E-Commerce And Value Creation: Empirical Evidence In Malaysia Tourism Sector

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ABSTRACT

This study examined the impact of e-commerce usage on business performance in Malaysia tourism sector. Focus was given to online tourism which include online hotels and online private hospitals (for health tourism). With the aim to seek empirical evidence of e-commerce practices and its business implications, an interactive, comprehensive and multi-dimensional theoretical model known as E-VALUE model was introduced. E-VALUE model assesses the drivers of e-commerce usage by looking at technological, organizational, and environmental factors. Technological characteristic was represented by an independent variable named technology competence. Organizational characteristic includes four independent variables; firm size, firm scope, managerial beliefs, and web technology investment costs. Environmental characteristic on the other hand includes regulatory support and pressure intensity. All these variables were used to predict e-commerce usage. Next, E-VALUE model tested how front-end functionalities and back-end integration through e-commerce usage influenced value creation by looking at four dimensions, impact on financial, impact on customers, impact on internal business process and impact on learning and growth. Besides independent and dependent variables, E-VALUE model also tested the mediator and moderator effect. Structural equation modeling was used to evaluate the model. Technology competence, firm size, firm scope, web-technology investment, pressure intensity and back-end usage were found to have significant influence on e-commerce usage. Among these, back-end integration was found to have the function of mediator. E-commerce experience (in years), was found to moderate the relationship between e-commerce usage and business performance. It is hoped that this study would narrow the gaps of knowledge and furnished useful guidelines that could trigger e-commerce implementation in the Malaysia tourism sector.

Keywords: E-VALUE model, e-commerce usage, business performance

1.0 Introduction

The emergence of Information Communication Technology (ICT) has contributed to the sudden growth in the electronic marketplace. Electronic commerce (e-commerce) has become a new frontier for business environment. Businesses are attempting to shift to the new technology to successfully achieve their business objectives (Chandran, Kang & Leveaux, 2001) and have started another avenue to pursue efficiency and quality (Mougayar, 1998). Drawing upon e-commerce literature, many efforts have been devoted to studying e-commerce at the pre-adoption stage (initiation) and its formal adoption (Norhayati, 2000), but little focus was given to the post-adoption issues (Zhu & Kraemer, 2005), especially in developing countries. In order to fully realize the business value of e-commerce investment, the full-scale deployment at the post-adoption stage and its impact stands out as an important research topic. In this study, focus was given on e-commerce usage and value creation in Malaysian tourism sector. An interactive, comprehensive and multi-dimensional theoretical model named E-VALUE model was developed to fill in the gaps of knowledge existed in the literature.
1.1 Background of the Study

In developing countries such as Malaysia, a major hindrance to e-commerce involvement is the enterprise attitude (Ng, 2000). Malaysian companies tend to be followers rather than pioneers or leaders in e-commerce investment. Many fear failure and some dare not to invest in e-commerce because it is an unknown space (Ng, 2000). According to Ainin and Noorismawati (2003); and Norhayati (2000), lack of successful stories by click and mortar companies in Malaysia is the main reason why traditional businesses are reluctant to embark in e-commerce transactions. A study by Ainin and Noorismawati on e-commerce stimuli and practices among Small Medium Enterprises (SME) in Malaysia for example, found that 79% respondents agreed that “not many success stories of e-commerce” was the first barrier to e-commerce adoption. Other barriers include “not having knowledge in e-commerce” (72.6%), “low internet access among buyers” (72.2%) and “lack of knowledge on e-commerce potential” (69.6%).

To be competitive, Malaysian companies should re-act fast to the changing business environment. They should grab the opportunities and take the risk to change the Internet space for business on the Net (Paynter & Lim, 2001). Although many research on e-commerce have been done in leading countries, Austin (1990) argued that theories developed in the context of mature markets would not be suitable in developing markets. Due to the reason, this study aims to examine how e-commerce implementation gives an impact on business performance. Focus is no longer on whether to deploy e-commerce but how to deploy it profitably with the aim to encourage newcomers in e-commerce, to help click and mortar companies to identify problems in their current e-commerce standing and to provide useful information for related bodies such as associations in the industry and regulatory bodies.

1.2 The Issue

The question of whether and how e-commerce usage creates value in tourism sector has always being the factor considered by brick and mortar companies before they embarked in e-business. Rapid development in electronic marketplace is attracting the interest of both service providers and customers. However, there is consensus that the e-commerce industry, in general, has not been able to cope with all the challenges and to realize the true potential of the technology based marketplace. Certain traditional values or human factors are still needed to ensure the success of businesses in all markets.

In service sector, technology serves as a unique tool to improve the efficiency and effectiveness of firms, as well as to enhance their services. Therefore, creativity in adopting the technology to enhance the value of services, will determine the success of e-commerce implementation.

