AN ADOPTION OF THE TAM MODEL TO DETERMINE FACTORS AFFECTING STUDENTS' ACCEPTANCE OF E-LEARNING IN INSTITUTIONS OF HIGHER EDUCATION IN SAUDI ARABIA

ABDULHAMEED RAKAN ALENEZI

DOCTOR OF PHILOSOPHY
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By

Abdulhameed Rakan Alenezi

Awang Had Salleh Graduate School of Arts and Sciences
UUM CAS
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ABSTRAK

Kajian ini bertujuan untuk menyiasat pengaruh faktor psikologi, sosial, teknikal, budaya dan institusi dengan penerimaan E-pembelajaran pelajar di institusi pengajian tinggi Arab Saudi. Data dikumpul daripada 480 pelajar di lima buah universiti Arab Saudi dengan menggunakan sampel rawak strata berganda. Soal selidik kajian ini di adaptasi terutamanya daripada kajian Pituch dan Lee (2006), Curtis dan Payne (2008), dan Ngai, Poon dan Chan (2007). Beberapa ujian statistik digunakan termasuk ujian-t, ANOVA satu hala, korelasi *bivariate* dan regresi berganda. Keputusan ujian-t menunjukkan perbezaan yang signifikan antara pengkhususan utama dan pengalaman internet manakala jantina, komputer dan pengalaman tidak signifikan dengan penerimaan E-pembelajaran. Analisis korelasi menunjukkan terdapat hubungan yang signifikan antara faktor psikologi, sosial, teknikal, budaya dan institusi. Analisis regresi linear menunjukkan faktor teknologi, sosial, psikologi merupakan penyumbang kepada penerimaan E-pembelajaran manakala faktor budaya tidak. Keputusan regresi *stepwise* menunjukkan semua faktor psikologi menyumbang kepada penerimaan E-pembelajaran. Bagi faktor sosial, hanya imej dan identiti kendiri menyumbang secara signifikan kepada penerimaan E-pembelajaran pelajar. Berkaitan dengan faktor teknologi, tiga variabel iaitu respons sistem, fungsi sistem dan interaksi sistem menyumbang secara signifikan kepada penerimaan E-pembelajaran tetapi prestasi sistem tidak menyumbang. Akhir sekali semua faktor institutsi menyumbang secara signifikan kepada penerimaan E-pembelajaran pelajar. Keputusan regresi *hierarchical* menunjukkan sikap sebagai pengantara yang signifikan antara faktor utama TAM dan penerimaan E-pembelajaran pelajar. Faktor-faktor penentu merupakan penyumbang yang signifikan dalam pembinaan dan penambahbaikan masa depan penerimaan dan penggunaan E-pembelajaran. Berdasarkan dapatan kajian ini, adalah dicadangkan antara lain, institusi pengajian tinggi mengambilkira faktor teknikal, institusi, sosial dan psikologi semasa proses mengimplementasi E-pembelajaran.

Katakunci: E-pembelajaran, Penerimaan, Model Penerimaan Teknologi (TAM), Pengajian Tinggi, Arab Saudi.

ABSTRACT

The purpose of this study was to investigate the influence of psychological, social, technical, cultural and institutional factors on the students' acceptance of E-learning in institutions of higher education in Saudi Arabia. Data was collected from 480 students at five universities in Saudi Arabia by using multi stage stratified random sampling. The questionnaire for this study was adapted from Pituch and Lee (2006), Curtis and Payne (2008), and Ngai, Poon and Chan (2007). Several statistical techniques were used including t-tests, one-way ANOVA, bivariate correlation, and multiple regression analyses. The t-test results showed statistically significant differences in students' E-learning acceptance based on their major and internet experience while students' gender, computer and E-learning experience did not indicate any significant differences. The correlation analysis indicated that the relationships between the psychological, social, technological, cultural and institutional factors were significant. The simple linear regression revealed that, technological, social and psychological factors significantly contributed to the students' acceptance of E-learning while the cultural factor did not. The results of the stepwise regression showed that the variables related to the psychological factor all significantly contributed to the students' E-learning acceptance. As for the social factors, only image and self-identity significantly contributed to students' E-learning acceptance. With regards to the technological factor, three variables namely system response, system functionality and system interactivity significantly contributed to students' E-learning acceptance while system performance did not. Finally, all the institutional factor variables significantly contributed to students' E-learning acceptance. Hierarchical regression results indicated that attitude significantly mediated the relationship between the TAM main constructs and the students' E-learning acceptance. Based on the findings, it is suggested that, among others, higher educational institutions should take into consideration the influence of technological, institutional, social and psychological factors in the process of implementing E-learning.

Keywords: E-learning Acceptance, Technology Acceptance Model (TAM), Higher Education, Saudi Arabia.

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CHAPTER ONE

INTRODUCTION

1.1 The Background of the Study

E-learning has been used in education as early as the 1950's. At that time E-learning was referred to as distance learning (Clark, 2000). The term E-learning refers to the learning methods which use electronic channels to deliver the instructional content. Moreover, E-learning is also referred to as web-based learning; technology based learning; online learning; networked learning and so on (Gotschall, 2000; Trombley & Lee, 2002). This way of learning gained its popularity just a decade ago according to Rosenberg (2001). Due to a broad global Intention given to e-Learning, various reports and studies have been conducted by educational institutions, different organizations as well as the governments of various nations (Rosenberg, 2001).

The Saudi Ministry of Higher Education is among those educational organizations that proposed the use of E-learning in Saudi Arabia. The Saudi Ministry of Higher Education recognised the need of integrating Information and Communication Technology (ICT) in various universities in Saudi Arabia. The Saudi Gazette (2008) by Madar Research reported that "the Saudi Arabian E-learning industry is projected to reach USD 125 million in 2008 and is set to grow at a compound annual rate of 33 per cent over the next five years". The increased projection shows vital focus on the advantages of E-learning in Saudi Arabia's modern education. Among the E-learning advantages mentioned are meeting the needs of learning through technology; fostering rapid learning cycles with the use of technological solutions in education; increasing easy access to information with cheaper cost and helping "organizations build, manage and measure learning outcomes by providing solutions based on the comprehensive knowledge solutions framework that blends content and infrastructure into a single and seamless solution" (Saudi Gazette, 2008).

It is vital to know why the Ministry of Higher Education pursues Information and Communication Technology (ICT) as an integral part of learning. The reasons for implementing E-learning in Education are" 1) The ability to have just-in-time workplace learning; 2) employees have greater control compared to other modes of learning and training; 3) it improves the effectiveness of workplace learning. And the top three underlying forces or drivers that will determine future use of E-learning are, in orders: 1) cost effectiveness; 2) its effectiveness vis-a-vis other modes of teaching; 3) its ability to reach more learners in the organization" (Bloom, 2003, p.10)

Chaffey and Wood (2005) also highlighted the following benefits of E-learning: 1) E-learning uses a different range of media tools such as audio and video which offer great interactive experience; 2) the employees learn based on their own interest;3) E-learning can be personalised based on the students' needs.

WorldwideLearn (2008) cited the similar benefits as mentioned by Bloom (2003). E-learning is self-paced, therefore, allowing the students to cope with learning on their own pace. E-learning is self-directed as students can choose tools in accordance with their needs and interests. E-learning promotes the use of multiple learning styles that are necessary for optimum learning. E-learning eliminates geographical barriers as students can learn wherever they are and E-learning promotes higher collaboration among students as well among students and instructors (Worldwidelearn, 2008).

JISCinfonet (2008) also included social equality as an additional benefit that can be derived through e-Learning.

The vital role that E-learning can play in achieving the objectives set forth by the Saudi Ministry of Higher Education as well as the cited benefits that can be derived through E-learning are considered important enough reasons for harnessing E-learning. Thus, because of the high investment in the area of E-learning in recent years, further research should be conducted in the area of acceptance, perception and readiness in order to achieve the Ministry's objectives. The necessity to understand how learners accept E-learning is crucial in order to build successful and effective E-learning courses.

1.1.1 Researches on E-learning Acceptance

Globally, a lot of research has been conducted to investigate student acceptance of E-learning implementation especially in the higher education context (Brown, 2002; Lee, Cheung, & Chen, 2005; Ngai, Poon, & Chan, 2007; Pituch & Lee, 2006; Saadé & Bahli, 2005). The Technology Acceptance Model (TAM) has been successfully utilised in these studies in order to predict the factors that could influence E-learning acceptance. The Technology Acceptance Model (TAM) by Davis (1986), adapted from Theory of Reasoned Action (TRA) by Fishbein and Ajzen (1975), has been extensively used as the theoretical basis for many empirical studies on student acceptance. Furthermore, many studies have examined the TAM's applicability and validity to clarify student acceptance of E-learning technology in higher education institutions (Landry, Rodger, & Hartman 2006; Masrom, 2007; Ngai et al., 2007; Roca, Chiu, & Martínez, 2006; Saadé & Bahli, 2005; Saadé & Galloway, 2005

Selim, 2003). The most recent research was conducted by Masrom in 2007 where the individual user acceptance of the E-learning system in different universities in terms of effectiveness was investigated. Particularly, it examined the TAM in predicting student acceptance of E-learning technology. The researcher's conclusion indicated that the TAM model was applicable, valid and supported.

Locally, various researches had been carried out particularly in Saudi Arabia on the effectiveness of E-learning in fostering better education (Ali, Sait, & Al-Tawil, 2003; Al-Jarf 2007; Al-Jarf 2006; Al-Jarf, 2005; Charbaji, Al-Hajhouj, & Beyruti, 2006; Sahab, 2003). Unfortunately, some of these researches came up with negative findings on E-learning acceptance due to various factors and reasons. Al-Jarf (2007) pointed out that the online courses in her specific classes were a total failure. " The online grammar course for both professor and students in Umm Al-Qura University proved to be a total failure" (Al-Jarf, 2007, p.1). Al-Jarf (2007, p.3) also indicated that the intention to use "online courses in some higher education institutions in Saudi Arabia is not yet known".

Sahab (2003) conducted a research in King Abdul-Aziz University (KAAU) regarding initiating distance education programs in Saudi Arabia using networked learning technology. The researcher found that KAAU needed to provide the faculty members with course training in using distance education tools in order for them to be skilled in new methods of teaching and learning. Furthermore, KAAU had to discuss the accessibility issue with the main internet provider Saudi Telecommunication company (STC) to improve the accessibility and the interactivity for the online users.

Further explanation about each of the above studies will be given in the literature review. Briefly, the findings of these research have pointed out that E-learning acceptance is rather low due to varying factors. It is therefore necessary to have an in-depth study of those factors that hinder E-learning acceptance in higher education institutions in Saudi Arabia.

1.1.2 Models and Theories on E-learning Acceptance

In order to achieve the many benefits that can be derived from e-learning, participants in the learning must accept and use the learning processes included therein. There is a need to study various models and theories on E-learning acceptance to better evaluate the existing programs that educational organizations are using in implementing E-learning in the Saudi universities. The following models and theories cited below are deemed to be important for this study.

1.1.2.1 Theory of Reasoned Action (TRA)

According to Fishbein and Ajzen (1975), the Theory of Reasoned Action (TRA) was established in order to examine the relationship between attitudes, subjective norm and behaviors. The TRA assumes that the main predictor of the behavior performance is the behavioral intention rather than the attitudes and subjective norm. Furthermore, the attitudes and subjective norm are the main predictors of the behavioral intention.

1.1.2.2 The Technology Acceptance Model (TAM)

According to Davis (1986), the Technology Acceptance Model (TAM) is important in understanding the use of the Information System as well as Information System Acceptance behaviours. The TAM is an extension of the Theory of Reasoned Action (TRA). However, the latter theory lacks distinction if the behaviour of users towards technology depends on intentions or attitudes (Klein, 1991). The TAM functions on the underlying belief that the individual's intention of using the technology depends on how useful the technology is to the user and how easily it can be used in terms of functionality. It is also believed that the usefulness of the technology is directly proportional to the ease of use (Davis, 1989). Perceived usefulness is also seen as being directly impacted by perceived ease of use.

According to Venkatesh, Morris, Davis and Davis (2003), the Technology Acceptance Model has been modified, by eliminating the impact of attitude in the Theory of Reasoned Action, and extended to include more external variables. These modifications required extending the TAM on three approaches. These approaches, according to Wixom and Todd (2005), are extending the TAM through the introduction of factors on interrelated models, initiating additional factors associated with beliefs, and examine previous circumstances wherein perceived usefulness and ease of use were studied.

Both the TRA and the TAM establish well-founded behavioural elements. They both identify that the user's intention, when cultivated, can lead to freedom to act without restriction. These restrictions according to Furneaux (2006) are "limited ability, time, environmental or organizational limits, and unconscious habits".

1.1.2.3 Unified Theory of Acceptance and Use of Technology (UTAUT)

According to Venkatesh et al. (2003), the UTAUT intends to clarify the intention of the users in using the Information System and the behaviour built on the use of it. This theory believes that there are four factors affecting the usage and behaviour intention. These four factors, according to Venkatesh et al. (2003) as cited by Furneaux (2005a), are "performance expectancy, effort expectancy, social influence, and facilitating conditions". Furneaux (2005a) further elaborated that:

> "The theory was developed through a review and consolidation of the constructs of eight models that earlier research had employed to explain IS usage behaviour (theory of reasoned action, technology acceptance model, and motivational model, theory of planned behaviour, a combined theory of planned behaviour/technology acceptance model, model of PC utilization, innovation diffusion theory, and social cognitive theory". (Venkatesh et al., 2003, p.428).

1.1.2.4 Diffusion of Innovation (DOI)

According to Rogers (1995) the DOI theory perceives that new technologies are used depending on specific channels and social norm. The users have varying degrees of willingness to use the technology; and with the passing of time the users normally adopt the technology (Rogers, 1995). Furneaux (2005b) explained the theory based on the factors posited by Rogers (1995): The rate of adoption of innovations is impacted by five factors: relative advantage, compatibility, trialability, observability, and complexity (Rogers, 1995). The first four factors are generally positively correlated with the rate of adoption while the last factor, complexity, is generally negatively correlated with the rate of adoption (Rogers, 1995). The actual rate of adoption is governed by both the rate at which an innovation takes off and the rate of later growth.

The models discussed above will be useful in gauging the factors that affect the efficiency of E-learning in promoting the benefits derived from it. These will be used to determine the key factors in the E-learning failures of some organizations that support E-learning. At the same time, those factors will be used as references to come up with a new research model that will determine the acceptance factors of E-learning in Saudi Arabia in order to make it effective and to ensure that the budget allocated for E-learning will not go to waste.

1.1.3 The Importance of Acceptance Factors In Achieving Effective E-Learning

The success of an E-learning program depends on how the learner is motivated (Frankola, 2001). When the learners take the initiative for self-improvement rather than having training imposed on them, E-learning becomes more successful. Hiemstra (1997) has cited the importance of understanding the factors that enhance acceptance of new learning techniques and new technologies by adult learners in order to build a successful learning strategy.

In order to achieve the advantages of E-learning, it is vital for learners in the higher education to get fully involved in the process. The detrimental factors for the success of E-learning should be removed (Frankola, 2001). A well-designed course, good technology and capable teachers may not be sufficient to establish optimum learning when learner's inhibitions in accepting E-learning are not taken into consideration.

Both external factors (factors controlled by the E-learning organizers) and internal factors (factors controlled by the learner in which beliefs and values are taken into consideration) have great impact on the willingness of learners to participate in the E-learning process (Rabak & Innes, 2006). The Force Field Theory by Lewin (1997) states that the learner's field comprising various factors with respect to behaviour are the driving and restricting force of learning. The learner's attitude towards the E-learning process should be considered. Nonetheless, the factors that restrain E-learning success should be studied. Identifying the factors that lead to the acceptance and resistance of E-learning may build a strong basis for ascertaining what approaches/models may be suitable for optimum learning to take place. Thus, factors influencing student acceptance of E-learning will be investigated and examined in this research.

1.2 Problem Statement

The significance and relevance of E-learning to higher education has been palpably felt. Educational organizations and the governments of various nations realise that now is opportune time to focus on the benefits derived from E-learning (Rosenberg, 2001). Saudi Arabia is one of those nations that promote the use of E-learning in their higher education institutions. The Saudi Arabian E-learning industry is projected to reach USD 125 million in 2008 and is set to grow at a compound annual rate of 33 per cent over the next five years, according to a recent study conducted by Madar Research (Saudi Gazette, 2008). Various research and studies have been conducted to promote the use of E-learning to foster better education worldwide (Webster & Hackley, 1997). Unfortunately, some of the researches on E-learning, particularly in Saudi Arabia, connote failure findings in fostering optimum E-learning due to various reasons. Al-Jarf (2004) has demonstrated that the Saudi students showed less reaction and participation in using E-learning compared to Ukrainian and Russian students in posting their responses under the discussion threads.

> "Analysis of the students' messages and reactions showed that all of the students posted a total of 186 responses (posts) under the discussion threads (instructors' messages were excluded). The Ukrainian students posted 67 percent, the Russians posted 23 percent and the Saudis posted 10 percent of the responses" (Al-Jarf 2004, p.10).

Furthermore, Al-Jarf (2004) indicated that the low percentage among the students who are participating in online course was from Saudi Arabia. The reasons behind this low percentage of interactivity in the online course among Saudi students have not been clearly ascertained as yet. They could be psychological, social, technical, cultural or institutional factors as well as other related factors. In recent days, the trend seems to be the same students are still unwilling to use E-learning tools and participate in the online mode (Al-Jarf, 2007; Alenezi, Abdul karim, Veloo, 2010). Al-Jarf (2007) pointed out that using the online system for her English course was a total failure. The author has also observed that the interaction between the participants was lacking and that the students had a negative attitude towards online courses. Nevertheless, the factors that have affected the acceptance of the system have still not been investigated yet. Al-Jarf (2007) found that in two Saudi universities, the students were still apprehensive, shy and hesitant to participate in this project. Moreover, the author pointed out that the online project in the two universities proved to be a total failure. Therefore, the researcher is interested in conducting this research to find out the factors influencing the students' acceptance of using E-learning and to determine the factors that contribute most to the students' acceptance of E-learning.

In order to determine and investigate the factors that affect E-learning acceptance, the TAM has been chosen as the fundamental model for the current study. The reasons for the choice are the TAM's applicability, validity, reliability and its tremendous popularity in acceptance studies in different settings (Landry, Rodger, & Hartman 2006; Masrom, 2007; Ngai et al., 2007; Roca, Chiu, & Martínez, 2006; Selim, 2003; Saadé & Bahli, 2005; Saadé & Galloway, 2005). Even though there are a limited number of studies that examined the TAM applicability on E-learning context, the TAM has been successfully applied in the E-learning context. Masrom (2007) has utilised the TAM in order to examine the applicability of the TAM in explaining students' acceptance of E-learning technology within the academic setting. "The results of this study show that the TAM can be used to explain the student's acceptance of E-learning technology" (Masrom, 2007, p.8). Furthermore, Rezaei, Mohammadi, Asadi, and Kalantary (2008) have conducted a research in Iran by utilising the TAM to predict E-learning acceptance in Agriculture schools in higher education. The TAM was applicable and valid in predicting the students' acceptance of the E-learning system in the higher education context. The study demonstrated "there was a strong direct influence of perceived usefulness on students' intention to use E-learning" (Rezaei et al., 2008, p.90). Therefore, the TAM will be used as basic model for this study in order to determine the factors affecting E-learning acceptance in Saudi Arabian higher education institutions.

Even though the Saudi Arabian Government places greater emphasis on the use of E-learning and provides larger funds for its success, it is imperative to understand how benefits can be derived from E-learning and how we can promote these advantages to be more acceptable and effective. Different researchers in different parts of the world have discussed the acceptance issues towards E-learning implementation in higher education institutions. However, the present researcher found that there is a lack of research in this area particularly in Saudi Arabia. This can be related to the delayed introduction of the E-learning system in Saudi university courses compared with the global experience.

Since Davis (1989) suggested testing and validating the TAM by exploring more variables that could affect the TAM main constructs, the present researcher will examine the factors that could affect E-learning acceptance. The examined factors were derived from well-known theories and models related to the area of technology acceptance. These factors will be studied and categorised including demographic, psychological, social, technological, cultural and institutional perspectives.

The demographic variables were found to play a significant role in predicting the individual's behaviour towards using online technology particularly e-learning (Gefen & Straub, 1997; Jackson, 2001; Ong & Lai, 2006; Tolhurst & Debus, 2002; Speier & Venkatesh, 2002; Venkatesh et al., 2003; Yuen & Ma, 2002). Venkatesh et al. (2003) examined the demographic variables as moderators while there are limited studies that investigate the influence of demographic variables directly with individual's intention to use e-learning. Chen, Lin, Chen and Yeh (2009) concluded that there is a need for future research to investigate the demographic variables such as gender difference, internet experience and level of education to enhance the ability to predict actual use of e-learning systems more accurately as well as to improve our ability to predict usage intention. Therefore, this research will investigate the direct influence of demographic variables on students' intention to use e-learning.

The psychological and emotional states and intrinsic motivation show their strong influence on early acceptance of using the technology (Saadé & Kira, 2006; Venkatesh & Morris, 2000). Variables such as enjoyment, computer anxiety and computer self-efficacy were found to be stronger predictors of technology acceptance especially on E-learning (Pituch & Lee, 2006; Saade, Tan & Nebebe, 2008; Saade & Kira, 2006). Therefore, this study will examine the psychological related variables that could affect E-learning acceptance.

As demonstrated by Kieran (2001) and Rogers (1995), the TAM does not include any clear social variables. In other words, the students' acceptance of a particular system could be influenced by other people's understanding and their evaluation of using a particular system; this indicates the crucial importance of considering the social factor in determining the students' acceptance and other related factors (Rogers, 1995). The literature indicates the numerous influences of social variables such as image, subjective norm and self-identity on technology acceptance (Lee, Lee & Lee, 2006; Nasution, 2007; Ndubisi, 2004; Moore, & Benbasat, 1991). Due to the researchers' suggestions of considering these variables in future studies and due to the strong influence of these variables on the technology acceptance, the present research will investigate the effect of social factor on the students' E-learning acceptance.

The TAM has also been found to neglect the external characteristics such as technological and system characteristics (Lee, Kozar, & Larsen, 2003). The technological factor seems to be a significant key factor in successful E-learning acceptance. This research will only investigate the factors related to the system characteristics and not to include other technological variables. Therefore, this research will integrate variables such as system performance, system functionality, system interactivity, and system response. These variables were shown to have significant effects on E-learning acceptance (Liu, & Ma, 2006; Pituch & Lee, 2006). The present research will investigate these variables under the technological factor because of previous research suggestions to consider these factors in developing E-learning (Liu & Ma, 2006; Pituch & Lee, 2006; Selim, 2003). Hence, the technological factor will be considered as a significant factor that could affect E-learning acceptance.

Various researches were conducted in the area of E-learning acceptance based on cultural differences (Hasan & Ditsa, 1999, Srite, 2006; Straub, 1999; Straub, 1994; Sundqvist, Frank, & Puumaliainen, 2005) such as in Malaysia, Nigeria, China and United States. The researchers found that the cultural diversity has its own impact on the implementation of new learning techniques and technologies. However, this may not possibly affect the E-learning acceptance in the Saudi Arabian context since the cultural diversity is not of a high proportion. Srite (2006) has examined the issue of technological acceptance across two cultures, namely the US and the Chinese cultures. The researcher surveyed over a hundred participants across both cultures. The researcher proved that cultural differences between countries have particular impact on the effectiveness and efficiency of the IT acceptance. "Technology acceptance and usage across cultures is a crucial factor for deriving IT benefits in multinational and transnational organizations" (Srite, 2006, p.5). Thus, this study will examine the E-learning acceptance based on Saudi culture to determine whether the proposed cultural variables in Srite (2006) have an impact on the E-learning acceptance or not. In terms of the TAM applicability in predicting the cultural factor, the TAM has become a controversial model regarding its ability in predicting the students' acceptance based on their own cultural values. The TAM has been applied and examined in different cultural settings, particularly western and non-western (Agarwal, Karahanna, 2000; Igbaria, Iivari, & Maragahh , 1995; Hsu , & Lu., 2004; Liaw & Huang , 2003; Mao, Srite , Thatcher, & Yaprak, 2005; McCoy, Everard, & Jones, 2005; Money, & Turner, 2005; Straub, Keil, & Brenner, 1997; Teo , Chan ,Wei, & Zhang , 2003). The two main constructs of the TAM in these studies were different in terms of its power to predict the users' acceptance. In other words, perceived usefulness seems to be more significant in determining the users' acceptance in the studies that conducted in the western culture. However, the ease of use was of more significance in the non-western context. Straub et al. (1997) conducted an empirical study across three different cultures. They indicated that the TAM did not fit the Japanese culture. In contrast, Mao et al. (2005) concluded that the ease of use was very important for non-western cultures (Turkey) compared to the western cultures (US). Thus, the inconclusive findings of these researches need further investigation. Therefore, this study will try to examine the TAM applicability to predict the cultural variables and investigate its influence on the students' acceptance of E-learning.

Several internal and external institutional factors were found to have significant influence on online learning acceptance (Galletta et al., 1995; Igbaria et al., 1997; Yi et al., 2001). For example, Igbaria et al. (2007) confirmed that the organisational factor highly influences the technology acceptance. This research will consider three institutional variables namely facilitating conditions, training and institutional technical support. The reason behind this is that the significant effects of proposed variables in influencing new technology acceptance (Amoako-Gyampah & Salam, 2004; Curtis, &Payne, 2008; Ngai, Poon & Chan, 2007). Thus, the current research will investigate the role of institutional factor in influencing the students' willingness to accept or reject E-learning.

Many studies have produced inconclusive findings regarding the mediating effects of attitude on the TAM. Davis et al. (1989) cited in Yousafzai, Foxall and Pallister (2007, p.265) demonstrated that "the explanatory power of the TAM is equally good and it is more parsimonious without the mediating attitude construct". Similarly, Venkatesh and Davis (1996) eliminated attitude from their proposed model because attitude as a mediating constructs did not seem to mediate fully the effect of perceived usefulness (PU) and perceived ease of use (PEU) with the behavioral intention (BI). However, in technology acceptance, many studies have confirmed the mediation effect of attitude on the relationships between main TAM model predictors and its criterion particularly in mandatory settings (Brown, 2002; Lee et al., 2005; Ngai et al., 2005; Saadé & Bahli, 2005). Therefore, this research will test the mediation effect of attitude.

In conclusion, Davis et al. (1989) stated that testing the TAM with additional factors will provide richer understanding of the users' acceptance and behaviour toward using the technology. Therefore, the current research will examine the effect of psychological, social, technological, cultural and institutional factors on students' E-learning acceptance in higher education institutions in Saudi Arabia.

1.3 Objectives of the Study

The overall aim of this study is to investigate the influence of psychological, social, technical, cultural and institutional factors on the students' acceptance of E-learning in higher education institutions in Saudi Arabia. The relationship between the proposed factor and the students' behavioural intention to use E-learning will be examined. It will also investigate the indirect effect of perceived usefulness and perceived ease of use on behavioural intention through the mediation effect of attitude. The proposed variables that constructed each factor will be examined in order to assess the most contributive variables for each proposed factor. Thus, this study will attempt to achieve the following objectives:

1. To investigate the students' mean differences in E-learning acceptance based on gender, age, major and level of experience in using the computer, the Internet and E-learning among students in Saudi Arabian higher education institutions.

2. To identify the most important external factors namely psychological, social, technological, cultural and institutional factors that could influence E-learning acceptance.

3. To determine the relationship between the external factors (psychological, social, technological, cultural and institutional) and students' acceptance of E-learning.

4. To identify the most contributive variables that would predict E-learning acceptance in Saudi Arabian higher education institutions.

5. To examine the mediating effect of students' attitude on the relationship between perceived ease of use/ perceived usefulness and students' E-learning acceptance.

1.4 Research Questions

The researcher will attempt to answer the following questions:

1. Is there any significant difference in students' E-learning acceptance based on gender, majors and level of experiences in using the computer, the Internet and E-learning among students in Saudi Arabian institutions of higher education?

2. What are the external factors namely psychological, social, technological, cultural and institutional that could influence E-learning acceptance?

3. What are the relationships between the external factors (psychological, social, technological, cultural and institutional) and E-learning acceptance?

4. What are the external variables that would predict E-learning acceptance in Saudi Arabian institutions of higher education?

5. Does attitude towards using E-learning mediate the relationship between the main TAM predictor constructs (perceived usefulness & perceived ease of use) and the students' E-learning acceptance?

1.5 Research Hypothesis

The researcher in this study will investigate the influence of proposed factors and their relationships on the students' acceptance of the E-learning system through the TAM as the basis. The future questionnaire will be constructed in order to support the proposed hypothesis. Based on the research objectives and questions, the researcher posits the following null hypotheses:

$H_0$1: There is no significant difference between genders in students' E-learning acceptance.

$H_0$2: There are no significant differences between the age groups in students' E-learning acceptance.

$H_0$3: There is no significant difference between the majors in students' E-learning acceptance.

$H_0$4: There is no significant difference between the levels of experience in using the computer in students' E-learning acceptance.

$H_0$5: There is no significant difference between the levels of experience in using the Internet in students' E-learning acceptance.

$H_0$6: There is no significant difference between the levels of experience in using E-learning in students' E-learning acceptance.

$H_0$7: There is no relationship between the psychological factor and students' E-learning acceptance.

$H_0 8$: There is no relationship between the social factor and students’ E-learning acceptance.

$H_0 9$: There is no relationship between the technological factor and students' E-learning acceptance.

$H_0 10$: There is no relationship between the cultural factor and students' E-learning acceptance.

$H_0 11$: There is no relationship between the institutional factor and students' E-learning acceptance.

$H_0 12$: Enjoyment, computer anxiety and computer self-efficacy are not predictors of students' E-learning acceptance.

$H_0 13$: Image, Subjective Norm and Self-Identity are not predictors of students' E-learning acceptance.

$H_0 14$: System Performance, System functionality, System Interactivity and System response are not predictors of students' E-learning acceptance.

$H_0 15$: Individualism/Collectivism and Masculinity/Femininity are not predictors of students' E-learning acceptance.

$H_0 16$: Facilitating Conditions, Training and Institutional Technical support are not predictors of students' E-learning acceptance.

$H_0 17$: Attitude towards using E-learning does not mediate the relationship between perceived usefulness and behavioral intention to use E-learning.

$H_0 18$: Attitude towards using E-learning does not mediate the relationship between perceived ease of use and behavioral intention to use E-learning.

1.6 Significance of the Study

This study is expected to present significant practical and theoretical contributions in the area of students' E-learning acceptance. From the practical perspective, the study is significant in that it will provide an insight into one of the most important issues in Saudi Arabian higher education, which is E-learning acceptance. The findings of this study are important to the development of E-learning acceptance and the successful future implementation of E-learning. This study will try to determine the factors that could influence the students' acceptance of E-learning in higher education institutions in Saudi Arabia. Determining the significant factors that could influence the students' acceptance is aimed to reduce the students' resistance to using the E-learning system. Thus, the findings from this study will contribute practically in solving the research problem, which is the students' E-learning acceptance. Moreover, it will help determine factors that promote and hinder E-learning acceptance in Saudi Arabian higher education institutions. This in turn would help the academic staff in preparing effective guidelines in order to interest their students in participating in E-learning activities. It will also provide the E-learning course designers with the positive key factors that could increase the students' willingness to use the E-learning system. The expected findings would be beneficial to the Ministry of Higher Education in improving their universities E-learning courses to engage the students in the learning processes.

