

**Determinants of Small & Medium Sized Enterprises
(SMEs) Adoption of E-Commerce**

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Neither they nor the named individuals hold any responsibility for whatever errors and omissions that might appear in the report and the responsibility rests entirely on us.

Sincerely,

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Abstract

As the catalyst of Malaysian economy, SMEs are expected to be at the forerunner in Information Technology (IT) adoption. Engaging in e-commerce seems to be the logical next step as e-commerce is cited to offer a lot of benefits to SMEs. The main objective of this study is to investigate the status of e-commerce adoption among SMEs in Malaysia. More specifically, this study aims to investigate the status of e-commerce adoption among SMEs and the factors contribute to the acceptance and use behavior of e-commerce among the managers of SMEs. Questionnaires which were based on UTAUT model were distributed to 1,216 SMEs from which 71 completed questioners were received. The findings indicated a low level of e-commerce adoption by SMEs with only 18 (31%) of the firms' websites supported some sort of online transactions. Secondly, the results of regression analysis revealed that only Effort Expectancy is significantly and positively related to Behavioural Intention of using e-commerce by SMEs and this only partially supported original UTAUT model. Overall, this study has provided evidence that SMEs in Malaysia is still lagging behind in e-commerce adoption.

Sinopsis

Sebagai pemangkin ekonomi Malaysia, Industri Kecil dan Sederhana (IKS) sepatutnya terkehadapan dalam penggunaan Teknologi Maklumat (IT). Menceburi bidang e-dagang dilihat sebagai langkah seterusnya yang wajar diambil kerana e-dagang dikatakan menawarkan banyak manfaat kepada IKS. Objektif utama kajian ini adalah untuk mengkaji status penggunaan e-dagang di kalangan IKS di Malaysia. Kajian ini, secara khususnya, ingin melihat status penggunaan e-dagang di kalangan IKS dan faktor yang mempengaruhi penerimaan dan gelagat penggunaan e-dagang di kalangan pengurus IKS. Soalan kaji selidik yang berdasarkan kepada model UTAUT telah diedarkan kepada 1,216 IKS dan sebanyak 71 soalan kaji selidik telah diterima. Hasil kajian menunjukkan penggunaan e-dagang yang rendah oleh IKS di mana hanya 18 (31%) daripada laman-laman web syarikat menyokong urusan atas talian. Seterusnya, hasil dari analisa regresi menunjukkan hanya Effort Expentancy berhubungan secara signifikan dan positif dengan Gelagat Niat menggunakan e-dagang oleh IKS dan ini hanya tidak menyokong model UTAUT secara sepenuhnya. Secara keseluruhannya kajian ini memberikan bukti bahawa IKS di Malaysia masih ketinggalan dalam penggunaan e-dagang.

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List of Abbreviation

SMEs - *Small and Medium Enterprises.*

SMIDEC- *Small and Medium Industries Development Corporation*

UTAUT- *Unified Theory of Acceptance and Use of Technology*

B2B- *Business to business*

B2C- *Business to Consumer*

BACKGROUND OF THE STUDY

1.0 Introduction

Malaysian government has long identified Small and Medium Enterprises (SMEs) as the mover of the Malaysian economy. This is evidenced by the huge allocation to SMEs in every Malaysian five-year plan and other supports given by the government. As we enter the globalization era where competition becomes stiffer, local SMEs must equip themselves with necessary knowledge and technology to successfully compete with other cross-bordered SMEs. Moreover, as the catalyst of Malaysian economy, SMEs are expected to be at the forerunner in Information Technology (IT) adoption as Malaysia is gearing up in its move to the new economy. In this so-called borderless world, the adoption of some form of IT by SMEs is a rule rather than an exception. For SMEs, engaging in electronic commerce (e-commerce) seems to be the logical next step as e-commerce is cited to offer a lot of benefits to these types of firms such as lower transaction cost, better market penetration, and better customer service (Stockdale and Standing, 2004).

As Gates (1999) rightly pointed out that “in the future, there will only be internet business or no business”, e-commerce has been growing in significance in today’s economy. This is evidenced by the increasing number of firms engaging in e-commerce and the growth of e-commerce revenues. E-commerce revenues have been growing by leaps and bounds over the years since it came into existence. Worldwide Business-to-Business (B2B) e-commerce is expected to increase from RM1.1 trillion in 2000 to RM16.4 trillion in 2005. In 2005, Business-to-Consumer (B2C) e-commerce is expected to generate revenue amounting to RM1.1 trillion (IDC, 2000). In Malaysia, B2B’s revenue is expected to reach RM29.6 billion while B2C is expected to record total sales of RM5.7 billion in 2005 (IDC, 2000).

Despite this, several studies report a low level of e-commerce adoption among SMEs in Malaysia (e.g. Hassan, Amran and Idris, 2003; Asing, Obit, Bolongkikit and Tanakinjal, 2003). These studies suggested a number of reasons of why the SMEs do not adopt e-commerce. Among others, the reasons are the exorbitant cost associated with e-commerce implementation, lack of expertise needed in e-commerce adoption and the concern on e-commerce security issues. Results from studies in other countries also show a low level of e-commerce adoption among their SMEs (e.g. Akkeren and Cavaye, 1999; Cloete and Courtney, 2002; Stockdale and Standing, 2004). With the exception of Lee and Baek (2003), Grandon and Pearson (2002), and Jeon, Han and Lee (2006), most of the studies in e-commerce adoption among SMEs are exploratory. These studies offer less insightful information on the actual factors that determine the adoption of e-commerce among SMEs. Realizing the importance of e-commerce and the roles of SMEs in Malaysia's economy directions, it is timely for us to conduct a study on the factors explaining the adoption of e-commerce among SMEs. We believe this study is important as it may help the relevant authorities in planning the actions needed to encourage the adoption of e-commerce among SMEs.

1.1 Objectives of the Study

The main objectives of this study are to investigate the status of e-commerce adoption among SMEs in Malaysia and to determine the factors that influence the acceptance and usage of e-commerce as a mode of doing business among the managers of the SMEs. More specifically, the research objectives are stated below:

- a. To investigate the status of e-commerce adoption among SMEs in Malaysia.

- b. To examine factors contribute to the acceptance and use behavior of e-commerce among the managers of SMEs in Malaysia.

1.2 Significance of the Study

Although e-commerce is cited to offer many potential advantages to SMEs, its implementation among these players is still low (Hassan et al. 2003). Recognizing SMEs as the driver of Malaysian economy, it is imperative for relevant authorities to know the factors that contribute to the acceptance of e-commerce among SMEs. In Malaysia, studies on this area are still lacking and most of them are exploratory in nature (e.g. Hassan et al. 2003; Asing et al., 2003). Moreover, very little has been researched about e-commerce adoption in developing economies particularly in the context of SMEs. Several authors such as Raman and Yap (1996) and Thong (1999) have pointed out that developing countries like Malaysia are very different, in many aspects, from those of developed economies. In particular, there are big differences between these countries and the developed countries of Europe and North America in the extent and type of government interventions on IT related issues. Thus, this study is carried out to empirically investigate the factors that drive Malaysian SMEs to adopt e-commerce as an alternative way of doing business. The results of this research may provide useful information to the authorities to help boost the adoption of e-commerce among SMEs in Malaysia.