In Malaysia, e-commerce is still at the infancy stage. In hospitality services, only 20.5% of companies or organizations are involved in e-business. Brick and mortar companies worry to involve in e-commerce due to the lack of successful stories and information on the potential impact of e-commerce implementation among Malaysian companies (Chow, 2000). Due to this, more research needs to be done in order to understand the issues and potential impact of e-commerce. Top management need to work out on how to respond to the business challenges by exploiting e-commerce in their businesses. Therefore, this study will examine whether and how e-commerce implementation gives an impact on business performance in Malaysian tourism sector with the aim to furnish a useful guide for the service industry in Malaysia on the following:

i. The study helps to advance our understanding on the extent to which technological, organizational and environmental factors will influence the level of e-commerce usage and business performance by considering the direct and indirect effects.

ii. The study will provide input on how e-commerce capabilities (front-end functionality and back-end integration), through e-commerce usage, will influence value creation in business performance.

iii. The study will provide information on the relationship between level of e-commerce usage and business performance by considering the effects of moderating variables (i.e. E-commerce experience).
E-commerce is an unfolding phenomenon in technology advancement. Most large firms are still at the infancy stage of positioning themselves to exploit business opportunities enabled by the Internet (Zhu, 2004). It is difficult to determine the best measures of e-commerce capabilities. These points to the need for the development of an interactive, comprehensive and multidimensional theoretical model that may offer guidance in measuring e-commerce impact on firm’s performance.

Technology innovations lead to the development of various theories related to Information Technology (IT) and Information Systems (IS) diffusion. Literature review shows that there is a rich stream of research that studies technology diffusion on individuals and organizations (Cooper & Zmud, 1990; Tornatzky & Fleischer, 1990; Rogers, 1962). Some of the popular areas studied were on technology adoption or usage such as EFT, EDI, ERP; adoption drivers; adoption barriers or hindrance; and many others. In late 1990s, the research stream shows to be switched to e-commerce adoption.

2.1 Technological Organizational and Environmental (TOE) Model

Realizing the important of technology adoption, Tornatzky and Fleischer, (1990), developed a Technological, Organizational and Environmental (TOE) model to evaluate technology adoption. TOE model is consistent with the theory of innovation diffusion in organization by Rogers (1983). TOE model identifies three aspects of firm’s characteristics that influence the process adopting, implementing and using technological innovations (Tornatzky & Fleischer, 1990; DiPietro et. al., (1990); Robertson, (2005)). The three aspects are as follows:

i. Technological Context
   Technological context describes both existing and new technologies relevant to the firm such as prior technology usage, and number of computers in the firm that will determine the ability of the firm to move on an e-commerce and other technology initiatives.

ii. Organizational Context
   Organizational context refers to descriptive measures related to organizations such as firm scope, firm size and managerial beliefs.

iii. Environmental Context
   Environmental context focused on the areas of which the firm conducts its business operations. Concerns are always given on external factors in the industry that might influence the firm such as government incentives and regulations.

According to DePietro et. al., (1990), the three suggested elements are posited to interact with each other and to influence technology adoption decisions. The importance of technological, organizational and environmental characteristics in studying e-commerce implementation was supported by Audretsch and Mahmood (1995). In their study on the strategic morphing and the survivability of e-commerce firms, Audretsch and Mahmood, (1995), demonstrate that both industry-specific factors (environmental factors) and firm-specific factors (organizational factors) can influence the propensity of a firm to fail. They also include the technological conditions as drivers to firm’s performance.

