FACTORS INFLUENCING EMAIL USAGE: APPLYING THE UTAUT MODEL.

by

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ABSTRAK

Kini, e-mel sudah menjadi sebahagian daripada dunia komunikasi dalam kehidupan seharian kita. Sudah tentu ia adalah medium komunikasi yang amat penting. Sebelum memahami kesan e-mel dalam kehidupan harian kita, terlebih dahulu kita perlu mengamati sebabnya. Oleh yang demikian, tujuan kajian ini dijalankan untuk menganalisis faktor-faktor yang berkemungkinan mempengaruhi penerimaan e-mel sebagai media komunikasi dalam organisasi. Model 'Kesatuan teori dalam pernerimaan dan pengunaan teknologi' atau 'UTAUT' (Venkatesh et al., 2003)' digunakan sebagai asas kajian, dan data kajian telah dikumpul menerusi borang soal selidik. Sejumlah 350 borang soal selidik diedarkan kepada perkerja-perkerja di Pulau Pinang, and sejumlah 138 borang soal selidik dipulangkan dengan jawapan yang boleh digunakan untuk analisis, dan ini memberikan kadar maklum balik sebanyak 39.4 %. Keputusan kajian mendapati bahawa pembolehubah "berfaedah" dan pembolehubah "pengaruh sosial" memainkan peranan penting dalam menentukan "niat" untuk menggunaan e-mel dalam organisasi. Namun, pembolehubah "kemudahan penggunaan" tidak menunjukkan pengaruh yang besar terhadap "niat" untuk menggunakan e-mel. Tambahan pula, keputusan turut menunjukkan bahawa "niat" untuk menggunakan e-mel serta "kemudahan sedia ada" mempengaruhi penerimaan e-mel dalam organisasi. Walau bagaimanapun, kesemua pembolehubah penyederhana tidak mempengaruhi kesan terhadap pengunanan e-mel. Keputusan kajian juga menyatakan bahawa pengurus perlu mengunakan pelbagai pendekatan yang lebih proaktif seperti pengaruh seseorang pengurus, penekanan tentang faedah-faedah e-mel dan menyediakan kemudahan yang diperlukan serta menyediakan sumber yang cukup untuk menggalakkan pekerja-pekerjanya mengaplikasikan e-mel agar komunikasi yang lebih efektif dapat dikecapi and seterusnya meningkat prestasi dalam pekerjaan.

ABSTRACT

Email has now become an important thread that has been woven into the fabric of our daily communication in life. It is a powerful method of communication medium. To understand the effect, we must first comprehend the reason. Therefore, the study objective is to perform analysis on the possible factors which determined the acceptance of the electronic mail as communication media in organizations. The Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003) model was used as the basis of this study, and the data was collected using questionnaire. A total of 350 surveys were distributed to working adults in Penang, and a total of 138 useful responses were received, yielded 39.4 % response rate. The results of this study suggest that performance expectancy and social influences are important determinants of the behavioural intention to use email in an organizational environment. However, effort expectancy did not show significant influences on behavioural intention of email usage. The findings of this study also show that behavioural intention and facilitating conditions exert strong influence in the acceptance of email. Nevertheless, all the moderating variables did not show any impact. The outcome implied that manager should use a variety of proactive approach, such as managerial influences, stress on perceived benefits, and provide necessary facilities or resources to encourage employees in using email for effective communication which may result in improving performance benefits.

Chapter 1

INTRODUCTION

1.1.   Introduction

"One can accomplish nothing unless he can communicate effectively"(Allen, 2005). That brings us to the issue of effective communication, especially in informal communication which is at the heart and soul of organization communication. As per Rogers (1995), who defined communication as a process in which participants create and share information with one another in order to reach a mutual understanding. Therefore, it is of no surprise that in this age of rapid technology advances, the impact of information technology on communication patterns is very apparent, namely in the modern organization and competitive economic environment. Furthermore, technological advances are able to bring down the cost of personal communication while irrevocably tie modern communication media to our lives (Chen, Yen, & Huang, 2004).

With that, it is acutely essential to examine and evaluate a powerful tool of communication, electronic mailing or more familiarly known as e-mail. In the networked organization, email is used as inter-office memo, and message can be reached to a large group of members through distribution list. Additionally, email provides an effective means of coordination cross functional activities due to its multiple ability to address and ability to reach an individual for mass dissemination of information. Technically, email is considered as text based computer mediated communication (CMC) asynchronous communication. Its strength is based on the advantage of written memoranda of providing a permanent record which could be retained for some time to remind others of commitments. Nonetheless, it also performs beautifully and more effectively than written memoranda in terms of speed.