The need for models to explain the factors that drive users to embrace a technology has always been the objective of many information systems (IS) studies. This area of study will always interest researchers as new technologies or variations of the existing are introduced to the masses. A number of models have been proposed to explain the adoption behaviour of users on specific applications related to e-

commerce such as e-mails, Internet Relay Chat and websites. Among the popular models are Technology Acceptance Model (TAM) (Davis, 1989), Theory of Planned Behaviour (TPB) (Ajzen, 1991), and Innovation Diffusion Theory (IDT) (Rogers, 1983). More recently, Venkatesh, Morris, Davis, and Davis (2003) proposed a more comprehensive model called “Unified Theory of Acceptance and Use of Technology” (UTAUT). The model was developed based on a review of eight previous models, namely Social Cognitive Theory (Bandura, 1986), Theory of Reasoned Action (TRA) (Fishbein and Ajzen, 1975), TAM (Davis, 1989), TPB (Ajzen, 1991), IDT (Rogers, 1983), Model of Personal Computer Utilization (MPCU) (Thompson, Higgins and Howell, 1991), combined Technology Acceptance Model and Theory of Planned Behavior (CTAM-TPB) (Taylor and Todd, 1995), and Motivational Model (MM) (Davis, Bagozzi and Warshaw, 1992). UTAUT is claimed to be able to explain user acceptance in a more realistic manner than the two-construct TAM model. Rosen (2004) suggested that any future adoption model should use UTAUT as a benchmark to compare with as what TAM did 15 years ago. However, as this model is relatively new, more studies are needed to validate UTAUT under different settings, technologies and subjects. Therefore, in addition to the two objectives stated in the previous section, this study also attempts to replicate Venkatesh et al.’s (2003) study under different environment (SMEs in Malaysia) and technology (e-commerce).

LITERATURE REVIEW

2.0 Introduction

SMEs play an important role in the success of the Malaysian economy. The advancement of e-commerce has opened opportunities for the SMEs to participate in a global electronic marketplace and contribute to our economic development. However, due to the small size, the enterprises have limited ability and resources required in gathering information and assessing the risks, costs and benefits of investing in this kind of new technology.

2.1 Small and Medium Enterprises (SMEs)

There is no standard definition of SMEs where many countries define the term in various ways and had their own definition of what constitutes SMEs. Generally, what constitutes SMEs is determined by the annual sales turnover and the number of full-time employees employed.

In Malaysia, SMEs is defined as a company with an annual sales turnover of not exceeding RM25 million, and with full time employees of not more than 150 (SMIDEC, 1998). The United States, in contrast, defines small business as those with less than 100 employees, while medium-sized business refers to those with less than 500 employees. The European Union, on the other hand, has started to standardize the definition of SMEs. In its Commission Recommendations concerning the definition of micro, small and medium-sized enterprises (2003), it has been stated that SMEs is made up of enterprises which employ fewer than 250 persons (less than 50 is considered as 'small') and which have an annual turnover of not exceeding EUR 50 million and/or an annual balance sheet total not exceeding EUR 43 million.

2.2 The Importance of SMEs to the Malaysia's Economy

SMEs are significant in their contribution to the Malaysia's economy. They have been described as the driving force and backbone of Malaysia's economy, dominating about one-third of the nation's gross domestic manufacturing. SMEs also represent 90% of manufacturing companies in the country producing many intermediate and final goods for local consumption and export (SMIDEC, 2004). The importance of SMEs to Malaysia's economy spreads far and wide. Not only that they are revenue earners, they have also created wealth and employment opportunities for many. For example, in 2003, SMEs produced output totaling RM68.9 billion and created 375,840 job opportunities (SMIDEC, 2004). In recognition of the great importance of SMEs to the nation's economy, the Government has allocated RM110 billion for programs and projects under the Eighth Malaysia Plan (SMIDEC, 2004).

2.3 SMEs and E-Commerce

E-commerce has long been recognized as a tool that could make huge returns with the least investment. Small companies may compete with the larger ones head to head as the battlefield in e-commerce is said to be level. The number of companies offering variety of products to consumers worldwide is mushrooming as evidenced in 2000 where 61% of small businesses are connected to Internet (eMarketer, 2000). However, this enthusiasm only prevails in B2C e-commerce environment.

In B2B environment in which the bigger money lies, the adoption of e-commerce by SMEs has been slow compared to their larger counterparts (eMarketer, 2000). E-commerce technologies have traditionally been implemented by SMEs as a reactive measure, in response to requests by larger organizations that may be customers and therefore provide the business imperative for SMEs to become e-commerce capable.

However, these major corporations have accessed to resources and investment capital which are not generally available to SMEs. SMEs have been slow to adopt e-commerce technologies in general, particularly the more complex forms of e-commerce such as Electronic Data Interchange (EDI), predominantly due to the cost, which may be perceived or real. The emergence of the internet as a means of providing a low cost infrastructure now offers new opportunities for SMEs to introduce e-commerce into their business activities in a low risk environment.

Stockdale and Standing (2004) and Grandon and Pearson (2002) found that the benefits of e-commerce as viewed by the SMEs are improved exchanges of information with suppliers and customers, expanding market penetration, and better customer service. Asing et al. (2003) reported similar benefits enjoyed by SMEs with an additional benefit of improved corporate image.

In spite of the benefits offered by e-commerce, the percentage of e-commerce take up by these enterprises is still low. This small percentage of SMEs embracing e-commerce may be partly explained by the barriers cited by the SMEs players in these studies. Many studies reported that cost is one of the main hindrances impeding SMEs to adopt e-commerce (Asing et al., 2003; Hassan et al., 2003). However, Jeon et al. (2006) reported that cost is not a factor preventing SMEs in Taiwan to engage in e-commerce. Apart from cost, lack of expertise in IT and e-commerce, and lack of standards are also viewed as the main factors that hold the SMEs back (Mark et al., 2003; Stockdale and Standing, 2004; Grandon and Pearson, 2002). In their study, Grandon and Pearson (2002) recorded an interesting finding whereby the SMEs regard that the low e-commerce adoption by their suppliers and customers as the main reason why they did not engage in e-commerce themselves.

Several exploratory studies were conducted to investigate the general adoption of e-commerce among SMEs. For example, Cloete and Courtney (2002) suggest that the adoption of e-commerce by SMEs is heavily reliant on their people's acceptance of the technology. Hence, it is important to understand the factors lead to an individual's acceptance of e-commerce technology. In the context of SMEs, the decision to engage in e-commerce is usually made by the owner of the enterprises or recommended by the people in charge of IT division.

2.4 Determinants of Adoption of Information Technology (IT) Innovation

Efforts to empirically explain e-commerce adoption among SMEs could be found in the work of Lee and Baek (2003) and Grandon and Pearson (2002). Lee and Baek (2003) surveyed 71 of small business operators in the US and found that relative advantage, compatibility, ease of use, computer self efficacy, financial slack, innovativeness, image and competitive pressure were critically associated with the adoption behaviour of these operators. Grandon and Pearson (2002) investigated the perceived strategic value and adoption of e-commerce by SMEs in the US. Similar to Lee and Baek (2003), Grandon and Pearson (2002) found compatibility, external pressure and perceived ease of use to be statistically significant determinants of e-commerce adoption. Two other factors, namely, perceived usefulness and organizational readiness were also found to be statistically significant. Organizational support, decision aids and managerial productivity were found to be statistically significant as determinants of perceived strategic value of e-commerce which in turn found to have significant impact on managers' attitudes towards e-commerce adoption.