Reviewing the literature on e-commerce adoption, especially in the year 1997 onwards, TOE model was found to be the foundational model for studying drivers that contribute to successful e-commerce initiatives. A study by Tan, Nah, Iacovou and Kim, (2003) for example, introduced a model named “Model of Small Business E-marketplace Adoption” which is firmly grounded in the TOE framework. Drawing upon the empirical evidence from literature review, it was found that TOE model is famous in studying e-commerce adoption, implementation or usage. The use of TOE model in prior studies and also studies that intersect with any three contexts of TOE model can be summarized as below:
<table>
<thead>
<tr>
<th>Study</th>
<th>Constructs</th>
<th>Theoretical framework</th>
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<tbody>
<tr>
<td></td>
<td><strong>Organizational Context</strong>: (Size, Global Scope, Managerial Obstacles)</td>
<td>Organization /</td>
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<td></td>
<td><strong>Environmental Context</strong>: (Competition Intensity, Regulatory Environment)</td>
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<td>*Robertson, (2005)</td>
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<td>Critical Drivers in B2B E-commerce (Literature only)</td>
<td><strong>Technological Context</strong>: (Discontinuity of Services, Compatibility Integration, Benefits of New Technology, EDI, Asset Specificity)</td>
<td>Technology /</td>
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<td></td>
<td><strong>Organizational Context</strong>: (Readiness, Decision Makers IT Knowledge, Managerial Structure)</td>
<td>Organization /</td>
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<td>Zhu &amp; Kraemer, (2005)</td>
<td><strong>Technological Context</strong>: (Technology Competence)</td>
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<tr>
<td>Usage and Value of E-business</td>
<td><strong>Organizational Context</strong>: (Size, International Scope, Financial Commitment)</td>
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<td>IT Payoff in E-business Environments</td>
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<td><strong>Environmental Context</strong>: (Competition, Government Regulation)</td>
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<td>Kuan &amp; Chau, (2001)</td>
<td><strong>Technological Context</strong>: (Perceived Direct Benefits)</td>
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<td>EDI Adoption</td>
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<td>Thong, (1999)</td>
<td><strong>CEO Characteristics</strong>: (CEO’s Innovativeness and IS Knowledge)</td>
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<td>IS Adoption</td>
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<td>Organization /</td>
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<td></td>
<td><strong>Organizational Characteristics</strong>: (Business Size, Employees IS Knowledge)</td>
<td>Environment /</td>
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Note: Only significant factors are listed in this table (except *)
Dedrick and West, (no date), however, believed that TOE framework is just a taxonomy for categorizing variables and does not represent an integrated conceptual framework or a well developed theory but is a useful analytical tool to distinguish between inherent qualities of an innovation itself and the motivations, capabilities and broader environmental context of adopting organizations.

In looking at e-commerce adoption and value creation, the application of TOE framework would add more meaningful findings if it is used in conjunction with other theories or model. Zhu et. al., (2005), for example, combined TOE framework with RBV theory to study the post-adoption variations in usage and value of e-business. As drivers to e-business usage are categorized into three characteristics; technology, organization and environment, e-business value creation was analyzed from a resource-based perspective that stems from the unique characteristics of the Internet, the front-end functionalities and the back-end integration (Zhu, 2004). Viewing e-commerce as a global technological innovation (Kraemer, Dedrick, Melville and Zhu, 2006), empirical evidence of e-commerce usage and its impact on firm’s performance were seek to further enhance our understanding on the whole process of e-commerce diffusion.

2.2 Resource –based View Theory

Resource-based theory has been developed to facilitate the understanding of how organizations achieve sustainable competitive advantages (Caldeira & Ward, 2001). Rooted in the strategic management literature, RBV theory focus on the idea of costly-to-copy attributes of the firm as sources of business returns and the means to achieve superior performance and competitive advantage (Conner, 1991). The theory argues that sustained competitive advantage is generated by the unique bundle of resources at the core of the firm (Conner & Prahalad, 1996). Based on RBV theory, business owners build their businesses from the resources and capabilities that they currently posses or acquire (Dollinger, 1999). In general, RBV theory addresses the central issue of how superior performance can be attained relative to other firms in the same market and posits that superior performance results from acquiring and exploiting unique resources of the firm (Saffu, 2004).

Prior IS literature shows that RBV theory has been used to analyzed IT capabilities (Matta, Fuerst & Barney, 1995) and to explain how IT business value resides more in the organization’s skills to leverage IT as compared to the technology itself (Soh & Markus, 1995). It shows that IT business value depends on the extent to which IT is used in the key activities in the firm’s value chain (Zhu and Kraemer, 2005).

In relation to e-commerce innovation, RBV theory is used as a theoretical basis for linking e-business usage and business performance. It focuses on how firms leverage their investments in e-commerce to create unique Internet-enabled capabilities that determines a firm’s overall e-commerce effectiveness (Zhu, 2004b). Although some people might argue that e-commerce technologies are already available in the software and hardware market (e.g.: EDI and EFT), for which the investment in e-commerce will not create value, there is a counterargument that regardless of how commodity-like the technology is, the architecture that removes the barriers of system incompatibility and makes it possible to build a corporate platform for launching e-business applications is never a commodity (Keen, 1991). The costly-to-copy attributes of e-commerce capabilities are tightly connected to the resource base and embedded in the business process of the firms but the degree varies due to the firms themselves are unique with respect to their resource endowments (Smith, Bailey & Brynjolfsson, 2000). The value creation through information sharing and the availability of online communities will lead to performance advantages in e-commerce (Lederer, Mirchandani & Sims, 2001).

Looking at the use of RBV theory in discussing e-commerce implementation and value creation, Zhu and Kraemer, (2005) integrate the TOE framework and the RBV theory as their conceptual model to assess the use and value of e-business by organizations. Zhu and Kraemer posit that e-business leverages the unique characteristics of the Internet to improve business performance. They investigate e-business functionalities that make use of the unique characteristics of the Internet and consequently enable value creation. E-business capabilities are classified as front-end functionalities and back-end integration.