From the theoretical point of view, the study hopes to contribute by producing an E-learning acceptance model based on the factors that have been confirmed to be most contributive. This will help the higher education institutions to work on the acceptance of their online courses and ultimately eliminate the student resistance in the future. The present study also hopes to contribute in proving the significant role of attitude in mediating the relationship between perceived ease of use, perceived usefulness and the students' acceptance of E-learning. While most studies in the area of technology acceptance have tested the demographical factors as antecedents and moderating factors, this research will test directly the relationship between the proposed demographical factors and the students' behavioural intentions (E-learning acceptance) towards using E-learning. Moreover, the researcher is proposed factors (psychological, social, technological, cultural & institutional) will be tested directly with the students' E-learning acceptance. The present research will investigate the ability of the TAM in predicting E-learning acceptance in a non-western culture (Saudi Arabia). Thus, other researchers who are working in cross-cultural research and the meta analysis field will find the research findings useful for the purpose of comparison in their future studies.

1.7 Scope of the Study

This study includes the analysis of various case studies in which highlighting the failure of E-learning acceptance. The study also tries to conduct a new study that focuses on the factors of E-learning acceptance and resistance by students in higher education in Saudi Arabia. The study tries to examine the TAM in terms of validity, applicability and the ability of TAM's core constructs to predict the users' acceptance in a non-western culture. The collected data will include information that will help the researcher to understand the psychological, social, technological, cultural, and institutional factors affecting E-learning acceptance in Saudi Arabia. This study will also try to create a suitable framework for the acceptance of E-learning in higher education through the use of acceptance models.

1.8 Limitations of Study

This study is limited to learner's acceptance and resistance factors in the area of E-learning acceptance in the Saudi Arabian higher education environment. The learners under study are limited to five government universities only. The methods of the study are restricted to the quantitative approach particularly the survey technique.

1.9 Operational Definition

Student Acceptance

It is defined as the extent to which a student's behavioural intention tends to regularly or fully use their institution's E-learning system throughout his/her academic studies in which the E-learning courses are designed to use a specific learning management system.

Higher education

This refers to education provided by Saudi Arabian government universities, vocational institutions, community colleges, and Teachers' colleges etc.

The Technology Acceptance Model (TAM)

It is an information systems theory that models how students come to accept and use a particular educational system.

E-learning

E-learning can be defined as a new form of learning in which the instructor and student in Saudi universities are separated by space or time where the gap between them is bridged through using a particular Learning Management System (LMS) such as the JUSUR (LMS).

1.10 Summary of chapters

This thesis is prepared and divided into five chapters. The first chapter introduces background of the study, problem statement, research objectives, research questions and the significance and scope of the study. It concludes with a summary of following chapters. In chapter two, a comprehensive literature was reviewed, analysed and cited. Third chapter describes the research design, approaches, framework, and further explanation of the methodology used in this research. The fourth chapter represents the obtained findings from the data analysis. Finally, the chapter five summarised the findings, discussions, implications and the recommendations for future research.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents a review of the literature and background to the concept of E-learning acceptance. The researcher will introduce glimpses over the chosen region of the present study. The researcher will identify and analyse the basic model used in this study and other related models. The current contribution of the researcher will be introduced, categorised and identified through a presentation of a research model. The predicting and affecting factors of E-learning acceptance will be extensively examined in the literature.

2.2 Glimpses of the Kingdom of Saudi Arabia

In 1932, Saudi Arabia was officially named the Kingdom of Saudi Arabia (KSA). It is located in the southwest of Asia continent, at the crossroads of Europe, Asia and Africa, extending from the Red Sea in the west to the Arabian Gulf in the east. The Kingdom of Saudi Arabia comprises about four-fifths of the Arabian Peninsula. The Kingdom of Saudi Arabia occupies approximately 2,250,000 square kilometers (868,730 square miles) which is bordered on the west by the Red Sea; on the north by Jordan and Iraq; on the northeast by Kuwait; on the south by The Yemeni Republic and the Sultanate of Oman; and on the east by the United Arab Emirates, Qatar, Bahrain and the Arabian Gulf (Royal Embassy of Saudi Arabia, 2009). The total Saudi population as of September 2004 increased to 22.7 million, compared with 13 million in 1985 and 21 million in 1999. The population growth rate in the KSA stands at 3.24 percent, which ranks somewhere between the lowest growth in

Kuwait (2 %), and the highest growth rate in the UAE (5.84 %). However, growth rates in the KSA rank above the general average of 2.37 percent. The high birth rate and the low mortality rate are the result of dedicated and intensive efforts towards health care issues (The Ministry of Foreign Affairs, 2006).

*Figure 2.1.*Saudi Arabia location
Source: SAMIRAD (2009)

2.3 Historical Development of Higher Education

The researcher in this study will investigate the E-learning acceptance issues in higher education institutions in Saudi Arabia. Thus, a brief history of higher education will be introduced to outline and frame the educational issues faced in higher education.

The higher education system in Saudi Arabia was improved gradually through its development from 1932 till 2009. It has five important stages which indicate the historical improvement of the higher education system in Saudi Arabia.

- **First Stage**

When the Kingdom of Saudi Arabia was established in 1932, the basic education available was limited to children of wealthy families' children who were living in the most important cities. Only one formal school called "scholarship preparing school", managed to send its students to Egypt. In 1945, the country's initiator, King Abdulaziz bin Abdelrahman Al-Saud, established some schools. In 1949, the first higher education institution was established in Makka and it was called "the College of Shari'a (Islamic Law). By 1951, the number of schools had reached 226 schools with a capacity of 29,887 students. In 1952, Teachers' College was established in order to prepare high school teachers. In 1953, the College of Shari'a and Arabic Language was established in Riyadh, which has new become a basic part of Imam Muhammad bin Saud University. At that time, the Ministry of Higher Education was not founded yet. In 1954, the Ministry of Education was founded and it was responsible for both basic education and higher education. (Royal Embassy of Saudi Arabia, 2009).

- **Second Stage**

This stage was important in developing the higher education system in Saudi Arabia because it witnessed the establishment of the oldest universities in Saudi Arabia. In 1957, King Saud University was the first university founded in Riyadh city and it was followed by the establishment of what are now three of oldest universities in the kingdom (Table 2.1). In 1970, the Saudi government was in need of productive and skillful citizens who could contribute to the country's development. In 1975, the Ministry of Higher Education was established in Saudi

Arabia. At that time, the Ministry of Higher Education had drew up a long term plan to ensure that the higher educational system would provide qualified and skilled citizens who could run the kingdom's economy. The two main objectives of the ministry's plan were: 1) Establish new universities and institutions throughout the kingdom to ensure that all citizens will have equal opportunities to continue their higher education. 2) Establish new courses in different majors for both undergraduate and postgraduate students (Royal Embassy of Saudi Arabia, 2009).

Table 2.1

Saudi Universities between 1957 -1967

The University Name	Years of	Location
(1) King Saud University	1957	Riyadh
(2) The Islamic University	1961	Medina
(3) King Fahd University of Petroleum	1963	Dhahran
(4) king Abdulaziz University	1967	Jeddah

- **Third Stage**

In this stage, three of the most important universities today were founded. In 1974, Imam Muhammad bin Saud University was founded. It is highly regarded for its excellence. In 1975, King Faisal University was founded. In 1979, Umm Al-Qura University was established in Makka (Table 2.2).

Table 2.2

Saudi's Universities between 1974 - 1979

The University Name	Years of	Location
(5) Imam Muhammad bin Saud University	1974	Riyadh
(6) King Faisal University	1975	Al-hassa-Dammam
(7) Umm Al-Qura University	1979	Makka

- **Fourth Stage**

This stage reveals two important issues. In 1993, the higher education supreme council of Universities was established by royal decree to work as a legislative coordinating council for all higher education institutions. The Higher Education Council has many duties including supervising the universities' education development, coordinating degrees and scientific departments among universities, encouraging scientific studies, and formulating the rules and regulations. The educational administrative and financial affairs, the implementation of university policy, and preparing the budget were under the responsibility of the university council. Furthermore, each university has a scientific council in order to encourage scientific studies and academic staff publications. Each college within the university has its own council charged with the responsibility to implement and carry out the general university policies, plans and regulations. Each department within the college has an organization paralleling that of the college and university. Higher education witnessed rapid expansion in the last three decades of the twentieth century. In 1998, King Khalid University was established by merging King Saud University and Imam Muhammad bin Saud University branches (Table 2.3).

Table 2.3

Saudi Universities in 1998

The University Name	Years of	Location
(8) King Khalid University	1998	Abha

- **Fifth Stage**

This stage is a recent stage in the higher education development plan. It has important events. In 2004, three universities were established: University of Taif, Taibah University and Qassim University. In the following year, four more universities were also established: Aljouf University, the University of Ha'il, Jazan University and Al-Baha University. In the same year, the Teacher's colleges came under the supervision of the Ministry of Higher Education. In 2006, two more universities were established and the colleges for women merged into the Riyadh Women's University. By 2007, two universities were established: Northern Border University and King Abdullah University of Science and Technology. All in all by 2008, there were 21 major universities, a large number of vocational institutes and an increasing number of private colleges (Table 2.4). At present approximately 600,000 students are enrolled at the higher education institutions.

Table 2.4

Saudi's Universities between 2004 – until now

The University Name	Foundation	Location
(9) University of Taif	2004	Taif
(10) Taibah University	2004	Medina
(11) Qassim University	2004	Qassim
(12) Aljouf University	2005	Aljouf
(13) The University of Ha'il	2005	Hail
(14) Jazan University	2005	Jazan
(15) Baha University	2005	Baha
(16) Najran University	2006	Najran
(17) Tabouk University	2006	Tabouk
(18) Northern Border University	2007	Arar
(19) King Abdullah University of Science and Technology	2007	Thuwal
(20) King Saudi Bin Abdulaziz Health Sciences University	2005	Riyadh
(21) Riyadh Girls University	2007	Riyadh

2.2 Higher Education in Saudi Arabia

Nowadays, Saudi Arabia is witnessing a comprehensive development in all fields and in different sectors. Higher Education is among the most important sectors, gaining a lot of Intention from the Saudi Arabian government. "University education has an advantage with the generous support including the construction of new universities, scientific and applicatory colleges and a huge financial allocation of the budgets. The universities in the Kingdom of Saudi Arabia include twenty government universities and four national universities" (National Report on Education Development in the Kingdom of Saudi Arabia, 2008).

2.2.1 Saudi Arabian Universities

In this thesis, the researcher focuses on the government universities not the national ones. Based on the last National Report on Education Development in the Kingdom of Saudi Arabia (2008), a brief description will be given about Saudi government universities. Saudi Arabia has 21 government universities and 15 private colleges (National Report, 2008). The Saudi universities are considering E-learning as a key solution in facing the growth in the number of male and female students' graduation from high schools (Albalawi, 2007). The latest official statistics indicate that the total number of students who graduated from high school was 622,314 and the female students represented 59% as shown below in Table 2.5.

Table 2.5

High school graduates enrolled at the Universities 2004-2006

Years of study	Inter. Diploma	Bachelor	Total
2004	79159	481042	560201
2005	84492	505932	590924
2006	93968	528346	622314

Source: National Report on Education Development in the Kingdom of Saudi Arabia (2008).

The government universities in Saudi Arabia are: King Saud University, Umm Al-Qura University, Islamic University, Imam Mohammed Bin Saudi University, King Fahad University of Petrol and Minerals, King Khalid University, King Faisal University, Taibah University, Taif University, Al-Qassim University Al-Jouf University, Hail University, Jazan University, Tabouk University, Baha University, Najran University, Northern Border University, King Abdullah Sciences and Technology University, and the newest universities, King Saudi Bin Abdulaziz Health Sciences University and Riyadh Girls University. According to the National Report on Education Development in the Kingdom of Saudi Arabia (2008), the number of universities has reached a total number of 21 government universities.

- **Umm Al-Qura University**

Umm Al-Qura University was established in 1981. The core of this university was the Religion College in Mecca that was founded in 1949. Currently, the university includes 24 colleges. The latest statistics (2005) indicate that there were 26,559 male and female students of which 59.09% are male students and 40.91% are female students. The total number of teaching staff is 1305 of which 265 of them are female. Furthermore, the university comprises 670 male and female technical and administrative cadre and another 102 female employees.

- **Islamic University**

Islamic University was founded in 1961, in Medina Monar'a city and it has 6 colleges. The latest statistics indicate that there were 6473 students in all the levels. Surprisingly, the majority of the Islamic University students are non-Saudi. The Islamic University consisted of 471 teaching staff besides a technical and administrative cadre of 460 employees.

- **Imam Mohammed Bin Saudi Islamic University**

Imam Mohammed Bin Saudi Islamic University was founded in 1984, in the capital city, Riyadh. The history of this university dated back to 1953, when the Arabic language college and the faculty of religion were established. It has 15 colleges. The latest statistics indicate that there were 28401 students of which the male students represent 62.63 % and the female students, 37.37%. The university has 1333 teaching staff members.

- **King Saudi University**

The oldest university in Saudi Arabia is King Saudi University, which was formed in 1957. It has 41 colleges. King Saudi University has 60868 students according to the latest statistics of 2005. The university has 3093 academic staff members and 2937 administrators.

- **King AbdulAziz University**

King AbdulAziz University was established in 1967 in Jeddah, as a national university. The university has 20 colleges and its students, according to the latest statistics (2005) were 57899 students in all levels. King AbdulAziz University has 2284 teaching staff members and it has 1328 technical and administrative staff.

- **King Fahd Petroleum and Mineral University**

King Fahd University of Petroleum and Mineral was founded in 1963 with one college called Petroleum and Mineral and presently it has 11 colleges. The latest statistics (2005) indicated that there were 9764 students. King Fahd Petroleum and Mineral University has 933 teaching staff members and 958 administrative members.

- **King Faisal University**

King Faisal University was founded in 1975. It has 31 colleges and the total number of students according to the latest statistics (2005) was 15659 students.

The teaching staff comprises 904 members and it has 854 technical and administrative staff members.

- **King Khalid University**

King Khalid University was founded in 1998 in Asir Region. It has 23 colleges and its students according to the latest statistics (2005), were 11146. The teaching staff comprises 811 members and it has 336 technical and administrative staff members.

- **Taibah University**

Taibah University was established in 2004, in Medina. The core purpose of this university was producing teachers. The University has 32 colleges and 11 support deanships. The total enrolment in the university was 28498 students, according to latest statistics report in 2005.

- **Qassim University**

Qassim University was established in 2004, in Qassim province. The University consisted of 25 colleges. According to latest statistics report (2005), the total number of enrolled students was 37055.

- **Taif University**

In 2004, the decision was made to change Umm Al-Qura University branch in Taif to that of an independent university called Taif University. The Taif Education College is considered as the oldest college in Taif region. It has 20 colleges. The total number of enrolled students at the university was 24138 students.

- **Al Jouf University**

Al-Jouf University was established in 2005, in Skaka City. Even though it was recent established, Al Jouf University has a long history. It was an integration of many colleges such as a Teachers' college, a Faculty of sciences and a community college. It has 18 academic colleges and the latest statistics report (2005) indicated that there were 14011 enrolled students.

- **Hail University**

Hail University was established in 2005, in Ha'il City. Hail University consisted of 10 colleges and, in the latest statistics report, it was pointed out that there were 13288 enrolled students.

- **Jazan University**

Jazan University was established in 2005, in Jazan City. The university has 12 academic colleges and the latest statistics indicated that there were 15003 male and female students.

- **Baha University**

Baha University was established in 2005, in Baha City. The university consisted of 10 academic colleges and the latest statistics indicated that there were 11914 male and female students.

- **Tabouk University**

The university was established in 2006 in order to provide university education to the region as a single government university in the province. The university consisted of 9 academic colleges and the latest statistics indicated that there were 10024 male and female students.

- **Najran University**

Najran University was established in 2006, in Najran City. The university consisted of 12 academic colleges and the latest statistics indicated that there were 6024 enrolled students.

- **Northern Border University**

In 2007, Northern Border University was established. The university consisted of 11 academic colleges and the latest statistics indicated that there were 7735 enrolled students.

- **King Abdullah University of Science and Technology**

King Abdullah University of Science and Technology is expected to be completed by the end of 2009. It is established with the aim of promoting research and science achievement in Saudi Arabia and around the globe, and as a leading research institution in the area.

- **Riyadh Girls University**

The university was established in 2007. The university consisted of 32 academic colleges and the latest statistics indicated that there were 10057 full-time students.

- **King Saudi Bin Abdulaziz Health Sciences University:**

King Saudi Bin Abdulaziz Health Sciences University was established in 2005, in Riyadh City. The university has 6 academic colleges. The university is a government university which is under the supervision of the general presidency of the National Guard. However, its syllabus is controlled by the Ministry of Higher Education.

2.3 E-learning and Acceptance

Today, it is commonly recognised that E-learning has many advantages that can be derived from its implementation in higher education environment. The significant role of investment in E-learning development is related to the benefits in improving our educational system. It is crucial to make sure that these expenditures will achieve the expected benefits. Hence, E-learning used in educational technology needs further research in order to ensure its benefits are derived successfully. The recent concern is whether E-learning system is acceptable and the significant factors affecting E-learning success (Chen, 2011). Thus, this study is interested in understanding the determining factors of students' acceptance in order to ensure that the budget provided for E-learning will not go to waste and also to ensure that the future new designs of E-learning will help to diminish the students' resistance towards E-learning. Currently, students' acceptance of E-learning is one of the most widely researched issues in institutions of higher education. The recent stream of acceptance studies is considering behavioral intention as the major construct in measuring acceptance (Payne et al, 2008). As such, we can assume that the students' decision or willingness to accept and use E-learning tools can be predicted by their behavioral intention. Nevertheless, the current research endeavors to understand and investigate the significant factors affecting the students' acceptance in government universities in Saudi Arabia. Thus, the future use of the E-learning system will reduce the students' resistance and engage them effectively on the E-learning courses.

2.3.1 E-learning Definitions

The roots of the E-learning system are old. Therefore, E-learning, or electronic learning, has been defined under a number of different names in the literature such as web-based learning; web-based instruction; technology-based learning; online learning; networked learning, etc. aside from being called distance learning (Gotschall, 2000). Bleimann (2004) stated that E-learning is a kind of self-directed learning that is derived from information and communication technology tools, particularly web-based technology. Nichols (2003) defines E-learning as comprising the usage of a combination of information and communication technology tools for educational purposes. Rosenberg (2001) has defined E-learning as "the use of internet technology to deliver a broad array of solutions that enhance knowledge and performance". Trombley and Lee (2002) defined E-learning as the new technique of learning which uses electronic instructional content delivered via Web-based tools or the Internet. Some of these definitions are a bit restrictive compared to others. Nevertheless, the researcher in this study will use the broader definitions which can include different forms of information and communication technology tools such as the Internet, Intranet, Interactive Video, satellite broadcast, etc. Recently, E-learning has accrued dissimilar characteristics in terms of content delivery, synchronicity, location, independence and mode, as listed below in Table 2.6. (Greenagel, 2002; Jack, & Curt, 2001; Ong, Lai, & Wang 2004; Romiszowski, 2004; Wagner, Hassanein, & Head, 2008).

Table 2.6

E-learning delivery types based on Synchronicity, Location, Independency and Mode

Delivery Types	Attribute	Denotation
Synchronicity	Asynchronous (flex-time)	content delivery occurs at a different time than receipt by the student such as programmed instruction and tutorials
	Synchronous (real-time)	content delivery occurs at the same time as receipt by the student such as video conferencing and electronic white boards
Location	Same place	students use an application at the same physical location as other students and/or the instructor
	Different place	Students use an application at various physical locations, separate from other students and the instructor
Independency	Individual	students work independently from one another to complete learning tasks
	Collaborative	students work collaboratively with one another to complete learning tasks
Mode	Electronically only	all content is delivered via technology, there is no face-to-face component
	Blended	E-learning is used to supplement traditional classroom learning

Source: Greenagel, 2002; Jack and Curt, 2001; Ong et al., 200; Romiszowski, 2004; Wagner, et al., 2008.

2.3.2 Definitions of Acceptance

The term "acceptance" has no unique definition in the literature and the concept of acceptance revealed many different definitions of acceptance (Succi, 2007). A common logic definition of acceptance is the positive answer to an offer (Succi, 2007). The online dictionary defines acceptance as:

I. "The mental attitude that something is believable and should be accepted as true ".

II. "The act of accepting; receiving what is offered, with approbation, satisfaction, or acquiescence".

III. "Favorable reception"; "its adoption by society"; An agreement to terms or proposals by which a bargain is concluded and the parties are bound or the act of taking something that is". (World web Online, 2009).

The acceptance concept has been defined in a variety of domains. Thus, the researcher in this study will focus on specific concepts and definitions that are related to the technology acceptance theories and models. For instance, the basic theoretical foundation for this research was Technology Acceptance Model (TAM) by Davis (1989) who identified the acceptance concept by using the term "use". Thus, the TAM describes technology acceptance as" users' decision about how and when they will use technology" (Davis, 1989). Furthermore, the Innovation Diffusion Theory (IDT) has defined acceptance with the term adoption. Adoption is defined as a decision to make full use of an innovation as the best course of action available. Rogers (1995, p.21) has a unique definition of adoption *"the adoption* *process as the mental process through which an individual passes from first hearing about an innovation to final adoption".* The TAM definition of acceptance is considered as a formal definition of acceptance and is used in this study.

2.3.3 E-learning Acceptance (ELA)

In the area of technology acceptance, the term 'technology acceptance' is used by researchers from different backgrounds and in a variety of ways. A number of models have been developed to investigate, understand and predict the factors affecting the users' acceptance of information technology in different contexts rather than only define the concepts of acceptance. Dillon and Morris (1996, p. 4) defined students' acceptance of technology as "the demonstrable willingness within a user group to employ information technology for the tasks it is designed to support". This research adopts Dillon and Morris' definition of E-learning acceptance.

2.4 E-learning Acceptance Models and Theories

In this section of the thesis, various models and theories are presented and reviewed in order to improve the understanding for the historical background of the current perspective of E-learning acceptance issues. It gives an overview about the acceptance models and theories. The following models and theories cited below are deemed to be important in this study.

2.4.1 Theory of Reasoned Action (TRA)

The Theory of Reasoned Action (TRA) by Fishbein and Ajzen (1975) is considered as one of the fundamental theories on human behaviour. The TRA is a well-developed and validated behavioral prediction model that has been used successfully to predict users' behavior. It was established in order to examine the relationship between attitudes, subjective norm and behaviors. The TRA assumes that specific intentions and behaviours can be predicted by attitudes toward behavior and subjective norm. The TRA is very common, "designed to explain virtually any human behaviour" (Ajzen & Fishbein 1980, p. 4). The TRA was developed and extended to become the basis for some of the most influential models and theories in technology acceptance such as the Technology Acceptance Model (TAM) by Davis (1989), which is the basic model of this research and the Theory of Planned Behavior (TPB) by Ajzen (1991). According to Venkatesh et al., (2003), the two main core constructs of the TRA are attitude toward behaviour and subjective norm. Attitude is defined as "an individual's positive or negative feelings about the target behaviour" (Fishbein & Ajzen, 1975, p. 216). Subjective norm is defined as "the person's perception that most people who are important to him think he should or should not perform the behaviour in question" (Fishbein & Ajzen, 1975, p. 302). According to the TRA, attitude is a purpose of belief. Therefore, performing a specific behaviour is directly related to the positive attitude which is a form of positive outcome as a result of performing specific beliefs and vice versa. Formally, the Theory of Reasoned Action can be presented as follows (Fishbein & Ajzen 1975, p301):

$$\mathbf{B \sim BI = (AB)\ W1 + (SN)\ W2}$$

Where B = a specific behaviour, I = intention to perform behavior B, AB = attitude toward performing behavior B, SN = subjective norm, and W1 and W2 = empirically determined weights that reflect the relative influence of the AB and SN, and components of BI. The Theory of Reasoned Action model is presented in Figure 2.2.

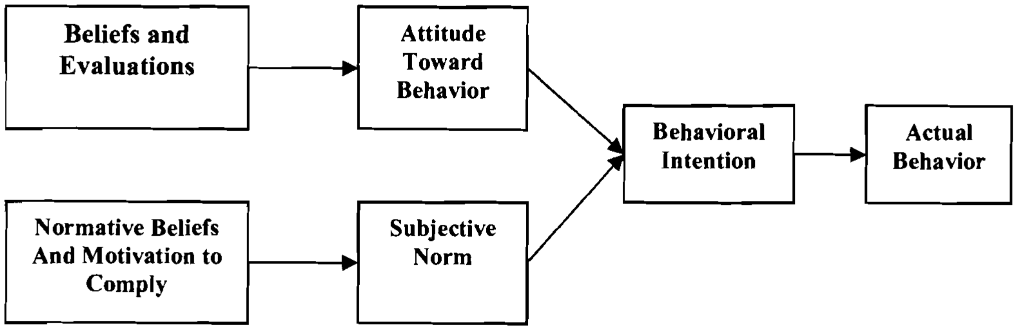

Figure 2.2. Theory of Reasoned Action (TRA)
Source: Fishbein and Ajzen (1975)

2.4.2 Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) is one of the most widely applied models to studies on individual acceptance and the usage of technologies. The TAM was adapted from the more general human behaviour which is the Theory of Reasoned Action (TRA). The model was initially developed and validated by Davis (1986, 1989). Davis et al. (1989) developed TAM as a theoretical basis, to provide an explanation of the determinants of human computer usage behaviour that is general, directly from generic TRA (Fishbein & Ajzen, 1975). Moreover, according to Davis, Bagozzi, and Warshaw (1989, p. 985), the TAM is the proficient of explaining users' behavior crossways of a broad range of end-user computing technologies, alongside both parsimonious and hypothetically justified. The TAM model has been extensively validated across an array of settings and contexts (Davis et al., 1989; Venkatesh & Morris, 2000; Venkatesh & Davis, 2000; Venkatesh, Morris, Davis, & Davis, 2003). Furthermore, many studies have examined the TAM's applicability and validity to investigate students' acceptance in using the E-learning technology in higher education institutions (Landry, Rodger & Hartman, 2006; Masrom, 2007; Ngai et al., 2007; Roca et al. , 2006; Saadé & Galloway, 2005; Saadé & Bahli, 2005; Selim, 2003). The TAM suggests that perceived ease of use and perceived usefulness of Information Technology (IT) are the main determinant factors of IT usage. Davis (1993, p. 447) defines perceived ease of use (PEOU) as, "the degree to which an individual believes that using a particular system would be free of physical and mental effort". Moreover, Davis (1989) defined perceived usefulness (PU) as "the degree to which a person believes that using a particular system would enhance his or her job performance". The two independent constructs of the TAM: PU and PEOU, have the capability to predict an individual's attitude towards using a particular system. Both constructs, PU and PEOU, will influence an individual's attitude (A). Davis et al., (1989) defined attitude as an individual's positive or negative assessment of the behavior and is a function of perceived usefulness and perceived ease of use. Attitude (A) will influence the behavioral intention (BI) of using a particular system, and in sequence, actual use of the system (AU). Actual use (AU) will be predicted by the individual's behavioral intention (BI). Behavioral intention (BI) refers to an individual's intention to perform a behavior and is a function of attitude and perceived usefulness (Davis et al., 1989). The relationships between the mentioned constructs are presented in Figure 2.3, as shown below.

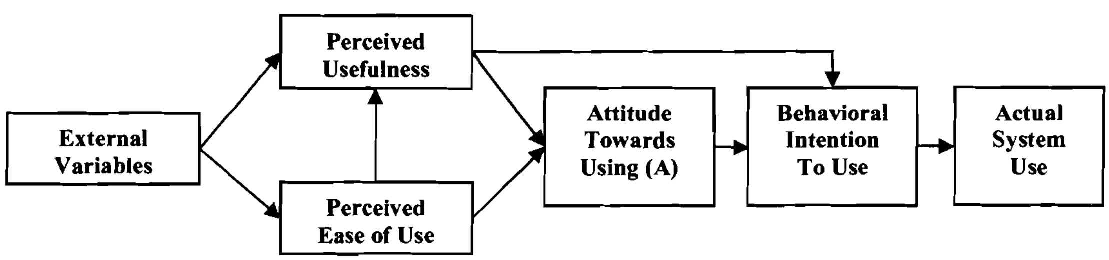

*Figure 2.3.*Technology Acceptance Model (TAM)
Source: Davis et al. (1989)

Venkatesh and Davis modified the TAM model to produce TAMII in 2000 by eliminating the impact of attitude in the Theory of Reasoned Action (TRA). The present researcher discusses this model because in this research image and subjective norm were used as variables for the social factor. Venkatesh et al., (2000) have extended the TAM on three approaches. Firstly, they extended the TAM model by including additional factors for interrelated constructs. Secondly, they initiated additional factors associated with beliefs and finally they examined the previous circumstances wherein perceived usefulness and ease of use were deliberated. Venkatesh and Davis (2000) explain in TAMII, perceived usefulness and usage intentions in terms of social influence (subjective norm, image, voluntariness, & experience) and cognitive instrumental processes (job relevance, output quality, perceived ease of use & result demonstrability (Figure 2.4).

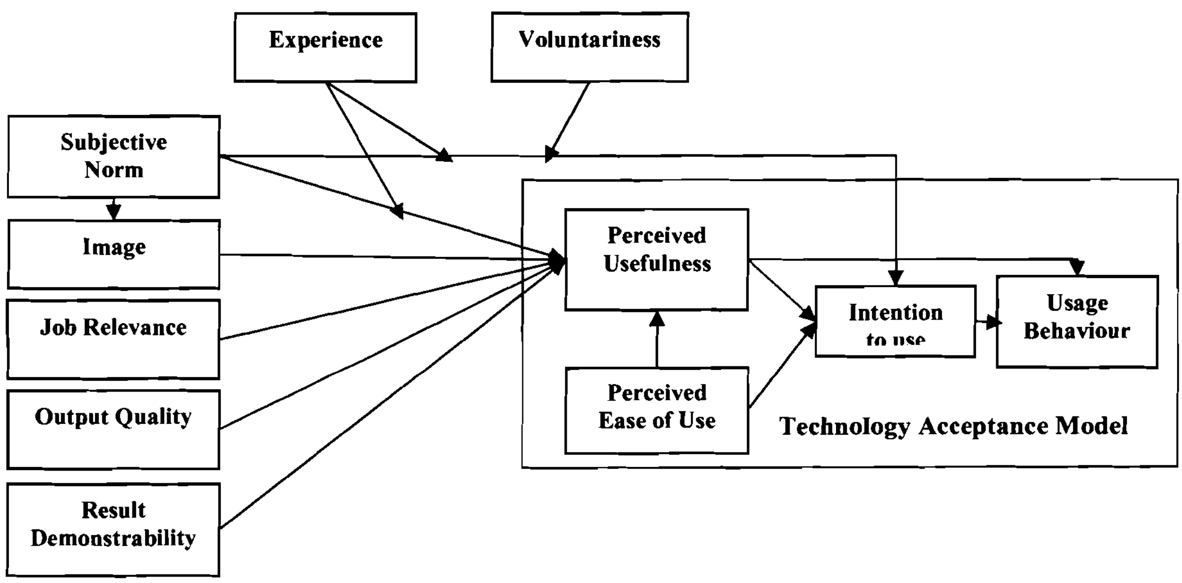

*Figure 2.4.*Technology Acceptance Model (TAM 2)
Source: Venkatesh, et al., 2000

2.4.3 Theory of Planned Behavior (TPB)

The Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975) was the root of the Theory of Planned Behavior (TPB) (Ajzen, 1988). TPB has the TRA objectives which aim to understand the human behavior by capturing the determinant factors of behavioral intentions (Ajzen, 1988; Fishbein & Ajzen, 1975). As extension of the TRA, the basic theory of TAM and TPB were discussed. The TPB was established in attempting to provide better understanding for the determinant factors of behavioral intentions. The TPB model has addressed perceived behavioral control as a key factor that can predict the behavioral intention to use the technology, beside the subjective norm and attitude. Briefly, the TPB core constructs definitions are given in Table 2.7 below and their relationships is depicted in Figure 2.5.