Many models have been developed and proposed for explaining adoption behavior of IT in organizations, for example, Theory of Reasoned Action or TRA (Fishbein and Ajzen, 1975), Theory of Acceptance Model or TAM (Davis, 1989), Innovation Diffusion Theory or IDT (Rogers, 1983), Theory of Planned Behavior or TPB (Ajzen, 1991), Model of PC Utilization or MPCU (Thompson et al., 1991), and Motivational Model or MM (Davis et al., 1992). These models have been applied and tested on variety of technologies within many settings. TRA which is a behavioral model in social psychology was originally developed to predict various behaviors from voting in elections to attending school classes (Fishbein and Ajzen, 1975). This theory predicts that behavior is influenced by intention which in turn is affected by attitude. Based on TRA, Davis (1989) developed TAM which proposes two particular beliefs; ease of use and usefulness, determine user acceptance and use of technology within an organizational context. Ease of use is hypothesized to affect attitude while usefulness is hypothesized to influence attitude and intention which in turn influences actual behavior. TRA was later extended by Ajzen (1991) in TPB. TPB proposes a third belief; behavioral control as affecting intention and actual behavioral. Behavioral control includes how an individual perceives on the presence or absence of requisite resources and opportunities to perform the behavior. The individual may possess a positive attitude toward a behavior but without the needed resources such as knowledge and abilities, he may not have the intention to perform the behavior or has never performed the behavior. Rogers (1983) on the other hand formulated IDT, a general theory to explain adoption of various types of innovations basing on a synthesis of a considerable body of adoption research. IDT views adoption as a process by which an innovation is communicated through certain channels over time among a member of social systems (Rogers, 1995). Five

innovation characteristics were determined to affect adoption; relative advantage, complexity, compatibility, trialability and observability. Besides that, this theory also predicts adopter characteristics and explains the adoption process.

Thompson et al. (1991) on the other hand, adapted and refined Triandis (1977) theory of human behavior into Information System (IS) context and used it to predict PC utilization by individuals. The model is used to predict actual usage behavior of technology rather than attitude and intention. The constructs in this model are job-fit, complexity, long-term consequences, affect towards use, social factors and facilitating conditions. Another model, Motivational Model (MM) has been originally used in psychology as a general motivation theory to explain behavior. Its two constructs; extrinsic motivation and intrinsic motivation are hypothesized to influence a user's perception toward performing an activity. Within IS domain, Davis et al. (1992) and Venkatesh and Speier (1999) applied the model to understand new technology adoption and use.

Among these models, TAM is the most popular with more than 100 replications and extension studies (Rosen, 2004). With only two model variables; ease of use and usefulness, TAM is very intuitive and easy to test. However, there has been a discussion whether the parsimonious TAM is explanatory enough to explain user acceptance and use of technology (Taylor and Todd, 1995, Harrison, Mykytyn and Riemenschneider, 1997; Venkatesh et al., 2003). Researchers have argued that while TAM provides parsimonious explanation for the technology acceptance, other models such as TPB and IDT are able to give a more detailed explanation on the adoption behavior. Taylor and Todd (1995) introduced C-TAM-TPB which combines TAM and diffusion of innovations with TPB and proposed eight antecedents to the original TPB constructs. One study that applies some of these

models in SMEs setting is the study conducted by Harrison et al. (2003). They investigated IT adoption decisions in small firms, by combining the TPB (Ajzen, 1991), with the TAM (Davis, 1989). They considered that such combination would fit better the small business context, obtaining a more powerful model, and more explanatory power. They found adoption decisions to be highly influenced by consequence perceptions, social influence, and resources to overcoming obstacles. A summary of the models and their constructs is presented in Table 1 below:

Table 1: A Summary of Models

Models	Core Constructs
Theory Acceptance Model (TAM)	<ul style="list-style-type: none"> • Perceived Usefulness • Perceived Ease of Use • Subjective Norm
Theory of Planned Behavior (TPB)	<ul style="list-style-type: none"> • Attitude Toward Behavior • Subjective Norm • Perceived Behavioral Control
Combined TAM and TPB (C-TAM-TPB)	<ul style="list-style-type: none"> • Attitude Toward Behavior • Subjective Norm • Perceived Behavioral Control • Perceived Usefulness
Motivational Model (MM)	<ul style="list-style-type: none"> • Extrinsic Motivation • Intrinsic Motivation
Model of PC Utilization (MPCU)	<ul style="list-style-type: none"> • Job-fit • Complexity • Long-term Consequences • Affect Towards Use • Social Factors • Facilitating Conditions
Innovation Diffusion Theory (IDT)	<ul style="list-style-type: none"> • Relative Advantage • Ease of Use • Image • Visibility • Compatibility • Results Demonstrability • Voluntariness of Use
Social Cognitive Theory (SCT)	<ul style="list-style-type: none"> • Outcome Expectations – Performance • Outcome Expectations – Personal • Self – efficacy • Affect • Anxiety
Theory of Reasoned Action (TRA)	<ul style="list-style-type: none"> • Attitude toward Behavior • Subjective Norm

Realizing of the need to have a unified view of IT adoption, Venkatesh, et al. (2003) performed a review of eight previous models and established correspondence among the constructs of the eight models, where applicable. Then, conceptual and empirical similarities across the eight models were used to formulate a new unified model. The model was empirically tested via longitudinal using the original data from four organizations and cross-validated using new data from an additional two organizations. This model was found to outperform the eight individual models with adjusted R^2 of 70 percent. They named the resulting model as “Unified Theory of Acceptance and Use of Technology” (UTAUT). The model comprises four main constructs: performance expectancy, effort expectancy, social influence, and facilitating conditions. There are also four moderators of the relationships: gender, age, experience, and voluntariness of use. The first three constructs have significant effect on behaviour intention to use a system moderated by the moderators. In turn, behaviour intention and facilitating conditions have significant effects on the actual use of the system.

Rosen (2004) and Mallat (2004) argued that while UTAUT is able to explain the adoption behavior within an organizational context, it lacks the explanatory power to predict the technology adoption and use at individual level. Rosen (2004) used UTAUT to test the effect of Personal Innovativeness in IT domain (PIIT) on technology acceptance and use, and found that PIIT was able to offer a better explanation of the process of technology adoption and use by individuals. Mallat (2004) who studied the theoretical constructs of mobile payment adoption argued that trust and risk were two important factors in mobile commerce adoption besides the factors suggested in UTAUT. Therefore, more studies are needed to test UTAUT. A study on user acceptance on technology such as mobile and electronic commerce

using UTAUT may provide support to UTAUT's ability to explain adoption of various types of technologies. Besides, application of UTAUT within different types of organizations such as SMEs may reveal adoption issues specific to that type of organization.

RESEARCH METHODOLOGY

3.0 Research Model and Hypotheses

The four constructs of UTAUT are hypothesized to have significant roles as direct determinants of user acceptance and usage behavior. There are five factors that might influence the adoption of e-commerce as stated by UTAUT: performance expectancy, effort expectancy, social influence, facilitating conditions, and behavioral intention.

Performance expectancy is defined as the degree to which an individual believes that using the system will help him or her to attain gains in job performance. The construct is derived from five constructs from different models: perceived usefulness (TAM), extrinsic motivation (MM), job-fit (MPCU), relative advantage (IDT) and outcome expectations (SCT). UTAUT model shows that performance expectancy has a significant influence on user's behavior intention to use a technology, which then determines the usage behaviour. It appears to be a determinant of intention in most situations (Venkatesh et al., 2003). Following Venkatesh et al. (2003) and basing on previous literature, the study hypothesizes that:

H_{1a}: There is a direct relationship between behavioural intention and performance expectancy.

H_{1b}: There is an indirect relationship between use behaviour and performance expectancy acting through behavioural intention.

The second determinant, effort expectancy is defined as the degree of ease associated with the use of the systems. The construct is derived from three constructs from existing models: perceived ease of use (TAM), complexity (MPCU), and ease

of use (IDT). Prior research supports that constructs related to effort expectancy are stronger determinants of individual's intention (Venkatesh and Morris, 2000; Morris and Venkatesh, 2000). Prior research also shows that effort-oriented constructs are salient in the early stages of new behavior (Agarwal and Prasad, 1997; Davis, 1989; Thompson et al., 1991). UTAUT shows that effort expectancy has significant effect on user's behavioral intention to use a technology, which then determines the usage behaviour. Therefore, following Venkatesh et al. (2003) and basing on previous literature, the study hypothesizes that:

H_{2a}: There is a direct relationship between behavioural intention and effort expectancy.