With a click of the mouse, it reaches the recipient in no time. Moreover, it has been proven that varied work schedules among staff, administrators, and department heads highlight the needs and advantages of an asynchronous medium of communication (Komsky, 1991). Undoubtedly, organizations use email because of its effectiveness, efficiency, improving productivity, and enhancing greater communication.

1.2.   Problem Statement

In the modern organization, corporate investment in computers, software, and communication technologies is massive.   The primary reasons for investing in communication technology is to increase productivity, effectiveness, efficiency, and greater communication in the work environment. Undoubtedly, email communication in organizations has now been considered critical and necessary. However, despite the apparent value of email as an efficient and effective communication channel, it is important to recognize that its successful implementation in organization is not guaranteed. For example, the adoption of email in non-Western countries is has not been as rapid as in the West (Straub, 1994, as cited in Huang, Lu, & Wong, 2003). Further, Douglas (2001) in his review mentioned that executive and co-workers from "low" context cultures (US) may experience a greater comfort with the use of electronic communications media because fewer nonverbal cues are required than those from higher context cultures (China, Japan).

The problem statement of this study is how to increase email usage. Email usage decision is important because it is not only has an internal impact (e.g., employees' usage to obtain in depth information related to their task through email communication channel) but they have an external implication as well (e.g., effective

communication with customers, supplier, other related business partners, through the use of email).

1.3.   Research Objectives

The objective of this study is to test the applicability of UTAUT model in Malaysia particularly for acceptance of email usage. For this reason, the target is to perform analysis on the possible factors which determine the acceptance of the electronic mail as communication media in actual organization setting. Thus, this study examine the relationship between performance expectancy, effort expectancy, and social influence as independent variable, and factors such as age, gender, voluntariness of use, and experience as moderators to behavioural intention in the email usage. Followed by the relationship between behavioural intention and facility conditions as independent variable to email usage as dependent variable. In summary, the objectives are;

1.   To test the applicability of UTAUT model in Malaysia particularly for acceptance of email usage.

2.   To determine what factors influence employees' email acceptance and most importantly for organization to develop a plan to improve the email usage.

1.4.   Research Questions

As mentioned earlier, the purpose of this study is to ascertain what factors determine the acceptance of email usage in actual organization setting. The following research questions are designed to guide our analysis of email use in organization:

1.   Is performance expectancy related to behavioural intention in email usage?

2.   Is effort expectancy related to behavioural intention to use email?

3. Do social influences influence behavioural intention to use email in organization?

4. Do facilitating conditions contribute to email usage in organization?

5. Is behavioural intention to use email significantly related to actual email usage?

6. Does gender, age, experience, and voluntariness of use moderate the relationship between the performance expectancy, effort expectancy, social influences and facilitating conditions with behavioural intention and/or usage?

7. Does UTAUT model applicable in the acceptance of technology study in Malaysia, particularly in acceptance of email?

1.5. Significance of the Study

The significance of this study lies in its attempt to understand the factors that influences the email usage in organization. A comprehensive understanding on the subject of email being used as means of communication relating to the organization process is indeed needed. An assessment of email communication in organization therefore is considered decisive in order to obtain in-depth information. Not to mention, it plays an essential role to be able to develop a plan to encourage employees to use this new communication technology to enhance communication. With that, it is evident that the findings of this study will have applications for managers who are concerned with making the most out of email system in improving the quality of work. And what more, it is all done by letting organizations reduce time, money and communication problems.

1.6. Scope of Study

The scope of the study is to examine the relationship of selected independent variables, namely performance expectancy, effort expectancy, and social influence to behavioural intention in the email usage. Follow by the relationship between behavioural intention and facility conditions as independent variable to email usage as dependent variable. This study also examines the moderating variables shaping the usage of email in real organization setting. The scope of this study cover the sample conveniently selected working adults in Penang, and the duration of data collection is estimated around one and half months with more than 100 sets of useful data.

1.7. Definition of key variables.

1.7.1. Email

Electronic Mail or email is the messages, usually text, sent from one person to another via computer. E-mail can also be sent automatically to a large number of addresses (Enzer, 2005).

1.7.2. Acceptance and Email usage

Acceptance, reflects the willingness of users to utilize an electronic mail system when alternative communication media readily available and indicates the success of the implementation process (Komsky, 1991). As a result, usage can be an objective measure of acceptance. The email usage is measured by number of messages sent out in one day, number of message received in one day, frequency of the email usage and time spend in email usage in a day.

1.7.3. Performance expectancy

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 (Venkatesh, Morris, Davis, & Davis, 2003).

1.7.4. Effort expectancy

Whereas effort expectancy means the degree of ease associated with the use of the system (Venkatesh et al., 2003).

1.7.5. Social influences

Social influence, as classified by UTAUT is the degree to which an individual perceives that important others believe he or she should use a technology (Venkatesh et al., 2003).