Front-end refers to the medium on which customers interact with the marketspace. In the case of e-commerce, front-end functionalities refers to the seller’s portal, electronic catalogs, a shopping cart, a search engine and a payment gateway (Turban & king, 2003). Activities that related to order aggregation and fulfillment, inventory management,
purchasing from supplier, payment processing, packaging and delivery are known as back-end of the business (Turban & King). Applying RBV theory in looking at the post-adoption variations in usage and value of e-business, Zhu and Kraemer, (2005) found that both front-end functionalities and back-end integration contribute to value creation of e-business, but back-end integration has a much stronger impact.

2.3 E-VALUE Model – The Theoretical Foundation of the Study

As e-commerce technology is increasingly attracting the attention of researchers and managers, the literature on e-commerce remains fragmented and ambiguous especially from organizational perspectives that related to e-commerce usage and value creation (Govindarajulu et al., 2004). The absence of an integrated theoretical framework has led to a fractured research stream with many simultaneous but non-overlapping conversations (Chan, 2000). There is a need to develop a conceptual model that not only based on theory, but rooted in one that is inherently suitable for analyzing the complexity of IT and firm performance (Melville, Kraemer & Gurbaxani, 2004). This issue merely solved by Zhu and Kraemer (2005) which has come out with an integrated model of e-business use and value which combined TOE model and RBV theory. However, it is believed that to provide a comprehensive and multi-dimensional theoretical model, both direct and indirect effects, and the inclusion of moderator variable need to be considered. This lead to the development of an interactive, comprehensive and multi-dimensional theoretical model which is known as E-VALUE model (figure 2.1), to further examine the impact of e-commerce usage on business performance. E-VALUE model is a combination of TOE model, and RBV theory which will assess drivers to e-commerce usage and value creation.

In proposing the specific constructs within the E-VALUE model, considerations were given to significant factors found in prior studies. This study firstly reviews the literature on e-commerce drivers, and followed by e-commerce usage and value creation. As majority of prior studies on e-commerce field from organizations perspective are centered on the use of TOE model and RBV theory, this study combined the TOE model, RBV theory, and e-business scorecard to provide a comprehensive and multi-dimensional theoretical model. Considering the pre and post adoption e-commerce usage; direct and indirect effects; effect of moderating variable; and providing a balanced perspectives of constructs, dimensions and elements from both IT and Accounting point of views, it is hoped that E-VALUE model would be able to fill in the gaps of knowledge exits in prior studies.

Figure 2.1: E-VALUE Model
2.4 Research Questions and Hypotheses Development

The gaps found in the literature limit our understanding on e-commerce impact on firm’s performance in Malaysian service industry. It is hoped that this study would fill in the gap of knowledge and furnish useful guidelines that could trigger new comers in Malaysian e-commerce environment by answering the following research questions:

i. What framework can be used to assess e-commerce impact on business performance?

ii. Within the theoretical framework, what factors can be used as key antecedents of e-commerce usage and value creation?

iii. How do e-commerce value creations vary depending on a company’s e-commerce experience?

According to Hussey and Hussey, (1997), hypotheses is an idea or proposition which can be tested for associated or causality by deducing logical consequences which can be tested against empirical evidence. The theoretical perspectives discussed in 2.0, lead us to believe that e-commerce usage depends on various factors which acts as drivers, and will determine the level of usage, which finally contributed to firm’s performance. The hypotheses developed below allow us to predict the relationships mentioned above:

2.4.1 Hypotheses 1

In existing literature, technology resources have been found to be an important factor for successful IS adoption (Crook & Kumar, 1998; Kuan & Chau, 2001). Technology resources as suggested by Mata, Fuerst and Barney (1995) and Bharadwaj, (2000) consist of infrastructure, human resources and knowledge. Technology infrastructure provides the enabling backbone of e-business service (Robertson, 2005). Competence based theories frequently suggests that firms’ abilities to acquire, assimilate and exploit new technological knowledge is directly related to their portfolio of human resources (Cohen and Levinthal, 1990; Arora and Gambardella, 1994; Szulanski, 1996). In this study technology competence refers to technology infrastructure and IT human resources that enable the development and implementation of e-commerce. Technology infrastructure establishes a platform on which e-business can be developed. With the availability of technology infrastructure, here comes the function of IT human resources to use their knowledge and skills to develop e-commerce applications (Zhu & Kraemer, 2005). Realizing the importance of technology competence towards e-commerce implementation, hypothesis 1 was developed to test the relationship of technology competence and e-commerce usage.

H1: Technology competence significantly explains the variance in e-commerce usage.