H_{2b}: There is an indirect relationship between use behaviour and effort expectancy acting through behavioural intention.

The third determinant, social influence is defined as the degree to which an individual perceives that it is important for others to believe he or she should use the new system. The construct is derived from construct subjective form in TRA and C-TAM-TPB, social factor in MPCU and image in IDT. Reliance on others' opinions is significant particularly in the early stages of experience when an individual's opinions are relatively ill-informed (Agarwal and Prasad, 1997) and, thus, find social influence to be more salient when forming to use a new technology (Venkatesh and Morris, 2000). The behavioural intention will then determine the usage behaviour. Thus, hypothesis 3 is stated as below:

H_{3a}: There is a direct relationship between behavioural intention and social influence.

H_{3b}: There is an indirect relationship between use behaviour and social influence acting through behavioural intention.

The fourth determinant, facilitating conditions is defined as the degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system. This definition captures concepts embodied in perceived behavioral control (TPB), facilitating conditions (MPCU), and compatibility (IDT). Empirical results showed that facilitating conditions have direct significant influence on the actual usage of a system (Thompson et al., 1991; Moore and Benbasat, 1991). Venkatesh (2000) demonstrated that facilitating conditions construct is captured in effort expectancy in that facilitating conditions matter when a user intent on using of a particular technology believes it entails considerable effort on his part. As in this model the effort expectancy construct is present, therefore it is hypothesized that:

H_{4a}: There is a direct relationship between behavioural intention and facilitating conditions.

H_{4b}: There is an indirect relationship between use behaviour and facilitating conditions.

Finally, consistent with the underlying theory for all intention models discussed in this paper, we expect that behavioral intention will have a significant influence on technology usage. Thus, the hypothesis is as follows:

H₅: There is a direct relationship between use behaviour and behavioural intention.

The research model is presented in Figure 1 below.

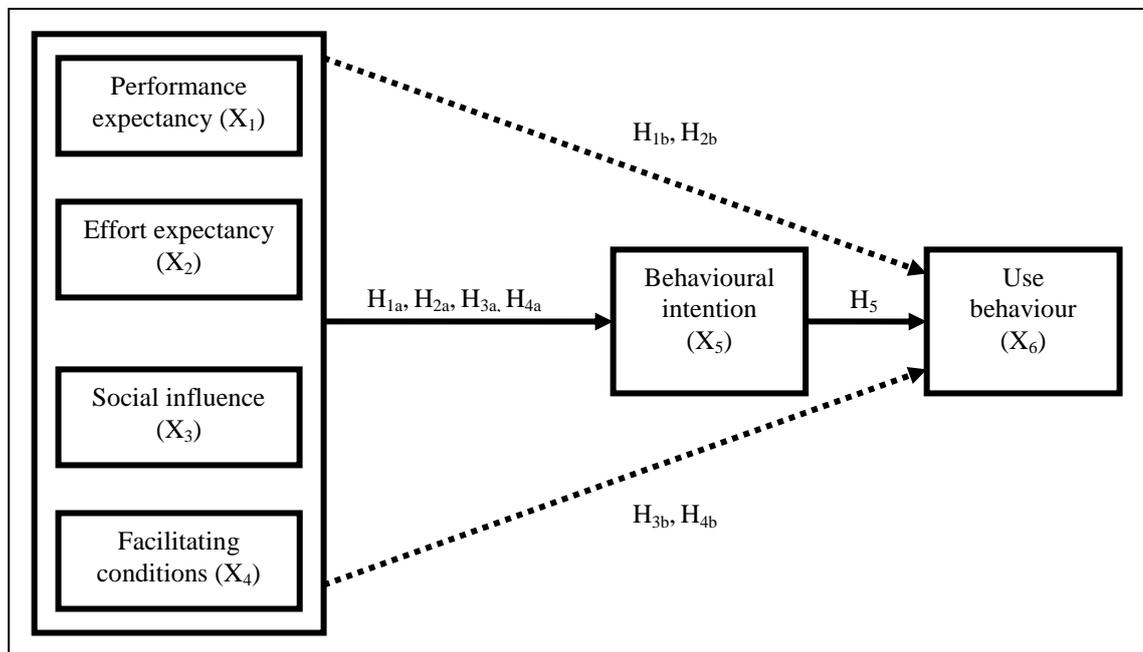


Figure 1: Research Model

3.1 Definition of E-Commerce

The term e-commerce has been defined by many researchers in many different ways. However, for the purposes of this study, a general definition of e-commerce as the buying and selling of products, services or information via computer networks, mainly the Internet (Wen, Cheng and Hwang, 2001; Bontis and Castro, 2000) is chosen. A company's website may provide useful information to the customers and suppliers but unless there are mechanisms to also transact a sale, it is simply considered as an online brochure (Kang, Onn and Seah, 2001). Thus, a firm which has a website with no transactions (i.e. buying and selling) taking place on the web

does not satisfy itself as an e-commerce operator. This definition encompasses both B2B and B2C activities.

3.2 Research Instrument

A survey questionnaire approach is used in obtaining the required data for this study. The instrument is adapted from the study conducted by Venkatesh, et al. (2003), and organized into 3 sections. Section A is on the background of the participating firms where the subjects were asked on the legal status of the firm, main business activity, business status, year firm established, number of full-time employees, and its annual sales turnover. In addition, subjects were also asked on whether the firm is a subsidiary of another firm or an independent firm, and the extent of application of e-commerce in the company.

Section B consists of twenty-two questions. Each question is measured with five point Likert-scales of 1 (strongly disagree) to 5 (strongly agree), which is used to indicate the subjects' opinion on the factors influencing an e-commerce acceptance. The factors include behavioral intention to implement e-commerce, performance expectancy, effort expectancy, social influence, and facilitating conditions. On the other hand, subjects were also asked on the actual use of e-commerce in their company.

The final section, Section C of the questionnaire gathers information on the profile of the subjects which is related to their job title, number of years in current position, gender, age, personal experience in e-commerce (in years), and their computer literacy.

3.3 Identification of the Sample and Population

This study requires a comprehensive list of SMEs. In Malaysia, SMEs is defined as a company with an annual sales turnover of not exceeding RM25 million, and with full time employees of not more than 150 (SMIDEC, 2004). However, it is anticipated that there would be problems in identifying the sampling frame since there is no convenient source which contains a complete and updated list of the companies. The two best sources identified are companies registered with the Federation of Malaysian Manufacturers (FMM), and Small and Medium Industries Development Corporation (SMIDEC).

For the purpose of this study, SMEs listed in the official business directory of SMIs association of Malaysia (known as Directory for SMIs/SMEs/SMBs) were chosen as they represent a wide spectrum of industries and not only manufacturing companies as in the case of FMM. Moreover, the directory of SMEs prepared by SMIDEC is the most easily available data at researcher disposal. There were 1,642 SMEs listed in the 2005 directory. Considering the likelihood of poor response rate, all listed SMEs were included within the sampling frame for the distribution.

The targeted subjects are the Chief Executive Officers (CEOs), the Managing Directors (MDs), or anyone holding higher position in the company. They were chosen to be the subjects of this study since they are more likely to have valid perceptions of the IT strategies adopted by the companies. At most common, most of them makes major key decisions in the company and is perhaps the only person who can harness IT to corporate objectives and strategy (Jarvenpaa and Ives, 1991).