1.7.6. Facility conditions

Organizational facilitating conditions are identified as the degree to which an individual believes that an organizational and technical infrastructure exists to support the use of the system (Venkatesh et al. 2003).

1.8. Organization of the remaining chapters

The remainder of the thesis is organized as follows. In the Chapter 2, review of literature related to this study and hypothesis are developed. Subsequently, Chapter 3 provides a detailed discussion of the methodology used in the study. Chapter 4 and Chapter 5 report the study finding results and offer concluding comments respectively.

Chapter 2

LITERATURE REVIEW

2.1.   Introduction

This chapter presents a review of the literature and research in support of this study. Before this, Komsky (1991) has explained the meaning of acceptance which was reflected in the willingness of users to utilize an electronic mail system. This is when an alternative communication media is readily available but user is willing to select a particular communication media such as email, and so this will indicate the success of implementation process of email acceptance. Markus (1987) continued the explanation of acceptance by elaborating on that frequent usage of the system which seems to be one of the requirement for the success of the system.

2.2.   Email – Communication Richness Studies

According to Lee (1994), email was considered less rich in cue variety, immediate feedback, and message personalization compared to other media in equivocal situations. Lee (1994) mentioned that e-mail users spend time interpreting and exchanging messages. However, more recent researchers contend that e-mail is not always a lean medium. On the contrary, researches found that users are not passive. The claim has been consolidated by Channel Expansion Theory (Carlson & Zmud, 1999), who posited that richness is dependent upon user's subjective experiences. This suggests richness is dynamic and dependent upon the characteristics of individuals and the organization.

It is also discovered that electronic mailing has become one of the most popular tool of communication. E-mail can enhance organizational information processing and decision-making capabilities. Perhaps this goes on to explain why

email is now the preferred mean for intra-organizational communication. Daft and Lengel (1986) found that individuals choose communication media based on perceptions of usefulness and ease of use. In addition, Kettinger, and Grover (1997) research shown that email has become an important method of broadcast, task, and social interorganizational communication. Duchemeaut (2002) investigates the effects of the introduction of email on organization structure and power found that email help reinforce an organization's preexisting structure and its communication networks.

Derrick, Dyck, and Brotheridge (2001) explores the impact of intra-organizational communication in a global virtual organization, and found that the impact is seen in the transformation from postal messages to facsimile to electronic mail. Over a period of ten years, the evolution has found support for e-mail as a rich communication medium comparatively with other written media. This is particularly evident in terms of increased participation rate and decision-making speed (Derrick et al., 2001).

Tutan, Urban, and Gray (1998) study presents evidence that email can serve as an effective medium for social influence to change employees attitude from negative behaviours, such as absenteeism, to positive behaviours like discussing the organization's needs and working harder to make a difference. In conclusion, Tutan et al. (1998) finding indicates that email can be used successfully to communicate attitudes, feelings, and beliefs as well as the traditional exchange of information.

2.3. Email usage in Malaysia.

Since the existence of Internet, email has been one of the main applications being used by people in his connected environment. The use of email is one of the fundamental skills needed to communicate via the Internet. The two most successful

Internet applications have been electronic mail and the World Wide Web (Froomkin, 1996). According to ebusinessforum.com (ebusinessforum.com, 2005) The Malaysia government through The Communications and Multimedia Commission an agency of Ministry of Energy, Technology and Multimedia, is promoting and to spur internet growth in Malaysia. The Communication and Multimedia Commission main objective are to increase Internet penetration to 30% by 2005 and to 50% by 2020; to ensure that Internet services are made available to public at "affordable cost"; to guide relevant infrastructure development, and to promote Malaysia as a regional information-technology hub. Ebusiness.com also reported that other Malaysian government statistics show that although around 65% of Malaysians have computer access at work, only about 5% have home access to computers. In order to boost Internet growth as well as email usage, the government has created tax incentives for computer buyers.