2.4.2 Hypothesis 2

Increasing the efficiency of business process such as reducing processing costs related to commercial transactions is a major objective that drives companies to implement e-commerce regardless the size-bands (The European E-business Report, 2004). However higher fixed costs for technology implementation and maintenance among small companies had always been a debatable issue in e-commerce investment. A study in Europe shows that larger firms which can afford more powerful solutions are more likely to benefit from efficiency gains (The European E-business Report). Firm size is one of the most commonly studied factors in the innovation diffusion literature (Zhu et. al, 2004a and Damanpour, (1992)). As firm size seems to represents several important aspects of the organization such as resource availability, decision agility and prior technology experience (Zhu & Kraemer, 2005), a hypothesis was developed regarding the size effect among online service companies in Malaysia. In this study, firm size was measured by looking at the number of employees in the unit of analysis. As suggested in the European E-business Report, firm size can be categorized into four; micro (0-9 employees); small (10-49 employees); medium (50-249 employees) and large (250 and above employees).

H2: Firm size significantly explains the variance in e-commerce usage.

2.4.3 Hypotheses 3

Firm scope is another commonly studied factor in the technology diffusion literature. Dewan and Kraemer, (1998); and Hitt, (1999), have proposed that greater scope lead to greater demand of IT. In this study, firm scope is defined as the geographical extent of the firm’s operation and its trading globalization. The emergence of e-commerce
eliminated the geographical boundaries of doing businesses. It allows business organizations to expand their business reach (Khan & Motiwalla, 2002). With e-commerce, firms are now connected to the global market which provides opportunities to widen the market size. To test the relationship between firm scope and e-commerce usage, hypothesis 3 was developed.

H3: Firm scope significantly explains the variance in e-commerce usage.

2.4.4 Hypothesis 4

To what extent does web technology investment costs influence e-commerce usage seems to be not popular in prior study on e-commerce usage. Web technology investment costs normally relate to what extent the top management beliefs that e-commerce leads to firms’ value creations. According to Caldeira, Crag and Wald, (no date), despite high IT investment, not all firms are successful in innovating an effective IT capability. Zhu and Kraemer, (2005) however, believed that higher investment on e-business development, lead to greater extent of usage. In this study, web technology investment costs refer to financial commitment by companies in setting up their e-commerce system which requires investment in hardware, software system integration and employee training. Hypothesis 4 was developed to identify the nature relationship between web technology investment costs and e-commerce usage.

H4: Web technology investment costs significantly explain the variance in e-commerce usage.

2.4.5 Hypotheses 5

Empirical study by Igbaria, Zinatelli and Cayave, (1998), found that the key role in driving the technology innovation lies on the shoulder of top management. Gould, (2001), has identified that senior management support is one of the three main factors that necessary for successful e-commerce. This is consistent with a study undertaken by Quinn, Baruch and Zien (1997), which found that the most critical single factor in stimulating innovation is top management leadership. In this study, managerial beliefs refers to how top management acts to e-commerce technology innovation. This relates to their beliefs on the ease of use and usefulness of e-commerce investment in creating firms’ value. To test whether managerial beliefs has significant effects on e-commerce usage, hypothesis 5 was developed.

H5: Managerial beliefs significantly explain the variance in e-commerce usage.

2.4.6 Hypotheses 6

The development of the digital technology and the emergence of new products and services require the formulation of a new policy and regulatory framework. In developing the new digital convergence industry, without parallel development of laws, policies and strategic directions by government can results in abuses and discourage the use of such technologies (www.comnet.mt). For e-commerce to flourish, the legal framework needs to facilitate the use and access to basic infrastructure and technology (Country Progress Report Malaysia, 2004). Besides regulatory framework, governments support would facilitate e-commerce usage. In this study, regulatory support refers to governments’ role to encourage e-commerce usage by establishing e-business laws and providing incentives. Prior studies show that regulatory support is a critical environmental factor that tends to affect e-commerce usage (Zhu & Kraemer, 2005). A study by Dasgupta, Agarwal, Ioannidis and Gopalakrishnan, (1999), found that companies operating in restricted government policies have low IT adoption. To test whether regulatory support provided by Malaysian government affect e-commerce usage, hypothesis 6 was developed.

H6: Regulatory support significantly explains the variance in e-commerce usage.

2.4.7 Hypothesis 7

Sociological research on threshold models suggested that decisions to engage in a particular behavior depends on perceived number of similar others in the environment that they have already done likewise (Krassa, 1988). According to Windrum & Berranger, (no date), factors that influence firms’ decisions to invest in e-commerce can be classified into two, internal drivers and external drivers. Quayle, (2002) and Martin, (2001) for example,
identified customer pressure, competitive pressure and key suppliers as the external drivers of e-commerce adoption. Improved knowledge-sharing, costs reduction and increased efficiency are some of the internal drivers to e-commerce adoption intention (Daniel & Wilson, 2002; Martin, 2001). To identify whether pressure intensity has significant effect on e-commerce usage, hypothesis 7 was developed.