3.4 Data Collection

Prior to actual data gathering phase, pre-testing and a pilot survey were carried out to further refine the questionnaire. The purpose of the pilot study is to determine the reliability and validity of the survey instruments before the actual data collection is done. These efforts are in line with Dillman's (1978) suggestion that the questionnaire needs to be refined before data collection is carried out. Five firms were selected for pre-testing phase. Then, a sample of 421 SMEs was randomly selected from the population for pilot testing. Twenty-five firms had responded to the questionnaires, thus covering the response rate of 5.9%. Each participating subjects' opinions and constructive comments were taken into consideration and the questionnaire was then reconstructed before officially sent to the remaining subjects. Finally, a set of questionnaires attached with a self-addressed envelope were distributed to 1,216 firms. In order to increase the response rate, some of the questionnaires were distributed personally to the SMEs by the researcher over the Klang Valley area. However, after a period of two months and two reminders, we managed to receive only 71 completed questionnaires, covering a response rate of 5.8%, which is slightly below the rate received during the pilot testing phase.

3.5 Reliability Test

A reliability test was conducted on five variables: behavioral intention to implement e-commerce; performance expectancy; effort expectancy; social influence; and facilitating conditions. Overall, the results show a Cronbach Alpha value of more than 0.7 for all variables and these results are considered as reasonable (Nunnally, 1978; Sekaran, 2000). A summary of the reliability results is shown in Table 2 below:

Table 2: Reliability analysis result

Construct	Alpha Value	Number of items	
		Before	After
Behavioral intention	0.926	3	3
Performance expectancy	0.888	4	4
Effort expectancy	0.898	4	4
Social influence	0.897	4	4
Facilitating conditions	0.841	3	3
Total		18	18

RESULTS AND DISCUSSIONS

4.0 Demographic Information

Demographic information of the 71 subjects participated in this study is presented in Table 3. One of the weaknesses of mail questionnaire is that the researcher has no control over who answers the questionnaire (Jobber, 1991). Therefore, it is anticipated that this study would also face the same problem. The result in Table 3 shows about one-third (68%) of the subjects are at least at the managerial position, whilst other subjects put them in others category. Slightly over half (56%) of the subjects are male, and about 49% are above 40 years old.

The number of years employed reflects the length of time the subject has been associated with the company, and hence the level of familiarity with the goals and operations of the organisation. The result in Table 3 shows about 55% of the subjects have been in the current position for more than 5 years and so have sufficient knowledge to respond properly.

About one-third of the subjects consider themselves at an intermediate level of the computer literacy, whilst only 2.8% has no experience with computer at all. When asked about their experience with e-commerce, about 40% of the subjects claimed to have a personal experience of using e-commerce for more than 5 years, another 46% claimed to have a personal experience of using e-commerce for less than five years, and only 13% has no experience at all.

Table 3: Profile of Subjects

Demography	Category	Frequency	Percentage
Current position	Chief Executive Manager	15	21.1
	Manager	18	25.4
	Senior Manager	15	21.1
	Others	23	32.4
	Total	71	100
Number of years in Current position	Less than 5 years	32	45.1
	More than 5 years	39	54.9
	Total	71	100
Gender	Male	40	56.3
	Female	31	43.7
	Total	71	100
Age	Below 29 years	13	18.3
	30 – 34 years old	13	18.3
	35 – 39 years old	10	14.1
	40 – 44 years old	10	14.1
	45 – 49 years old	10	14.1
	Above 50 years old	15	21.1
	Total	71	100
Personal experience in Using e-commerce	None	9	13
	Less than 5 years	32	46.4
	More than 5 years	28	40.6
	Total	69	100
Computer literacy	None	2	2.8
	Novice	15	21.1
	Intermediate	48	67.6
	Expert	6	8.5
	Total	71	100

Demographic information of the 71 responding firms are presented in Table 4 below. It is observed from Table 4 that the sample is overwhelmingly made up of limited companies (82.9%), where only six (8.6%) are partnerships and five (7.1%) are sole proprietorships. This is a reflection of the dominance of that company form of organisation in SME sector.

Table 4: Profile of Firms

Demography	Category	Frequency	Percentage
Legal status of the firm	Sole proprietorship	5	7.1
	Partnership	6	8.6
	Limited company	58	82.9
	Others	1	1.4
	Total	70	100
Subsidiary of another firm or an independent firm	An independent firm	59	84.3
	A subsidiary firm	11	15.7
	Total	70	100
Business activity of the firm	Engineering based	30	43.5
	Non-engineering based	39	56.5
	Total	69	100
Business status	Bumiputera owned	13	18.3
	Non-Bumiputera owned	48	67.6
	Others	10	14.1
	Total	71	100
Year firm established	< 1979	13	19.4
	1980 – 1989	14	20.9
	1990 – 1999	35	52.2
	> 2000	5	7.5
	Total	67	100
Number of full-time employees	1 – 9	8	11.6
	10 – 19	14	20.3
	20 – 49	18	26.1
	50 – 99	15	21.7
	100 - 150	14	20.3
	Total	69	100
Annual sales turnover	Less than RM1 million	5	7.1
	RM 1 million – RM5 million	24	34.3
	RM5 million – RM10 million	13	18.6
	RM10 million – RM15 million	9	12.9
	RM15 million – RM20 million	6	8.6
	RM20 million – RM25 million	13	18.6
	Total	70	100

Table 4 also classifies the sample based on whether the firm is an independent company or a subsidiary of other companies. The results show that about 84% of the responding firms are independent firms. About one-third (68%) of the firms are non-Bumiputera firms and 57% of the firms having a business activity of non-engineering based. In addition, slightly over half of the companies (52%) have been into

operations from between year 1990 – 1999 and only a few (8%) have been operated since year 2000 and more, which implies that a majority of the firms are matured firms. Moreover, about 58% of the firms are having full-time employees of less than 50, and thus can be classified as small firms. The rest of the firms (44%) are having full-time employees between 50 and 150 and can be classified as medium sized firms.

4.1 Extent of E-Commerce Application

The first objective of this study is to investigate the current status of e-commerce application among SMEs in Malaysia.

Table 5: Status of E-Commerce Application and Firm Size

E-Commerce Status	Small	Med	Total
No website	10	2	12 (17.1%)
Basic web presence	4	7	11 (15.7%)
Simple static informational web	5	5	10 (14.3%)
Simple interactive web	11	8	19 (27.1%)
Interactive site supporting transactions with users	9	7	16 (22.9%)
Interactive site supporting the whole buying/selling process	1	1	2 (2.9%)
Total	40	30	70

The results in Table 5 above reveal that 58 out of 70 (83%) of the firms have had a website, and thus eligible for the testing of hypotheses H_{1a}, H_{2a}, H_{3a}, and H_{4a}. These four hypotheses will examine the direct effect of performance expectancy, effort expectancy, social influence, and facilitating conditions on behavioural intention to use e-commerce. It should be noted that firms with no website were excluded as it is assumed that the firms should have at least a website to have the intention to use e-commerce. Results in Table 5 also reveal that only 2 firms comply with the definition of e-commerce as defined in this study, i.e. e-commerce firms are those involve in the buying and selling of products, services or information via the internet.

Hypotheses H_{1b}, H_{2b}, H_{3b}, and H_{4b} attempt to examine the indirect relationship between use behaviour and performance expectancy, effort expectancy, social influence, and facilitating conditions acting through behavioural intention, while hypothesis H₅ attempts to examine the direct relationship between use behaviour and behavioural intention. Since only 2 firms have implemented e-commerce as defined in this study, only 2 subjects are usable for use behaviour variable. Therefore, hypotheses H_{1b}, H_{2b}, H_{3b}, and H_{4b} and H₅ could not be tested due to insufficient data. Subsequent sections will thus focus only on the analyses of hypotheses H_{1a}, H_{2a}, H_{3a}, and H_{4a}.