Table 2.7

TPB constructs definition

Construct	**Definition**
Intention	Refers to individual's intention to perform a behavior and is a function of Attitude, Subjective Norm and Perceived Behavioral Control
Attitude	Refers to individual's positive or negative evaluation of the behavior (Ajzen, 1988)
Subjective Norm	Refers to individual's "perception of social pressure to perform or not to perform the behavior" (Ajzen, 1988, p.132)
Perceived Behavioral Control	Refers to the "perceived ease or difficulty of performing the behavior and reflects past experience as well as anticipated impediments and obstacles" (Ajzen, 1988,p.132)

Source: **Yayla & Hu (2007)**

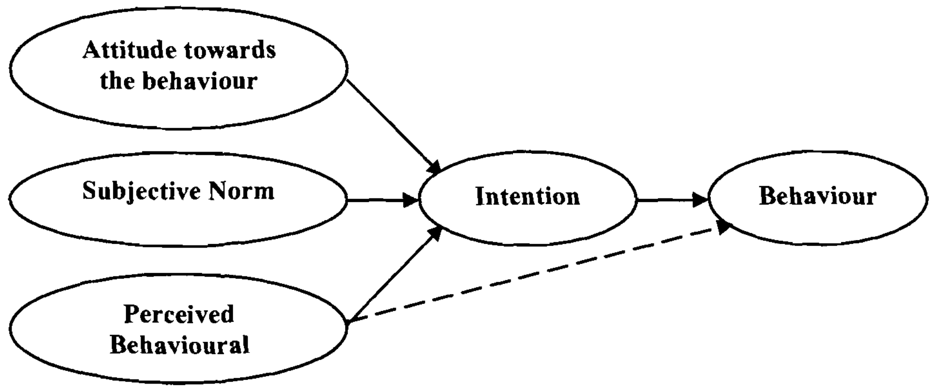

Figure 2.5. TPB constructs' relationships
Source: Ajzen (1988)

The TPB has been extensively used in the literature of technology acceptance and many researchers have widely applied the TPB in their research in order to predict the technology acceptance behavior (Chau & Hu, 2001; Harrison, Newman, & Roth, 2006; Mathieson, 1991; Pavlou & Fygenson, 2006; Taylor & Todd, 1995; Venkatesh et al, 2003). Many researchers have already combined the TAM and the TPH in order to elaborate the TAM core constructs (Pavlou & Fygenson, 2006; Venkatesh et al, 2003; Venkatesh & Davis, 2000).

2.4.4 Unified Theory of Acceptance and Use of Technology (UTAUT)

The Unified Theory of Acceptance and Use of Technology (UTAUT) has two constructs which are the image as social constructs and facilitating conditions as organisational factor. The UTAUT was developed through a comprehensive review of eight most well-known models/theories (Venkatesh et al., 2003). The eight models and theories are: the Theory of Reasoned Action (TRA), the Technology Acceptance Model (TAM), the Motivational Model (MM), the Theory of Planned Behavior (TPB), Combined TAM and TPB (C-TAMTPB), the Model of PC Utilization (MPCU), the Innovation Diffusion Theory (IDT), and the Social

Cognitive Theory (SCT). Venkatesh et al. (2003) stated that the UTAUT model is able to explain up to seventy percent of variance in intention to use technology. The UTAUT has four predictors of behavioral intention: performance expectancy, effort expectancy, social influence and facilitating conditions. Brief definition of the UTAUT core constructs are given in Table 2.8.

Table 2.8

UTAUT constructs definition

Construct	Definition
Performance expectancy	The degree to which an individual believes that using the system will help him or her to attain gains in job performance.
Effort expectancy	The degree of ease associated with use of the system.
Social influence	The degree to which an individual perceives that important others believe he or she should use the new system.
Facilitating conditions	The degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system.

Source: Venkatesh et al. (2003) pp.447-453

The UTAUT Model has three direct determinants of behavioral intention to use (performance expectancy, effort expectancy, and social influence) and two direct determinants of usage behaviour (intention and facilitating conditions). The UTAUT Model has four moderating factors which influence the major constructs such as experience, voluntariness, gender, and age. Despite the significant influence of the proposed variables, Venkatesh *et al.* (2003) suggested that future research should attempt to *"test additional boundary conditions of the model in an attempt to provide an even richer understanding of technology adoption and usage behaviour"*. The relationships between the mentioned variables are shown in Figure 2.6.

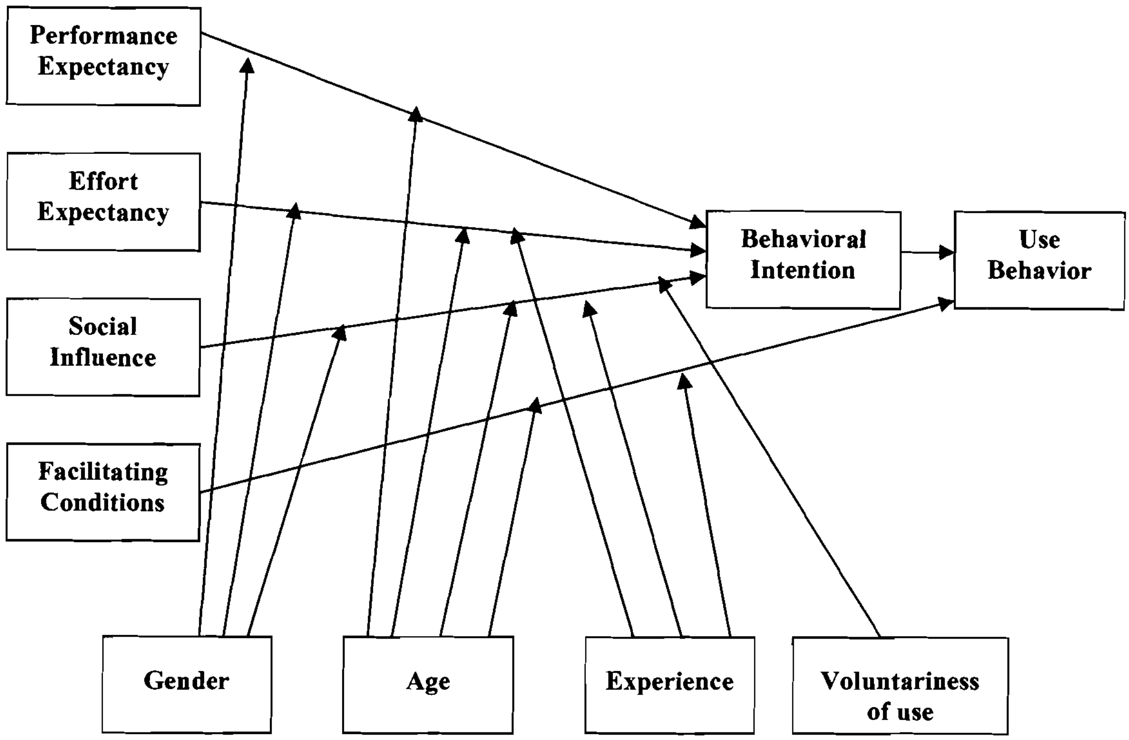

Figure 2.6. Unified Theory of Acceptance and Use of Technology (UTAUT)

Source: Venkatesh, et al. (2003).

2.4.5 Innovation Diffusion Theory (IDT)

According to Rogers (1995), the DOI theory perceives that new technologies are used depending on specific channels and social norm. The users have varying degrees of willingness to use the technology, and, with the passing of time, the users normally adopt the technology (Rogers, 1995). According to Rogers (1995) Innovation Diffusion Theory has five characteristics of a technology determining its acceptance. They are relative advantage, compatibility, complexity, trialability, and observability. The Innovation Diffusion Theory core constructs definitions are given in Table 2.9

Table 2.9

Innovation Diffusion Theory constructs definition

Construct	Definition
Relative advantage	the extent to which it offers improvements over available tools
Compatibility	its consistency with social practices and norm among its users
Complexity	its ease of use or learning
Trialability	the opportunity to try an innovation before committing to use it
Observability	the extent to which the technology's gains are clear to see

Source: **Rogers (1995)**

2.4.6 Diffusion of Innovation (DOI)

Moore and Benbasat (1991) adapted the characteristics of Rogers' model and came up with the Diffusion of Innovation (DOI) theory which has the ability to measure adaptation of information technology innovations. According to Venkatesh et al. (2003), the DOI has six constructs relying on Rogers' five characteristics: relative advantage, compatibility, complexity, observability and trialability. Moore and Benbasat's contribution in this theory was in providing additional constructs such as image, voluntariness, results demonstrability and visibility. The additional constructs have great influence in improving the original instruments. The adoption of image constructs in recent research need more extensive reviews in these theories and models in order to understand the constructs' original definition, validation, elaboration, and the authors' contribution by these constructs. Thus, the reviewed models and theories have given enormous insight into the proposed factor in this research and also assisted the authors to identify the constructs' definitions and their relationship with the behavioral variables. IDT core constructs definitions are given in Table 2.10.

Table 2.10

Diffusion of Innovation (DOI) constructs definition

Core constructs	Definition
Relative Advantage	"The degree to which an innovation is perceived as being better than its precursor" (Moore & Benbasat, 1991, p. 195).
Image	"the degree to which use of an innovation is perceived to enhance one's image or status in one's social system" (Moore & Benbasat, 1991, p. 195).
Visibility	The degree to which one can see others using the system in the organization" (adapted from Moore & Benbasat, 1991).
Compatibility	"the degree to which an innovation is perceived as being consistent with existing values, needs, and past experiences of potential adopters" (Moore & Benbasat, 1991, p. 195).
Results Demonstrability	"the tangibility of the results using the innovation, including their observability and communicability" (Moore & Benbasat, 1991, p. 203).
Voluntariness of Use	"The degree to which use of the innovation is perceived as being voluntary, or of free will (Moore & Benbasat, 1991, p. 195).

Source: Moore and Benbasat (1991) cited in Venkatesh et al., 2003.

2.5 The Role of Demographic Characteristics in Students' Acceptance of E-Learning

Demographic characteristic differences exist in many sectors, including the educational setting. Many researchers have extensively examined the role of demographic characteristics in the level of students' acceptance of using E-learning tools. Many researchers have proved that gender and age play an important role in the individuals' behaviour towards using technology (Gefen & Straub, 1997; Jackson, 2001; Ong & Lai, 2006; Speier & Venkatesh, 2002; Tolhurst & Debus, 2002; Yuen and Ma 2002). The prior experience in using new technology was a crucial determinant of users' behavioral intention (Gefen, Karahanna, & Straub, 2003; Ramayah, 2004, 2006; Taylor and Todd, 1995). In previous TAM studies, the demographic factors were examined as external factors and moderating factors in order to observe whether these factors affected the technology acceptance or not.

Ong and Lai (2006) in their study have inspected the gender differences in perception and its relationship with E-learning acceptance. The authors show that gender has a significant effect on students' utilisation of E-learning tools. In this study, males were found to have more knowledge than females in using the online tools. The study also shows that the male students had more experience than female students. The result of this study shows that there is a significant gender difference that affects the main predictors' construct of TAM model. It also shows that men's rating of perceived usefulness, perceived ease of use and computer self-efficacy are better than women's rating.

Gefen and Straub (1997) conducted a study in order to investigate the students' perception towards using electronic mail. The study found that gender and perceived ease of use have significant influence on students' intention to use e-mail. This study had extended the TAM model to include the demographical characteristics such as gender and tested it in terms of its moderating influence. The major findings indicated that the TAM was applicable and valid in order to predict the students' perception towards using e-mail services.

Tolhurst and Debus (2002) investigated the students' acceptance based on their knowledge, attitude, learning activity structure, and ability. The researchers used the hypermedia tools in order to test the learners' acceptance of control opportunity. They made a comparison between their factors and the TAM model factors in terms of significant influence. They found that students' beliefs, institutional culture and gender differences influenced students' acceptance besides the technology acceptance model's main predictors.

Hoskins and Hooff (2005) conducted a research to determine the students' usage of online learning based on gender differences. The authors confirmed that the students' gender is a very important factor which can predict the students' acceptance of using web-based tools learning. Hoskins and Hooff (2005) concluded that males were more familiar with using online tools than the female students. This result is consistent with the previous research findings (Ibrahim & Abu Samah, 2002).

Ibrahim Abu Daud and Abu Samah (2002) conducted a study on students' attitude towards online learning. The research showed that the male students had positive attitude and readiness more than the female students. The study utilised the TAM as the foundation model for their research. The findings showed that the gender significantly influenced the students' behavioral intention to use online tools. Thus, males seemed to have a high level of intention than female students (Ibrahim et al., 2002). However, Alshare et al. (2004) found that the gender had no significant influence or relationship in technology usage based on the TAM model. This was consistent with Masrom (2007) who investigated the TAM related works tasks and E-learning in the Malaysian higher education context. The study confirmed the applicability and the validity of the TAM model and its related constructs in predicting the students' acceptance of using E-learning in Universiti Technology

Malaysia (UTM). The results revealed that no significant differences were found between the students' age and gender and both attitude and the students' intention to use e-learning.

Milis, Wessa, Poelmans, Doom and Bloemen (2008) conducted a research to examine the impact of gender on the acceptance of the virtual learning environment particularly the E-learning system in the educational context. The researcher confirmed that no significant difference existed between the males and females in the proposed research model.

Koohang (2004) investigated students' perceptions toward using the online digital library and resources. The target sample was 154 undergraduate students. Age was found to be an insignificant factor. Nevertheless, gender and prior experience were found to be significant factors influencing the perception of the online library tools. Male students had significantly higher positive perceptions toward using the digital library compared to female students. Students who had more prior experience particularly with the Internet had significantly higher positive perceptions in using the online library tools.

In terms of faculty, the literature confirmed that there were significant differences in students' usage of E-learning based on their majors or faculties. Alexander and Golja (2007) conducted a research to examine the influence of students' experiences in obtaining best quality in using E-learning system. The researcher indicated that there were significant differences among the different faculties' members.

Internet experience can be defined as the extent of a person's experience to perform specific tasks using the Internet. Several studies have used the experience as an antecedent in the Technology Acceptance Model and they have tested the relationship between perceived ease of use and perceived usefulness (Chang, 2004; Wolk, 2007). At the same time, some studies have tested internet experiences as an external variable with the intention to use distance and E-learning (Fusilier & Durlabhji, 2005; Kerka, 1999, Rezaei et al. 2008).

Rezaei et al. (2008) has applied and extended the Technology Acceptance Model to predict students' acceptance of E-learning application in agriculture at the higher educational level. They have extended the TAM to include more external variables such as internet experience, computer self-efficacy, computer anxiety and affect and age. The results demonstrated that there was a positive relationship between students' intention to use E-learning and its perceived usefulness, perceived ease of use, internet experience, computer self-efficacy and affect. Conversely, computer anxiety and age had negative relationships with students' behavioral intention to use E-learning application.

Fusilier and Durlabhji (2005) conducted a study to explore behavioral intention of users' acceptance of internet technology. They incorporated the experience with the direct relationship with the intention to use Internet technology. The findings showed that the relationship between intention of using the Internet and experience was stronger and that it depended on the level of experience. Moreover, the experience had a complex influence on the students' intention to use internet technology. Thus, the level and the rate of experience play a significant role in the intention to use a particular system.

Taylor and Todd (1995) assessed the relationship between the information technology usage and prior experience using the TAM. He found that users with prior experience indicated intention to use IT more than the users who are not experienced. This was consistent with Stoel and Lee (2003), who investigated the effect of student experience on Web-based learning acceptance using the Technology Acceptance Model as a basic framework. The results revealed that the experience was directly related to students' intention to use the courseware as well as increase the students' perceptions for the courseware to be useful and easier in use.

In conclusion, the studies above suggested that the demographical factors play a significant role in determining the students' acceptance of E-learning usage in the education context. Yet, the students' gender, age and level of experience should be addressed in order to investigate their influence on the students' acceptance. While the Saudi Arabian educational system is largely a single gender education system, the gender differences could affect the students' acceptance of using E-learning.

2.6 Technology Acceptance Model (TAM) and its Constructs as a Foundation to Study the Students' Acceptance

The Technology Acceptance Model (TAM) has been extensively employed in the educational context in order to measure and predict students' behavioral intention to use a particular system. The TAM theorizes that perceived usefulness (PU) and perceived ease of use (PEU) influence the attitude (A). Perceived usefulness (PU) and perceived ease of use (PEU) were considered as the two important key determinants of users' intention to use the technology. Davis et al. (1989) stated that the goal of the TAM is "to provide an explanation of the determinants of computer acceptance that is, in general, capable of explaining user behavior across a broad range of end-user computing technologies and user populations, while at the same time being both parsimonious and theoretically justified". According to Lee, Kozar, and Larsen (2003), the TAM has four periods of development namely: Model Introduction Period, Model Validation Period, Model Extension Period, and Model Elaboration Period. The chronological progresses of TAM Research are given in Figure 2.7.

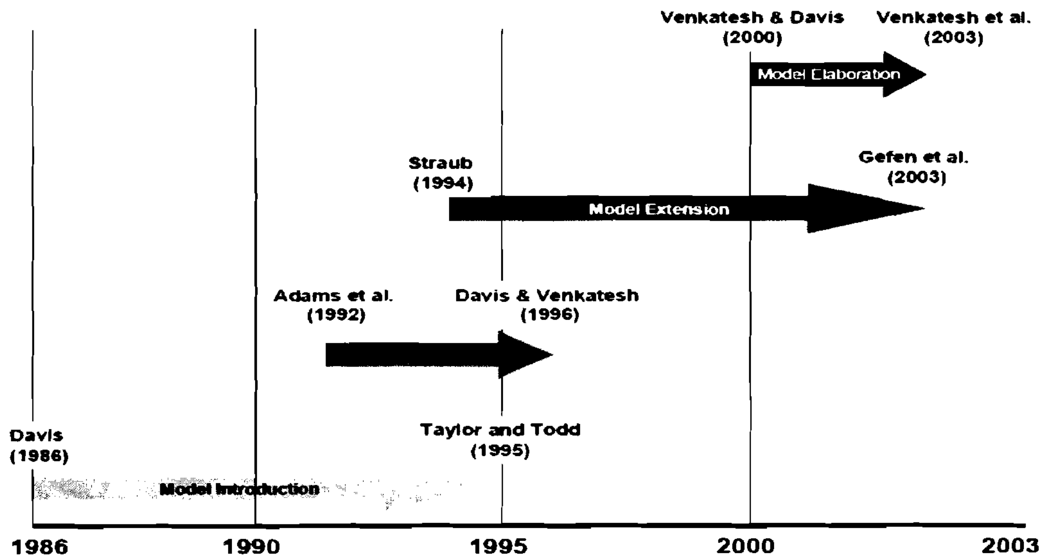

*Figure 2.7.*Chronological Progress of TAM Research
Source: Lee, Kozar and Larsen (2003)

2.6.1 Perceived Usefulness (PU)

Perceived usefulness is defined as "the degree to which a person believes that using a particular system would enhance his or her job performance" (Davis, 1989, p. 320).

In other words, when the students' perceived E-learning tools as useful, they will use it to improve the performance of their tasks. Adam et al. (1992) reported that the users' acceptance of computer technology is driven to a large extent by perceived usefulness. This result is consistent with Igbaria's (1990) study, which indicated that perceived usefulness is associated with the acceptance of system usage.

Segars and Grover (1993) provided practical definitions of the usefulness by its determinant factors. Their study indicated that the main determinants of usefulness as constructs are the ability to work more quickly, to make learning a meaningful process, to make jobs useful, to increase the tasks' productivity and effectiveness, as well as performance (Ong & Lai, 2006). Therefore, the E-learning system with a high level of perceived usefulness significantly influences the students' acceptance of using its tools. This is consistent with Venkatesh and Morris' (2000) findings, which indicate that perceived usefulness has a significant effect on the students' behaviour intention to use online learning tools.

Sun, Tsai, Finger, Chen, & Yeh (2008) conducted an empirical study to investigate the significant factors affecting online satisfaction. The TAM was employed in this research in order to predict the factors influencing the learning management system satisfaction. The research stated that perceived usefulness of the online learning system would positively influence the learners' satisfaction with this system.

Tung and Chang (2008) utilised the TAM to investigate the students' intention to use online courses. This study investigated whether the Taiwanese students accepted the online courses or not. The study pointed out that when the students perceived the online courses as useful tools, their intention to use these courses was higher.

Rezaei, Mohammadi, Asadi, and Kalantary (2008) conducted a research in Iran by implementing the TAM in predicting E-leaning system in Agriculture schools in higher education. The study demonstrated that "there was a strong direct influence of perceived usefulness on students' intention to use e-learning" (Rezaei et al., 2008, p.90). The main findings of this research were the positive relationship between students' intention to use E-learning and its perceived usefulness, internet experience, computer self-efficacy and affect. However, there was no relationship between computer anxiety and age with students' intention to use E-learning.

In brief, the results from the previous studies illustrated the importance of Perceived usefulness (PU) as a construct in determining the students' acceptance of E-learning in the higher educational environment. It also plays a significant role in making the students use a particular system.

2.6.2 Perceived Ease of Use (PEU)

"Ease of use" is defined as "the degree to which a person believes that using a particular system would be free of effort" (Davis, 1989, p.320). Many studies have confirmed that the level of acceptance is increased by the ease of use of a particular system (Davis, 1989; Davis & Venkatesh, 1996; Kaasinen, 2005; Lai & Ong, 2004; Sun et al., 2008). Perceived ease of use can clarify the users' perception of the amount of effort necessary to employ a particular system and how using a particular technology will be effortless (Davis et al., 1989). Many studies have proven that perceived ease of use has influenced perceived usefulness (Babenko-Mould, Andrunsyszyn & Goldenberg, 2004; Davis et al., 1992; Gefen and Straub, 2000; Ngai et al., 2007; Masrom, 2007; Ong et al., 2004; Saadé & Bahli, 2005; Selim, 2003; Szajna, 1996). Thus, the E-learning designers must take this into consideration and design a more friendly, easy to use and simple E-learning system in order to ensure that all kinds of students would be able to use the system effectively. Heijden (2004) stated that perceived ease of use and perceived enjoyment have a more significant effect than perceived usefulness. Nevertheless, Davis has confirmed that perceived usefulness is more important than perceived ease of use.

Ong and Lai (2004) conducted a research to examine students' acceptance of E-learning by extending the TAM with gender as a demographic characteristic. The study shows that when the students have a high level of belief that online courses are easy to use, the rate of students' acceptance of online learning will be increased. In addition, they found that the students' gender has a significant relationship with the students' intention to use E-learning. Furthermore, the male students had more intention to use the online learning more than the female students.

Furthermore, Venkatesh and Morris (2000) extended the TAM and its related constructs to include gender, playfulness and anxiety that influence the perception of ease of use of the system. They indicated that the women seemed to be motivated and driven by the ease of use of the system. Their model has been supported by many studies and the model explains up to 60% of the variability of perceived ease of use (PEU).

Many studies have confirmed that perceived ease of use has a positive correlation with behavioral intention to use a particular system (Chau, 1996), and in using computer PC (Moore & Benbasat, 1991). Some of these researches have tested the direct relationship between perceived ease of use and behavioral intention (Davis, 1989; Davis et al, 1992; Venkatesh & Morris 2000; Venkatesh & Davis, 2000), while other research tested indirectly through perceived usefulness (Davis, 1989, Igbaria et al., 1997; Venkatesh & Davis, 2000).

Many research results indicated that perceived ease of use influenced perceived usefulness (Lai & Ong, 2004; Saadé & Bahli, 2005). The relationships between perceived ease of use and computer self-efficacy have empirically been validated (Davis et al, 1989; Lai & Ong, 2004, Lee, 2006). Evidence from these studies stated that the high level of computer self-efficacy has a positive relationship with perceived ease of use. Lee (2006, p.1) has pointed out that "computer self-efficacy demonstrated significant influence on perceived ease of use".

In brief, the literature shows that perceived usefulness (PU) and perceived ease of use (PEU) were two keys that determine and predict the users' intention to use a particular system. In this study, both PU and PEU will be the main determinates of the students' acceptance and use of E-learning (Davis, 1989).

2.6.3 Attitude (A)

Attitude is defined as an "individual's positive or negative feelings about performing the target behavior" (Fishbein & Ajzen, 1975, p.216). The Theory of Reasoned Action (TRA) was the theoretical basis of the Technology Acceptance Model

(TAM). Thus, this construct was the core construct of the TRA. Nonetheless, the Theory of Planned Behavior (TPB) has also adapted this construct from the original TRA. In the TAM, attitude was originally formulated (Davis, 1989). However, Davis et al. (1989) cited in Yousafzai, Foxall and Pallister (2007, p.265) have demonstrated that "the explanatory power of the TAM is equally good and it is more parsimonious without the mediating attitude construct". Furthermore, Venkatesh and Davis (1996) have eliminated attitude from their proposed model because attitude as a mediating construct did not seem to mediate fully the effect of perceived usefulness (PU) and perceived ease of use (PEU) on behavioral intention (BI). On technology acceptance, many studies have confirmed that attitude has positive relationships with perceived ease of use (PEU), perceived usefulness and intention to use E-learning in a mandatory setting (Brown, 2002; Lee et al., 2005; Ngai et al., 2005; Saadé & Bahli, 2005). Conversely, Wolski & Jackson (1999) stated that the relationship between attitude and behavioral intention was not supported. Consistent with this, Davis et al. (1989) have also shown that attitude may not be a strong determinant of intentions in workplace settings compared to other factors such as PU. This is the reason behind eliminating the attitude construct from the original TAM for some studies in voluntary environments, not the mandatory one, while other researchers eliminated the attitude construct in order to simplify their research model. The TAM used in this study would include attitude as a mediating construct in order to confirm that attitude could mediate in full the relationships between PU, PEU and BI to use E-learning in the Saudi Arabian higher education context.

Brown (2002) conducted a research in South African University in order to investigate factors affecting perceived ease of use of web-based learning technologies. The author extended the TAM to include different individuals and technological factors such as ease of finding, ease of understanding, self-efficacy and computer anxiety. The proposed factors were directly tested with TAM's constructs. The findings indicated that attitude has an important role in enhancing the students' ease of using the web-based learning.

Lee, Cheung and Chen (2005) modeled the students' acceptance through the TAM extension to include extrinsic factors (perceived usefulness and ease of use) and intrinsic factors (perceived enjoyment). The study was conducted in Hong Kong involving 544 universities. Their findings related to attitude were supported with the proposed factors. However, only one case was not supported. That was the relationship between the attitude towards using online tools and the ease of usage.

Meanwhile, Ngai et al. (2005) conducted a research in Hong Kong as well with the purpose of examining the adoption of WebCT using the Technology Acceptance Model (TAM). The authors extended the TAM to include technical support as external variable and examined the students' acceptance of the learning management system (WebCT). The results indicated that usefulness and ease of use were the main factors affecting the attitude of students using WebCT. The additional factor had a direct effect on both the perceived ease of use and perceived usefulness.

Several studies in the area of technology acceptance were conducted to explore the attitude component because it is very vital to determine the students' intention towards using E-learning tools. Bhattacherjee (2000) found that usefulness and a user-friendly environment can determine the attitudinal behavior to use and accept the technology. Furthermore, Lin and Lu (2000) conducted a study to determine the role of individual's attitude in using web sites. The results indicated that the two main constructs of the TAM explain up to 67% of the individual's attitude. Thus, additional factors should be examined in order to explore more components that could determine and affect the students' attitude towards using the E-learning system.

In conclusion, the literature revealed that attitude is a crucial factor in the TAM, which links between the major keys that determine acceptance, perceived usefulness (PU) and perceived ease of use (PEU). This could predict in some extent the students' acceptance of E-learning in the higher education environment. Accordingly, the study on the individual's attitude illustrated the extent of students' intention to use E-learning tools.

2.6.4 Behavioral Intention to Use (BI)

Davis (1986) introduced an adaptation of the TRA to indicate the behavioral intention as a person's subjective probability that will perform the behavior in question whilst the TRA defined behavioral intention as "a measure of the strength of one's intention to perform a specific behavior" (Fishbein & Ajzen, 1975, p.12). According to Davis et al. (1989), actual system use is determined by the behavioral intention to use a particular system and the intention to use a particular system is determined by the perceived usefulness and perceived ease of use of the system. Thus, Behavioral Intention (BI) is the main factor that determined the construct of technology acceptance. In other words, the students who are willing to use E-learning may have a high level of intention to use it. According to Davis &

Venkatesh (1996, p. 20), the behavioral intention to use is the "single best predictor of actual system usage".

Many studies have shown the ability of the TAM in predicting the students' acceptance to use a particular system through measuring their intention. Selim (2003) employed the TAM to evaluate the students' acceptance of the online courses. The findings indicated that ease of use and usefulness of using online courses can determine the students' intention to use them. The researcher also ascertained that the intention to use online courses was the main predictor for their acceptance.

Several studies tested and validated the behavioral intention (BI) construct with different variables and constructs. Ong and Lai (2006) agreed that gender, perceived ease of use and perceived usefulness have positive relationships with intention to use online learning. However, some prior research showed that perceived usefulness has a positive influence on behavioral intention to use (Davis, 1989; Davis et al., 1992; Fusilier et al., 2005; Ngai et al., 2007; Saadé & Bahli, 2005; Selim, 2003; Venkatesh & Davis, 2000; Venkatesh & Morris, 2000).

Compeau and Higgins (1995) extended the TAM to include computer anxiety. The aim of this study was to investigate the computer technology adoption in high schools. The study indicated that there were positive relationships between computer anxiety and intention to use computer technology for learning purposes. Lee et al. (2005) found that perceived enjoyment has a positive influence on the intention to use internet-based learning medium.

To sum up, the intention to use a particular system as a major criterion of technology acceptance should be investigated by more internal and external factors in order to model the factors that could affect the students' acceptance of new technologies. Yet, in this research, the behavioral intention to use will be examined directly and indirectly through perceived ease of use and perceived usefulness. The positive relationships between the behavioral intention (BI) and the proposed factors will be considered as influencing factors affecting students' acceptance of E-learning in the higher education environment.