H7: E-commerce adoption intention significantly explains the variance in e-commerce usage.

2.4.8 Hypotheses 8, 9 and 10

Customers interact in the digital market via a front end. Front end is defined by Turban and King, (2003), as the portion of an e-seller’s business process through which customers interact. In simple word, front end refers to the seller’s web sites, an interface that helps business organizations to interact directly with customers and to outperform their competitions. Front end functionalities is a critical success factor of e-commerce (Wen, Lim & Huang, 2003). Interactive technology such as live chat, interactive catalogues and three dimensional (3D) modeling gives online buyers more control over their shopping experience and draws them deeper into the buying process (Young, no date). Front end functionalities help firms to deliver real-time product information, offer customization and facilitate customers via online account management which lead to improving transactional efficiencies and expanding the existing channel (Zhu & Kraemer, 2002). This would help firms to improve business performance. To test whether front end functionalities create values in e-commerce, hypothesis 8 was developed.

H8: Through e-commerce usage, front-end functionalities significantly explain the variance in business performance.

Turban and King, (2003) define back end as the activities that support online order taking and fulfilment, inventory management, purchasing from suppliers, payment processing, packaging and delivery. A study by Zhu and Kraemer, (2005) found that the process of back end integration which is more difficult to imitate, have stronger impact on e-business performance compared to front-end functionalities. Since not much focus was given on how back end integration effects business performance in prior literature, hypothesis 9 was developed to test the relationship between back end integration and business performance.

H9: Through e-commerce usage, back-end integration significantly explains the variance in business performance.

As back-end integration helps to fit the transactions offered by front-end system by linking disparate systems and fragmented resources which helps to facilitate order fulfilment and logistics management with suppliers and distributors (Zhu, 2004b), hypothesis 10 was developed to test the relationship between front-end functionalities and back-end integration.

H10: Front-end functionality has significant influence on the level of back-end integration.

2.4.9 Hypotheses 11

The ultimate goal of using e-commerce is to improve business performance (Zhu & Kraemer, 2005). Prior study by Clayton and Criscuolo, (2002), shows that firms that use e-commerce are more likely to assess their innovations as having high positive impact on firm performance than those without e-commerce. Khan and Motiwalla, (2002) in their study on “The influence of e-commerce on corporate performance: An empirical investigation in United States” found that from 44 companies under study, 64% found that e-commerce impact on ROI is favourable, 18% neutral and 18% unfavourable. There is no evidence on to what extent does e-commerce usage influence business performance in Malaysian service industry? To answer this question, hypothesis 11 was developed.

H11: E-commerce usage significantly explains the variance in business performance.

2.4.10 Hypothesis 12

A moderator variable could change the nature of correlation between the predictor and criterion variables (Baron & Kenny, 1986; Frasier, Tix & Barron, 2004). The change can be either (1) the strength of correlation

9
H12: The relationship between E-commerce usage and business performance is significantly moderated by E-commerce experience (years).

3.0 Methodology

3.1 Scope of Study

In this study, companies that involved with online tourism services, (hotels, resorts and hospitals in health tourism), constituted the population of interest. These companies were chosen as population of interest because of their high usage of technology equipment such as computers and their high e-commerce involvement in running their business activities. Until June 2006, a directory of Malaysian Virtual Tourism Portal shows that there are 456 of members (hotels and resorts) doing online services. For health tourism, directories of Association of Private Hospitals of Malaysia till September 2006 shows 35 hospitals involved in health tourism. Therefore, the population of interest amounted to 491 companies.

3.2 Sampling Procedure

Based on the population, a sample was selected using stratified random sampling. Stratified random sampling is the most efficient sampling design when differentiated information is needed regarding various strata within the population (Sekaran, 2003). In this study, stratified random sampling was chosen in order to avoid a case which some members of the population being significantly under or over represented (Hussey & Hussey, 1997). Sample size was then determined according to a table provided by Sekaran, (1992). For a population of 491, sample size of 217 companies was selected randomly for the purpose of data collection. This sample size fulfils the rule of thumb as proposed by Roscoe (1975), for which sample sizes larger than 30 and less than 500 are appropriate for most research. If a sample size is to large (say, more than 500), it could result a problem of committing Type II errors (Sekaran, 2003). Type II error is a case that we would accept the findings of our research when in fact we should reject them. For example, if a sample size is too large, a weak relationship might reach significance level which cannot be generalized to the population. In this research, sample size of 217 is larger than 30 and less than 500, therefore it is appropriate and thus, Type II errors were avoided.