Bearing in mind that the percentages of the small and medium sized of the sample firms are quite balance (56%:44%), a simple chi-square test was performed to find out whether there is any significance difference between the size of firms and the status of e-commerce application. The results indicate that there is no significant relationship between the size of firms and the status of e-commerce application for the study sample (degree of freedom = 5; p-value = 0.351). This suggests that the status of e-commerce application does not relate to the size of the firms.

4.2 Hypotheses Testing

The descriptive statistics of five major variables are displayed in Table 6. The results in Table 6 show that the mean values for three independent variables, i.e. performance expectancy, effort expectancy, and social influence are above 3.0. Effort expectancy has the highest mean value (3.35), whilst facilitating conditions has the lowest mean value (2.89). The results suggest that most of the subjects agreed that e-commerce would improve their job performance and does not require much effort.

However, most of the subjects perceived that the facilitating conditions in their firms and their social influence are less encouraging for them to implement e-commerce.

Table 6: Descriptive Statistics

Variables	Mean	S.D.	N
Behavioural intention	2.80	1.10	47
Performance expectancy	3.28	0.91	47
Effort expectancy	3.35	0.72	47
Social influence	3.03	0.85	47
Facilitating conditions	2.89	0.97	47

The following sections will explore the second and also key objective of the research. This was to test the relationship between performance expectancy, effort expectancy, social influence, facilitating conditions, and behavioural intention. To test the direct effects of performance expectancy, effort expectancy, social influence, and facilitating conditions on behavioural intention (hypotheses H_{1a}, H_{2a}, H_{3a}, and H_{4a}), the following regression model was estimated:

$$X_5 = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 \quad (1)$$

Where:

X₁ = Performance expectancy

X₂ = Effort expectancy

X₃ = Social influence

X₄ = Facilitating conditions

X₅ = Behavioural intention

The results of the regression model above including the beta coefficients are presented in Table 8. Regression, in the form of multiple regression, is one of the most widely used techniques in the analysis of data in the social sciences (Bryman

and Cramer, 2001). Multiple regression analysis is a statistical technique that can be used to analyse the relationship between a single dependent variable and several independent variables. The technique can be applied to a data set in which several independent variables are correlated with one another and with dependent variable to varying degrees (Tabachnick and Fidell, 2001). The objective of multiple regression analysis is to predict the changes in the dependent variable in response to changes in the independent variables. Each independent variable is weighted by the regression analysis procedure to ensure maximal prediction from the set of independent variables (Hair, Anderson, Tatham, and Black, 1998). Regression techniques consist of standard multiple regression, sequential (hierarchical) regression, and statistical (stepwise) regression. Differences between these techniques involve the way variables enter the equation. In standard multiple regression, all the available independent variables are entered in the equation simultaneously.

The multiple regression results display, among others, the correlations between the variables, the unstandardised regression coefficient (B), the standardised regression coefficient (β), R, R^2 and adjusted R^2 . The SPSS outputs of the regressions are presented in Appendix A.

Table 7: Correlation Matrix

	BI	PE	EE	SI	FC
Behavioural Intention (BI)	1.00	.500*	.498*	.534*	.343*
Performance Expectancy (PE)		1.00	.418*	.773*	.382*
Effort Expectancy (EE)			1.00	.664*	.594*
Social Influence (SI)				1.00	.574*
Facilitating Conditions (FC)					1.00

Note: * $p < 0.1$

The results presented in Table 7 above provide preliminary support for hypothesis H_{1a} , H_{2a} , H_{3a} , and H_{4a} as the correlations between performance expectancy

(X_1), effort expectancy (X_2), social influence (X_3), and facilitating conditions (X_4) and behavioural intention (X_5) are significant ($p < 0.1$). This is consistent with previous evidences which suggest that there are direct relationships between behavioural intention and performance expectancy, behavioural intention and effort expectancy, behavioural intention and social influence, and behavioural intention and facilitating conditions.

The regression equation treated behavioural intention (X_5) as the dependent variable and performance expectancy (X_1), effort expectancy (X_2), social influence (X_3), and facilitating conditions (X_4) as the independent variables. A useful statistical test that is related to R^2 is the F ratio. The F ratio is based on the multiple correlations (R) for the analysis. The multiple correlations, which is the square root of the coefficient determination, expresses the correlation between the dependent variable and all the independent variables collectively. The multiple R under consideration is 0.596 ($R^2 = 0.355$). The F test allows the researcher to test the null hypothesis that the multiple correlation is zero in the population from which the sample was taken. The F ratio is usually significant if any of the correlations were statistically significant. Surprisingly, in this case, the F value is 5.779 and the significance level is 0.1 suggesting that it is extremely improbable that R in the population is zero.

In interpreting the regression variate, Hair et al. (1998) warned that the researcher must be aware of the impact of multicollinearity. Highly collinear variables can distort the results substantially or make them quite unstable and, thus, not generalisable. This implies that they are likely to be subject to considerable variability from sample to sample. According to Bryman and Cramer (2001), the Pearson's r between each pair of independent variables should not exceed 0.80, otherwise the independent variables that show a relationship at or in excess of 0.80

may be suspected of exhibiting multicollinearity. From the output in Appendix A, it is observed that none of the correlation values exceed 0.80, which indicate that multicollinearity does not exist. Two common measures for assessing the multicollinearity are the tolerance and variance inflation factor (VIF) values. A common cut-off threshold is a tolerance value of 0.10, which corresponds to a VIF value above 10 (Hair et al., 1998). From the output in Appendix A, it is observed that the tolerance values for all variables are above 0.10. Likewise the VIF values for all variables are less than 10, thus confirming that multicollinearity does not exist.

The results in Table 8 reveal there is a significant relationship ($p < 0.1$) between behavioural intention (X_5) and effort expectancy (X_2), thus supporting H_{2a} . However, there are no significant relationships between behavioural intention (X_5) and performance expectancy (X_1), behavioural intention (X_5) and social influence (X_3), and behavioural intention (X_5) and facilitating conditions (X_4). These insignificant relationships thus allowed the rejection of hypotheses H_{1a} , H_{3a} , and H_{4a} .

Table 8: Regression of X_5 against X_1 , X_2 , X_3 , and X_4

	Variables	Coefficient	t value	Sig.
X_1	Performance expectancy	.288	1.443	n.s.
X_2	Effort expectancy	.313	1.747	.09
X_3	Social influence	.115	.460	n.s.
X_4	Facilitating conditions	-.019	-.120	n.s.

$R^2 = 0.355$, $F = 5.779$, $p < 0.1$

4.3 Discussions and Conclusion

The first objective of the study was to investigate the current status of e-commerce application among Malaysian SMEs. Whilst the results of this study reveal that 58 (80%) of the firms participated in this study have had a website, however, only 18 (31%) of the firms' websites supported some sort of online transactions. This is in line with the result found in a study done by Hassan et. al

(2003) where only 34% of the Malaysian SMEs companies were found to have e-commerce activities and it appeared that although the SMEs do possessed the information technologies and facilities, their involvement in ecommerce was, however, very minimal. Asing et. al (2003) also reported a low rate of e-commerce takers in Sabah, citing, among others, costs associated with the implementation of e-commerce and lack of skills as the factor inhibiting e-commerce implementation.

More surprisingly, in this study, it was found that only 2 (3%) firms have fully implemented e-commerce. This study defined e-commerce firms as those that involve in the buying and selling of products, services or information via the internet.