As the Internet penetration increased and availability of computer in Malaysia, it would be expected that email usage also will be increased, as email is one of the most successful Internet applications. In addition, according to report by The Radicati Group, Inc. (IT Facts, 2004), the regular email users is around 651 million people worldwide and will increase at annual rate of 7% over the next four years from 683 million users in 2005 to about 930 million in 2009 (The Radicati Group, Inc., 2005). Figure 2.1., showed the email traffic worldwide as reported by The Radicati Group, Inc. (IT Facts, 2004).
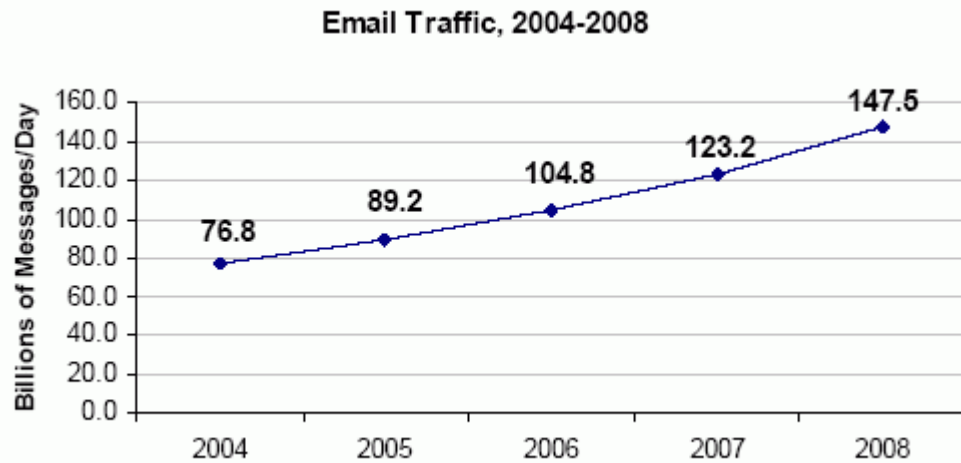
Figure 2.1. Email Traffic (Retrieved from the Web 14th May 2005. http://www.itfacts.biz/index.php?id=P2157)

2.4. Unified Theory of Acceptance and Use of Technology (UTAUT)

Obviously, the degree of acceptance in technology begs for discussion and discovery. Relatively, various theoretical models have been designed and planned to investigate technology acceptance in the information literature. The research model which will be developed and tested in this study draws on findings from relevant prior research and is primarily based on the Unified Theory of Acceptance and Use of Technology (UTAUT) model (Venkatesh et al., 2003). UTAUT model was built upon and extends beyond the well established Technology Acceptance Model (TAM) (Davis, 1989; Davis et al., 1989)

For the understanding of the acceptance and adoption of information technology, Vankatesh, et al. (2003) have proposed a more complete model, Unified Theory of Acceptance and Use of Technology (UTAUT) model. This UTAUT model unified the various model of information technology acceptance that integrated the elements of eight prominent models, namely Theory of Reasoned Action (TRA) (Fishbein & Ajzen 1975), Technology Acceptance Model (TAM) (Davis, 1989; Davis et al., 1989), Motivational Model (MM) (Davis et al., 1992, as cited in Venkatesh et

al., 2003), Theory of Planned Behaviour (TPB) (Ajzen, 1991), Combined TAM-TPB (Taylor & Todd, 1995), Model of Personnel Computer (PC) Utilization (MPCU) (Thompson, Higgins, & Howell, 1991), Innovation Diffusion Theory (IDT) (Roger 1995), and Social Cognitive Theory (SCT) (Bandura, 1986). Comparing UTAUT and previous models, UTAUT was able to explain 70% of technology acceptance behaviour, a considerable improvement on previous models which routinely explain over 40% of acceptance (Venkatesh et al., 2003). In more detail, UTAUT contains four core determinants of intention and usage – performance expectancy, effort expectancy, social influence and facilitating conditions (Venkatesh et al., 2003). The variable gender, age, experience and voluntariness of use moderate the key relationships in the model (Venkatesh et al., 2003), as shown in Figure 2.2.

The following subsection briefly explains the eight model that was included in the Unified Theory of Acceptance and Use of Technology (UTAUT).
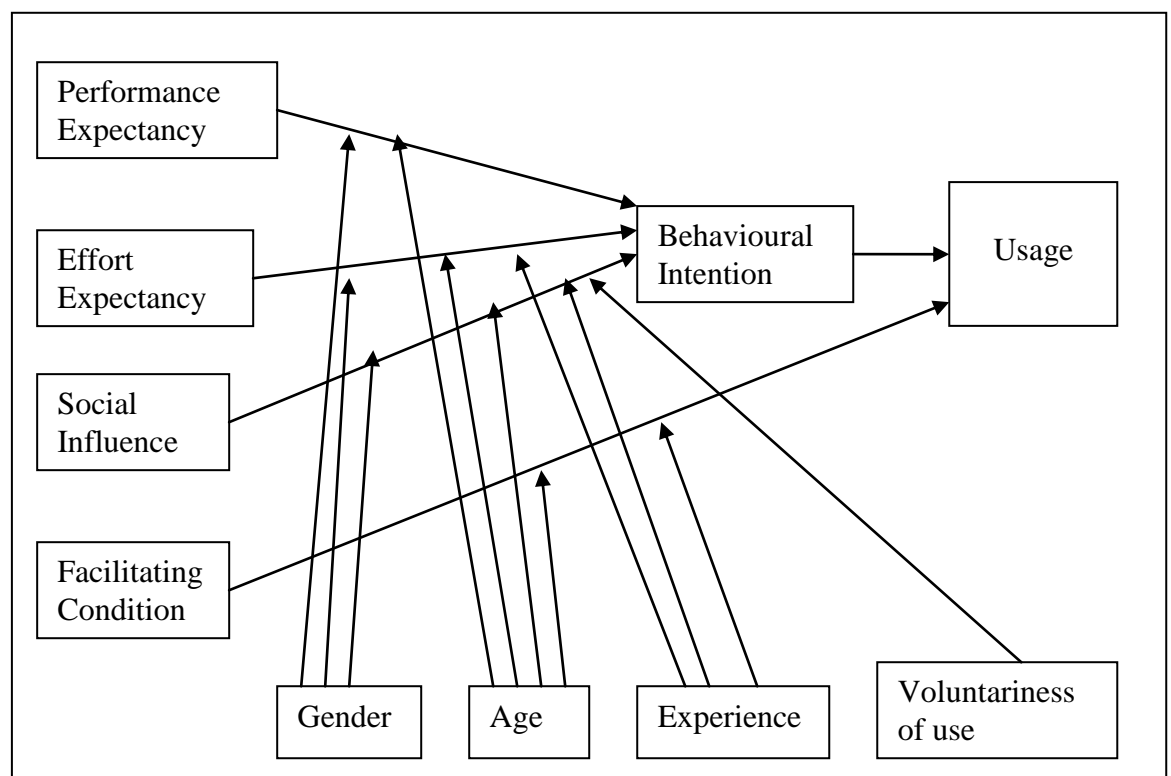
Figure 2.2. UTAUT Model (Venkatesh et al., 2003).