3.3 Data Collection and Analysis Procedures

Data collection relied mainly on primary data (questionnaires method). Other useful information was gathered through literature search, websites review, reports and documents. Data were coded and run using SPSS version 12.0.1 for windows and Amos Graphics version 5.0. Structural Equation Modeling (SEM) technique was used in analyzing the data. Although quite similar to multiple regression technique, SEM is a more powerful data analyzing technique that takes into account the modelling of interactions, non-linearity, correlated independents, measurement errors, correlated error terms, multiple latent independents each measured by multiple indicators and one or more latent dependents also each with multiple indicators, (Garson). With the use of SEM, it is hoped that the research findings would be more meaningful, accurate and can be applied by the industry.

3.4 Construct Reliability

Construct reliability measures the degree to which items are free from random error and therefore yield consistent results. In this study, Cronbach’s alpha was performed for each construct to measure internal consistency reliability for the individual scales and the overall measures. In the view of the fact that there is no exact minimum cut off value of Cronbach’s alpha, a rule of thumb 0.6 is used as the lower level of acceptability as suggested by Jones, LoPresti, Naphtali and Whitney, (1999). Table 3.1 shows the Cronbach’s alpha score for each constructs.
Table 3.1: Cronbach’s Alpha for each Construct

<table>
<thead>
<tr>
<th>Constructs</th>
<th>No. of Indicators</th>
<th>Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology Competence</td>
<td>3</td>
<td>0.704*</td>
</tr>
<tr>
<td>Firm Scope</td>
<td>2</td>
<td>0.761</td>
</tr>
<tr>
<td>Managerial Beliefs</td>
<td>6</td>
<td>0.911</td>
</tr>
<tr>
<td>Web Technology Costs</td>
<td>2</td>
<td>0.780</td>
</tr>
<tr>
<td>Regulatory Support</td>
<td>4</td>
<td>0.909</td>
</tr>
<tr>
<td>Pressure Intensity</td>
<td>3</td>
<td>0.761</td>
</tr>
<tr>
<td>E-commerce Usage</td>
<td>4</td>
<td>0.958</td>
</tr>
<tr>
<td>Front End Functionalities</td>
<td>5</td>
<td>0.973</td>
</tr>
<tr>
<td>Back End Integration</td>
<td>4</td>
<td>0.980</td>
</tr>
<tr>
<td>Business Performance</td>
<td>19</td>
<td>0.987</td>
</tr>
</tbody>
</table>

4.0 Empirical Analysis and Findings

The research model was tested using SEM. Covariance-based SEM using AMOS 5.0 was chosen because it emphasis on the overall variance-covariance matrix and on the overall model fit which make it analytic and suitable to test the model as a whole.

With the purpose of studying e-commerce impact on business performance, this study developed a comprehensive and multidimensional theoretical model that lead to the development of 12 hypotheses to be tested. The empirical analysis demonstrated several major findings. Interpretations based on these findings are discussed below:

4.1 Major Findings and Interpretation

4.1.1 Results of Hypothesis Testing

Table 4.1: Summary of Hypothesis Testing

<table>
<thead>
<tr>
<th>Proposition</th>
<th>Causal Relationship</th>
<th>β</th>
<th>P</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>TC→ECU</td>
<td>0.146</td>
<td>0.003</td>
<td>Supported</td>
</tr>
<tr>
<td>H2</td>
<td>SZ→ECU</td>
<td>0.007</td>
<td>ns</td>
<td>Not Supported</td>
</tr>
<tr>
<td>H3</td>
<td>SC→ECU</td>
<td>0.164</td>
<td>***</td>
<td>Supported</td>
</tr>
<tr>
<td>H4</td>
<td>WTI→ECU</td>
<td>0.240</td>
<td>0.046</td>
<td>Supported</td>
</tr>
<tr>
<td>H5</td>
<td>MB→ECU</td>
<td>0.043</td>
<td>ns</td>
<td>Not Supported</td>
</tr>
<tr>
<td>H6</td>
<td>RS→ECU</td>
<td>-0.031</td>
<td>ns</td>
<td>Not Supported</td>
</tr>
<tr>
<td>H7</td>
<td>PI→ECU</td>
<td>-0.415</td>
<td>***</td>
<td>Supported</td>
</tr>
<tr>
<td>H8</td>
<td>FE→ECU</td>
<td>0.192</td>
<td>ns</td>
<td>Not Supported</td>
</tr>
<tr>
<td>H9</td>
<td>BE→ECU</td>
<td>0.279</td>
<td>0.004</td>
<td>Supported</td>
</tr>
<tr>
<td>H10</td>
<td>FE→BE</td>
<td>0.912</td>
<td>***</td>
<td>Supported</td>
</tr>
<tr>
<td>H11</td>
<td>ECU→BP</td>
<td>0.438</td>
<td>***</td>
<td>Supported</td>
</tr>
<tr>
<td>H12</td>
<td>EC Experience on ECU→BP</td>
<td>0.749</td>
<td>***</td>
<td>Supported</td>
</tr>
</tbody>
</table>
Within the TOE framework, technology competence, firm scope, web technology investment costs and pressure intensity were found to have significant influence on the extent of e-commerce usage. Among these, pressure intensity appears to be the strongest factor and have a significant negative path (β) -0.415. It shows that the higher the pressure (by competitors, suppliers and customers), the lower the level of E-commerce usage. This could be due to financial constraint related to the high costs of web technology investment to fully implement e-commerce technology. Low web-technology investment means companies cannot fulfil suppliers and customers need. Customers and suppliers on the other hand, are trying to fully utilize e-commerce technology with the aim to minimize costs and maximize their profits. As a result, when the pressure is higher, due to financial constraints, low web-technology investment by business organizations will resulted suppliers and customers withdrawals. Suppliers and customers moved to other business entity that could provide better services with minimum costs in order to maximize their profits.