2.7 Psychological Factors (PF) and Technology Acceptance

Hendrick et al. (1984) defined technology acceptance by linking the individual's psychological status directly with their behavioral intention to use technology. Hendrick et al. (1984) as cited in (Masrom, 2007) defined technology acceptance as "an individual's psychological state with regard to his or her voluntary or intended use of a particular technology". Several studies have proved the strong relationships between psychological factors and E-learning acceptance (Agarwal et al., Anandarajan, Igbaria & Anakwe, 2000; Compeau & Higgins, 1995; Davis et al., 1992; Saadé & Kira, 2006; Tan & Teo, 2000; Venkatesh, 2000; Venkatesh et al., 2003). In this study, the researcher will consider the effect of proposed factors from the individual's psychological perspective on E-learning and the technology acceptance model.

2.7.1 Enjoyment (EN)

Enjoyment (EN) refers to the extent to which the activity of using the computer is perceived to be enjoyable in its own right, apart from any performance consequences that may be anticipated (Davis et al., 1992). Several studies have been conducted to investigate the role of perceived enjoyment as an intrinsic motivation factor on capturing the students' intention to use E-learning (Lee, et al., 2005; Saadé, Tan, & Nebebe, 2008; Yi & Hwang, 2003). Some of the studies have used enjoyment as intrinsic motivator to capture the students' intention to use the computer (Venkatesh, Speier, & Morris, 2002) and web-based information (Yi & Hwang, 2003), while some studies construct enjoyment under different names such as playfulness (Moon, & Kim, 2001) and perceived fun (Igbaria, et al., 1996). Moreover, perceived enjoyment seems to be significant in relation to demographical factors (Teo, 2001).

Saadé, Tan, and Nebebe (2008) conducted empirical research on examining students' acceptance of a web-based learning system. The researchers incorporated the Technology Acceptance Model (TAM) to include enjoyment as an intrinsic motivator. The study extended the TAM to include perceived enjoyment in order to clarify students' behavioral intention in using the web-based learning system from a motivational perspective. This study was conducted on two different cultures (China vs. Canada). The results demonstrate that both perceived usefulness and enjoyment have significant impact on students' intention to use the system in both groups. The study also indicated that perceived ease of use did not possess a significant direct effect on behavioral intention in the Canadian group. However, in the Chinese subjects, the relationship between ease of use and intention to use WLS was significant.

Lee, Cheung and Chen (2005) conducted a study on the role of extrinsic and intrinsic motivation on students' acceptance of the internet-based learning medium. The authors used the Technology Acceptance Model as the theoretical basis for their research. They postulated perceived usefulness and perceived ease of use as extrinsic motivators and perceived enjoyment as an intrinsic motivators. The two proposed motivators were modeled in order to capture and explain students' intention to use the internet-based learning medium. The findings showed that perceived enjoyment had a significant relationship with the students' acceptance of online learning and that it directly influenced their intention. While perceived usefulness was significantly correlated with the students' acceptance, the perceived ease of use, however, did not record any impact on student attitude or intention towards E-learning usage.

Sun and Zhang (2005) conducted an empirical study on causal relationships between perceived enjoyment and perceived ease of use. The aim of this study was to examine the relationship between them and their impact on the students' acceptance. The findings indicated that the causal direction of perceived enjoyment was stronger on perceived ease of use while the direct relationship between perceived ease of use was not that strong in the path analysis.

Atkinson and Kydd (1997) carried out a study to discover the critical factors influencing the students' acceptance to use the World Wide Web. The study involves

162 business (graduate & undergraduate) students. The study indicated that perceived enjoyment was extremely significant whereas the perceived usefulness was not.

Teo, Tan, and Wong (1998) investigated the role of perceived usefulness, perceived ease of use and perceived enjoyment on the intention to use the Internet. The researchers distributed 1370 questionnaires. The findings indicated that perceived usefulness was not significant while perceived enjoyment have a strong relationship with internet usage.

To sum up, perceived enjoyment seems to be a very important factor that could affect E-learning acceptance in the higher education environment. Thus, the researcher will consider enjoyment as an important psychological factor in this study.

2.7.2 Computer Anxiety (ANX)

Computer anxiety (ANX) is defined as an individual's apprehension or even fear, when she/he is faced with the possibility of using computers (Simonson et al., 1987 as cited in Venkatesh, 2000). Moreover, Howard (1986) defines computer anxiety as the tendency of a person to experience a level of uneasiness over his or her impending use of a computer. In fact, students using E-learning as a new educational tool could have some anxiety towards using it. Several researches have investigated computer anxiety as a key factor in influencing the different types of technology acceptance such as E-mail (Elasmar & Cartar, 1996) and computer usage (Compeau & Higgins, 1995). Recently, several researches have been conducted in the area of E-learning acceptance to investigate the role of computer anxiety on students' acceptance (Ndubisi, 2004; Saadé & Kira, 2006).

Saadé and Kira (2006) conducted research to assess the emotional state of students' perception towards the online learning system based on the Technology Acceptance Model (TAM). The researchers extended the Technology Acceptance Model to include anxiety and affect as antecedents for both perceived usefulness and perceived ease of use. The findings from the study indicated that the perceived usefulness of using online system is not determined by the students' computer anxiety. However, it has an indirect influence through the perceived ease of use on the students' acceptance of the online learning system. Furthermore, anxiety has a positive influence on students' acceptance of using the online system. In conclusion, the emotional state has no direct impact on perceived usefulness of an online learning system whereas it has power in predicting the ease of use of an online learning system. Thus, computer anxiety was tested as a direct variable in the current research.

Ndubisi (2004) conducted a research to investigate the critical factors that influence the students' intention to adopt E-learning tools in Malaysia. The researchers examined many factors on students' intention to use the Blackboard system such as users' attitude, subjective norm, perceived behavioral control, perceived usefulness and ease of use of the system. Some of those factors were used as mediators and other were tested directly with proposed variables. The findings show that computer anxiety contributed significantly and predicted about 22% of variation of the behavioral intention. The findings also indicate that the students with a high level of computer anxiety have less perceived behavioral control which will ultimately influence the behavioral intention to use E-learning tools.

In brief, computer anxiety seems to be a crucial factor that could influence the E-learning adoption in higher education institutions. Thus, computer anxiety in this research was considered critical factors and will be investigated in the higher education context.

2.7.3 Computer Self–Efficacy (CSE)

Computer self-efficacy is an individual's beliefs about the users' ability and motivation to perform specific tasks (Agarwal, Sambamurthy, & Stair, 2000) while self-efficacy as a concept is defined as "judgment of one's ability to use a technology to accomplish a particular job or task" (Venkatesh, Morris, Davis, & Davis, 2003, p. 432).

Computer self-efficacy has been studied in different domains. For instance, computer self-efficacy had a positive influence on computer learning performance (Hasan & Ali, 2004; Yi & Im, 2004). Several studies have been conducted to study the influence of computer self-efficacy on the Technology Acceptance Model (Hayashi, Chen, Ryan, & Wu, 2004; Madorin & Iwasiw, 1999;; Lee, 2006; Venkatesh & Davis, 1996;). Compeau and Higgins (1995) (as cited in Lee, 2006) proposed three dimensions of computer self-efficacy: 1) The "magnitude of computer self-efficacy" is defined as the extent to which people believe they can accomplish difficult tasks using a computer, 2) The "strength of computer self-efficacy" is interpreted as reflecting the power of self-judgment by individuals, 3) the "generalisability of computer self-efficacy" refers to the perception by people of their ability to use various computer software and hardware devices. The dimensions of computer self-efficacy were used as antecedents of perceived usefulness and ease of use. The magnitude, strength and generalisability of computer self-efficacy had a positive effect on the students' ability and confidence towards their acceptance of E-learning tools.

Madorin and Iwasiw (1999) investigated the effects of computer self-efficacy on using instructional technology in education particularly computer-assisted instruction. The findings stated that the students' computer self-efficacy had a strong influence on the perceived ease of computer use for learning purposes. However, computer self-efficacy did not have a positive relationship with perceived usefulness. This result is not inconsistent with the findings regarding the effect of computer self-efficacy and perceived usefulness (Venkatesh & Davis, 1996).

Lee (2006) conducted an empirical study to investigate the factors influencing the adoption of an E-learning system in both mandatory and voluntary settings. The research confirmed the capability of perceived usefulness and perceived ease of use in predicting the success of E-learning adoption in both contexts. The findings related to computer self-efficacy were important. Computer self-efficacy demonstrated significant impact on perceived ease of use. However, the significant relationship between computer self-efficacy and perceived usefulness was not strong. Furthermore, Lim (2000) found that computer self-efficacy had a direct influence on the students' participation in distance education activities.

Briefly, computer self-efficacy seems to have the ability to induce the students to use the E-learning system at the high level. It also seems to be an enthusiasm factor towards E-learning acceptance.

2.8 Social Factors (SF) and Technology Acceptance

The social influence on technology acceptance has been comprehensively studied in the last two decades (Granberg & Holmberg, 1990; Harrison et al., 1997; Igbaria et al., 1996; Lee et al., 2003; Sparks et al., 1995; Venkatesh, et al., 2003). The researchers extended the TAM and other related models in order to include social influence due to its significant influence on technology acceptance. The TAM construct has limited conceptualization because "it only deals with restricted normative components and does not reflect wider societal contexts" (Terry & Hogg, 2000). Hence, the researcher will include the proposed social factors as external factors with the TAM.

2.8.1 Subjective Norm

The first introduction of subjective norm as a construct was in the Theory of Reasoned Action (TRA). Subjective norm is defined as the person's perception that most people who are important to him think he should or should not perform the behavior in question (Fishbein & Ajzen, 1975). Moreover, subjective norm is also defined as the individual's perception that an entity or a person who is important to him thinks whether he should use the system or not (Venkatesh & Davis, 2000). Ajzen (1980) affirmed that the intention to use a particular system is affected by two major determinants, the attitude towards behavior intention and the subjective norm. It is a fact that the surrounding environment could have its impact on the students' behavior. In other words, some students are willing to follow other people's opinion towards certain behaviors.

Liker and Sindi (1997) described subjective norm as perceived external pressure. Thus, subjective norm could be described as the student's pressured feelings towards using E-learning tools due to their instructor or their peers. Several studies have shown the role played by subjective norm in predicting behavior (Bagozzi et al., 1992; Fishbein & Ajzen, 1975; Venkatesh & Morris, 2000), and using online courses (Lee et al., 2003; Miller et al., 2003; Pan, Sivo, & Brophy, 2003). However, further research is still needed in order to determine whether the subjective norm have a positive influence on students' acceptance, especially for the students from different cultures. Davis (1998) illustrated that the Technology Acceptance Model needs to be extended in order to include some external variables for better understanding of the students' behavior. The first suggestion was to include subjective norm in order to determine the students' intention to use the technology.

Shen, Laffey, Lin, and Huang (2006) investigated the role of subjective norm on the students' perception towards using online learning. The researchers examined the impact of the instructors, mentors and peers on perceived usefulness and perceived ease of use. The results show that the three components of subjective norm significantly influenced perceived usefulness while subjective norm did not influence perceived ease of use.

Lin, Hu, and Chen (2003) investigated the e-government system acceptance. The main finding of their study indicated that subjective norm was the significant key determinant of system acceptance and the intention to use it. They also indicated that the persons' opinion could influence the users' trend to evaluate the system's usefulness or the ease of using it. Thus, the subjective norm seems to be a promising variable that could affect the students' acceptance of E-learning in higher education environment. Thus, it will be examined as social varriable.

In brief, the subjective norm will be used in this research as social factor constructs that could directly affect the students' intention to use the E-learning system in Saudi Arabian government universities.

2.8.2 Image (IM)

Image is defined as "the degree to which adoption/usage of the innovation is perceived to enhance one's image or status in one's social system"(Venkatesh et. al, 2003). According to Venkatesh, et al. (2003), the social-influence construct originally consists of subjective norm, social factors, and image. These factors seem to be important in the mandatory setting only. This result has been confirmed in the TAMII by Venkatesh and Davis (2000).

Venkatesh and Davis (2000) realized the importance of image as social constructs by extending the original TAM to include the social factors. They tested image in two different settings. They developed the TAM to include many constructs for better understanding of users' acceptance. The research findings indicated that in a voluntary setting the subjective norm seems to be the most significant determinant for the users' acceptance and their intention to use a particular system. However, in a mandatory setting, the subjective norm may influence the image, intention to use and perceived usefulness while image was recorded to be significant for the users' perceived usefulness. Thus, in this research the influence of image on behavioral intention to use E-learning will be assessed.

Moore and Benbasat (1995) adapted the Innovation Diffusion Theory as the theoretical basis for their study. The main aim of their study was to measure the users' perceptions towards the Information Technology adoption. The researchers' contribution was made through embedded additional factors such as relative advantage, ease of use, image, visibility, compatibility, results demonstrability, voluntariness of use in order to explore the users' acceptance of new technology. Their findings indicated that image has positive influence on the users' acceptance of using new technology. These findings were consistent with those of Karahanna, Straub, and Chervany (2003).

Mao (2006) investigated the E-mail acceptance in China by extending the IT acceptance model and validated based on the Chinese culture. The researcher also made a comparison between Mao's previous research and other previous studies. The main finding of this research regarding the image construct was that image has no effect on the IT users' attitude towards using E-mail.

In a nutshell, image seems to be a significant variable affecting the students' acceptance of E-learning in Saudi Arabian universities. Yet, the research will test the construct's significance in relation to the students' intention to use E-learning.

2.8.3 Self- Identity (SI)

Self-Identity (SI) is defined as the individual's comparison of other's expectation with his own values, beliefs, and previous experience and transformation of these into his own self-expectation (Venkatesh et al., 2003). Giddens (1991) has stated that self-identity has to be a very crucial construct on social system because it has given a clear social interpretation. Thus, self-identity could be examined in order to reflect the impact of social influence on behavior intention to use technology, besides subjective norm and image as social constructs.

Several studies have shown that self-identity is a positive construct in relation to the behavioral intention in different domains (Granberg & Holmberg, 1990; Sparks et al., 1995). Self-identity has a distinct difference from the subjective norm factor in two features. The first one is related to the specific settings such as mandatory and voluntary settings. Chang et al. (1988) (cited in Lee et al., 2006) stated that self-identity can capture the significance of the social influence in voluntary settings whereas subjective norm can capture the social influence only in the mandatory settings. Secondly, self-identity is shaped through the "internalization process which compares others' expectations with ones' own values, beliefs, and previous experience and transforms them into ones' own self-expectation. On the other hand, subjective norm captures others' expectations without the internalization process and thus others' pressure directly affects a person's technology acceptance decision" (Lee et al., 2006. p.62).

Lee et al. (2006) investigated the social influence on using WebCT behavior. The researchers have extended the TAM to include subjective norm and self -identity. The study also examined the role of self-identity for capturing the students' intention to use WebCT in the classroom. The findings demonstrated that self-identity has both direct and indirect significant influence on students' intention to use WebCT in the classroom. It also confirmed that self-identity seems to be significant in both voluntary and mandatory settings. The study is consistent with previous studies regarding subjective norm influence in a voluntary setting. The study shows that subjective norm has no significant influence on the students' intention to use WebCT in voluntary situations. Moreover, self-identity had a significant effect on perceived usefulness and perceived ease of use. The researchers suggested that further research should be carried out to determine the self-identity influence in different domains and in different settings.

In brief, based on the proposed information above, the present research will investigate the role of self-identity in influencing students' acceptance of the E-learning in higher education universities in Saudi Arabia. The results drawn from this research will be compared with previous research in terms of consistency.

2.9 Technological Factors (TF) and Technology Acceptance

The benefits derived from the E-learning system will not be achieved if the students are not using the proposed system. The technological factors appear to have a strong influence with the area of technology acceptance (Liu & Ma, 2006; Pituch & Lee, 2006). Thus, suggested system characteristics have proved to be significant factors influencing the students' acceptance of using the E-learning system in the higher education environment (Palloff & Pratt, 1999; Pituch & Lee, 2006; Selim, 2003).

2.9.1 System Performance (SP)

System performance (SP) refers to the degree to which a person believes that a system is reliable and responsive during a normal course of operations (Liu& Ma, 2006). This concept has its intention in different domains such as the wireless system (Shankaranarayanan, 2001), website software purchase (Mahinda & Whitworth, 2005) and medical records (Liu & Ma, 2006). Thus, this factor seems to be a crucial antecedent of both TAM beliefs constructs: perceived usefulness and perceived ease of use.

Liu and Ma (2006) extended the Technology Acceptance Model with the construct perceived system performance. System performance consisted of two sub-constructs: reliability and responsiveness. Perceived system performance has explained around 46% of the variance in perceived ease of use and 56% of the variance in behavior intention. Thus, the perceived system performance seems to be vital in terms of its applicability to predict the users' perception towards a specific system. Furthermore, when the perceived system is nonexistent, the relations between the TAM constructs are still supporting. However, the association between perceived ease of use and intention of using the system is weak.

Mahinda and Whitworth (2005) have come up with a new model called The Web of System Performance. They extended the TAM to include system related factors such as security, connectivity, flexibility, extendibility and privacy. The study aimed to investigate the proposed factors on the users' online software purchase. The findings indicated that security, privacy, usability, functionality, reliability and connectivity play a significant role that users would consider when they purchase software via online.

2.9.2 System Functionality (SF)

System functionality (SF) refers to the perceived ability of an E-learning system to provide flexible access to instructional and assessment media (Pituch & Lee (2006). System functionality is a very important factor which is related to a system's characteristics. Many studies have investigated the relationship between system characteristics and users' acceptance (Davis, 1993; Venkatesh & Davis, 1996, Igbaria et al., 1995; Pituch & Lee, 2006; Ruth, 2000). Several researches study the system impacts on the E-learning environment (Palloff & Pratt, 1999; Pituch & Lee, 2006; Selim, 2003). In this research, system functionality will be studied with other associated system characteristics as technological factors.

Seels and Glasgow (1998) conducted a research investigating the affecting factors on the instructional design decisions. The research indicated that the system function is related to its capabilities to integrate different types of media such as video and audio. The researchers indicated that the high level of the system functionality can be derived from making a clear and interactive instructional design in order to gain the students intention to use a specific system. At the same time, Selim (2003) has referred to system functionality for its ability to provide superior system accessibility from remote and different locations around the world.

Pituch and Lee (2006) investigated the influence of system characteristics on E-learning use. They proposed and tested alternative models that can search for an explanation on students' intention to use an E-learning system when the system is utilised as an additional learning tool. The data were collected from 259 students from a Taiwanese university. The researchers proposed system functionality, system interactivity, system response, self-efficacy and internet experience as external variables of the TAM. The results indicated that the system characteristics influenced both the E-learning usage outcomes and the users' beliefs. They indicated that the system characteristics must be considered at the development stage of the E-learning design. The researchers also mentioned that the developers of E-learning system should select the specific system characteristics before the implementation stages.

In short, system functionality seems to be a pre-implementation factor that could has its impact on the students' willingness to use E-learning system tools in the higher educational environment. Thus, system functionality will be assessed as an external construct and its influences will be examined in relation to students' E-learning acceptance.

2.9.3 System Interactivity (SIN)

System interactivity (SIN) refers to the perceived ability of an E-learning system to provide the interactions among students themselves and the interactions between faculty and students (Pituch & Lee, 2006). Palloff and Pratt (1999, p.5) cited in Pituch and Lee (2006) stated that for E-learning systems, the ''key to the learning process are the interactions among students themselves, the interactions between faculty and students, and the collaboration in learning that results from these interactions''. In line with this matter, the current E-learning system has been interactive since it provides interactivity tools such as the E-mail and chat room. Therefore, system interactivity will be studied as a critical factor that could determine whether it influences the students' acceptance of E-learning implementation or not.

2.9.4 System Response (SR)

System response (SR) is defined as the degree to which a learner perceives the response from the E-learning system as fast, consistent, and reasonable (Pituch & Lee, 2006). Besides the importance of system performance, functionality and its interactivity, the system response is a crucial factor that influences the students' perception of both usefulness and ease of use of the E-learning system. Kerka (1999) affirmed that the E-learning system has disadvantages upon its wide communication tools and its limitation in bandwidth capacity. Thus, the system response must be the priority of E-learning design and implementation.

Pituch and Lee (2006) investigated the influence of system response on E-learning use. They indicated that the system response has a crucial influence on the students' acceptance of using the E-learning system. For instance, the students who perceived the E-learning system to be responsive will indicate that the system is easy to use and is useful. Eventually, their intention to use the system will be high and positive.

In brief, system performance, system functionality, system interactivity and system response appear to be significant as antecedents of both the TAM beliefs constructs. It also appears to influence the students' intention to use E-learning system. Thus, the present research will utilise the proposed constructs to investigate the technological factor that could affect the students' acceptance of E-learning in Saudi Arabian universities.

2.10 Cultural Factors (CF) and Technology Acceptance

The Cambridge Advanced Learner's Dictionary defines "culture" as "the way of life, especially the general customs and beliefs, of a particular group of people at a particular time". It also mentions that culture is related to the habits, norm, traditions and beliefs of a society. Goodman and Green (1992) described culture as the dissimilarity between beliefs, values and motivations of different groups. In technology acceptance, culture has been a key success factor in adopting new technology (Straub, et al., 2001). Furthermore, Hofstede defined culture as "the collective programming of the mind which distinguishes the members of one human group from another" (1980, p. 260). Hofstede's Dimensions of Culture model (1980) has been extensively cited in cross-cultural design studies. Many researchers have used Hofstede's model in order to explain technology acceptance differences (Rose & Straub, 1998; Srite, 2006). Srite (2006) stated that "culture's influence in the acceptance and use of technology, in the context of Asia, has not been comprehensively examined". However, several studies have already examined the relationship between the TAM and Hofstede's cultural dimensions (Al-Gahtani et al., 2007; Anandarajan et al., 2002; Calantone et al., 2006; Hasan et al., 1999; Srite, 2006;). Hofstede (2001) developed four cultural dimensions, namely uncertainty avoidance, power distance, individualism/ collectivism, and masculinity/ femininity based on over 116,000 surveys gained from over 60 countries and 3 regions, in about 20 languages. In the present study, the researcher will examine the external influence and the direct relationship of Hofstede's cultural dimensions and E-learning acceptance which is represented by the behavioral intention construct. The results will be compared to Srite (2006) research results.

2.10.1 Individualism versus Collectivism (IC)

Individualism/Collectivism (IC) can be defined as "societies in which the interests of the individual prevail over the interests of the group" versus "societies in which the interests of the group prevail over the interests of the individual" (Hofstede, 1991, p. 50). In other words, the individualism and collectivism dimension can describe the relationship between individuals and the group in a specific society based on their values, customs and norm. Basically, we can assume that if the Saudi culture has a high level of collectivism, the groups will reflect their identity and vice versa. Many studies on the national culture and its impact on technology acceptance have been extensively concluded (Al-Gahtani et al, 2007; Calantone et al., 2006; Srite, 2006). Thus, the current study will try to identify whether the Saudi culture reflects individualism or collectivism based on the future analysis and their influence on E-learning acceptance will be assessed.

Srite (2006) conducted a study to examine the issues of technology acceptance across two cultures: Chinese and American. Srite extended the TAM to include Hofstede's cultural model and tested it independently across two different cultures. In both cultures the perceptions of perceived ease of use significantly influenced the perceptions of usefulness and behavioral intention to use. However, the relationship between subjective norm and behavioral intention was insignificant in the US sample, but significant in Chinese sample. In the US ample, the relationship between perceived usefulness and behavioral intention was significant while in the Chinese sample it was not. According to the cultural score, in terms of uncertainty avoidance and power distance, there was no significant difference. However, in the Chinese sample, the individualism and collectivism were strongly significant as well as masculinity and femininity.

In 2002, Tung and Quaddus conducted a research to investigate the cultural differences and their impact on different results in using Group Support Systems. The researchers indicated that the national culture played a crucial role in explaining the acceptance of using Group Support Systems. They examined two cultures: Mexican and the US culture. The findings indicated that the Mexican group had a low individualism level as compared with the US group. Moreover, power distance was high in the US sample but not in the Mexican group. The Figure (2.8) below indicates some countries' scores based on their high or low level of individualism and collectivism.

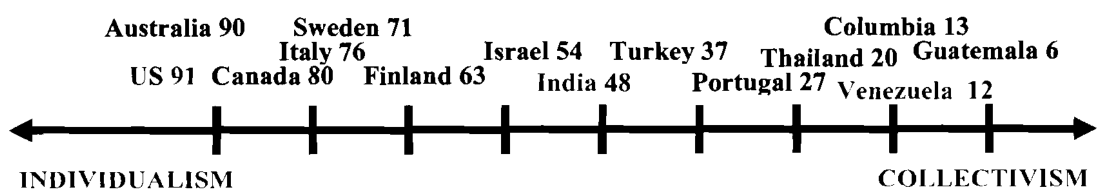

Figure 2.8. Individualism Values for Selected Countries, using Hofstede's (2001) Individualism Index

Sources: Hofstede's (2001)

2.10.2 Uncertainty Avoidance (UA)

Uncertainty avoidance (UA) refers to "the extent to which the members of a culture feel threatened by uncertain or unknown situations" (Hofstede 1991, p. 113). The uncertainty avoidance dimension describes the degree to which members of a society feel uncomfortable with uncertainty and ambiguity, preferring structured over unstructured situations (Kovacic, 2005).

Kovacic (2005) conducted a study to investigate the impact of national culture on the web E-government readiness. The researcher indicated that countries with strong uncertainty avoidance would have less acceptance and readiness with adopting new ICTs. However, the countries with weak uncertainty avoidance will be willing to adopt the new ICTs because of their ability to take the risk of unsuccessful implementation. Moreover, the country with strong uncertainty avoidance would have a negative attitude towards using new ICT tools and vice versa.

Straub et al. (1997) examined the TAM across three different cultures: US, Switzerland and Japanese culture. The researchers proved that the TAM was not capable of explaining the users' acceptance of new technology in different settings and different cultures. E-mail is highly accepted in the US, reasonably accepted in Switzerland and not accepted in Japan. They assumed that uncertainty avoidance seems to be crucial in making the new technology acceptable. However, the researchers did not collect any cultural data from the countries of study. Thus, there is no empirical evidence for their assumptions related to cultural values differences.

In conclusion, uncertainty avoidance could have an impact on students' acceptance of E-learning due to the uncomfortable, uncertain and ambiguous situation. Thus, this dimension will be tested and its related findings may be able to shed light on the overall results.

2.10.3 Power Distance (PD)

Power Distance (PD) refers to "The extent to which the less powerful members of institutions and organizations within a country expect and accept that power is distributed unequally (Hofstede, 2001, p. 98). Srite et al. (2000) found that a culture with higher power distance is found to be less innovative and trusting in its perceptions towards information system usage. The study also found that a culture with high level of collectivism seems to be influenced by its subjective norm values. Myers and Tan (2002) indicated that power distance seems to have a strong impact on the web design and users' interface acceptance.

Srite et al. (2000) studied the cultural dimension on the IT system use in the Arab world. They developed an Information Technology transfer model and the survey was distributed in five Arab countries. The researchers affirmed that power distance seems to be a significant variable in stimulating the users' acceptance or resistance to use the proposed system.

Al-Khaldi and Wallace (1999) examined computer usage in two different cultures: Saudi Arabian and Canadian. Their study aimed to identify the influencing factors that may affect computer usage in both cultures. The researchers found that dissimilar culture generate different perceptions towards using a particular system. It also creates different attitudes.

In brief, power distance (PD) appeared as a critical dimension of Hofstede model. The current study will investigate the impact of the power distance on Saudi culture and its impact on students' acceptance of E-learning in Saudi Arabian universities.

2.10.4 Masculinity versus Femininity (MF)

Masculinity/Femininity (MF): "Masculinity stands for a society in which social gender roles are clearly distinct... Femininity stands for a society in which social gender roles overlap (Hofstede, 2001, p. 297). It is a fact that the cultural dimension can be influenced by the gender role. In other words, the role of gender and its impact on technology acceptance has been cited extensively in the literature (Gefen & Straub, 1997; Jackson, 2001; Ong & Lai, 2006; Speier & Venkatesh, 2002; Tolhurst & Debus, 2002; Yuen & Ma, 2002). However, a society is described as masculine when the society prefers achievement, assertiveness, and material success in their tasks. On other hand, a society can be described as feminine when it prefers perfect relationships with its supervisors or peers, caring for the weak, and caring about the value of life.

Sundqvist, Frank, and Puumaliainen (2005) investigated the effect of cultural similarity on the adoption of wireless communication tools. They hypothesised that countries with higher masculinity would have faster diffusion of wireless communications. However, their assumption was not substantiated by the findings and yet to be proven. They concluded that a high level of uncertainty avoidance will negatively affect the new technology adoption and that their acceptance will depend on the country's previous success and experience.

Bagchi ,Cerveny, Hart, and Peterson (2003) indicated that the Information Technology encourages a cooperative relationship and a better life quality which, indicate a high level of masculinity. In contrast, using E-learning can be masculine but, it can also be aimed at promoting the successful study stages, increasing the students' performance which can all be described as feminine. Thus, the study will investigate the influence of the Hofstede dimensions on E-learning acceptance based on Saudi culture and its related values. The current study aims to prove whether the cultural factor and its related constructs have influence over students' acceptance in higher education institutions in Saudi Arabia or not.

2.11 Institutional Factors (IF) and Technology Acceptance

With the recent growth in investment in new technologies among institutions of higher education, the organizations have to be aware about its own impact on the success and acceptance of these technologies. Several organisational internal and external factors revealed that the institutional factors have strong influence on online learning acceptance (Galletta et al., 1995; Igbaria et al., 1997; Yi et al., 2001). The cited studies have shown the impact of internal and external organisational factors on perceived ease of use and perceived usefulness while other studies have suggested that training workshops have their impact on the students' attitude and their intention to use online learning systems (Yi et al., 2001). Thus, the current research will investigate the role institutional factor plays on the students' willingness to accept or reject using the E-learning system in Saudi universities. The facilitating conditions, training and technical support will be considered as institutional factors that could influence the students' acceptance of E-learning implementation and will be studied from the organisational aspect.

2.11.1 Facilitating Conditions (FC)

Facilitating conditions are defined 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, p.453). In other words, the facilitating conditions can be those fulfilled by universities in providing their students with the basic knowledge, necessary resources and assistance while the students are using E-learning system. Facilitating conditions have been identified to be a stronger predictor for the usage behavior (Venkatesh et al, 2003).

Ely (1999) cited in (Succi, 2007) identified eight conditions that affect the success of the implementation of innovative educational technologies: 1) "Dissatisfaction with the status quo" which indicates the users' discomfort perception towards using new techniques as ineffective tools, 2) "Knowledge and Skills" which indicates that level of users' knowledge about the implemented system, 3)" Adequate Resources" which refers to available resources necessary to a particular system,4) "Adequate Time" which refers to the availability of the time provided by the institution to educate the users in using the system, 5)" Rewards or Incentives" which indicates the role of the organisation in providing the users with external motivation elements such as non-financial and financial rewards, 6) "Participation" which refers to the institution's effort to encourage the users to use the system, 7)" Commitment" which stands for the organisation management's commitment to use the system, 8)"Leadership" which refers to the management's active contribution in the implementation of the system. The proposed conditions have appeared to be significant in terms of the organisational context. Accordingly, this study will consider the proposed conditions in the measurement of the facilitating conditions construct.