After the publication of Venkatesh et al. (2003) UTAUT model, Schaper and Pervan (2004) outline their research proposal utilizing the UTAUT model to examine information and communication technology acceptance and utilization by Australian occupational therapists. Anderson and Schwager (2004) also proposed a research project to validate the UTAUT model in the context of SMEs adoption of wireless LAN technology. In addition, Taylor (2004) reviewed the UTAUT model in his article with the title of "Technology Acceptance: Increasing new technology use by applying the right messages". Taylor (2004) concluded that it is important to communicate the rolling out of new technology to users regarding what, where, when, and the why of the technology implementation. Beside this communication, it is also important to consider the characteristics of target users, such as general attitudes towards change, beliefs towards the company's support of change, gender, age range, technology experience and perception of voluntariness. Finally, together with good communication regarding the objective of new technology implementation, identified the target users, and the support provided to users will provide a great return on the new technology investment.

2.4.1. *Theory of Reasoned Action (TRA)*

As Theory of Reasoned Action (Fishbein & Ajzen 1975) states, individual performance of a given behaviour is primarily caused by a person's intention to perform that behaviour. The intention in turn is influenced by two major constructs, namely attitude towards the behaviour and subjective norm. In the context of attitude toward the behaviour, it is an individual's positive or negative feeling about performing the target behaviour. On the other hand, subjective norm is regarded as "the person's perception that most people who are important to him think he should or

should not perform that behaviour in question" (Fishbein & Ajzen, 1975, p. 302). Davis, Bagozzi, and Warshaw (1989) applied TRA in their study on user acceptance of computer, focusing on the use of electronic mail, and they found that usefulness had significantly greater correlation with usage behaviour than did ease of use.

2.4.2. *Technology Acceptance Model (TAM), and TAM2*

An extended explanation also came about through Technology Acceptance Model (Davis, 1989), which attempts to offer a prevailing explanation for user acceptance and usage behaviour. To start, TAM is an adaptation of TRA that is specific for modeling of user acceptance of information system. User acceptance in TAM is controlled by two key beliefs, perceived usefulness and perceived ease of use. Explanation for perceived usefulness is the extend to which a person believes that using a particular technology will enhance her/his job performance. Alternatively perceived ease of use is defined as the degree to which a person believes that using a technology will be free from effort (Davis, 1989).

Interesting to note that TAM2 was extended from TAM by including subjective norm as an additional predictor of intention (Venkatesh & Morris, 2000). Subjective norm involves an individual belief that people who are important to her/him think she/he should perform the behaviour in question as defined by Fishbein and Ajzen (1975). Next, Venkatesh and Morris (2000) in their research constructed the basis for the integration of gender as potential key in understanding the role of social influence in initial technology adoption decision including sustained usage of new technology.

2.4.3. Motivational Model (MM)

In accordance with Deci (1975), who defined intrinsic motivation as conduct which deals with the environment, tends to motivate a person's need to feeling competent and self-determining. This intrinsic motivation will decrease if the person is not attaining enjoyment from the activities. Nevertheless, extrinsic motivation activities linked extrinsic rewards which consequently correlated to satisfaction of primary drives of achieving goal set. For example of positive rewards, it can be money or praise or social approval or positive feedback for fitting into their social reference group.