The findings also suggest that e-commerce adoption among Malaysian SMEs is still lagging those of developed countries. For instance, the use of e-commerce among SMEs in 1997 is highest for Finland with 42% of firms using the internet, followed by Italy (41%) and the United Kingdom (37%), (OECD, 1998). Moreover, 75% of the firms in Finland appeared using e-commerce in their business organization. However, only 34% of small firms in Australia are making use of the internet, compared with 65% of medium firms. This shows that the size of the firms seems to be a major push to convince SMEs to adopt and accept e-commerce as a new way of doing business.

On the other hand, Kushairi (2001) pointed that Malaysia has been ranked by the Economist Intelligent Unit (EIU) at the 32nd in terms of the e-commerce readiness among 60 countries, after South Korea at 24th, Taiwan at 27th and Thailand at 29th. This shows that SMEs are adopting e-commerce at a slow pace and yet to embrace the e-commerce revolution by making greater use of electronic transactions in their working environment. Thus, relevant authorities such as SMIDEC and MDEC should play more active roles in encouraging these firms to involve in e-commerce

activities. This is important as the world trend of globalization makes the competition faced by SMEs stiffer. These firms have to compete not only among themselves in local shores but also to compete with their counterparts across the borders. To compete effectively with other low-cost economies in neighboring countries, local SMEs, by all means have to keep up with any new innovations and technologies introduced in their domain such as e-commerce. They cannot afford to lag behind in their mindset, knowledge and application of new technologies as failure to recognize the importance of these elements in the long run, may take a heavy toll on their survival.

The second and main objective of the study was to examine the factors that contribute to the acceptance (i.e. behavioural intention) and use behavior of e-commerce among the managers of SMEs in Malaysia. Specifically, this study attempts to examine the direct relationship of performance expectancy, effort expectancy, social influence, and facilitating conditions on behavioural intention (H_{1a} , H_{2a} , H_{3a} , and H_{4a}), and the direct effect of behavioural intention on use behaviour (H_5). Second, the study initially attempts to also examine the indirect relationship of performance expectancy, effort expectancy, social influence, and facilitating conditions on use behaviour (H_{1b} , H_{2b} , H_{3b} , and H_{4b}). However, due to insufficient data, only H_{1a} , H_{2a} , H_{3a} , and H_{4a} could be tested. It was pursued by testing the relationship between behavioural intention as the dependent variable and performance expectancy, effort expectancy, social influence, and facilitating conditions as the independent variables using multiple regression analysis. The results of Pearson correlation analysis reveal that increasing behavioural intention is associated with performance expectancy, effort expectancy, social influence and facilitating conditions, thus provided initial support for hypotheses H_{1a} , H_{2a} , H_{3a} , and

H_{4a}. An explanation of the results is that as an individual's performance expectancy, effort expectancy, social influence, and firms' facilitating conditions increased, the intention to use e-commerce also increased. However, the results of regression analysis revealed that only effort expectancy is significantly and positively related to behavioural intention, thus supported hypothesis H_{2a}. These results however, only partially supported Venkatesh's UTAUT model. In Venkatesh et al (2003), it was found that performance expectancy, effort expectancy, and social influence were significantly related to the behavioral intention moderated by factors such as gender, age, experience, and voluntariness of use.

4.4 Limitations of Research

In appraising the findings of this study, it is important to interpret the results in the light of the following limitations. First, this study has received a very low response rate where only 71 out of 1,216 (5.8%) firms responded to the questionnaires. Thus, the results do not cover wider views of the status of e-commerce applications and also the subjects' opinions on the factors that contribute to the acceptance of the technology. The insufficient data also hinder the researcher from replicating the UTAUT model as initially planned. Second, it is also important to note that this study is based on a survey, which is a cross-sectional in nature. This approach has its shortcoming as it captures a situation or an event at a point in time. This shortcoming may be embedded in the data gathered from the mail survey. Future research could employ a more qualitative approach, such as a case study or a longitudinal study. Another limitation of the study concerns the cause and effect relationship between performance expectancy, effort expectancy, social influence, and facilitating conditions as independent variables and behavioural intention as dependent variable.

In this empirically-based study, the research model developed provides a way of viewing the world, but at the same time makes the research feasible by simplifying things somewhat. In the complex real world of business, there are potentially other factors that could influence behavioural intention. A cross-sectional study such as this cannot prove cause and effect relationships. Finally, the sample of this study was drawn from one source, i.e. SMIDEC, and generalising the results to other SMEs should be viewed with caution.

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Directory for SMIs/SMEs/SMBs

eMarketer (2000), <http://www.emarketer.com>

IDC (2000), <http://www.idc.com>

SMIDEC (2004) <http://www.smidec.gov.my>

Appendix A

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.596 ^a	.355	.294	.92839

a. Predictors: (Constant), FacilitatingConditions, PerformanceExpectancy, EffortExpectancy, SocialInfluence

b. Dependent Variable: BehaviouralIntention

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	19.923	4	4.981	5.779	.001 ^a
	Residual	36.200	42	.862		
	Total	56.123	46			

a. Predictors: (Constant), FacilitatingConditions, PerformanceExpectancy, EffortExpectancy, SocialInfluence

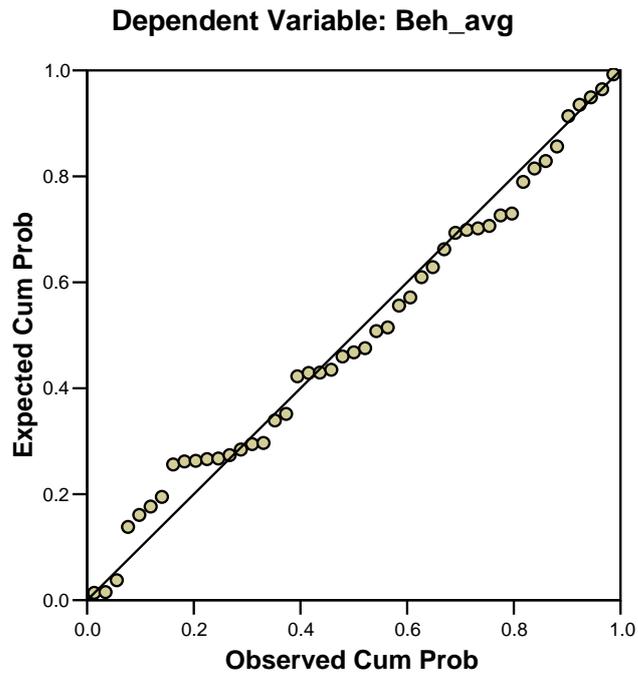
b. Dependent Variable: BehaviouralIntention

