD/APD/CORR/90/02/06

February 2, 2006

Azizah Binti Hamzah
Ketua Setiausaha
Kementerian Sains, Teknologi and Inovasi
Kementerian Sains, Teknologi dan Inovasi Malaysia
Aras 1-7 Blok C5, Parcel C
Pusat \Pentadbiran Kerajaan Persekutuan
62662 Putrajaya

Puan/Cik,

KAJIAN ILMIAH OLEH PUAN INTAN SALVANI MOHAMED

Merujuk kepada surat bertarikh 25 January 2006.

Pihak kami dengan dukacitanya memaklumkan bahawa Resort tidak dapat   memberi maklumbalas mengenai kalian ilmiah untuk   Puan Intan Salvani Mohamed. Ini adalah disebabkan maklumat yang diperlukan adalah begitu 'Sulit dan Persendirian'.

Sekian Terima kasih.

Yang benar,
AVILLION PORT DICKSON

Gared Mario Cubinar
Pengarah Operasi

c.c. Puan Salvani Binti Mohamed
      No. 15 Jalan Gunung Nuang U11/9
      Bukit Bandaraya
      40170 Shah Alam Selangor

www.manaraa.com

Appendix 9

<div align="center">

List of Technical Terms Definition

</div>

Dear Respondent,

Below is a list of technical terms definition which might be useful to assist you in answering the questionnaire.

TECHNICAL TERMS DEFINITION

BACK-END INTEGRATION
The activities that support online order-taking and fulfilment, inventory management, purchasing from suppliers, payment processing, packaging and delivery

BACK-OFFICE SYSTEM
The activities that support fulfilment of sales, such as accounting and logistics

CUSTOMIZATION
Creation of a product or service according to the buyer's specifications

E-BUSINESS
A broader definition of E-business that includes not just the buying and selling of goods and services but also servicing customers, collaborating with business partners, and conducting electronic transactions within an organization.

ELECTRONIC DATA INTERCHANGE (EDI)
Technology to electronically transfer documents such as purchase orders between firms doing business

ELECTRONIC FUND TRANSFER (EFT)
Technology to electronically transfer funds between firms doing business

ELECTRONIC INTERMEDIARIES
An online third party that brokers a transaction between a buyer and a seller

EXTRANET
A network that uses the internet to link multiple intranets

FRONT-END FUNCTIONALITY
The portion of an e-seller's business process through which customers interact, including the seller's website, electronic catalogs, a shopping cart, a search engine and a payment gateway

INTRANET
An internal corporate or government network that uses internet tools such as web browsers and internet protocols

PROCUREMENT
The acquisition of goods and services for organizations

Appendix 10

SEM Output - Model Identification

Notes for Model (Default model)

Computation of degrees of freedom (Default model)

Number of distinct sample moments:	780
Number of distinct parameters to be estimated:	246
Degrees of freedom (780 - 246):	534

Result (Default model)

Minimum was achieved
Chi-square = 554.824
Degrees of freedom = 534
Probability level = .258

Appendix 11

SEM Output for Hypothesis Testing

Estimates (Group number 1 – Default model)
Maximum Likelihood Estimates
Regression Weights: (Group number 1 – Default model)

			Estimate	S.E	C.R	P	Label
EBU	<---	TECHCOMP	.107	.038	2.809	.005	
EBU	<---	WEBFUNC	.497	.081	6.123	***	
EBU	<---	SIZE	.195	.080	2.428	.015	
EBU	<---	ISCOPE	.412	.299	1.376	.169	
EBU	<---	MBELIEF	.138	.081	1.692	.091	
EBU	<---	WEBINV	.137	.093	1.466	.143	
EBU	<---	PRESSURE	-.339	.053	-6.357	***	
EBU	<---	REGSUP	.105	.060	1.761	.078	
BP	<---	ECU	.365	.081	4.497	***	
BP	<---	YEARS	.132	.035	3.754	***	

Appendix 12

SEM Output – Standardized Regression Weights

Standardized Regression Weights: (Group 1 – Default model)

	Estimate
EBU <- - - TECHCOMP	.125
EBU <- - - WEBFUNC	.453
EBU <- - - SIZE	.116
EBU <- - - ISCOPE	.088
EBU <- - - MBELIEF	.101
EBU <- - - WEBINV	.075
EBU <- - - PRESSURE	-.389
EBU <- - - REGSUP	.112
BP <- - - ECU	.364
BP <- - - YEARS	.284

SEM Output on Goodness of Fit Measures of E-VALUE Model

Model Fit Summary

CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	246	554.824	534	.258	1.039
Saturated model	780	.000	0		
Independence model	39	7570.928	741	.000	10.217

Baseline Comparisons

Model	NFI Delta 1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	.927	.898	.997	.996	.997
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.015	.000	.030	1.000
Independence model	.237	.232	.242	.000

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