2.4.4. Theory of Planned Behaviour (TPB)

Consecutively, Theory of Planned Behaviour (TPB) of Ajzen (1991) assists to understand how we can change the behaviour of people. Briefly, according to TPB, there are three kinds of consideration which are attitude toward behaviour (adapted from TRA), subjective norm (adapted from TRA) and perceived behavioural control. What perceived behaviour control means is the perceived ease or difficulty of performing the behaviour (Ajzen, 1991). As a general rule, the more favorable the attitude and subject norm and the greater control, the stronger should be the person's intention to perform the behaviour in question (Ajzen, 1991).

2.4.5. Combined TAM-TPB(C-TAM-TPB)

In a more complex approach, Taylor and Todd (1995), combined TAM-TPB model the predictors from TAM and TPB model, such as, attitude toward behaviour (adapted from TRA/TPB), subjective norm (adapted from TRA/TPB), perceived behavioural control (adapted from TPB), and perceived usefulness (adapted from TAM) in their

studies of assessing IT usage. In their research, they incorporated TAM with social influences and behaviour control. All this is to allow comparisons to be made between the experienced and inexperienced user group on usage of a computing resources center by business school student. Finally, the conclusion reached by them is that the combination of TAM-TPB model can be applied to predict the behaviour of both experienced and inexperienced users of IT.

2.4.6. *Model of PC Utilization (MPCU)*

Further, Thompson, Haggins, and Howell (1991) in their research to predict usage behavior in personal computer utilization, relied heavily on their research Model of PC utilization. Among the core constructs in the Model of PC utilization are job fit, complexity, long term consequences, affect towards use, social factors and facilitating conditions. In short, job fit is the extent to which an individual believes that using a PC can enhance the performance of his or her job (Thompson et. al., 1991). Additionally, complexity is the degree to which an innovation is perceived as relatively difficult to understand and use, based on Rogers (1995). Further, long term consequence is defined as outcomes that have a pay-off in the future (Thompson et. al., 1991). As explained by Fishbein and Ajzen (1975), affect refers to a person's feeling toward and evaluation of some object, person, issue or event. Also, Thompson et al. (1991) made a discovery that social norms and three components of expected consequences (complexity of use, fit between the job and PC capability, and long term consequences) have a strong influence on utilization.

2.4.7. Innovation Diffusion Theory (IDT)

According to Rogers (1995), a reason for the very much dwelling interest in the diffusion of innovations is because "getting a new idea adopted, even when it has obvious advantages, is very difficult" (Rogers, 1995, p. 1). The main concern of the innovation diffusion research centers on how innovations are adopted as well as the reasons behind innovations are adopted at different rates. Rogers (1995) goes on stating there are four main elements of diffusion - innovation, time, communication, and social system. Expanding from the four main elements, Rogers defines diffusion as "the process by which an innovation is communicated through certain channels over time among the members of a social system" (Rogers, 1995, p. 5).

Moreover, Karahanna, Straub, and Chervany (1999) adapted the characteristics of innovation diffusion theory in evaluating the differences in pre-adoption and post-adoption of Windows 3.1 software. This evaluation is by analysis using terms of beliefs and attitudes. In order for technology to be diffused successfully, the keys are that it must be reliable, easy to use, compatible with today's advances, and so on. It must be bear in mind that the success of any new technology at all, is solely dependent on how people and users are being able to accept and use it. Without that, any technology, new or old will be useless.

2.4.8. Social Cognitive Theory (SCT)

All in all, Bandura's Congnitve theory (1986) goes to explain the relationship between a person's behaviour, personal factors such as cognitive skills or attitudes, and the environment. Each can impact and be impacted by the other, or it influences one another. Social cognitive theory is a view that, individuals possess self-beliefs that enable them to exercise a measure of control over their thoughts, feelings, and

actions, "What people think, believe, and feel affects how they behave" (Bandura, 1986, p. 25). With that, Bandura presents a view of human behaviour in which the beliefs that people have about themselves are key functions in the exercise of control. So goes the saying "No man's an island", as human lives are not lived in isolation, people work together on shared beliefs about their capabilities and common aspirations to better their lives. Thus, environments and social systems influence human behaviour on an enormous scale.

2.5. Performance Expectancy

What it means by performance expectancy is the degree to which an individual believes that using the system will help him or her to attain gains in job performance (Venkatesh et al. 2003). The five constructs from different models that pertain to performance expectancy are perceived usefulness (TAM/TAM2, and C-TAM-TPM), extrinsic motivation (MM), job fit (MPCU), relative advantages (IDT), and outcome expectations (SCT).