Coefficients^a

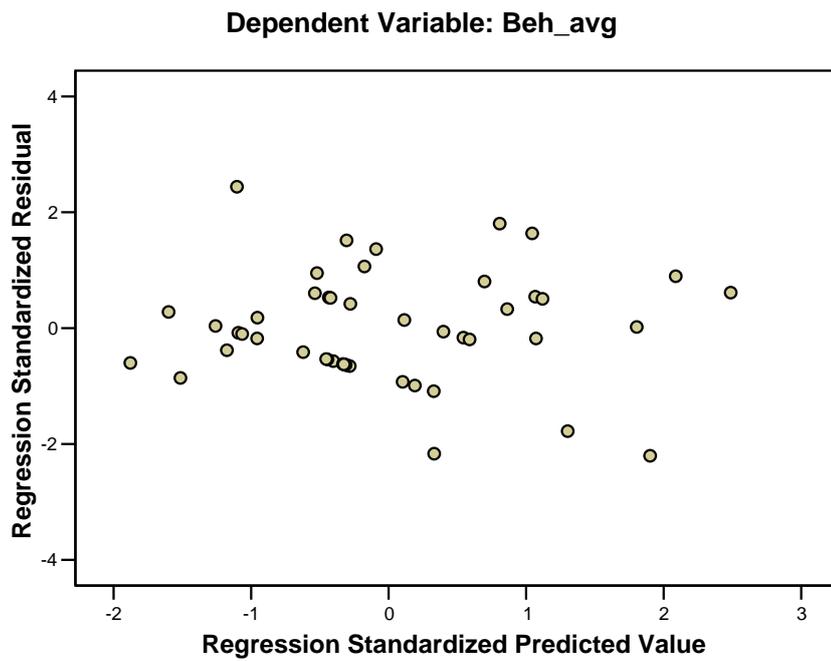
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-.357	.714		-.501	.619		
	PE	.351	.243	.288	1.443	.156	.385	2.594
	EE	.479	.274	.313	1.747	.088	.478	2.094
	SI	.149	.324	.115	.460	.648	.246	4.062
	FC	-.022	.184	-.019	-.120	.905	.588	1.701

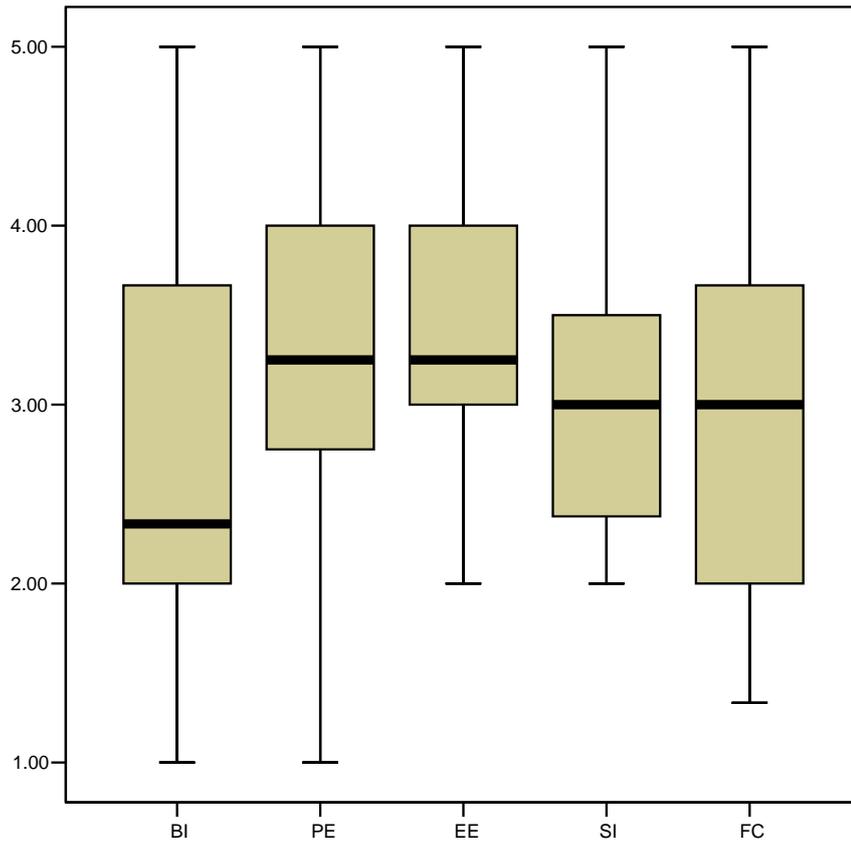
a. Dependent Variable: BI

Normal P-P Plot of Regression Standardized Residual



Scatterplot





Appendix B

Questionnaire

SECTION A: COMPANY BACKGROUND

We would like some information about your company so that we can understand better your decisions related to e-commerce adoption. *(Please tick an appropriate box).*

1. Legal status of your firm.

- Sole Proprietorship
 Partnership
 Limited Company

2. **Is your firm a subsidiary of another firm or an independent firm?**

- An independent firm
 A subsidiary firm

3. Main business activity of your firm.

- Engineering based
 Non-engineering based

4. Business status.

- Bumiputra owned
 Non-bumiputra owned
 Other (Please specify):.....

5. **In what year was your firm established?**

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6. **How many full-time employees does your firm employ?**

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7. Annual sales turnover.

- Less than RM1 million
 RM1 million – RM5 million
 RM5 million – RM10 million
 RM10 million – RM15 million
 RM15 – RM20 million
 RM20 – RM25 million

SECTION B: FACTORS INFLUENCING E-COMMERCE ADOPTION

The following statements will help us understand the factors that influence your decisions to adopt e-commerce. (Please circle the most appropriate number on the scale ranging from 1 = strongly disagree to 5 = strongly agree).

	Strongly disagree				Strongly agree
Behavioral intention to implement E-Commerce:					
1. I intend to implement the E-Commerce in the next 12 months.	1	2	3	4	5
2. I predict I would implement E-Commerce in the next 12 months.	1	2	3	4	5
3. I plan to implement E-Commerce in the next 12 months.	1	2	3	4	5
Performance expectancy:					
1. I would find e-commerce is useful in achieving my job's objectives.	1	2	3	4	5
2. Implementing e-commerce enables me to accomplish tasks more quickly.	1	2	3	4	5
3. Implementing e-commerce increases my productivity.	1	2	3	4	5
4. If I implement e-commerce, I will increase my chances of getting a raise.	1	2	3	4	5
Effort expectancy:					
1. My interaction with Internet/e-commerce would be clear and understandable.	1	2	3	4	5
2. It would be easy for me to become skilful at operating e-commerce.	1	2	3	4	5
3. I would find e-commerce easy to operate.	1	2	3	4	5
4. Learning to operate e-commerce is easy for me.	1	2	3	4	5
Social influence:					
1. People who influence my behavior	1	2	3	4	5

think that I should implement e-commerce.

- | | | | | | |
|---|---|---|---|---|---|
| 2. People who are important to me think I should implement e-commerce. | 1 | 2 | 3 | 4 | 5 |
| 3. The senior management of this business has been helpful in the implementation of e-commerce. | 1 | 2 | 3 | 4 | 5 |
| 4. In general, the organization has supported the use of e-commerce. | 1 | 2 | 3 | 4 | 5 |

Facilitating conditions:

- | | | | | | |
|--|---|---|---|---|---|
| 1. I have the resource (e.g. government financial assistance, credit facilities, own money) necessary to implement e-commerce. | 1 | 2 | 3 | 4 | 5 |
| 2. I have the knowledge necessary to implement e-commerce. | 1 | 2 | 3 | 4 | 5 |
| 3. A specific person (or group) is available for assistance with system difficulties. | 1 | 2 | 3 | 4 | 5 |

Voluntariness of use:

- | | | | | | |
|---|---|---|---|---|---|
| 1. Although it might be helpful, implementing e-commerce is certainly not compulsory in my job. | 1 | 2 | 3 | 4 | 5 |
| 2. My boss does not require me to implement e-commerce. | 1 | 2 | 3 | 4 | 5 |
| 3. My superiors expect me to implement e-commerce. | 1 | 2 | 3 | 4 | 5 |

Actual use

In a week, on average, the number of hours I spend using e-commerce is

hours

SECTION C: PERSONAL INFORMATION

1. What is your current position in the company?

- Chief Executive Officer
- Senior manager
- Manager
- Other (please specify):

2. Gender.

- Male
- Female

3. Age.

Years old

4. Number of years using e-commerce

Years

5. Computer literacy.

- None
- Intermediate
- Novice
- Expert

Please use this space to write any comments you wish to make

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