Thompson et al. (1991) adapted the Triandis model of human behavior to build the Model of PC Utilization. They predicted the usage behavior rather than the intention to use. Their findings indicated that the facilitating conditions play crucial role to simulate the users' behavior and not only the intention. These findings opened the door for further investigation into the role of facilitating conditions. For instance, Bock and Kim (2000) investigated the model of PC by expanding the facilitating conditions factor to include rewards. They found that facilitating conditions also had a positive effect on users' behavior.

Venkatesh et al. (2003) built the Unified Theory of Acceptance and Use of Technology (UTAUT). The facilitating conditions were direct determinants of users' usage behaviour and have shown enormous impact on the users' acceptance. Venkatesh et al. (2003, p.470) suggested that future research should attempt to "test additional boundary conditions of the model in an attempt to provide an even richer understanding of technology adoption and usage behaviour". The researchers have suggested investigating more conditions due to its impact on technology acceptance.

Based on the information provided above, the present research will investigate the direct relationship between the facilitating conditions and the students' acceptance to use the E-learning system.

2.11.2 Training

Training (TR) in this study is defined as institution's effort to teach and train their students to acquire E-learning skills. Many studies that extended TAM confirmed the role of the training as a significant factor influencing the students' acceptance of using online learning (Igbaria et al, 1997; Wolski & Jackson,1999). The studies concluded that training had a positive impact on users' acceptance and their intention to use a particular system.

Wolski and Jackson (1999) applied the Technology Acceptance Model in educational institutions. They investigated the teachers' acceptance of new technology used for academic purposes. The TAM in this study has shown its ability to predict the users' acceptance. However, the extended factor "Subjective Norm" was insignificant. They suggested that the role of the incentives and training on technology acceptance would be the most significant key factor that determined acceptance.

Igbaria et al. (1997) conducted a study to investigate the factors affecting personal computing acceptance. The original relationships between the TAM constructs were proven. The authors have examined the training and management support and its influence on perceived usefulness and perceived ease of use. The findings indicated that training had a positive influence on both TAM predictor constructs.

Thus, the training provided by the institutions will be considered a key factor for the successful implementation of E-learning and its relationship with the students' intention to use E-learning will be investigated.

2.11.3 Institutional Technical Support

Institutional technical support (ITS) in the current study is defined as institution capability to provide qualified people to support the E-learning system users when they encounter any system difficulties such as help desk and online support. The lack of technical support was cited as one of most important barriers to E-learning implementation (Behl et al., 2007, Schifter, 2000; Shannon & Doube, 2004). Kleinman and Entin (2002) stated that technical support must be available during the online courses in order to offer a sense of confidence for the online learners.

Several studies have been tested to determine the influence of technical support on students' acceptance of technology (Igbaria et al., 1996, 1997; Ngai et al., 2005; Venkatesh& Davis, 2000). The studies indicated that different types of support such as management support and internal computing support have influenced the users' perception towards using specific technology.

Ngai et al. (2005) investigated the students' perception towards the WebCT tools. The researchers investigated around 836 students in Hong Kong. They extended Technology Acceptance Model (TAM) to include technical support as an external factor. The findings indicated that perceived usefulness and perceived ease of use are able to predict the students' acceptance of web course tools through a positive attitude. The institutional technical support (ITS) had a direct influence on both:

perceived usefulness and perceived ease of use. The researchers concluded that technical support was a significant factor that could influence the students' acceptance of WebCT.

Venkatesh and Davis (2000) examined the role of management support, internal computing support and external computing support on users' acceptance. The researchers confirmed that support provided by the management or technical staff seemed to be vital factors influencing the users' intention to use computer technology.

Igbaria et al. (1996) tested microcomputer usage through their motivational model. The model used organisational support as a critical factor affecting the usage together with complexity, usefulness, enjoyment and social pressure. Their model explained around 28% of the variance. They found that organisational support had significantly influenced the users' usage of microcomputer.

In brief, the technical support provided by the institutions seems to be a crucial issue particularly with the E-learning system. As it is a new form of technology, many students will encounter some technical difficulties that will need to be resolved or the lack of technical support will be a crucial to E-learning implementation. In this present research, the relationship between the technical support and the students' behavioral intention to use E-learning system will be investigated as well as its influences.

In conclusion, the proposed factors have been cited well in literature in terms of their effect on technology acceptance. In this study, the researcher will consider the TAM as the basis model in order to assess and predict the students' acceptance of E-learning in Saudi Arabian universities and the behavioral intention will represent the concept of 'E-learning acceptance' in this research. The researcher will extend the TAM to include psychological, social, technological, cultural and institutional factors to identify the significant factors that could promote or hinder the E-learning implementation in Saudi Arabia. The relationship between the proposed factors and students' acceptance will be examined. The applicability and validity of the TAM will also be investigated in this research.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the primary research methodology used in collecting and analysing the present research data. The researcher in this study explored the current level of use of the E-learning system in government universities in Saudi Arabia. The study also identified and investigated the factors that contributed to students' acceptance. The well known TAM was used as the basis in this research. However, the TAM has been extended in this study to include other external factors namely psychological, social, technological, cultural and institutional factors.

This chapter is divided into eight topics which are the research design, population and samples, instrumentation, validity of questionnaire, pilot study, reliability analysis, data collection procedures and data analysis techniques.

3.2 Research Design and Approach

Oppenheim (1998) affirmed that the research design is aimed to make the research problems researchable through setting up the research process in a way that can generate specific answers to particular questions. Universally, there are two main research approaches, namely quantitative and qualitative research approaches. A particular approach is used upon and based the nature and the requirement of the research objectives and questions. According to Yin (2003), the types of research can be categorized based on purposes: Exploratory, Descriptive or Explanatory research. Therefore, based on the purpose of research questions and the nature of the research objectives, the current research can be categorized as a quantitative descriptive survey design.

According to Polit and Hungler (1993), survey is utilised to collect original data and obtain information for describing an entire population by observing a suitable study sample and the means of self-reports. In this research, the mean of self-reports can be achieved through the survey design because the students' willingness or rejection in using the E-learning system will be embedded in their beliefs, opinions and attitudes concerning the use of a particular system.

Nueman (2003) stated that survey methods are suitable for research questions or research objectives that deal with beliefs or behaviors. In consistency with this view, Zikmund (2003) affirms that surveys are better methods for measuring awareness, opinions and behaviour. Studying the students' acceptance towards a particular system will involve their opinions and behavior (Davis et al., 1998). Thus, in order to obtain the required information from the appropriate sample, survey design was used as the main strategy for this research.

3.2.1 Research Framework

The framework of this research aims to investigate the factors affecting students' acceptance of E-learning in Saudi government universities. The Technology Acceptance Model (TAM) was used as the foundation model for this research. Many studies have extended the TAM to include additional factors (Landry, Rodger & Hartman 2006; Masrom, 2007; Ngai et al., 2007; Roca, Chiu, & Martínez, 2006; Saadé & Bahli, 2005; Saadé & Galloway, 2005; Selim, 2003). The present researcher's efforts to extend the TAM derived from Davis's (1998) suggestion to include additional external factors in order to gain better insight and understanding on the issue of technology acceptance. This research extended and elaborated the TAM to include further external factors to study their effects on students' acceptance. This research also seeks to confirm the mediation effects of attitude on the relationships between the TAM main predictors and E-learning acceptance. The proposed factors' relationships with the acceptance issue and the TAM have been cited extensively in the body of current study literature. The proposed external factors to be included in the TAM are psychological factors, social factors, technological factors, cultural factors and institutional factors. Most of these factors and their related variables have been derived from well known theories and models as mentioned earlier in the literature review.

The proposed framework consists of two parts. The first part represents the main constructs of the TAM. The dependent variable (DV) is represented by the behavioral intention to use E-learning, which is considered as "Students' E-learning acceptance". The internal independent variables (IVs) are perceived ease of use and perceived usefulness. It also has attitude as the mediating variable in the relationships between perceived usefulness / perceived ease of use and the students' E-learning acceptance. The second part proposes the external factors that could affect the students' acceptance of E-learning in Saudi government universities. This part includes five factors which are the psychological factor (PF) which includes three variables, namely enjoyment, computer anxiety and computer self-efficacy. The second factor is social factor (SF) which includes three variables, namely image, subjective norm and self-identity. The third factor is technological factor (TF) which consists of four variables, namely system performance, system functionality, system interactivity and system response. The fourth factor is cultural factor (CF) which consists of four variables, namely individualism/collectivism, uncertainty avoidance, power distance and masculinity/femininity. The fifth factor is institutional factor (IF) which comprised of three variables namely facilitating conditions, training and institutional technical support. The proposed factors were considered as external independent variables (IVs). Table 3.1 represents the main TAM variables and the proposed independent external factors and their related variables. The proposed factors have been extensively defined, investigated and discussed in the body of the literature review. The proposed framework is depicted in Figure 3.1.

Table 3.1
The proposed external factors categories and their related variables

Factor Categories	**Variables**
Basic Model (TAM)	Perceived Usefulness (PU) Perceived Ease of Use (PEU) Attitude toward Using E-learning (A) Behavioral Intention to Use E-learning (BI)
Psychological Factors (PF)	Enjoyment (EN) Computer Anxiety (ANX) Computer Self-Efficacy (CSE)
Social Factors (SF)	Image (IM) Subjective Norm (SN) Self-Identity (SI)
Technological Factors (TF)	System Performance(SP) System Functionality (SF) System Interactivity (SIN) System Response (SR)
Cultural Factors (CF)	Individualism/Collectivism(IC) Uncertainty Avoidance (UA) Power Distance(PD) Masculinity/Femininity(MF)
Institutional Factors (IF)	Facilitating Conditions (FC) Training (TR) Institutional Technical Support (ITS)

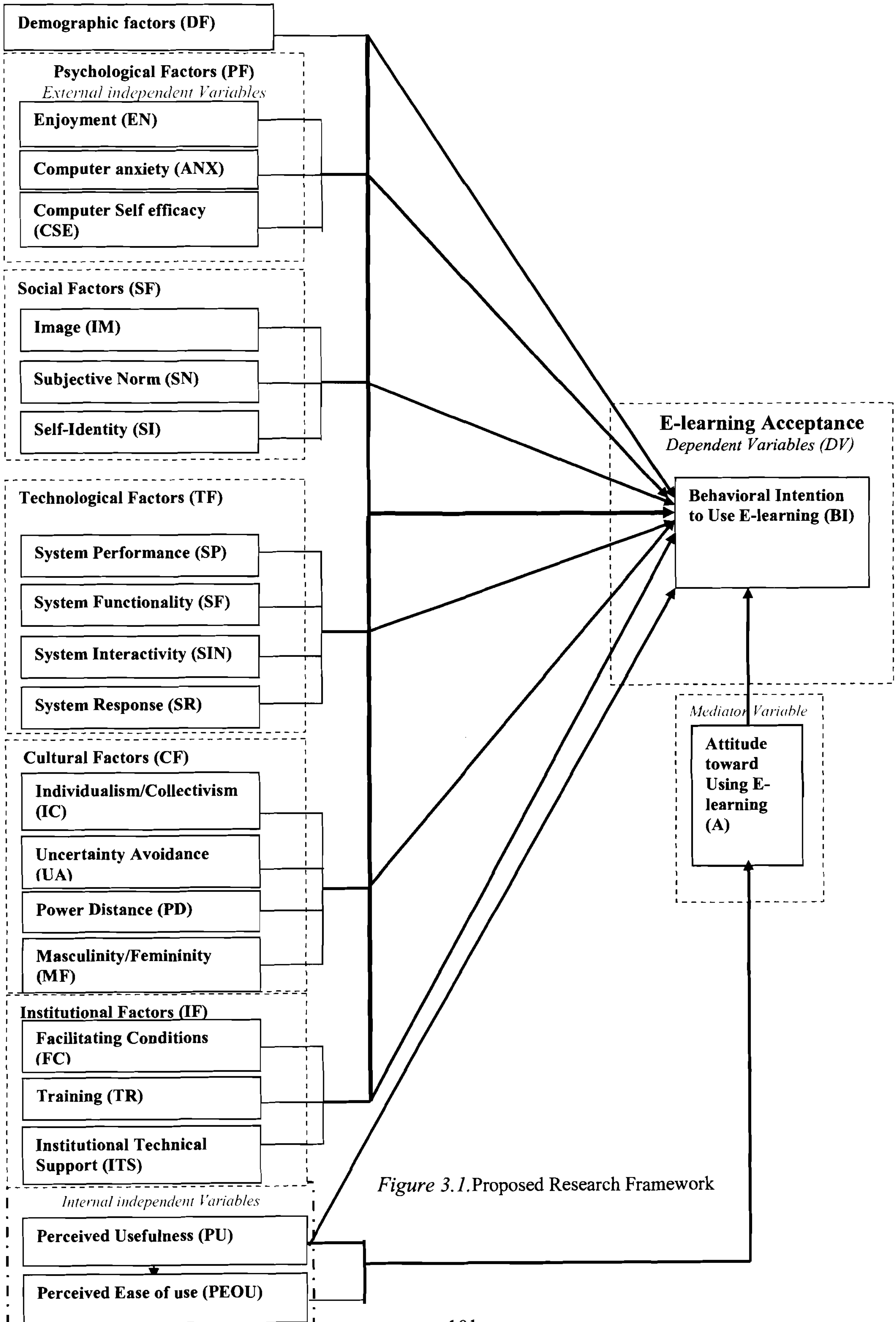

Figure 3.1. Proposed Research Framework

3.3 Population and Samples

3.3.1. Research Population

The target population of this research comprised all the undergraduates enrolled in the year of 2009/2010 at five universities in Saudi Arabia in the five main geographical locations. The five universities were randomly selected from the list of 21 government universities. The foundation and freshmen students were excluded from the sample in order to ensure that the examined students had exposure to the E-learning experience. The chosen universities were: King Saud University (KSU) in the Central region, King AbdulAziz University (KAU) in the Western region, King Faisal University (KFU) in the Eastern region, King Khalid University (KKU) in the Southern region and Al-Jouf University (JU) in the Northern region (Table 3.2).

Table 3.2

Statistical summary of targeted universities and the number of male and female enrolled students

	University	Enrolled Students		
		Population (% from entire population)	**Male**	**Female**
1	King Saud University (KSU)	50420 (32.23%)	62.01%	37.99%
2	King AbdulAziz University (KAU)	65589 (41.93%)	65.64%	34.36%
3	King Faisal University (KFU)	13502 (8.63%)	49.36%	50.65%
4	King Khalid University (KKU)	12907 (8.25%)	93.16%	6.84%
5	Al-Jouf University (JU)	14011 (8.96%)	50%	50%

Sources: National Report on Education Development in the Kingdom of Saudi Arabia (2008).

3.3.2 Sample

3.3.2.1 Sample Size

According to Bless and Higson (1995), determining a suitable sample size is a significant component of the research success. The entire study population was 156,429 undergraduate students. According to Krejcie and Morgan (1970), it is appropriate to select a minimum sample of 384 students from the entire research population. The sample distribution from each university was allocated based on its percentage from the entire population (Table 3.3).

Table 3.3

The sample distribution on each university based on its percentage from entire population, female and male students

University	**Allocated sample**	**Number of Male & Female students from sample size**	
		M	**F**
King Saud University (KSU)	124 (32.23%)	77	47
King AbdulAziz University (KAU)	161 (41.93%)	106	55
King Faisal University (KFU)	33 (8.63%)	16	17
King Khalid University (KKU)	32 (8.25%)	28	14
Al-Jouf University (JU)	34 (8.96%)	17	17
Total	**384**	**244**	**140**

3.3.2.2 Sampling Strategy

This research utilises a stratified random sampling procedure to obtain the required sample. The steps taken are as follows. First, the number of students from each of the five universities was determined and the percentages were derived. Based on the derived percentages, for each university, the proportion of male to female students was then determined. Using the procedure outlined above a total of 384 students comprising of 244 males and 140 females were selected. Table 3.3 shows the number of participants selected from each university.

3.4 Instrumentation

The primary method of collecting the data was questionnaire. Questionnaire was chosen as a data collection instrument because of its efficient capability to cover the study population across different broad locations in Saudi Arabia. Babbie (1990) stated that the survey questionnaire is the most efficient method in collecting the original data from the population sampling. The researcher developed the questionnaire instrumentation by adapting the previous validated studies. The Technology Acceptance Model constructs were adapted from Davis (1998) and Suh and Lee (2007). Psychological factors were adapted from Saade, Tan and Nebebe (2008), Saade and Kira (2006) and Pituch and Lee (2006). Social factors were adapted from Lee, Lee and Lee, (2006), Moore and Benbasat (1991), Nasution (2007) and Ndubisi (2004). Technological factors were adapted from Liu and Ma (2006), and Pituch and Lee (2006). Cultural factors were adapted from Srite (2006) and institutional factors were adapted from Amoako-Gyampah and Salam (2004), Curtis and Payne, (2008), and Ngai, Poon, and Chan (2007). The number of original adapted items, reliability coefficients and its sources are attached in Appendix (C).

3.4.1 Questionnaire Design

The research questionnaire is divided into seven major sections and comprises 83 items. The research questionnaire was originally written in English as represented in Appendix (A). However, the majority of respondents are native Arabic speakers. Thus, the questionnaire was translated into Arabic.

3.4.2 Questionnaire Translation

The questionnaire was translated into Arabic using a back translation technique in order to achieve the measurement equivalences in both languages (Brislin, 1970). The questionnaire was sent to two bilingual experts (English / Arabic) in order to ensure that the two versions are harmonized as close as possible with the original English questionnaire. Then, the Arabic version was translated back into English by another bilingual expert in order to remove or solve any differences. The Arabic version of questionnaire is depicted in Appendix (B).

3.4.3 Questionnaire Items and Structure

The very crucial step before organising the survey questions is to make the instructions clear and understandable. To ensure this, the questionnaire has a cover letter included in the instructions of questionnaire. The cover letter stated the purpose of research, the estimated time it would take to complete the questionnaire, the questionnaire sections, an example of each question type, and the Likert scale used in the questionnaire. The questions were grouped into seven sections: Demographic Questions, the TAM Questions, Psychological Factors Questions, Social Factors Questions, Technological Factors Questions, Cultural Factors Questions, and Institutional Factors Questions. Neuman (2003) pointed out the benefit of structuring the questionnaire well is to enable the respondents to proceed smoothly. The questions were structured in sequences into each section in order to prevent the respondents from experiencing discomfort and confusion, as advised by Neuman (2003). The questionnaire used in this research consisted of seven sections. The measured factors and their related elements in the questionnaire are given in Table 3.4.

Section (1): It has 10 questions which solicited demographic information and questions related to students experience in using the computer, the Internet and E-learning tools.

Section (2): It has 18 questions which investigate the Technology Acceptance Model constructs which are capable of determining and predicting the extent of the students' acceptance of E-learning.

Section (3): It has 11 questions which investigate the Psychological Factors (PF) that could affect the students' acceptance of E-learning.

Section (4): It has 10 questions which investigate the Social Factors (SF) that could affect the students' acceptance of E-learning.

Section (5): It has 14 questions which investigate the Technological Factors (TF) that could affect the students' acceptance of E-learning implementation.

Section (6): It has 6 questions which investigate the Cultural Factors (CF) that could affect the students' acceptance of E-learning.

Section (7): It has 14 questions which investigate the Institutional Factors (IF) that could affect the students' acceptance of E-learning.

Table 3.4

The measured factors and their related elements in the Questionnaire

Factor Categories	Main Variables	No. of items	Total
Demographic	Demographics, Experience, Usage	10	**10**
Basic Model (TAM)	Perceived Usefulness (PU)	5	**18**
	Perceived Ease of Use (PEU)	6	
	Attitude toward Using E-learning (A)	3	
	Behavioral Intention to Use E-learning (BI)	4	
Psychological Factors (PF)	Enjoyment(EN)	3	**11**
	Computer anxiety(ANX)	4	
	Computer Self-efficacy(CSE)	4	
Social Factors (SF)	Image (IM)	4	**10**
	Subjective Norm (SN)	3	
	Self-Identity(SI)	3	
Technological Factors (TF)	System Performance(SP)	3	**14**
	System functionality (SF)	6	
	System Interactivity (SIN)	2	
	System response (SR)	3	
Cultural Factors (CF)	Individualism/Collectivism(IC)	2	**6**
	Uncertainty Avoidance (UA)	1	
	Power Distance(PD)	1	
	Masculinity/Femininity(MF)	2	
Institutional Factors (IF)	Facilitating Conditions (FC)	5	**14**
	Training (TR)	4	
	Institutional Technical support (ITS)	5	
	Total		**83**

The questionnaire questions were closed-ended questions. The constructing measurements were in a four- point Likert scale (Force choice scale) as depicted in Table 3.5.

Table 3.5

The research Likert scale

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

The Likert scale is structured as strongly agree, agree, disagree and strongly disagree (see Table3.5). The reason behind choosing the four- point Likert scale is to reduce the level of confusion that is caused by the neutral option. According to Raaijmakers et al. (2000), because the midpoint is a neutral position on the scale, students may tend to use it even when they are truthfully undecided or when they are in doubt. In terms of consistency, the weighting scheme was the same in all the questions including the demographic question lists which include four options.

3.4.4 Validity of Questionnaire

Validity refers to the appropriateness, meaningfulness and usefulness of the specific measure (Pedhazur & Schmelkin, 1991). In other words, the validity is the determination of the extent to which an instrument is able to measure what is supposed to be assessed (Slavin, 1992). The validity of the questionnaire was begun with the face and content validity which is the degree to which the scale's measurements can assess the study domain concept (Sekaran, 2003). The questionnaire's draft was sent to a panel of experts in different fields, which are Instructional Technology, Education, Arabic language and English language in order to detect any misleading questions and to elicit suggestions based on their experiences in the field. The experts' comments and suggestions were taken and used. The final questionnaire was considered clear, concise and well designed and valid to be used for the pilot study.

3.4.5 Pilot Study

The pilot study is considered a significant step in developing the measurement scales. According to Zikmund (2003), the pilot study is an experimental study that aims to enhance particular research instrumentations. The reasons behind conducting the pilot study in this research are: 1) in order to assess the readability and clarity of the study questionnaire; 2) testing the adequacy of the instrumentation to measure the targeted concepts; 3) detect the internal consistency and reliability of the utilised questionnaire.

The questionnaire was distributed to 50 students from Al-Jouf University in session one 2009/2010. The returned and usable questionnaires were 48 and two questionnaires were excluded from the analysis due to a large number of unanswered questions. The analysis of internal consistency was obtained from the interval scale items only. The responses to the pilot study were excluded from the main study. The reliability analysis using Cronbach Alpha is given in the next section.

3.4.6 Reliability Analysis

Sekaran (2003) defined reliability as the extent to which the measurement is free of errors or without biases. The Cronbach alpha test was performed in order to determine the reliability for each scale. The Cronbach alpha coefficient above 0.60 is considered as acceptable (Nunnally& Bernstein, 1994; Sekaran, 2000). Thus, the suggested acceptable cut-off level of 0.60 was applied in this research. The corrected item total correlating among all items should be above 0.30 (Hair et al., 1998; Henryson, 1971). Therefore, both ways were utilised in the current research in order to assess the scale reliability and internal consistency. Since the main concern of conducting the pilot study is to examine the reliability of the instruments, the results of the reliability analysis are given in details below. The full SPSS outputs of the pilot study reliability analysis are depicted in Appendix (D)

3.4.6.1 Reliability Analysis of TAM model constructs

The TAM consisted of a dependent variable which is Behavioral Intention to use E-learning (BI) as indicator of students' acceptance of E-learning. It also consisted of the attitude (A) as mediator variable and perceived usefulness (PU) and perceived ease of use (PEU) as internal independent variables. The reliability of each variable is shown in Table 3.6.

Table 3.6

Reliability analysis of TAM variables

Factor	**Variables**	**Total of Items**	**Corrected Item-Total Correlation (>0.3)**	**Cronbach's Alpha (a)**
E-learning Acceptance (ELA)	Behavioral Intention (BI)	4	0.60,0.55,0.68,0.60	0 .80
Mediation	Attitude (A)	3	0.61,0.57,0.46	0.72
Internal Independents variables	Perceived Usefulness (PU)	5	0.54,0.44,0.75,0.60,0.70	0.81
	Perceived Ease of Use (PEU)	6	0.60,0.63,0.45,0.46,0.62,0.55	0.79

3.4.6.2 Reliability of External Factors

Psychological Factor (PF)

A reliability test was performed on the Psychological Factor (PF). The Psychological Factor consisted of three variables namely enjoyment (EN), computer anxiety (ANX) and computer self-efficacy (CSE) with three, four and four items respectively. Table 3.7 presents the results of the reliability test for the Psychological Factor.

Table 3.7

Reliability analysis of the Psychological Factor

Factor	**variables**	**Total of Items**	**Corrected Item-Total Correlation (>0.3)**	**Cronbach's Alpha (a)**
Psychological Factor (PF)	Enjoyment (EN)	3	0.76,0.75,0.64	0 .85
	Computer Anxiety (ANX)	4	0.72,0.63,0.61,0.54	0.81
	Computer Self-Efficacy (CSE)	4	0.59,0.57,0.63,0.34	0.74

Social Factor (SF)

The social factor consisted of three variables namely image (IM), subjective norm (SN), and self identity (SI). It has respectively four items, two items and four items. Table 3.8 presents the results of the reliability test for the Social Factor.

Table 3.8

Reliability analysis of the Social Factor

Factor	Variables	Total of Items	Corrected Item-Total Correlation (>0.3)	Cronbach's Alpha (a)
Social Factor (SF)	Image (IM)	4	0.67,0.64,0.61,0.59	0 .82
	Subjective Norm (SN)	2	0.56,0.55	0.71
	Self Identity (SI)	4	0.60,0.69,0.64,0.59	0 .81

Technological Factor (TF)

The technological factor consisted of four variables, namely System Performance (SP), system functionality (SF), system interactivity (SIN), and system response (SR). They had three items, six items, two items, and three items respectively. Table 3.11 presents the results of the reliability test for the Technological Factor.

Table 3.9

Reliability analysis of the Technological Factor

Factor	variables	Total of Items	Corrected Item-Total Correlation (>0.3)	Cronbach's Alpha (a)
Technological Factor (TF)	System Performance (SP)	3	0.73,0.68,0.81	0 .86
	System functionality (SF)	6	0.70,0.73,0.61,0.55,0.43,0.36	0.80
	System Interactivity (SIN)	2	0.59,0 .59	0.74
	System Response (SR)	3	0.60,0.64,0.53	0.76

Cultural Factor (CF)

The Cultural Factor (CF) consisted of four variables, namely Individualism/Collectivism(IC), Masculinity/Femininity (MF), Uncertainty Avoidance (AU) and Power distance (PD). The Individualism/Collectivism (IC) and Masculinity/Femininity (MF) variables have two items while the other two variables have only one item. Table 3.10 presents the results of the reliability test for the Cultural Factor.

Table 3.10

Reliability analysis of the Cultural Factor

Factor	**Cronbach's Alpha** (a)
Cultural Factor (CF)	0 .77

Institutional Factor (IF)

The Institutional Factor consisted of four variables, namely Facilitating Conditions (FC), Training (TR), and Institutional Technical Support (ITS). It has in each of them five items, four items and five items, respectively. Table 3.11 presents the results of the reliability test for the Institutional Factor.

Table 3.11
Reliability analysis of the Institutional Factor

Factor	Variables	Total of Items	Corrected Item-Total Correlation (>0.3)	Cronbach's Alpha (a)
Institutional Factor (IF)	Facilitating conditions (FC)	5	0.45,0.51,0.65,0.46,0.53	0 .75
	Training (TR)	4	0.46,0.75,0.39,0.64	0.79
	Institutional Technical Support (ITS)	5	0.56,0.61,0.73,0.59,0.43	0 .80

Overall, the pilot study data revealed acceptable alpha reliability coefficient of all items. Therefore, all items were retained for the main study. Thus, the questionnaire could be distributed to the targeted sample.

3.5 Data Collection Procedures

The questionnaire for this study was distributed personally by the researcher after obtaining permissions from the deanship of research and postgraduate studies in each university. The first university that was visited was King AbdulAziz University (KAU) in the Western part of Saudi Arabia. Secondly, the researcher traveled to King Khalid University (KKU) in the Southern region, followed by King Saud University (KSU) and King Faisel University (KFU) in the Central and eastern parts of Saudi Arabia respectively. Finally, the last station was Al-jouf University (JU) in the Northern area. The students were given between 20-30 minutes to complete the questionnaire in their classrooms, libraries and computer labs. A limited number of questions were asked of the researcher during this process. The data collection was carried out in a period of three months from October 2009 to December 2009. Even though visiting the different universities in diverse locations particularly in Saudi

Arabia incurred high expenses, the personally administrated technique has successfully contributed in encouraging the students' participation in this research and also ensuring a high response rate.

3.6 Technique of Data Analysis

The major approach of this study was quantitative survey questionnaire design. Therefore, different analysis techniques were performed using the Statistical Package for Social Science (SPSS) in order to examine the obtained information from the respondents. The demographics information was analysed using the T-test and one way Analysis of Variance (ANOVA) in order to examine any mean differences. A correlation analysis using the Pearson correlation matrix was performed to test the direct relationships (positive or negative) and the strength of the relationships between the hypothesised variables or factors and Students' E-learning acceptance. A Multiple regression analysis was performed in order to assess the influences of independent variables (IVs) on the dependent variables (DVs). The hierarchical multiple regression and Baron & Kenny (1986) approach were utilised in order to examine the attitude mediating affects on the relationship between the main TAM predictors and E-learning acceptance. A stepwise regression was performed in order to obtain the most significant predictors' variables that have strong influence on the E-learning acceptance. The Stepwise regression analysis helped the researcher to come up with a significant acceptance model for E-learning in terms of the most influential factors that affect the students' acceptance in Saudi Arabia. The data analysis techniques used in this research are depicted in Table.3.12.

Table 3.12

The data analysis techniques used in the research

	Research Questions	Analysis Techniques
1	Is there any significant difference in students' E-learning acceptance based on gender, majors and level of experiences in using the computer, the Internet and E-learning in Saudi Arabian institutions of higher education?	T-Test & One way ANOVA
2	What are external factors namely psychological, social, technological, cultural and institutional that could influence E-learning acceptance?	Multiple regression analysis
3	What are the relationships between the external factors (psychological, social, technological, cultural and institutional) and E-learning acceptance?	Pearson product- moment Correlation
4	What are the external variables that would predict E-learning acceptance in Saudi Arabian institutions of higher education?	Stepwise regression analysis
5	Does attitude towards using E-learning mediate the relationship between the main TAM predictor constructs (perceived usefulness & perceived ease of use) and the students' E-learning acceptance?	Hierarchical Multiple regression & Baron & Kenny (1986) approach

CHAPTER FOUR

DATA ANAYLSIS AND FINDINGS

4.1 Introduction

The main aim of the present research is to investigate the factors affecting students' acceptance of E-learning in higher education institutions in Saudi Arabia. This chapter presents the results of the gathered data and the analysis techniques used in this research. This chapter is divided into a number of major sections. Firstly, the collected data was inspected for missing data and outliers. Secondly, the response rate and the profile of the respondents in this research were outlined. Thirdly, factor analysis techniques and their related issues are demonstrated in depth. The reliability of the research constructs has been tested. The different analysis techniques are utilised in order to answer the research questions and test the proposed hypothesis. Fourthly, mean comparison techniques such as independent sample t-test and Analysis of Variance (ANOVA) were utilised in order to examine any means differences in dependent variables (DV) based on the demographical variables. Fifthly, correlation was used to test the direct and the strength of the relationships between the proposed independent variables (IVs) and dependent variables (DV). A Pearson correlation matrix was used in order to test the positive and negative relationship in the proposed hypothesis. Furthermore, multiple regression analysis was performed in order to assess the influences of independent variables (IVs) on the dependent variable (DV). Finally, the chapter is concluded by a summary of the obtained results.