2.5.1. Perceived usefulness as constructs of performance expectancy

Overall, technology acceptance model is the most well established model in defining why users adopt information technology. In line with this, Davis (1989), in his study using the TAM to examine two characteristics of email usage, specifically, perceived usefulness and perceived ease of use, found that perceived usefulness and perceived ease of use were significantly associated with both self reported current usage and self predicted future usage. The perceived usefulness was fundamental to computer-based technology usage. Davis (1989) has stated his perception that usefulness constructs is the degree to which a person believes that using a particular system would enhance

his or her job performance. People tend to use or not use an application system as they are being dependent on his or her belief that the system will help them perform their task better. It makes sense to fully utilize a program that helps improve the work quality or manages part of the workload. Davis (1989) studies also predict usefulness and ease of use will increase that particular user's intentions to adopt the new system. Conclusively, perceived usefulness was a major determinant of individuals' intentions to use computers, and perceived ease of use was a second determinant.

Other than that, Morris and Dillon (1997) in their studies of Netscape acceptance found that users' initial perceptions of technology usefulness and ease of use had significant influences on intentions to use it too. It is vital to gather user perceptions of the system's usefulness and ease of use. The act is to assess whether that system will ultimately be accepted by users.

In addition, Ramayah, Jantan, Mohd Noor, and Koey (2003) in their study about Internet banking acceptance in Malaysia found that perceived usefulness and perceived ease of use is significantly related to intention to use Internet banking. Further, Ramayah, Aafaqi, Ignatius, and Yeap (2004) reported that perceived ease of use and perceived usefulness has significant influences on e-library usage amongst student in public university in Malaysia.

In contrast, in Karahanna and Limayem (2000) surprisingly found non significant relation between perceived usefulness and use for email, but in the case of voice mail, perceived usefulness is the key determinants of voice mail usage.

2.5.2. *Extrinsic motivation as construct of performance expectancy*

According to David and Straub (2000) perceived usefulness is a response to user assessment of its extrinsic characteristics or motivation such as task oriented, and outcomes. Of course, this includes how IT helps users achieve task oriented objectives, such as task efficiency and effectiveness. Besides that, Gefen and Straub (2000) discovered that perceived ease of use relates to its intrinsic characteristics of IT, such as ease of use, ease of learning, and clarity of its interface.

In addition, Yi and David (2003), in their study had developed and tested a new model of modeling-based training intervention influence computer (spreadsheet training) task performance. Successfully, they have found that retention enhancement training significantly improved task performance. Based on social cognitive theory, Yi et al. (2003) also defined motivation as the symbolic memory actions will weaken unless the perceived consequences of performing the actions are sufficiently favorable to cause repeated performance

2.5.3. *Job – fit as construct of performance expectancy*

In their advanced research, Thompson, et al. (1991) used the Model of PC Utilization only to find that job fit was a stronger and more reliable predictor of utilization. Similarly, their result showed compatibility to Davis et al.'s (1989) perceived usefulness and utilization. Definition of job fit is as the extent to which an individual believes that using PC can enhance the performance of his or her job (Thompson et al., 1991).

Venkatesh and Davis (2000) found that system usefulness is affected by an individual's cognitive matching of their job goals.

What is more, Hubona and Kennick (1996), in their studies in actual system usage of electronic mail and Words application, suggest in their finding, the important of fit between technology and task. Again, perceived usefulness relates closely to functionality of the application as enabling and expediting task-related job performance.

2.5.4. *Relative Advantage as construct of performance expectancy*

Rogers (1995) defined relative advantage as the degree to which an innovation is perceived as being better than the idea it supersedes. According to Rogers, the degree of relative advantage is often expressed as economic profitability, social prestige, or other benefits. And referring to Speier and Venkatesh (2002), research on the adoption of Sales Force Automation Technology, they found that both sex and age influenced relative advantages, and partially supported for relative advantages effect on job-fit, and finally job-fit positively influenced usage.

2.5.5. *Outcome expectations as construct of performance expectancy*

Taking a step further, Compeau and Haggin (1999), based on Bandura's (1986) Social Cognitive Theory, test the influence of computer self efficacy, outcome expectations, affect and anxiety in computer usage. They reported that significant relationship between self efficacy and outcome expectation, as well as affirming performance outcomes to hold influence on affect and use. In all, overall findings provide strong confirmation that both self efficacy and outcome expectation impact an individual's affective and behavioural reaction to information technology usage.

Deborah, Christopher, and Sid (1999), in their study on the influence of computer self-efficacy, outcome expectations, affect and anxiety on computer usage,

found that performance outcome expectations exerted a significant influence on computer usage.

2.6.   Effort Expectancy

Effort expectancy is defined as the degree of ease associated with the use of the system (Venkatesh et al., 2003). Three constructs from the existing models capture the concept of effort expectancy, namely perceived ease of use (TAM/ TAM2), complexity (MPCU), and ease of use (IDT).