Although Kraemer et. al., (2006), found that inadequate legal protection, unclear business laws and security and privacy issues were the common concerns for companies to embark in online business, in this study, regulatory support is not a predictor to E-commerce. This can be due to the different population of interest (tourism sector) as compared to previous study that focused on manufacturing sector.

When comparing front-end functionalities to back-end integration, back-end Integration was found to have significant influence on E-commerce usage. Back-end Integration was also found to be a mediator in the relationship between front-end functionalities and E-commerce Usage. Back-end integration helps to fit the transactions offered by front-end system by linking disparate systems and fragmented resources which helps to facilitate order fulfilment and logistics management with suppliers and distributors (Zhu, 2004b). Non-significant path between Front-end functionalities and E-commerce Usage shows that Front-end alone would not have significant influence on the extent of E-commerce Usage. Higher Front-end Functionalities should come together with higher Back-end Integration in order to significantly influence E-commerce Usage.

EC Experience significantly influence the relationship between E-commerce Usage and Business Performance (6.9% increase in R²). This was supported by the study on firm survival using evolutionary game theory by Kauffman et. al., (2002), which found that firms come to realize which strategies pay off and which do not through a process of trial an error. Firms would realize what works better and what does not by exploring, experimenting, examining market feedback and performance feedback; and learning from others’ experience throughout a period of time. This is the reason why e-commerce experience moderates the relationship between E-commerce Usage and Business Performance.

4.1.2 Evaluation of Model Fit

Table 4.2 shows that the proposed E-VALUE model has a good model fit.

Table 4.2: Evaluation of Model Fit

<table>
<thead>
<tr>
<th>Goodness-of-fit-measure</th>
<th>Recommended value</th>
<th>Approximate boundary as a good fit of E-VALUE Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relative chi-square</td>
<td>&lt;3.00</td>
<td>1.268</td>
</tr>
<tr>
<td>IFI</td>
<td>Close to 1.0 is better</td>
<td>0.983</td>
</tr>
<tr>
<td>TLI</td>
<td>Close to 1.0 is better</td>
<td>0.976</td>
</tr>
<tr>
<td>CFI</td>
<td>Close to 1.0 is better</td>
<td>0.983</td>
</tr>
<tr>
<td>RMSEA</td>
<td>&lt;0.08</td>
<td>0.045</td>
</tr>
</tbody>
</table>

Relative Chi-Square

- Chi-square fit index divided by degrees of freedom. 3 or less is acceptable (Kline, 1998)
- Incremental Fit Index (IFI)
5.0 Conclusion

Grounded in the innovation diffusion literature which covers the TOE model and RBV theory, this study has theoretically developed and empirically evaluated an integrative research model incorporating technological, organizational and environmental factors for assessing e-commerce usage. While this issue were typically studied separately in the literature, the result in this study suggests that usage and value are closely linked and could provide a holistic picture of the post adoption diffusion and consequences of e-commerce. Regarding e-commerce impact on firm performance, this study has demonstrated that the extent of e-commerce usage and e-commerce capabilities from both front-end and back end integration, contribute to value creation of e-commerce investment which is consistent with RBV theory. In summary, this study has developed an integrative theoretical model for assessing e-commerce usage and its impact on business performance from a multi-dimensional perspective with the aim to fill in the gaps of knowledge exists in the literature. Research findings would also be useful for brick and mortar companies to start considering e-commerce business, and for click and mortar companies to evaluate their current e-commerce standing and to determine the areas that need to be re-engineered in the process of profiting their e-commerce investment.

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30. Malaysian directories & information. Available at: www.mesra.net.