4.2 Data Inspection

The collected data was inspected in order to ensure the data completeness and validity as advised by Hair et al. (2006). The inspection process includes missing data and outliers. The cleaning process was started with the inspection of all of the received questionnaires. The questionnaires with any missing data were eliminated from the data entries in order to ensure that all entry questionnaires were usable for further analysis. Therefore, the usable questionnaires obtained for further analysis were 408 questionnaires. Furthermore, the collected data was also examined to assess the univariate outlier cases because of the main concern for the factor analysis is the outliers. The main technique used to assess the univariate outliers was standard scores (Z-score). All the variables' scores were converted to standard scores. The cases were considered as outliers when the Z-score values were greater than +3 or less than -3 as a result of the current study's large sample size (Coakes & Steed, 2003). As a result of the process above, the obtained data was valid in proceeding with factor analysis.

4.3 Response Rate

Jobber (1989, p. 134) has defined the response rate as "the percentage of total questionnaires mailed (and not returned by the postal service as undelivered) that were returned by respondents". In order to achieve a high response rate, the technique of personally administrating questionnaire was utilised. Sekaran (2003, P.257) has outlined the advantages of using the technique of personally administrating the questionnaire. These are: 1) introducing the questionnaire topic which help the respondents to understand the aim of the distributed survey,2) clarifying any misunderstandings or doubts regarding any questions on the survey, 3) collecting the questionnaires straightaway after the respondents have completed them. However, this type of data collection has disadvantages such as being expensive particularly if the sample is geographically discrete. The distributed questionnaires were 480 for the undergraduate students at five universities in Saudi Arabia. The chosen universities were located in different geographical locations which are King Saud University (KSU) in the Central region, King Abdul Aziz University (KAU) in the Western region, King Faisal University (KFU) in the Eastern region, King Khalid University (KKU) in the Southern region, and Aljouf University (JU) in the Northern region. The response rate was 89.38 % with 429 Questionnaires. Twenty one questionnaires had excessive missing data and were discarded since the respondents had left many questions unanswered. Each case had more than 25 % missing data out of the total items in which situation they should be discarded (Sekaran, 2003, p.302). Thus, the usable response rate was 85 %. Table 4.1 demonstrates the response rate and usable response rate.

Table 4.1

The sample study response rate

Questionnaire Response	**Frequency/Rate**
Number of Questionnaires distributed	480
Returned Questionnaires	429
Questionnaires not returned	51
Usable and returned questionnaire	408
Discarded Questionnaires	21
Response rate	89.38%
Usable response rate	85%

4.4 Profile of Respondents

Besides the obtained information about the factors that could affect E-learning acceptance, the questionnaires obtained demographical and personal information about the respondents regarding their university, major, gender, age, computer ownership, and their experience in using the computer, the Internet and the E-learning. The respondents' profile would help the researcher to get an adequate understanding of the sample profile chosen in this research. The comprehensive understanding would enable the researcher to understand the discrepancies in the measurements of the despondences. The SPSS outputs of students' profile are given in Appendix (E).

4.4.1 University

The result in Table 4.2 shows that KAU represented the highest number of respondents with 39.5% while KSU represented 30.6% of the total respondents. KKU represented 11.0 %, followed by JU which represented 9.6%, and finally KFU represented 9.3 % of the total students' responses.

Table 4.2
The frequency and percentage of the respondents based on universities

University	Frequency	Percentage
KSU	125	30.6
KAU	161	39.5
KFU	38	9.3
KKU	45	11.0
JU	39	9.6
Total	**408**	**100.0**

4.4.2 The students' major

The students were requested to indicate their majors based on their faculty which is either Science or Arts. As shown in Table 4.3, 64.5% of the students were in the Science faculty while 35.5% of the remaining students were in the Arts faculty.

Table 4.3
The frequency and percentage of students' majors

Major	**Frequency**	**Percentage**
SCIENCE	237	58.1
ARTS	171	41.9
Total	**408**	**100.0**

4.4.3 The students' gender

The results shown in Table 4.4 indicate that 62.3% of the respondents were male while the female respondents represented only 37.7% of the total respondents.

Table 4.4
The frequency and percentage of students' gender

Major	**Frequency**	**Percentage**
Male	254	62.3
Female	154	37.7
Total	**408**	**100.0**

4.4.4 The students' age categories

Table 4.5 shows that more than half of the respondents' ages were between 22 and 25 years old (63.5%). The reason behind this is that the foundation and freshmen students were excluded from this research in order to ensure that they had exposure to E-learning experience in their institutions. The percentage of the respondents between 18 and 21years old was 31.1% while 5.4% of the respondents' age were between 26 and 29 years old.

Table 4.5

The frequency and percentage of students' age

Age	Frequency	Percentage
18-21	127	31.1
22-25	259	63.5
26-29	22	5.4
Total	**408**	**100.0**

4.4.5 The students' PC ownership

Table 4.6 shows that the majority of the respondents owned personal computers (93.9%) and only 6.1 % did not own a personal computer. Besides that, most of the universities have computer labs and the students can access the Internet and E-learning using these labs.

Table 4.6

The frequency and percentage of students' PC ownership

PC ownership	Frequency	Percentage
Yes	383	93.9
No	25	6.1
Total	**408**	**100.0**

4.4.6 The students' experience in sing the computer

Table 4.7 presents the number of years the students had used the computer. The students who had used the computer for between 1 and 3 years was represented by 36.8%. The students who had used the computer for between 4 and 8 years were 30.9% of while 25.5% had used it for less than one year. Only 6.9% had used the computer for more than 8 years. To conclude, there are a variety of the levels of experience among the students in the use of the computer.

Table 4.7

The frequency and percentage of students' experience in using the computer

Years using the computer	Frequency	Percentage
<1 Year	104	25.5
1-3 Years	150	36.8
4-8 Years	126	30.9
>8 Years	28	6.9
Total	**408**	**100.0**

4.4.7 The students' experience in using the Internet

In the questionnaire, the students were asked to indicate their experience in using the Internet. As shown in Table 4.8, more than half of the students had experience in using the Internet less than one year (57.8%). The percentage of the students who had experience in using the Internet for between 2 and 4 years was 35.3% while 6.9% had experience in using the Internet for more than 4 years.

Table 4.8

The frequency and percentage of students' experience in using the Internet

Years using the Internet	Frequency	Percentage
<1 Year	230	56.4
2-4 Years	142	34.8
>4 Years	36	8.8
Total	**408**	**100.0**

4.4.8 The respondents' experience of using e-learning

As shown in Table 4.9, almost half of the students used E-learning once per month (48.8%), 27.0% of the students used E-learning little per month while 18.4 % used E-learning little per week. Only 5.9% used E-learning once a day.

Table 4.9
The frequency and percentage of students' experience in using E-learning

E-learning usage	Frequency	Percentage
Once per month	199	48.8
Little per month	110	27.0
Little per week	75	18.4
Once per day	24	5.9
Total	**408**	**100.0**

4.5 Factor analysis procedures of each variable

Factor analysis is usually performed by the researchers when they want to understand the underlying structures of their studied constructs or factors (Hair et al., 2006). Furthermore, Sekaran (2003) has defined it as a multivariate technique which could confirm the measured concepts' dimensions that have been operationally defined as well as indicate the appropriate listed items that related to each dimension. The main purposes of factor analysis in this research are 1) to examine the construct validity of the measuring concept (Cooper & Schindler, 2003); 2) to reduce the number of variables, and 3) to identify the structure in the relationship between variables with defining a set of underlined dimensions. Thus, factor analysis can be utilised as a method of data reduction or structure detection (Hair et al., 1998). Exploratory Factor Analysis (EFA) and Confirmatory Factor Aanalysis (CFA) are the two common types of Factor analyses. According to Coakes, Steed, and Dzidic (2006), exploratory factor analysis is commonly utilised when a researcher wishes to summarise a set of structures variables. Furthermore, it can be also used when a researcher wants to identify the underlying dimensions of a set of constructs that are assessed by a specific instrumentation. Conversely, confirmatory factor analysis is used when a researcher seeks to confirm a theory about the structure of a particular domain (Hair, et al., 2006; Coakes et al., 2006). While the current research is aimed at conducting the factor analysis technique in order to identify and observe the underlying dimensions of a set of variables, exploratory factor analysis is considered as justifiable and suitable. The common method of performing exploratory factor analysis is principle component.

In order to perform the factor analysis technique and assess a goodness of adapted scales' measurement, several assumptions should be taken into consideration. Firstly, the sample size must be adequately large. Coakes et al. (2006) suggested that 100 subjects are acceptable for factor analysis. In addition, Comfrey and Lee (1992) suggested that the preferable sample size for conducting factor analysis is 200 subjects or more. The current research sample size is 408 subjects, which is considered quite adequate for conducting the essential statistical analysis such as factor analysis. Secondly, a correlation matrix coefficients between the items must contain two or more items that have at least a cutoff value of 0.30 or greater (Hair et al., 1998). Moreover, correlation coefficients between the items must be no more than 0.90. This is because the high intercorrelation value of greater than 0.90 is considered as multicollinearity and should be removed from the analysis (Hair et al., 1998). Thirdly, the Bartlett's test of sphericity must be significant and large (Hair et al., 2006) and the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy must be greater than 0.50 (Hair et al., 2006; Kinnear & Gray, 1994). Finally, the factors with a loading of 0.30 only or greater were considered as acceptable (Hair et al., 1998). Items with loadings of 0.50 or higher on one factor and loaded at a difference of less than 0.10 on other factor were removed in order to avoid loading in wrong factor and cross (double) loading respectively.

The Kaiser-Guttman criterion was applied regarding the number of factors to be extracted which were factors with only an eigenvalues equal or greater than one can be extracted (Guttman, 1954; Kaiser, 1960). Thus, the variables with eigenvalues less than one (< 1.00) were discarded. The factor analysis was individually performed of each following scales because the ratio of five subjects per item (5:10) suggested by Coakes and Steed (2003) and the ratio of ten subjects per item (1:10) to run a single factor analysis were not achieved (Hair et al., 1998). The required sample size to run the factor analysis for all the items together is 820 subjects (82 interval scale x 10 = 820 respondents). Since the obtained subjects were only 408, the factor analysis was performed separately. The following sections demonstrate the validity of each dimension. The full output of SPSS is provided in Appendix (F).

4.5.1 E-learning Acceptance (ELA)

A total of four items were utilised to assess E-learning Acceptance (ELA). E-learning Acceptance was represented by the Behavioral Intention to use (BI). Table 4.10 provides the results of the factor analysis on E-learning acceptance (ELA).

Table 4.10
Factor loading for E-learning acceptance (ELA)

Items	**BI**
Behavioral Intention1 (BI1)	0.80
Behavioral Intention2 (BI2)	0.79
Behavioral Intention3 (BI3)	0.78
Behavioral Intention4 (BI4)	0.74
Eigenvalues	2.44
Percentage of Variance Explained	61.02
Total Variance Explained	61.02
KMO	0.76
Bartlett's test of sphericity approx. chi square	457.67
Df	6
p	.00

As represented in Table 4.10, the KMO was 0.76 and considered acceptable (>.500) and the Bartlett's test of sphericity was significant (p<.05). The mentioned values indicated the appropriateness of conducting a factor analysis for E-learning acceptance variables. Results from Varimax rotated analysis indicated that Behavioral Intention (BI) accounted for 61.020% of the total variance explained with an eigenvalues of 2.441. Factor loading for the BI items ranged from 0.74 to 0.80. Therefore, the results provide initial support for the use of Behavioral Intention (BI) to measure the E-learning acceptance conceptualisation.

4.5.2 Attitude (A)

The attitude factor is used as a mediating variable in the current study based on the TAM. The Attitude consists of 3 items which reflects the students' attitude towards using E-learning. The results of Varimax rotated analysis is given in Table 4.11.

Table 4.11
Factor loading for Attitude (A)

Items	A
Attitude 1 (A1)	0.83
Attitude 2 (A2)	0.82
Attitude 3 (A3)	0.70
Eigenvalues	1.86
Percentage of Variance Explained	61.98
Total Variance explained	61.98
KMO	0.64
Bartlett's test of sphericity approx. chi square	222.72
Df	3
p.	.000

As portrayed in Table 4.11, the KMO was 0.64, which is considered acceptable because it is more than 0.50, Bartlett's test of sphericity was significant ($p<.05$). It can be said that the factor analysis was appropriate and could be performed on these items. The Attitude factor consisted of three items which reflect the students' attitude towards using e-learning. Attitude accounted 61.987 % of the total variance explained with an eigenvalues of 1.86. Factor loading for items in this factor ranged from 0.701 to 0.830 which is considered acceptable and justifiable. Thus, the attitude factor can be measured with the evaluated items.

4.5.3 Perceived Usefulness (PU) and Perceived Ease of Use (PEU)

Perceived Usefulness and Perceived Ease of Use are considered as internal independent variables of the Technology Acceptance Model. A total of 11 items of PU and PEU were submitted for factor analysis. Principle component extraction and Varimax rotated analysis were employed in order to interpret the targeted factors. The result is shown in Table 4.12.

Table 4.12

Factor loading for Perceived Usefulness (PU) & Perceived Ease of Use (PEU)

Items	**PEU**	**PU**
Perceived Ease of Use1 (PEU1)	0.73	
Perceived Ease of Use2 (PEU2)	0.71	
Perceived Ease of Use3 (PEU3)	0.69	
Perceived Ease of Use4 (PEU4)	0.68	
Perceived Ease of Use5 (PEU5)	0.65	
Perceived Ease of Use6 (PEU6)	0.45	
Perceived Usefulness1(PU1)		0.77
Perceived Usefulness2(PU2)		0.73
Perceived Usefulness3(PU3)		0.72
Perceived Usefulness4(PU4)		0.68
Perceived Usefulness5(PU5)		0.63
Eigenvalues	3.34	1.95
Percentage of Variance Explained	24.37	23.70
Total Variance Explained	48.06	
KMO	0.81	
Bartlett's test of sphericity approx. chi square	998.36	
Df	55	
P.	.00	

According to Table 4.12, the overall KMO was 0.81 which exceeds the minimum requirement of 0.50. The probability association with Bartlett's test of sphericity was significant (p<.05). The results for the factor analysis revealed that the two factors (PEU & PU) have eigenvalues greater than one that explained 48.06 of the total Variance explained. Perceived ease of use with eigenvalues of 3.34 explained about 24.37 % of the total variance. Factor loading for PEU items was ranged from 0.45 to 0.73. On the other hand, Perceived Usefulness with an eigenvalues of 1.95 has accounted for 23.70 % of the total variance explained. Factor loading of the items in this factor ranged from 0.63 to 0.77. Overall, the results indicated a goodness of the current study's factor measurements.

4.5.4 Psychological Factor (PF)

A total of 19 items were used to measure the Psychological Factors (PF). Psychological factors were referred to as psycho-personal factors that could affect the students' acceptance of E-learning. PF consisted of Enjoyment (EN), Computer Anxiety (ANX) and Computer Self-Efficacy (CSE). Table 4.13 provides the results of the factor analysis on PF items.

Table 4.13
Factor loading for the Psychological Factor (PF)

Items	**ANX**	**CSE**	**EN**
Computer Anxiety1 (ANX1)	.80		
Computer Anxiety2 (ANX2)	.76		
Computer Anxiety3 (ANX3)	.75		
Computer Anxiety4 (ANX4)	.74		
Computer Self–efficacy1 (CSE1)		.81	
Computer Self–efficacy2 (CSE2)		.79	
Computer Self–efficacy3 (CSE3)		.78	
Computer Self–efficacy4 (CSE4)		.57	
Enjoyment1 (EN1)			.89
Enjoyment2 (EN2)			.85
Enjoyment3 (EN3)			.83
Eigenvalues	1.505	2.244	3.277
Percentage of Variance Explained	13.684	20.40	29.79
Total Variance Explained	63.88		
KMO	.67		
Bartlett's test of sphericity approx. chi square	1663.82		
Df	55		
p.	.00		

As portrayed in Table 4.13, The KMO was 0.67 while Bartlett's test of sphericity was significant ($p<.05$). Thus, Principle component extraction and Varimax rotated analysis indicated the existence of three factors of PF with eigenvalues greater than one and explained 63.88 of the total variances.

Enjoyment (EN) included 3 items. This factor has high eigenvalues of 3.27. Items Factors loading ranged from 0.83 to 0.89 accounts for 29.79 % of the variance explained. Thus, the validity of enjoyment's construct is acceptable and justifiable. Computer anxiety (ANX) consisted of 4 items which reflect the students' apprehension when using the computer. This factor has accounted for 13.68 % of the total variance explained with an eigenvalue of 1.50. ANX factor loading ranged from 0.74 to 0.80.

Computer self-efficacy (CSE) was represented by four items. This factor with an eigenvalue of 2.24 accounted for 20.40 % of the variance explained. The factor items had factor loading arranged from 0.57 to 0.81. Overall, the results indicated a goodness of the current study factors' scale and its validation.

4.5.5 Social Factor (SF)

A total of 10 social factor (SF) items were examined by principle component and Varimax rotated analysis. The Social factors have three main variables which including image (IM), self-identity (SI) and subjective norm (SN). It has respectively four items, four items and two items. The results are shown in Table 4.14.

Table 4.14
Loading of the Social Factor (SF)

Items	**IM**	**SI**	**SN**
Image1 (IM1)	.79		
Image2 (IM2)	.77		
Image3 (IM3)	.76		
Image4 (IM4)	.68		
Self-identity1 (SI1)		.82	
Self-identity2 (SI2)		.82	
Self-identity3 (SI3)		.74	
Self-identity4 (SI4)		.61	
Subjective Norm1 (SN1)			.86
Subjective Norm2 (SN2)			.85
Eigenvalues	3.67	1.40	1.33
Percentage of Variance Explained	36.71	14.03	13.33
Total Variance explained	64.08		
KMO	.67		
Bartlett's test of sphericity approx. chi square	1532.61		
Df	45		
p.	.00		

According to Table 4.14, the results of the factor analysis illustrate that a proposed three variables with eigenvalues greater than the acceptable cutoff level explained 64.08% of the total variance. Thus, the factor analysis can be performed effectively. Image (IM), with its three items, has an eigenvalue of 3.67 accounting for 36.71 % of the variance explained. IM items had a factor loading ranged from 0.68 to 0.79. Self-Identity (SI) has four items to measure it. This factor, with an eigenvalue of 1.403, accounted for 14.034 % of the total variance. Self-Identity items have a factor loading from 0.61 and 0.82. Thus, the provided values indicated that the factor's items have shown great goodness. The last factor in Social Factors is Subjective Norm (SM) which has two items. SN with an eigenvalue of 1.33 accounted for 13.33 of the total variance. Furthermore, factor loading in this factor ranged from .85 to .86 which is considered as acceptable values.

4.5.6 Technological Factor (TF)

A total of 14 items were used to assess technological Factors (TF). The Technological Factor was related to the issues of the E-learning system used. TF consisted of System Functionality (SF), System Response (SR), System Performance (SP) and System Interactivity (SI). System Functionality was assessed using six items and System Response consisted of three items. System Performance also contained three items while System Interactivity had two items. The results of principle component extraction method and Varimax rotated analysis are given in Table 4.15.

Table 4.15
Factor loading for the Technological Factor (TF)

Items	**SF**	**SR**	**SP**	**SI**
System Functionality1 (SF1)	.86			
System Functionality2 (SF2)	.85			
System Functionality3 (SF3)	.67			
System Functionality4 (SF4)	.66			
System Functionality5 (SF5)	.62			
System Response1 (SR1)		.78		
System Response2 (SR2)		.77		
System Response3 (SR3)		.75		
System Functionality6 (SF6)		.69		
System Performance1 (SP1)			.88	
System Performance2 (SP2)			.82	
System Performance3 (SP3)			.79	
System Interactivity1 (SI1)				.83
System Interactivity2 (SI2)				.75
Eigenvalues	4.49	2.20	1.49	1.10
Percentage of Variance Explained	32.10	15.68	10.65	7.88
Total Variance Explained	66.32			
KMO	.770			
Bartlett's test of sphericity approx. chi square	2516.70			
Df	91			
p.	.00			

As shown in Table 4.15, the KMO value for the Technological Factor items was 0.77. The Bartlett's test of sphericity was also found to be significant ($p<.05$). Thus, factor analysis of these items indicated that is was appropriate to be conducted.

The principle component methods revealed the presence of four components with eigenvalues exceeding one, explaining 66.32 of the total variance. System Functionality (SF) includes six items which accounted for 32.10 % of the total variance explained with an eigenvalue of 4.49. The factor loading of its items was acceptable as it ranged from 0.62 to 0.86. One item (SF6) contributed highly to system response with loading of 0.69. Thus, according to Hair et al. (1998) items that contributed highly to other variables can take the label name or retain which original variable. Therefore, SF6 was retained with its related variable. System Response (SR) (eigenvalue = 2.20) contributed 15.68 % of the total variance explained. Its factor loading ranged from 0.69 to 0.78. Thus, the factor items met the current research criteria and the three items were retained. System Performance (SP) was represented by 3 items and accounted for 10.65 of the total variance explained with an eigenvalue of 1.49. Items factor loading ranged from 0.79 to 0.88. The last factorability of System Interactivity (SI) indicated that this factor, with an eigenvalue of 1.10, accounted for 7.88% of the total variance explained. Items factor loading ranged from 0.75 to 0.83.

The results of analysing the factorability of the Technological Factor items met the proposed criteria and resulted in elimination of one item. The total items used in the analysis were 14 items.

4.5.7 Cultural Factor (CF)

A total of six items were used to assess the cultural influence on students' acceptance of E-learning. It has the original four dimensions of hofstede. A total of two items were eliminated because they failed to meet the minimum criterion of having a primary eigenvalue of one (Uncertainty Avoidance (UA) eigenvalue = 0.69, Power Distance (PD) = 0.60). Thus, four items measuring Masculinity/Femininity (MF) and Individualism/Collectivism (IC) were retained for future analysis. The result is shown in Table 4.16.

Table 4.16
Factor loading for the Cultural Factor (CF)

Items	**MF**	**IC**	**UA**	**PD**
Masculinity/ Femininity 1 (MF1)	.89			
Masculinity/ Femininity 2 (MF2)	.88			
Individualism/Collectivism1 (IC1)		.87		
Individualism/Collectivism2 (IC2)		.86		
Uncertainty Avoidance (UA1)			.95	
Power Distance1 (PD1)				.94
Eigenvalues	2.61	1.35	.69	.60
Percentage of Variance Explained	43.59	22.46	11.60	10.12
Total Variance Explained	55.06			
KMO	.70			
Bartlett's test of sphericity approx. chi square	657.60			
Df	15			
p.	.00			

The overall KMO was acceptable with the value of 0.70 with the 55.06 of total Variance explained while the Bartlett's test of sphericity was also found to be significant ($p<.05$). Thus, the factor analysis of these items indicated that I was suitable to be conducted. Masculinity/Femininity (MF) items accounted for 43.59% of the total variances with an eigenvalue of 2.61. The items had a factor loading ranging from 0.88 to 0.89. Individualism/Collectivism (IC) had also retained its two items by achieving 1.35 eigenvalue and accounted for 22.46 of the total variance. It also had a high factor loading which ranged from 0.87 to 0.86. As a result of that, four items were retained to measure the cultural factors that affect students' E-learning acceptance.

4.5.8 Factor analysis of the Institutional Factor (IF)

A total of 14 items were used to measure the Institutional Factor (IF). An institutional factor consists of three variables, namely Institutional Technical Support (ITS), Facilitating Conditions (FC), and Training (TR). It has respectively 5 items, 5 items and 4 items. Table 4.17 provides the results of the factorability on the IF items.

Table 4.17
Factor loading for the Institutional Factor (IF)

Items	ITS	FC	TR
Institutional Technical Support1 (ITS1)	.69		
Institutional Technical Support2 (ITS2)	.68		
Institutional Technical Support3 (ITS3)	.63		
Institutional Technical Support4 (ITS4)	.60		
Institutional Technical Support5 (ITS5)	.59		
Facilitating Condition1 (FC1)		.72	
Facilitating Condition2 (FC2)		.69	
Facilitating Condition3 (FC3)		.67	
Facilitating Condition4 (FC4)		.66	
Facilitating Condition5 (FC5)		.64	
Training1 (TR1)			.85
Training2 (TR2)			.83
Training3 (TR3)			.56
Training4 (TR4)			.52
Eigenvalues	4.66	1.66	1.33
Percentage of Variance Explained	33.28	11.86	9.49
Total Variance Explained	54.63		
KMO	.76		
Bartlett's test of sphericity approx. chi square	2036.49		
df	91		
p.	.000		

According to Table 4.17, the overall KMO was 0.76 which exceeds the minimum requirement of 0.50. The probability association with Bartlett's test of sphericity was significant (p<.05). The principle component methods revealed the presence of three main components with eigenvalues exceeding one, explaining 54.63 of the total variance. Institutional Technical Support (ITS), which includes four items, accounted for 33.28% of the total variance explained with an eigenvalue of 4.66. The factor loading of its items was acceptable as it ranged from 0.59 to 0. 69. Facilitating Conditions (FC) (eigenvalue = 1.66) contributed 11.85 % of the total variance explained. Its factor loading ranged from 0.64 to 0.72. Thus, the factor items met the current research criteria and five items were retained. Training (TR), represented by 4 items accounted for 9.49 of the total variance explained with an eigenvalue of 1.33. The items factor loading ranged from 0.52 to 0.85. The results of analysing the factorability of the Institutional Factors (IF) items met the research criteria and resulted in retention of all 14 items for further data analysis.

4.6 Reliability Analysis Procedures

Reliability refers to the stability and consistency with which the instrument measures the concepts and helps to assess the goodness of the measure (Sekaran, 1992). The main issue in the research scale is internal consistency (Pallant, 2001). The measurement's internal consistency is utilised to test the degree of inter-correlation between items (Sekaran, 2003). According to Hair et al. (2006), all the individual items of a measurement should be measuring the same construct and be highly correlated. Two ways will be applied in this research to gauge the scale reliability and internal consistency. Firstly, the Cronbach's alpha coefficient that would provide an indication of the average of all the items' correlation that structures the scale (Pallant, 2001). The Cronbach's alpha coefficient above 0.60 is considered as acceptable (Nunnally & Bernstein, 1994; Sekaran, 2000). Therefore, the suggested acceptable cut-off level of 0.60 was applied in this research. Secondly, the corrected item total correlation among all items should be above 0.30 (Hair et al., 1998; Henryson, 1971). Therefore, both ways were utilised in the current research in order to assess the scale reliability. The full SPSS outputs of the reliability analysis are depicted in Appendix (G).

4.6.1 E-Learning Acceptance (ELA)

Internal consistency assessments were performed individually in order to assess each factor variable. Table 4.18 represents the results of the reliability test for E-learning Acceptance (ELA). The Behavioral Intention (BI) variable has four items that measure its concept and that are considered as dependent variable for this research.

Table 4.18
Reliability analysis for E-learning Acceptance (ELA)

variables (ELA)	**Total of Items**	**Corrected Item-Total Correlation**	**Cronbach's Alpha (a)**
Behavioral Intention(BI)	4	0.56, 0.59, 0.58, 0.52	0.77

As shown in Table 4.18, the Cronbach's alpha value for Behavioral Intention is 0.77, indicating an acceptable reliability for this variable (Hair et al., 2006). The corrected item total correlation ranged from 0.52 to 0.59, which are considered as acceptable.

4.6.2 Attitude (A)

A reliability test of mediator variable was performed. Table 4.19 presents the results of the reliability test for the Attitude (A). The Attitude (A) variable has three items that gauge its concept and that are considered as mediator variables for this research.

Table 4.19

Reliability analysis for Attitude (A)

Variable	Total of Items	Corrected Item-Total Correlation	Cronbach's Alpha(a)
Attitude(A)	3	0.57,0.56,0.43	0.70
(Mediator variables)			

As portrayed in Table 4.19, the Cronbach's alpha value for Attitude is 0.70, indicating an acceptable reliability level for this variable. The corrected item total correlation ranged from 0.43 to 0.57, which are considered as highly correlated and acceptable.

4.6.3 Perceived Usefulness (PU) and Perceived Ease of Use (PEU).

Reliability tests on Perceived Usefulness (PU) and Perceived Ease of Use (PEU) variables were performed. Table 4.20 represents the results of the reliability tests for the Perceived Usefulness (PU) and Perceived Ease of Use (PEU) variables. The Perceived Usefulness (PU) variable has five items while the Perceived Ease of Use (PEU) variable has six items.

Table 4.20

Reliability analysis for Perceived Usefulness (PU) and Perceived Ease of Use (PEU)

Internal independents variables	Total of Items	Corrected Item-Total Correlation	Total Cronbach's Alpha (a)
Perceived Usefulness (PU)	5	0.62,0.55,0.53, 0.49, 0.44	0.76
Perceived Ease of Use (PEU)	6	0.53,0.54,0.50,0.51,0.47,0.34	0.74

According to Table 4.20, the Cronbach's alpha value for Perceived Usefulness is 0.76, indicating an acceptable reliability level for this variable. The corrected item total correlation ranged from 0.44 to 0.62, which are considered as acceptable as well as highly correlated. The Cronbach's alpha value of Ease of Use (PEU) is .74, indicating an acceptable reliability level for this variable. The corrected item total correlations ranged from 0.34 to 0.54, and there are considered as acceptable.

4.6.4 Psychological Factor (PF)

Reliability test was performed on the Psychological Factor (PF). The Psychological Factor consisted of four variables namely Enjoyment (EN), Computer Anxiety (ANX) and Computer self-efficacy (CSE). Each of these has three items, four items and four items, respectively. Table 4.21 presents the results of the reliability test on the Psychological Factor variables.

Table 4.21
Reliability analysis for the Psychological Factor (PF) and its related variables

Factor	**Variables**	**# of Items**	**Corrected Item-Total Correlation**	**Cronbach's Alpha (a)**	**Overall Alpha(a)**
Psychological Factor (PF)	Enjoyment (EN)	3	0.72, 067, 0.63	0.82	**0.74**
	Computer Anxiety (ANX)	4	0.64,0.58,0.54, 0.59	0.78	
	Computer self-efficacy (CSE)	4	0.61,0.57,0.60,0.43	0.75	

The results in Table 4.21 indicate that the Cronbach's alpha value for Enjoyment (EN) is 0.82, indicating an acceptable reliability level for this variable. The corrected item total correlation ranged from 0.63 to 0.72 which are considered as acceptable. The Cronbach's alpha value of Computer Anxiety (ANX) is 0.78. The total items corrected correlation was ranged from 0.59 to 0.64, which are considered as acceptable. The Cronbach's alpha value of Computer self-efficacy (CSE) is 0.75, indicating an acceptable reliability level for this variable. The corrected item total correlation ranged from 0.43 to 0.61 which are considered acceptable. The overall alpha of the psychological factor was 0.75.