2.6.1.   Perceived Ease of use as construct of effort expectancy

In reference to the perceived ease of use, it is about the degree to which a person believes that using a particular system would be free of effort (Davis, 1989). The ease of use scale developed by Davis (1989) considers ease of learning. This "ease of learning" evident in the Davis' (1989) ease of use scale, e.g., system is clear and understandable; system requires low mental effort; easy to get the system to do what I want. Davis (1989) found that perceived ease of use was significantly correlated with current usage and future usage of computer. Naturally, inclination and approval would be based on the level of ease.

As such, Davis et al. (1989) in their studies on intention and use of word processor, found that perceived ease of use had a small but significant effect on intentions, although this effect subsided over time. Nonetheless, Karahanna and Limayem (2000) found that perceived ease of use was a significant determinant of use for both email and voice mail usage. Referring to Ramayah, Ignatius, and Aafaqi (2004) studies on PC usage among student, found that perceived ease of use was more influential than perceived usefulness when the students engage in advances tasks. This

suggest that college students would used the advanced application if they perceived it to be easy to use, especially when the advanced application is not required in the students' course.

2.6.2. *Complexity as construct of effort expectancy*

Conversely, complexity is the opposite of ease of use. It is the degree to which an innovation is perceived as relatively difficult to understand and use, based on Roger (1995). Notably, Thompson et al. (1991) in their studies of Model of PC Utilization found there was a significant negative relationship between perceptions about complexity of use and the utilization of PC.

2.6.3. *Ease of use as constructs related to effort expectancy*

In pre-adoption and post-adoption of Windows 3.1 software, Karahanna et al. (1999) adapted the characteristics of innovation diffusion theory in examine differences in terms of beliefs and attitudes. Their study found that pre-adoption attitude is only bases on instrumentality beliefs of usefulness, ease of use, result demonstrability, visibility, and trialability.

2.7. Social Influence

Social influence, as defined by UTAUT is the degree to which an individual perceives that important others believe he or she should use a technology (Venkatesh et al., 2003). Therefore, social influence as a direct determinant of behaviour intentions, is represented as subjective norm in TRA, TAM2, TPB/DTPB and C-TAM-TPM, social factor in MPCU and image in IDT. There are three constructs related to social influences: subjective norm (TRA, TAM2, TPB/DTPB, and C-TAM-TPB), social

factors (MPCU), and image (IDT). Social interaction is also expected to be important in influence of technology usage.

2.7.1. *Subjective norm as constructs related to social influences*

Subjective norm is found to be an important determinant of intention and /or behaviour (Venkatesh & Morris, 2000). Social aspects of technology use including hermeneutic interpretation (Lee, 1994), assessing IT usage (Taylor and Todd, 1995), and gender and social influence in technology acceptance (Venkatesh & Morris, 2000).

According to Karahanna and Limayem (2000) established in both cases of voice mail and email usage, that social norms are an important determinant of perceived ease of use, which in term had an effect on perceived usefulness. Possibly, strong social pressures to use a system may result in usage itself. This is irrespective of whether individuals perceive the system as being useful. Thus, the subjective norm may encourage email usage. Following the crowd may have validity here.

2.7.2. *Social factors as constructs related to social influences*

Subjective norm was significant determinants of intention to adopt, so says Karahanna et al. (1999) in their study of adoption of Windows. Also, Thompson et al. (1991) found that the social factors have strong influence on PC utilization.

Venkatesh and Davis (2000) focused on extending the TAM model, known as the TAM2. They have developed and tested theoretical extensions that explained perceived usefulness in term job relevance, output quality, result demonstrability, perceived ease of use, and social influences processes, which including subjective norm, voluntariness, and image. As a result, the test has shown that subjective norm

exerts a significant direct effect on usage intentions for mandatory, but not voluntary system.

Markus (1984) found that email adoption, use, and consequences of media in organization can be powerfully shaped by social processes such as sponsorship, socialization, and social control.

2.7.3.   *Image as constructs related to social influences*

In accordance to Rogers (1995), one motivation for many individuals to adopt an innovation is the desire to gain social status or image. Besides that, Venkatesh and Davis (2000) found that effect of subjective norm on image was significant measurement on system usage. Karahanna et al. (1999) in their studies on Windows adoption found that post-adoption attitude is only based on instrumentality beliefs of usefulness and perceptions of image enhancement.

This is followed by David, King, and Mcaulay (2000) in their studies found that significant group of managers favour email and, through its use, convey messages to subordinates about media style and individual identity.

2.8.   Facilitating Conditions

Organizational facilitating conditions are known as the degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system (Venkatesh et al. 2003). These facility conditions consist of management support, training and the provision of computer support.

Other than that, with regards to Karahanna and Limayem (2000), their study of email and voice mail usage has found significant effect of training on perceived usefulness in the voice mail but not in email. It is observed that training and support