4.6.5 Social Factor (SF)

Reliability test was performed on the Social Factor (SF) variables. Social Factor consisted of three variables namely Image (IM), Subjective Norm (SN), and Self Identity (SI). They have each four items, two items, four items, and four items, respectively. Table 4.22 presents the results of the reliability test for Social Factor.

Table 4.22
Reliability analysis for the Social Factor (SF) and its related variables

Factor	**Variables**	**Total of Items**	**Corrected Item-Total Correlation**	**Total Cronbach's Alpha(a)**	**Overall Alpha(a)**
Social Factor (SF)	Image (IM)	4	0.60,0.61,0.59,0.56	0.78	**0.81**
	Subjective Norm (SN)	2	0.52,0.52	0.69	
	Self Identity (SI)	4	0.59,0.65,0.60,0.51	0.78	

The results in Table 4.22 indicate that the Cronbach's alpha value for Image (IM) variable was 0.78, indicating an acceptable and good reliability level. The corrected item total correlation ranged from 0.56 to 0.61 which is considered as acceptable as well as highly correlated. The Cronbach's alpha value of Subjective Norm (SN) was 0.69. The corrected item total correlation was 0.52 which is considered as acceptable. The Cronbach's alpha value of Self Identity (SI) was 0.78, indicating an acceptable reliability level for this variable. The corrected item total correlation ranged from 0.51 to 0.65 which is considered as acceptable and justified. The overall alpha value of Social Factor was 0.81.

4.6.6 Technological Factor (TF)

A reliability test was performed on the Technological Factor (TF) variables. The Technological Factor consisted of four variables namely System Performance (SP), System Functionality (SF), System Interactivity (SIN), and System Response (SR). They had respectively, three items, six items, two items, and three items. Table 4.23 presents the results of the reliability test on the Technological Factor.

Table 4.23
Reliability analysis for Technological Factor (TF) and its related variables

Factor	**variables**	**Total of Items**	**Corrected Item-Total Correlation**	**Total Cronbach's Alpha(a)**	**Overall Alpha(a)**
Technological Factor (TF)	System Performance (SP)	3	0.70,0.61,0.60	0.79	**0.83**
	System functionality (SF)	6	0.69,0.69,.67,0.56, 0.50,0.39	0.82	
	System Interactivity (SIN)	2	0.53,0.53	0.70	
	System Response (SR)	3	0.60,0.52,0.51	0.72	

As shown in Table 4.23, the Cronbach's alpha value for System Performance (SP) was 0.79, indicating an acceptable reliability level for this variable. The corrected item total correlation ranged from 0.60 to 0.70, which is considered as acceptable. The Cronbach's alpha value of System functionality (SF) was 0.82. The corrected item total correlation was ranged from 0.39 to 0.69 which is considered as acceptable. The Cronbach's alpha value of System Interactivity (SIN) was 0.70, indicating an acceptable reliability level for this variable. The corrected item total correlation is 0.53. System Response (SR) alpha coefficient was 0.72. The corrected item total correlation ranged from 0.51 to 0.60 which is considered as acceptable and justified. The overall value alpha of the Technological Factor was 0.83.

4.6.7 Cultural Factor (CF)

The extracted items from the factor analysis were tested for reliability. The Cultural Factor (CF) consisted of two variables namely Individualism/Collectivism (IC) and Masculinity/Femininity (MF). Both variables had two items each. Table 4.24 presents the results of the reliability test for the Cultural Factor.

Table 4.24
Reliability analysis for the Cultural Factor (CF) and its related variables

Factor	variables	Total of Items	Corrected Item-Total Correlation	Total Cronbach's Alpha(a)	Overall Alpha(a)
Cultural Factor (CF)	Individualism/ Collectivism (IC)	2	0.59, 0.59	0.74	**0.76**
	Masculinity/Femininity (MF)	2	0.67, 0.67	0.80	

As shown in Table 4.24, the Cronbach's alpha value for Individualism/Collectivism (IC) was 0.74, which indicated that the items were reliable for this variable. The corrected item total correlation was 0.59, which was considered as acceptable as well as highly correlated. The Cronbach's alpha value of Masculinity/Femininity (MF) was 0.80. The corrected item total correlation was 0.67 which is considered as acceptable. The overall alpha value of the cultural factor was 0.76.

4.6.8 Institutional Factor (IF)

A reliability test was performed on the Institutional Factor (IF). The Institutional Factor consisted of four variables, namely Facilitating Conditions (FC), Training (TR), and Institutional Technical Support (ITS). Each had respectively five items, four items and five items. Table 4.25 presents the results of the reliability test on the Institutional Factor.

Table 4.25
Reliability analysis for the Institutional Factor (IF) and its related variables

Factor	variables	Total of Items	Corrected Item-Total Correlation 0	Total Cronbach's Alpha(a)	Overall Alpha(a)
Institutional Factor (IF)	Facilitating conditions (FC)	5	0.56,0.41,0.62,0.51,0.52	0.75	**0.84**
	Training (TR)	4	0.69,0.53,0.49,0.51	0.76	
	Institutional Technical Support (ITS)	5	0.50,0.45,0.57,0.50,0.44	0.73	

As portrayed in Table 4.25, the Cronbach's alpha value for Facilitating Conditions (FC) was 0.75, indicating an acceptable reliability level. The corrected item total correlation ranged from 0.41 to 0.62, which was considered as acceptable as well as highly correlated. The Cronbach's alpha value of Training (TR) was 0.76. The corrected items total correlation ranged from 0.49 to 0.69 which is considered as highly correlated and acceptable. The Cronbach's alpha value of Institutional Technical Support (ITS) was 0.73, indicating an acceptable reliability level for this variable. The corrected item total correlation ranged from 0.43 to 0.57, which is considered as acceptable and justified. Over all, the Cronbach's alpha values for all the variables were acceptable and justifiable. Therefore, further analysis of obtained data was conducted.

4.7 Descriptive Analysis

To understand the variability of subscale derived from the factor analysis, means, slandered deviations and intercorrelation between the model's variables were computed. Table 4.26 shows the means and standard deviations of the research variables.

Table 4.26
Means and standard deviations for all Variables

Variables	M	SD
Psychological Factor (PF)	3.20	0.39
Social Factor (SF)	3.19	0.47
Technological Factor (TF)	3.13	0.44
Cultural Factor (CF)	3.14	0.50
Institutional Factor (IF)	3.07	0.43
Perceived Usefulness (PU)	3.25	0.54
Perceived Ease of Use (PEU)	3.06	0.53
Attitude (A)	3.14	0.50
Behavioral Intention (BI)	2.94	0.67

As portrayed in Table 4.26, it can be observed that the mean scores of BI indicated a moderating level of Behavioral Intention with 2.94 (SD= 0.67). For the Attitude (A) the mean was 3.14 (SD=0.50), which indicated a moderate level of agreement. The internal independent variables means scores show that perceived usefulness accounted 3.25 (SD= 0.54), while the mean of perceived ease of use was 3.06 with SD of 0.53. The mean score of the proposed external factors (Institutional Factor, Cultural Factor, Technological Factor, Social Factor and Psychological Factor) ranged from 3.07 to 3.20 whilst the standard deviation values ranged from 0.39 to 0.50, indicating a weak agreement with the influence of the proposed factors on E-learning acceptance.

4.7.1 Correlation Analysis

Correlation analysis is a statistical method used to describe the strength and direction of the linear relationship between two variables (Pallant, 2001). The degree of correlation concerned is to measure the strength and importance of a relationship between the variables. Pearson's correlation coefficient (*r*) with significance levels was utilised in order to assess the correlations between the variables. Cohen (1988) has provided a guideline to explain the strength and the degree of the correlation between two variables as presented in Table 4.27. In Table 4.28, a summary of the variables' correlations is presented while the SPSS output details are illustrated in Appendix (H).

Table 4.27

Cohen's Guideline of Correlation Strength

r	Strength of relationship
0.10 to 0.29 / - 0.10 to - 0.29	Low
0.30 to 0.49 / - 0.30 to - 0.49	Moderate
0.50 to 1.0 or / - 0.50 to - 0.1.0	High

Table 4.28

Summary of Correlations of Variables

Study variables	Correlation coefficient	Strength of relationship
Psychological Factor (PF) and ELA	0.31**	Moderate
Social Factor (SF) and ELA	0.54**	High
Technological Factor (TF) and ELA	0.72**	High
Cultural Factor (CF) and ELA	0.10*	Low
Institutional Factor (PF) and ELA	0.63**	High
Perceived Usefulness (PU) and Perceived Ease of Use (PEU)	0.27**	Moderate
Perceived Usefulness (PU) and Attitude (A)	0.17**	Low
Perceived Ease of Use (PEU) and Attitude (A)	0.26**	Low
Attitude (A) and Behavioral Intention (ELA)	0.15*	Low

* p <.05, ** p <.01

4.8 Regression Analysis

For the purpose of answering the research questions, multiple regressions were performed. However, several assumptions must be met in order to conduct multiple regression analysis. There are mainly normality, linearity, homoscedasticity and independence of errors terms, multicollinearity and multivariate outliers (Hair et al, 1998; 2006; Pallant, 2001; Coakes & Steed, 2003). The SPSS outputs of regression assumptions are fully given in Appendix (I).

4.8.1 Normality Assessment

Hair et al. (1998) suggested that the normality of the data be checked as a fundamental step, before the regression analysis. The normality was assessed utilising two techniques, a visualization of the normal distribution histogram, as shown in Figure 4.1, and also the values of skewness and Kurtosis for all variables as shown in Table 4.29.

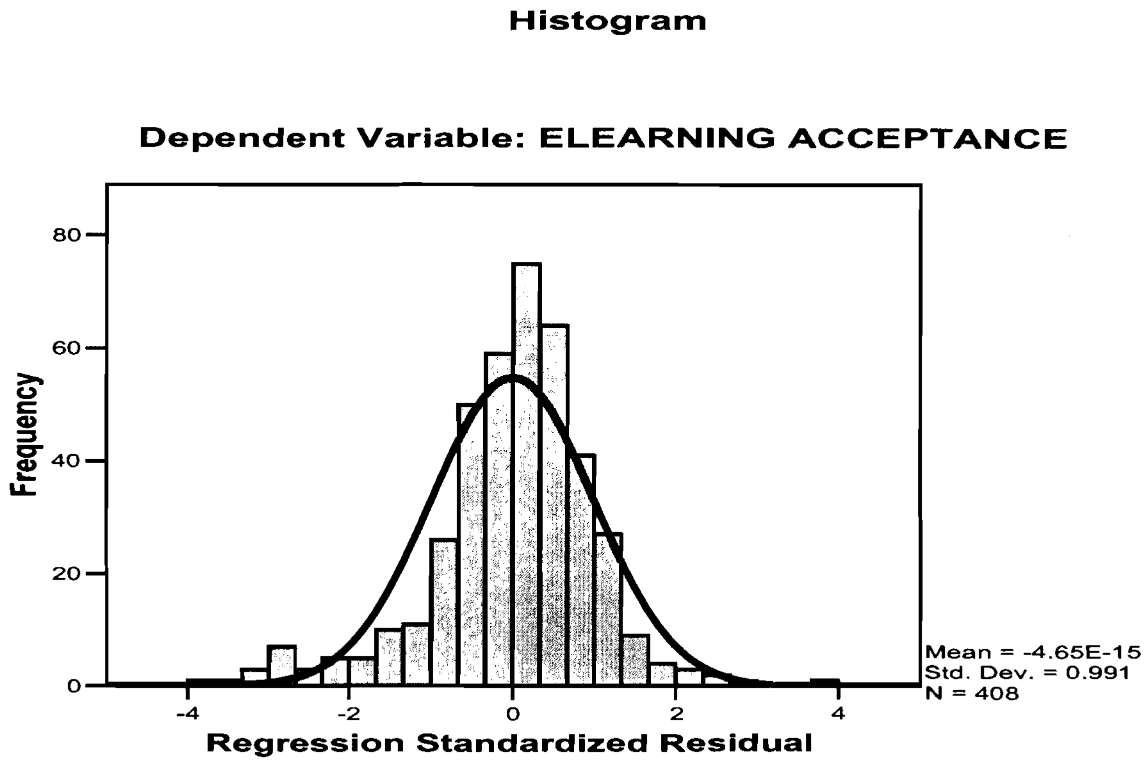

*Figure 4.1.*Normality Test Histogram of Standardized residuals

As portrayed in Figure 4.1, the sample of study was normally distributed because the histogram displayed a bell shaped curve for all the examined residuals and no exaggerated cluster was observed. Therefore, the normality assumption was already met.

As shown in Table 4.29, all of the variables' skewness and Kurtosis statistics were between the normal distribution ± 2 Standard deviations (Hair et al., 1998). Thus, the normality assessment was met and the collected data was valid for regression analysis.

Table 4.29

Statistic Values of Skewness and Kurtosis (Descriptive Statistics) (n=408)

Variables	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error
Psychological Factor (PF)	-.411	.121	-.287	.241
Social Factor (SF)	-.408	.121	-.309	.241
Technological Factor (TF)	-.399	.121	-.495	.241
Cultural Factor (CF)	-.383	.121	-.331	.241
Institutional Factor (IF)	-.118	.121	-.524	.241
Perceived Usefulness (PU)	-.541	.121	-.587	.241
Perceived Ease of Use (PEU)	-.146	.121	-.765	.241
Attitude (A)	-.367	.121	-.734	.241
E-Learning Acceptance(ELA)	-.455	.121	-.418	.241

4.8.2 Linearity

In order to assess the linearity, the normal plot diagram was utilised. Figure 4.2 illustrates the results of testing the linearity.

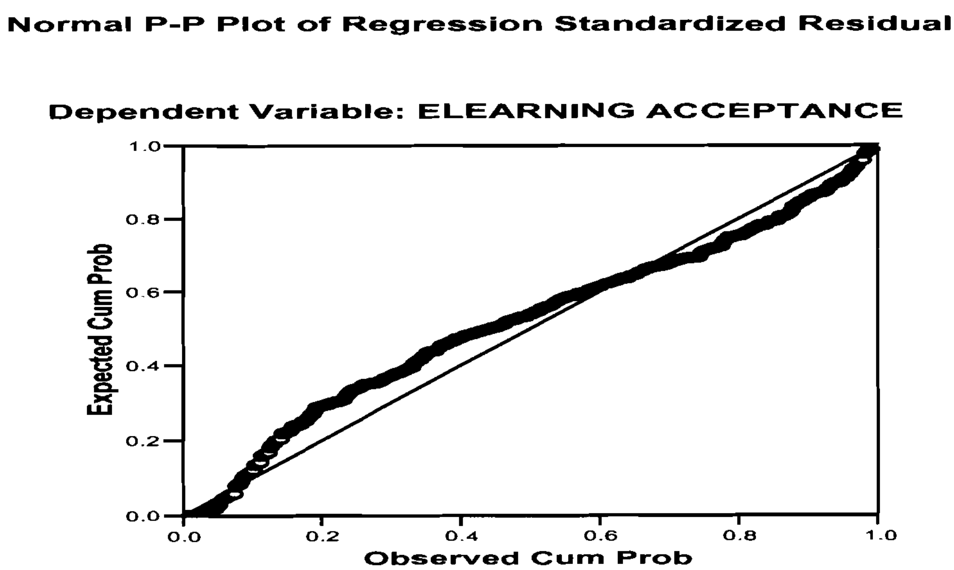

Figure 4.2
Normal Probability P- Plot Regression of Standardized residuals

It is impossible to obtain data which is exactly normally distributed. Not observed cases were faraway above or below the diagonal line and all the observed values did not have any substantial departures. Therefore, the obtained residuals were considered to be normal. Hence, the required outcome of linearity test was met and further analysis could be performed.

4.8.3 Homoscedasticity

Homoscedasticity was verified using the scatter plots of regression standardized residuals versus regression standardized predicted value. The randomised pattern of the plot indicated that the assumption of Homoscedasticity was achieved. Figure 4.3 shows the results of the Homoscedasticity test which shows that the data is normally distributed.

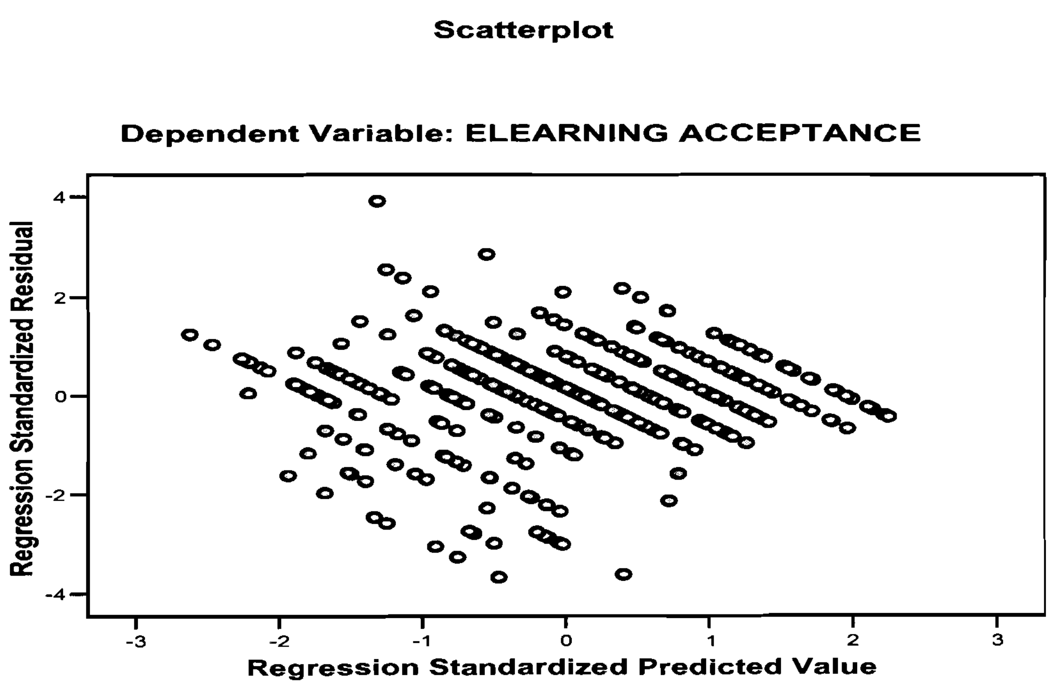

Figure 4.3

Homoscedasticity test for ELA

4.8.4 Independence of Error Term

In order to assess and validate the independence of error assumption, Durbin-Watson statistics were utilised. According to Coakes and Steed (2003), the independence of error term is not violated if the values of Durbin-Watson statistics fall between 1.50 and 2.50. In Table 4.30, the Durbin-Watson value is summarized. It indicates that value fell between the acceptable values implying that no auto-correlation problems existed.

Table 4.30
Durbin-Watson statistical value

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.81 (a)	.66	.66	.39	1.86

4.8.5 Multicollinearity Test (Independence of Independent Variables)

Besides other assumptions, multicollinearity is an important assumption to be met in order to make sure that multicollinearity did not exist. Colinearity diagnostics was performed in order to assess and identify the predictors' multicollinearity problems. This can be done by investigating the Tolerance Value and the Variance Inflation Factor (VIF). According to Hair et al. (2006), the tolerance values ranged between 0-1. A value of 1 indicates that the variable is not correlated with other variables and a value of 0 indicates a perfect correlation between the two examined variables. Moreover, the VIF has a standard cutoff value of 10 and all predictors must have VIF values less than 10. Table 4.31 provides the results of the multicollinearity test values.

Table 4.31

Tolerance Value and the Variance Inflation Factor (VIF) test

Independent variables	Colinearity statistics	
	Tolerance	VIF
Psychological Factor (PF)	0.73	1.37
Social Factor (SF)	0.70	1.44
Technological Factor (TF)	0.66	1.52
Cultural Factor (CF)	0.96	1.04
Institutional Factor (IF)	0.63	1.59
Perceived Usefulness (PU)	0.91	1.19
Perceived Ease of Use (PEU)	0.91	1.10

According to Table 4.31, the results of the multicollinearity test shows that multicollinearity does not exist amongst all independent variables because the tolerance values are not more than 1.00 and VIF values are less than 10.0. Therefore, the obtained data can be analysed using multivariate techniques particularly regression analysis.

4.8.6 Outliers

Multiple regression techniques are very sensitive to outliers. Thus, Casewise Diagnostics was performed in order to assess the outliers' cases. As a result of the outlier test, six cases were removed from further analysis because the standard deviation fell above the value of 3.00. The remaining sample size was 402 which is considered as adequate and justified further analysis.

Overall, the underlying assumptions that could negatively influence the multiple regression analysis results were met and achieved. Thus, the hypothesis and research questions can be investigated and answered.

4.9 Answering the Research Questions and Testing Hypotheses

4.9.1 Research Question One (Is there any significant difference in students' E-learning acceptance based on gender, majors and level of experiences in using the computer, the Internet and E-learning among students in Saudi Arabian institutions of higher education?)

The research question set out to investigate if there are any significant differences in the students' E-learning acceptance based on gender, age, majors and level of experience in using the computer, the Internet and E-learning among students in Saudi Arabian institutions of higher education. The research question has six null hypotheses as follows:

$H_0(1)$: There is no significant difference between gender in students' E-learning acceptance.

$H_0(2)$: There are no significant differences between the age groups in students' E-learning acceptance.

$H_0(3)$: There is no significant difference between the majors in students' E-learning acceptance.

$H_0(4)$: There is no significant difference between the level of experience in using the computer in students' E-learning acceptance.

$H_0(5)$: There is no significant difference between the level of experiences in using the Internet in students' E-learning acceptance.

$H_0(6)$: There is no significant difference between the level of experiences in using E-learning in students' E-learning acceptance.

In order to answer the research question, the null hypotheses were tested through an independent sample t-test and one-way ANOVA. The T-test and one-way ANOVA SPSS output details are depicted in Appendix (J).

The first null hypothesis $H_0(1)$ states that: There is no difference between gender in students' E-learning acceptance. In order to examine the significant differences between gender in students' E-learning acceptance, independent-samples t-test was performed. Table 4.32 shows the results of the independent sample t-test for the students' gender and their E-learning acceptance.

Table 4.32
The results of the independent sample t-test for the students' gender and their E-learning acceptance

	GENDER	n	M	SD	t	df	p.
E-Learning Acceptance	MALE	252	2.94	.64	-.63	400	0.53
	FEMALE	150	2.98	.69			

p >.05

As shown in Table 4.32, the results indicate that there were no significant differences between the male (M=2.94, SD=.64) and the female (M=2.98, SD=.69) students regarding their E-learning acceptance with t (400) = - .63, p >.05. Therefore, the first null hypothesis is accepted.

The second null hypothesis $H_0(2)$ states that: There are no significant differences between the age groups in students' E-learning acceptance. In order to investigate if there were any significant differences in students' E-learning acceptance between their age groups, one-way ANOVA was utilised. Table 4.33 shows the results of one-way ANOVA for students' age group and their E-learning acceptance.

Table 4.33
The results of one-way ANOVA test for the students' age group and their E-learning acceptance

	Sum of Squares	df	Mean Square	F	p.
Between Groups	238	2	.12	.28	.76
Within Groups	172.450	399	.43		
Total	172.688	401			

p >.05

As portrayed in Table 4.33, the analysis of variance revealed that there were no significant differences among the ages groups in the students' E-learning acceptance, at the significance 0.05 level, F (2, 399)=0.27, p >.05. Therefore, the second null hypothesis could not be rejected.

The third null hypothesis $H_0(3)$ states that: There is no significant difference between the majors in students' E-learning acceptance. In order to determine whether there was any significant difference between the students' major in their acceptance of E-learning, Independent-sample t-test was performed. Table 4.34 indicates the obtained results.

Table 4.34
The results of the independent sample t-test for the students' majors and their E-learning acceptance

E-Learning	MAJOR	n	M	SD	t	df	p.
Acceptance	Science	234	3.02	.63	2.47	400	.01*
	Art	168	2.86	.69			

* p <.05

Table 4.34 shows that an analysis of variance indicates that there was a significant difference between the Science students (M=3.02, SD=.63) and the Art' students (M=2.86, SD=.69) regarding their level of E-learning acceptance, t (400) = 2.49, p<.05. Hence, the proposed null hypothesis was rejected.

The fourth null hypothesis $H_0(4)$ states that: There is no significant difference between the level of experiences in using the computer in students' E-learning acceptance. In order to investigate the mean differences of the level of using computer experience and students' E-learning acceptance, one-way ANOVA was used. Table 4.35 shows the results of one-way ANOVA for students' level of experience in using the computer in their E-learning acceptance.

Table 4.35
The results of one-way ANOVA test for students' level of experience on using the computer and their E-learning acceptance.

	Sum of Squares	df	Mean Square	F	p.
Between Groups	1.14	3	.38	.87	.45
Within Groups	171.55	398	.43		
Total	172.69	401			

p >.05

The result of one-way ANOVA test yielded that there was no significant difference between the level of experience in using the computer in students' E-learning acceptance, F (3, 398) = 0.88, p >.05, at the significance 0.05 level. Therefore, the null hypothesis was accepted.

The fifth null hypothesis $H_0(5)$ states that: There is no significant difference between the level of experience in using the Internet in students' E-learning acceptance. In order to find out whether there was significant difference between the level of experiences in using the Internet and students' E-learning acceptance, one-way ANOVA was performed. Table 4.36 shows the results of one-way ANOVA for students' level of experience in using the Internet and their E-learning acceptance.

Table 4.36
The results of one-way ANOVA test for students' level of experience in using the Internet and their E-learning acceptance.

	Sum of Squares	df	Mean Square	F	p.
Between Groups	2.61	2	1.31	.88	.05*
Within Groups	170.08	399	.43		
Total	172.69	401			

* p <.05

The results indicated significant differences in students' E-learning acceptance and their level of experience in using the internet, $F(2, 399) = 3.06$, $p < .05$. Thus, the proposed null hypothesis was rejected. Scheffe post hoc analyses did not indicate any significant differences in mean scores of the students' E-learning acceptance between their groups. However, the mean score of the group with an experience over four years ($M = 3.16$, $SD = .594$) was higher than the rest.

The sixth null hypothesis $H_0(6)$ states that: There is no significant difference between the level of experience in using E-learning in students' E-learning acceptance. In order to investigate the significant difference of the level of experience in using E-learning and students' E-learning acceptance, one-way ANOVA was performed.

Table 4.37 shows the results of one-way ANOVA for students' level of experience in using E-learning and their acceptance.

Table 4.37
The results of one-way ANOVA test for students' level of experience in using E-learning and their acceptance.

	Sum of Squares	df	Mean Square	F	p.
Between Groups	1.43	3	.48	1.11	.34
Within Groups	171.25	398	.43		
Total	172.69	401			

p >.05

The results indicated that there was no significant difference on students' E-learning acceptance based on their level of experience in using E-learning, $F(3, 398) = 1.11$, $p > .05$. Thus, the proposed null hypothesis was accepted. In conclusion, the tested hypotheses related to question one are summarised in Table 4.38.

Table 4.38

Summary of null hypotheses testing

Hypothesis	Statement	Accepted / Rejected
$H_0$1	There is no significant difference between gender and students' E-learning acceptance	**Accepted**
$H_0$2	There is no significant difference between the age group and students' E-learning acceptance.	**Accepted**
$H_0$3	There is no significant difference between the majors and students' E-learning acceptance.	**Rejected**
$H_0$4	There is no significant difference between the level of experiences in using the computer and students' E-learning acceptance.	**Accepted**
$H_0$5	There is no significant difference between the level of experience in using the Internet and students' E-learning acceptance	**Rejected**
$H_0$6	There is no significant difference between the level of experience in using E-learning and students' E-learning acceptance.	**Accepted**

4.9.2 Research Question Two (What are the external factors namely psychological, social, technological, cultural and institutional that could influence E-learning acceptance?**)**

The simple liner regression test was used in order to examine the influence of external factors on students' E-learning acceptance. The simple liner regression test has provided in-depth understanding of the extent of external factors' influence on the students' acceptance and determines each factor's contribution to E-learning acceptance. The standard value of R^2 equal one indicated a perfect linear relationship between the independent variables and the dependent variable while R^2 value equal

Zero indicated that there was no linear relationship between the independent variables and the dependent variable. The external factors explained a significant percentage of variance in E-learning acceptance $R^2 = .704$, $F\ (5, 401) = 188.622$, $p < .05$. Therefore, the psychological, social, technological, cultural and institutional factors explained 70.4 percent of the total variance in students' E-learning acceptance. Table 4.39 shows the results of multiple regression analysis between external factors (psychological, social, technological, cultural, and institutional) and E-learning acceptance. SPSS outputs are fully given in Appendix (K).

Table 4.39
Multiple regression analysis between external factors (psychological, social, technological, cultural, institutional) and E-learning acceptance (ELA)
Model Summary

Model	R	R^2	Adjusted R^2	Std. Error of the Estimate
1	.839(a)	0.70	0.70	0.36

ANOVA(b)

Model	Sum of Squares	df	Mean Square	F	P.
1	121.621	5	24.324	188.622	.000(a)
	51.067	396	.129		
	172.688	401			

Coefficients(a)

Model		Unstandardized		S.zed		
		B	Std. Error	Beta	t	P.
1	(Constant)	-2.07	.198		-10.44	.00**
	Psychological Factor	.189	.055	.11	3.42	.00**
	Social Factor	.239	.045	.17	5.28	.00**
	Technological Factor	.709	.050	.48	14.26	.00**
	Cultural Factor	.024	.036	.09	0.66	.51
	Institutional Factor	.443	.052	.29	8.44	.00**

** p <.01

As shown in Table 4.39, the results indicated that four external (psychological, social, technological & institutional) factors significantly influence students' E-learning acceptance while one factor (cultural) has no significant effect on students' acceptance of E-learning. The first most contributive factor of students' acceptance is the Technological factor (TF), $\beta = .48$, $t\ (396) = 14.26$, significant at the level of $p < .01$, two tailed. The second contributive factor is the Institutional factor (IF), $\beta = .29$, $t\ (396) = 8.44$, significant at the level of $p < .01$, two tailed. The third contributive factor is Social factor (SF), $\beta = .173$, $t\ (396) = 5.28$, significant at the level of $p < .01$, two tailed. The fourth contributive factor is the Psychological factor (PF), $\beta = .11$, $t\ (396) = 3.42$, significant at the level of $p < .01$, two tailed. Finally, the cultural factor (CF) with $\beta = .09$, $t\ (396) = .66$ was not significant at the level of $p < .01$, two tailed.

4.9.3 Research Question Three **(**What are the relationships between the external factors (psychological, social, technological, cultural and institutional) and E-learning acceptance?**)**

The research question sought to investigate the relationship between the external factors (psychological, social, technological, cultural and institutional) and the students' E-learning acceptance. It has five null hypotheses as follows:

$H_0 7$: There is no relationship between the psychological factor and students' E-learning acceptance.

$H_0 8$: There is no relationship between the social factor and students' E-learning acceptance.

$H_0 9$: There is no relationship between the technological factor and students' E-learning acceptance.

$H_0 10$: There is no relationship between the cultural factor and students' E-learning acceptance.

$H_0 11$: There is no relationship between the Institutional factor and students' E-learning acceptance.

The seventh null hypothesis ($H_0 7$) states: There is no relationship between the psychological factor and students' E-learning acceptance. In order to investigate the relationship between psychological factors and the students' E-learning acceptance, Pearson correlation coefficient was used. Table 4.40 shows the results of the correlation test between psychological factors and E-learning acceptance. The SPSS outputs of correlation tests are depicted in Appendix (L).

Table 4.40
Correlation coefficients of research factors (N=402)

Factors	E-Learning Acceptance
E-Learning Acceptance	1
Psychological Factor	**0.49 (**)**
Social Factor	**0.56(**)**
Technological Factor	**0.75(**)**
Cultural Factor	**0.13(**)**
Institutional Factor	**0.66 (**)**

** p <.01

The results in Table 4.40 indicated a positive and a moderately strong relationship between the psychological factor and E-learning acceptance with the coefficient value($r = 0.49$, $n = 402$, $p < .01$). Therefore, the null hypothesis was rejected.

The eighth null hypothesis ($H_0 8$) states: There is no relationship between the social factor and students' E-learning acceptance. The results in Table 4.40 illustrate that there was a positive and a strong relationship between the social factor and students' E-learning acceptance with the coefficient value ($r = 0.56$, $n = 402$, $p < .01$). Therefore, the null hypothesis was rejected.

The ninth null hypothesis (H_09) states: There is no relationship between the technological factor and students' E-learning acceptance. In Table 4.40, the results demonstrate that there was a positive and a strong relationship between the technological factor and E-learning acceptance with the coefficient value ($r = 0.75$, $n = 402$, $p < .01$). Hence, the null hypothesis was rejected.

The tenth null hypothesis (H_010) states: There is no relationship between the cultural factor and students' E-learning acceptance. In Table 4.40, the results indicate that there was a positive a weak relationship between the cultural factor and E-learning acceptance with the coefficient value ($r = 0.13$, $n = 402$, $p < .01$). Thus, the null hypothesis was rejected.

The eleventh null hypothesis (H_011) states: There is no relationship between the Institutional factor and students' E-learning acceptance. Table 4.40 shows the results of the correlation test on the relationship between the Institutional factor and E-learning acceptance. According to Table 4.40, there was a positive and a strong relationship between the Institutional factor and E-learning acceptance with the coefficient value ($r = 0.66$, $n = 402$, $p < .01$). Thus, the null hypothesis was rejected

Overall, all the tested hypotheses were significantly correlated with E-learning acceptance. The coefficient values were ranged from 0.13 to 0.75 with a positive direction on the correlation. The results of the examined hypotheses are summarised in Table 4.41.

Table 4.41

Summary of null hypotheses test results using correlation coefficients.

Hypothesis	Statement	Correlation's coefficients (r)	Correlation'sdirection	Strength of relationship
H_07	There is no relationship between the psychological factor and students' E-learning acceptance	0.49**	Positive (+)	Moderate
H_08	There is no relationship between the social factor and students' E-learning acceptance	0.56**	Positive (+)	Strong
H_09	There is no relationship between the technological factor and students' E-learning acceptance	0.75**	Positive (+)	Strong
H_010	There is no relationship between the cultural factor and students' E-learning acceptance	0.13**	Positive (+)	Weak
H_011	There is no relationship between the Institutional factor and students' E-learning acceptance	0.66**	Positive (+)	Strong

** $p < .01$

As described in Table 4.41, the highest correlated factor with the high strength coefficients is the technological factor, followed by the Institutional factor and then the social factor. In addition, the psychological factor has a positive and moderate correlation with E-learning acceptance while the cultural factor shows low strength of correlation coefficients with a positive direction.

4.9.4 Research Question Four (What are the external variables that would predict E-learning acceptance in Saudi Arabian institutions of higher education?)

This question sought to determine the most predicted or contributive variables under each external factor that could significantly predict the students' E-learning acceptance. Five null hypotheses were assumed, as follows:

$H_0$12: Enjoyment, Computer anxiety and Computer Self-efficacy are not predictors of students' E-learning acceptance.

$H_0$13: Image, Subjective Norm and Self-Identity are not predictors of students' E-learning acceptance.

$H_0$14: System Performance, System functionality, System Interactivity and System response are not predictors of students' E-learning acceptance.

$H_0$15: Individualism/Collectivism and Masculinity/Femininity are not predictors of students' E-learning acceptance.

$H_0$16: Facilitating Conditions, Training and Institutional Technical support are not predictors of students' E-learning acceptance.

The null hypotheses were tested using a stepwise regression analysis in order to evaluate how well the variables in each factor predicted students' E-learning acceptance. The stepwise multiple regression analysis would provide information on the relationship between the independent variables and the dependent variable. It can also provide the degree to which variation in the dependent variable can be explained by the independent variables. The relative strength of each variable in relation to the dependent variable can be identified by the standardized beta coefficient (*ß*). The

SPSS outputs of the stepwise Regression Analysis are fully attached in Appendix (M).

The twelfth null hypothesis ($H_0 12$) states: Enjoyment, Computer anxiety and Computer Self-efficacy are not predictors of students' E-learning acceptance. To examine the null hypothesis, a stepwise regression analysis was conducted. Table 4.42 shows the results of stepwise multiple regression analysis.

Table 4.42
Stepwise multiple regression analysis: psychological factor's variables as predictors of E-learning acceptance.

Psychological factor	R^2	Adjusted R^2	Standardized Beta	t	p.
Computer anxiety	.36	.36	.55	12.70	.00**
Computer Self-efficacy	.37	.37	.12	2.76	.01**
Enjoyment	.38	.37	-.08	-2.04	.04*

* p <.05, ** p <.01

As represented in Table 4.42, the psychological variables namely enjoyment, computer anxiety and computer self-efficacy were regressed in stepwise technique. The regression model utilised to predict E-learning acceptance resulted in Adjusted R Square = 37.3% at significance 0.05 level. Out of four examined psychological predictors, three predictors were activated prediction equation and were also associated with a significant percentage of variance in E-learning acceptance ($F_{(3, 398)} = 80.56$, $p < .01$). The first significant variable that predict E-learning acceptance was Computer anxiety with ($\beta = .55$, $t = 12.70$, $p < .01$). The second significant variable that predicted E-learning acceptance was Computer Self-efficacy with $\beta = .12$, $t = 2.76$, at the significance level of $p < .01$. The third significant variable that predicted E-learning acceptance was Enjoyment with β =-.081, t = -2.04, at the significance level of $p < .05$. From the psychological perspective, and based on the findings, students who have lower computer anxiety, higher computer self-efficacy and higher perceived enjoyment would have a better acceptance of E-learning activities and tasks.

The thirteenth null hypothesis ($H_0$13) states: Image, Subjective Norm and Self-Identity are not predictors of students' E-learning acceptance. To examine the null hypothesis, a stepwise regression analysis was conducted. Table 4.43 shows the results of the stepwise multiple regression analysis.

Table 4.43
Stepwise multiple regression analysis: social factor's variables as predictors of E-learning acceptance.

Social factor	R^2	Adjusted R^2	Unstandardized B	Standardized Beta	t	p.
Image	.25	.25	.05	.35	7.51	.00**
Self-Identity	.33	.33	.04	.33	7.15	.00**

** p <.01

As portrayed in Table 4.43, the social variables, namely Image, Self-Identity, and Subjective norm were regressed in stepwise technique. The regression model utilised to predict E-learning acceptance resulted in Adjusted R Square = 33.1% at significance 0.05 levels. Out of the three examined social predictors, two predictors were associated with a significant percentage of variance in E-learning acceptance, $F_{(2, 399)} = 100.32$, $p<0.001$. The first significant social variable that predicted E-learning acceptance was Image with β = .35, t = 7.51, at the significance level of $p<.01$, two tailed. The second significant social variable that predicted the E-learning acceptance was Self-Identity with β =.33, t = 7.15, at the significance level of p <

.01. However, subjective norm was excluded from the model because there was no significant association with E-learning acceptance at the significance level of $p < .05$. Therefore, E-learning acceptance can be influenced by both social variables namely Image and Self-Identity. Thus, the null hypothesis was partially rejected.

The fourteenth null hypothesis (H_014) states: System Performance, System functionality, System Interactivity and System response are not predictors of students' E-learning acceptance. To examine the null hypothesis, a stepwise regression analysis was conducted. Table 4.44 shows the results of the stepwise multiple regression analysis.

Table 4.44

Stepwise multiple regression analysis: technological factor's variables as predictors of E-learning acceptance.

Technological factor	R^2	Adjusted R^2	Unstandardized B	Standardized Beta	t	p.
System Response	.84	.84	.89	.82	35.04	.00**
System Functionality	.86	.86	.21	.19	7.92	.00**
System Interactivity	.86	.86	.42	.04	2.16	.03*

* p <.05, ** p <.01

As depicted in Table 4.44, the technological variables, namely System Response, System Functionality and System Interactivity were regressed in stepwise technique. The regression model utilised to predict E-learning acceptance resulted in Adjusted R Square = 86.2 % at a 0.05 significance levels. Out of the four examined technological predictors, three predictors were activated prediction equation and were also associated with a significant percentage of variance in E-learning acceptance, $F_{(3, 398)} = 834.31$, $p<.01$. The first significant variable that predicted E-learning acceptance was System Response with β = .82, t = 35.04, at the significance level of p<.01, two tailed. The second significant variable that predicted the E-learning acceptance is System Functionality with β =.19, t = 7.92, at the significance level of $p < .01$. The third significant variable that predicted E-learning acceptance was System Interactivity with β =.04, t = 2.16, at the significant level of $p < .01$. However, System performance was excluded from the model because it has no significant association with E-learning acceptance at the significance level of $p < .01$. Hence, from the technological perspective and based on the findings, students' who perceived E-learning system as a satisfactory level of response, functionality and Interactivity will have high level of E-learning acceptance. Therefore, the null hypothesis was partially rejected.

The fifteenth null hypothesis ($H_0 15$) states: Individualism/Collectivism and Masculinity/Femininity are not predictors of students' E-learning acceptance. To examine the null hypothesis, a stepwise regression analysis was conducted. Table 4.45 shows the results of the stepwise multiple regression analysis.

Table 4.45
Stepwise multiple regression analysis: cultural factor variables as predictors of E-learning acceptance.

Cultural factor	R^2	Adjusted R^2	Unstandardized B	Standardized Beta	t	p.
Individualism/ Collectivism	.014	.012	.11	.12	2.40	.02*

* p <.05

As shown in Table 4.45, the cultural variables, namely Individualism/Collectivism and Masculinity/Femininity were regressed in stepwise technique. The regression model utilised to predict E-learning acceptance resulted in Adjusted R Square = 1.2 % at a 0.05 significance levels. Out of the two examined technological predictors, one predictor was activated prediction equation and were also associated with a significant percentage of variance in E-learning acceptance, $F_{(1, 400)} = 5.77$, $p<0.05$. Only the Individualism/Collectivism variable predicted E-learning acceptance with $\beta=.12$, $t = 2.40$, at the significance level of $p < .05$. However, Masculinity/Femininity was excluded from the model due to its insignificant association with E-learning acceptance at the significance level of $p < .05$. Therefore, the null hypothesis was partially rejected.

The sixteenth null hypothesis ($H_0 16$) states: Facilitating Conditions, Training and Institutional Technical support are not predictors of students' E-learning acceptance. To examine the null hypothesis, a stepwise regression analysis was conducted. Table 4.46 shows the results of the stepwise multiple regression analysis.

Table 4.46

Stepwise multiple regression analysis: institutional factor variables as predictors of E-learning acceptance.

Institutional factor	R^2	Adjusted R^2	Unstandardized B	Standardized Beta	t	p.
Institutional Technical support	.34	.34	.46	.37	7.99	.00**
Facilitating Conditions	.44	.44	.41	.34	8.06	.00**
Training	.45	.45	.13	.11	2.56	.01*

* p <.05, ** p <.01

As represented in Table 4.46, the institutional variables namely Institutional Technical support, Facilitating Conditions and Training were regressed in stepwise technique. The regression model utilised to predict E-learning acceptance resulted in Adjusted R Square = 44.6% at a 0.05 significance levels. All of the examined institutional predictors were activated prediction equation and were also associated with a significant percentage of variance in E-learning acceptance, $F_{(3, 398)} = 108.74$, $p<0.01$. The first significant variable that predicted E-learning acceptance was Institutional Technical support with $\beta = .37$, $t = 7.99$, at the significance level of $p < .01$, two tailed. The second significant variable that predicted the E-learning acceptance is Facilitating Conditions with $\beta =.34$, $t = 8.06$, at the significance level of $p < .01$, two tailed. The third significant variable that predicted E-learning acceptance was Training with $\beta =-.11$, $t = 2.56$, at the significance level of $p < .05$. From the institutional perspective, and based on the findings, students who have higher Institutional Technical support, Facilitating Conditions and Training would have a better acceptance of E-learning activities. Therefore, the null hypothesis was rejected. Table 4.47 summarieses the tested null hypotheses using the stepwise multiple regression analysis.

Table 4.47
Summary of tested hypotheses results using stepwise regression analysis.

Hypothesis	Statement	Accepted/ Rejected
$H_0$12	Enjoyment, Computer anxiety and Computer Self-efficacy are not predictors of students' E-learning acceptance.	**Partially rejected**
$H_0$13	Image, Subjective Norm and Self-Identity are not predictors of students' E-learning acceptance.	**Partially rejected**
$H_0$14	System Performance, System Functionality, System Interactivity and System Response are not predictors of students' E-learning acceptance.	**Partially rejected**
$H_0$15	Individualism/Collectivism and Masculinity/Femininity are not predictors of students' E-learning acceptance.	**Partially rejected**
$H_0$16	Facilitating Conditions, Training and Institutional Technical support are not predictors of students' E-learning acceptance.	**Rejected**

4.9.5 **Research Question Five** (Does attitude towards using E-learning mediate the relationship between the main TAM predictor constructs (perceived usefulness & perceived ease of use) and the students' E-learning acceptance?)

This question sought to examine the mediating effect of students' attitude on the relationship between the internal independents variables, namely perceived ease of use/ perceived usefulness and students' E-learning acceptance. In order to investigate the mediating effects, two null hypotheses were formulated as follows:

$H_0$17: Attitude towards using E-learning does not mediate the relationship between perceived usefulness and E-learning acceptance.

$H_0$18: Attitude towards using E-learning does not mediate the relationship between perceived ease of use and E-learning acceptance.

Furthermore, in relation to the internal independent variables and their related original relationship, the relationship between perceived usefulness and perceived Ease of use were examined as well as the relationship between perceived usefulness and E-learning acceptance.

Firstly, the assumed null hypotheses of mediation were examined using hierarchical regression analysis and Baron and Kenny's (1986) approach, as shown in Figure 4.4. SPSS outputs of the hierarchical regression analysis are depicted in Appendix (N).

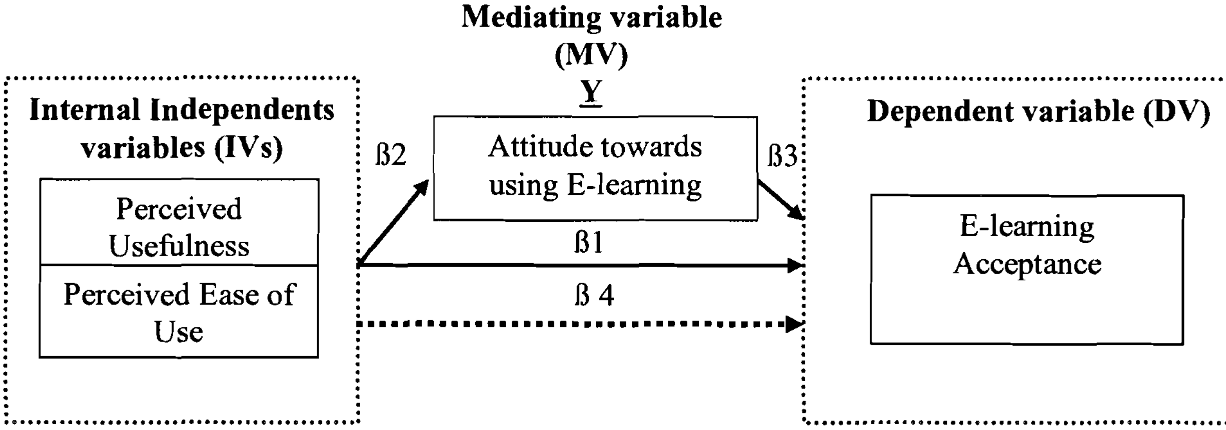

Figure 4.4
Mediation Model: Baron & Kenny (1986)

Equation1:	ß1 must be significant *(IV must influence DV significantly)*
Equation2:	ß2 must be significant *(IV must influence MV significantly)*
Equation3:	ß3 must be significant *(MV must influence DV significantly*
Equation4:	If ß4 insignificant, Y fully mediated. If ß4 significant, Y partially mediated.

According to Baron and Kenny (1986), mediation analysis of attitude towards E-learning requires the following four important steps; 1) a significant relationship between the internal independent variables, namely perceived ease of use/ perceived usefulness and students' E-learning acceptance, 2) a significant relationship between the internal independent variables, namely perceived ease of use/ perceived usefulness and attitude towards E-learning, 3) a significant relationship between the attitude towards E-learning and students' E-learning acceptance, 4) the full mediation occurs when the significant relationship between the independent variables and the dependent variables is reduced and is not significant after the mediating variable enters the equation. Moreover, partial mediation takes place when the significant relationship is reduced but not decreased. The Baron and Kenny's significant criteria were met because the correlation analysis between the targeted variables revealed that there were significant relationships between the variables (IVs with DV, IVs with MV & MV with DV). Therefore, the hierarchical regression analysis with Baron and Kenny's approach could be processed. Table 4.48 shows the results of the correlation analysis of IV, MV and DV.

Table 4.48
Correlation Coefficients analysis results between IVs, MV & DV

		(1)	(2)	(3)	(4)
Perceived Usefulness	(1)				
Perceived Ease of Use	(2)	.25 **			
Attitude	(3)	.13**			
E-learning Acceptance	(4)	.10 *	.13 **	.11 *	1

* p <.05, ** p <.01

The seventeenth null hypothesis ($H_0$17) states: Attitude towards using E-learning does not mediate the relationship between perceived usefulness and E-learning acceptance. To examine the hypothesized statement, Hierarchical regression was performed. The results in Table 4.49 demonstrate the results of the hierarchical regression analysis using Attitude as a mediator in the relationship between perceived usefulness and E-learning acceptance.

Table 4.49

The results of hierarchical regression analysis using Attitude toward e-learning as A mediator in the relationship between perceived usefulness and E-learning acceptance.

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	p.
Step1 (Model 1)	(Constant)	2.541	.201		12.66	.00**
	Perceived Usefulness	.127	.061	.104	2.08	.04*
Step2 (Model2)	(Constant)	2.284	.237		9.66	.00**
	Perceived Usefulness	.111	.061	.091	1.81	.07
	Attitude	.098	.049	.101	2.03	.04*

$R^2 = 0.11$ in step 1; $R^2 = 0.21$ in step 2

* p <.05, ** p <.01

As portrayed in Table 4.49, the results indicate that in the first model, perceived usefulness significantly contributed to E-learning acceptance, $R^2 = 0.11$, $F_{(1, 400)} = 4.35$, p<.05. Model one shows that perceived usefulness was positively related to E-learning acceptance $\beta = .10$, $t = 2.08$, at the significant level of $p < .05$. In model two, Attitude was added to the equation, the $R^2 = 0.21$ significantly changed with $F_{(2, 399)} = 4.24$, p<.05. Model two shows that perceived usefulness was insignificantly reduced $\beta = .09$, $t = 1.81$, at the significant level of $p < .05$ in testing the mediation effect of Attitude: In model 1 the relationship between perceived usefulness (IV) and E-learning acceptance (DV) was significant while in Model 2 the relationship between IV and DV become insignificantly reduced. Therefore, attitude towards E-learning fully mediates the relationship between perceived usefulness and E-learning acceptance.

The eighteenth null hypothesis ($H_0 18$) states: Attitude towards using E-learning does not mediate the relationship between perceived Ease of Use and E-learning acceptance. To examine the null hypothesis, a Hierarchical regression was performed. The results in Table 4.50 demonstrate the results of hierarchical regression analysis using Attitude as a mediator in the relationship between perceived ease of use and E-learning acceptance.

Table 4.50
The results of hierarchical regression analysis using Attitude toward E-learning as a mediator in the relationship between perceived ease of use and E-learning acceptance.

Model		Unstandardized Coefficients		Standardized Coefficients	t	p.
		B	Std. Error	Beta		
Step1 (Model 1)	(Constant)	2.452	.193		12.69	.00**
	Perceived Ease Of Use	.164	.062	.130	2.63	.01**
Step2 (Model2)	(Constant)	2.274	.220		10.32	.00**
	Perceived Ease Of Use	.137	.064	.109	2.13	.03*
	Attitude	.083	.050	.086	1.67	.09

$R^2 = 0.17$ in step 1; $R^2 = 0.24$ in step 2

* p <.05, ** p <.01

As presented in Table 4.50, the results indicate that in the first model, perceived ease significantly contributed to E-learning acceptance, $R^2 = 0.17$, $F_{(1, 400)} = 6.93$, $p<.05$. Model one shows that perceived ease of use was positively related to E-learning acceptance $\beta = .13$, $t = 2.63$, at the significant level of $p < .05$. In model two, the Attitude was added to the equation, the $R^2 = 0.24$ significantly changed with $F_{(2, 399)} = 4.88$, $p<.05$. Model two shows that perceived ease of use was still significant but it reduced $\beta = .10$, $t = 2.13$, at the significant level of $p < .05$ in testing the mediation effect of Attitude: In model 1, the relationship between perceived usefulness (IV) and E-learning acceptance (DV) was significant while in Model 2 the relationship between IV and DV was still significant but the magnitude of the relationship between them was reduced (β = .13 to.10, t = 2.63 to 2.13). Hence and based on the Baron and Kenny approach, the attitude towards E-learning partially mediates the relationship between perceived ease of use and E-learning acceptance.

The original relationship between perceived usefulness and perceived ease of use as well as the relationship between perceived usefulness and E-learning acceptance were examined using a Pearson product-moment correlation coefficient (r). In order to investigate the relationship between perceived usefulness and perceived Ease of use, Pearson correlation coefficient was used. Table 4.51 shows the results of the correlation test between perceived usefulness and perceived Ease of use.

Table 4.51
The results of the correlation test between perceived usefulness and perceived Ease of use (N=402)

	(1)	(2)	(3)
Perceived Usefulness			
Perceived Ease of Use	.254(**)		
E-learning Acceptance	.104(*)	.130(**)	

* p <.05, ** p <.01

The results in Table 4.51 indicated that a positive and weak relationship between the *perceived usefulness and perceived ease of use* with the coefficient value $r = 0.254$, $n = 402, p < 0.01$.

Table 4.51 demonstrates the results of the correlation test between perceived usefulness and E-learning acceptance. In Table 4.51, the results demonstrate that there was a positive and weak relationship between perceived usefulness and E-learning acceptance with the coefficient value $r = 0.104$, $p < 0.05$.

In conclusion, the tested null hypotheses in question five are summarized in Table 4.52.

Table 4.52
Summary of tested null hypotheses in question five using hierarchical regression and correlation analysis

Hypothesis	Statement	Results
$H_0$17	Attitude towards using E-learning does not mediate the relationship between perceived usefulness and E-learning acceptance.	**Fully mediated**
$H_0$18	Attitude towards using E-learning does not mediate the relationship between perceived Ease of Use and E-learning acceptance.	**Partially mediated**
TAM Relationship	There is no positive relationship between perceived usefulness and perceived Ease of use.	**rejected**
	$H_0$20: There is no positive relationship between perceived usefulness and E-learning acceptance	**rejected**

CHAPTER FIVE

SUMMARY, DISCUSSION, IMPLICATIONS, RECOMMENDATIONS FOR FUTURE RESEARCH AND CONCLUSION

5.1 Introduction

The main focus of this research is to investigate the factors that influence the students' acceptance of E-learning in institutions of higher education in Saudi Arabia. A research model was developed to investigate the influence of psychological, social, technical, cultural and institutional factors on the students' acceptance of E-learning. The research model was an extension and elaboration of the Technology Acceptance Model (TAM) in order to investigate and determine the factors that could influence the students' acceptance of E-learning. The mediation effect of attitude on the relationship between the TAM main predictors and the students' acceptance has been confirmed.

This chapter is organised in parts as follows: (5.2) The study objective, (5.3) Methodology, (5.4) Summary of the Findings, (5.5) Discussion of Findings, (5.6) The research Implications, (5.7) Recommendations for future research, (5.8) Conclusion.

5.2 The study objective

The main objective of the study was to investigate the influence of the psychological, social, technical, cultural and institutional factors on the students' acceptance of E-learning in institutions of higher education in Saudi Arabia. The relationship between the proposed factors and E-learning acceptance was examined. It also investigates the indirect effect of perceived usefulness and perceived ease of use on behavioural intention through the mediation effect of attitude. The proposed variables that constructed each factor were examined in order to assess the variables were most contributive to each factor. Therefore, this study attempted to answer the following questions:

1. Is there any significant difference in students' E-learning acceptance based on gender, majors and level of experiences in using the computer, the Internet and E-learning in Saudi Arabian institutions of higher education?

2. What are the external factors namely psychological, social, technological, cultural and institutional that could influence E-learning acceptance?

3. What are the relationships between the external factors (psychological, social, technological, cultural and institutional) and E-learning acceptance?

4. What are the external variables that would predict E-learning acceptance in Saudi Arabian institutions of higher education?

5. Does attitude towards using E-learning mediate the relationship between the main TAM predictor constructs (perceived usefulness & perceived ease of use) and the students' E-learning acceptance?

In order to answer the research questions, twenty research hypotheses were formulated. Based on the nature of question one, six hypotheses were constructed to investigate whether there were any significant differences in students' E-learning acceptance based on gender, majors and level of experiences in using the computer, the Internet and E-learning in Saudi Arabian institutions of higher education. To answer research question three, five hypotheses were formulated to determine the relationship between the external factors and students' acceptance of E-learning. In order to investigate the variables that most contributed to E-learning acceptance in question four, five hypotheses were constructed. In testing the mediation effect of attitude in question five, two hypotheses were constructed. Two additional hypotheses were constructed in order to test the original TAM direct relationship between perceived usefulness and both perceived ease of use and behavioural intention to use E-learning.

5.3 Methodology

Based on the research questions and the nature of the research objectives, this research was of a quantitative descriptive survey design. A sample of 480 students was surveyed. However, only 408 questionnaires were usable for the final analysis with an 85% usable response rate. The questionnaire was designed with different sections in order to make instructions clear and understandable. The cover letter begun with the purpose of this research, estimated time it would take to complete the questionnaire, questionnaire sections, an example of each question type, and the Likert scale used in this questionnaire. The seven sections are as follows:

Section (1): It has 10 questions which elicit demographic questions and information related to students experience in using the computer, the Internet and E-learning tools.

Section (2): It has 18 questions which investigate the Technology Acceptance Model constructs which are capable of determining and predicting the extent of students' acceptance of E-learning.

Section (3): It has 11 questions which investigate the Psychological Factors (PF) that could affect the students' acceptance of E-learning.

Section (4): It has 10 questions which investigate the Social Factors (SF) that could affect the students' acceptance of E-learning.

Section (5): It has 14 questions which investigate the Technological Factors (TF) that could affect the students' acceptance of E-learning implementation.

Section (6): It has 6 questions which investigate the Cultural Factors (CF) that could affect the students' acceptance of E-learning.

Section (7): It has 14 questions which investigate the Institutional Factors (IF) that could affect the students' acceptance of E-learning.

5.4 Summary of Findings

The statistical findings from the exploration of the influences and relationships between the factors and the study's variables are presented in two parts. The first part consists of the respondents' demographic variables while the second part consists of statistical findings which include all the tested hypotheses. One of the research questions has no hypothesis. Therefore the research findings are organised based on the research questions.

5.4.1 Respondents' demographic variables

The results obtained from the respondents indicated that King Abdul Aziz University (KAU) had the highest number of respondents with 161 respondents (39.5%) while King Saud University (KSU) had 30.6%, with 125 respondents. King Khalid University (KKU) represented 11.0 % with 45 respondents, followed by Aljouf University (JU) which represented 9.6% with 39 respondents and finally King Faisal University (KFU) represented 9.3 % with 38 respondents. In terms of the students' majors, the majority of the students belonged to the Science faculty (64.5) while 35.5% of the students belonged to the Arts faculty. The respondents' gender indicated that 62.3% of the respondents were male and 37.7% were female. In terms of age group, more than half of the respondents were between 22-26 years old (63.5%). 31.1% of the respondents were between 18-21years old, while 5.4% of the total respondents were between 27 – 29 years old. With regard to the experience of using the computer, 36.8% of the students had used the computer for between 1 and 3 years. 30.9% of the students had been used the computer for between 4 and 8 years, while 25.5% had used it for less than one year. Only 6.9% had used the computer for more than 8 years. To conclude, there were differences in the level of experience among the students in using the computer. The respondents' experience in using the Internet indicated that more than half of the students had experience in using the Internet for less than one year (57.8%) while, 35.3% of the students had experience in using the Internet facilities for between 2 and 4 years, and only 6.9% had experience in using the Internet for more than 4 years. Finally, the respondents' experience in using E-learning showed that almost half of the students used E-learning once per month (48.8%), 27.0% of the students used E-learning little per month while 18.4 % used E-learning little per week. Only 5.9% used E-learning activities once a day.

5.4.2 Research Questions

Research Question One

The research question sought to investigate if there were any significant differences in the students' E-learning acceptance based on their gender, majors and level of experience in using the computer, the Internet and E-learning in Saudi Arabian institutions of higher education. In order to answer this research question, six hypotheses were formulated. The findings obtained from testing the related hypotheses are summarised as follows:

- There was no a statistically significant difference in students' E-learning acceptance in terms of their gender.
- There was a statistically significant difference in students' E-learning acceptance based on their majors.
- There was no a statistically significant difference in the students' E-learning acceptance in terms of their level of experiences on using the computer.

- There was a statistically significant difference in the students' E-learning acceptance in terms of their level of experiences in using the Internet.
- There was no a statistically significant difference in the students' E-learning acceptance in terms of their level of experiences in using E-learning.

Research Question Two

The research question set out to examine the influence of psychological, social, technological, cultural and institutional factors on students' E-learning acceptance. The results indicated that the psychological, social, technological, cultural and institutional factors had a significant influence on the students' E-learning acceptance. However, the cultural factor had no significant influence on the students' E-learning acceptance.

Research Question Three

The research question sought to investigate the relationship between the external factors (psychological, social, technological, cultural and institutional) and the students' E-learning acceptance. Five null hypotheses were prepared to answer the research question. The results obtained from tested the hypotheses are summarised as follows:

- There was a significant positive relationship between the Psychological factor and students' E-learning acceptance.
- There was a significant positive relationship between the Social factor and students' E-learning acceptance
- There was a significant positive relationship between the Technical factor and students' E-learning acceptance.

- There was a significant positive relationship between the Cultural factor and students' E-learning acceptance.
- There was a significant positive relationship between the Institutional factor and students' E-learning acceptance.

Research Question Four

This question explained and determined the most contributive variables in each external factor that could significantly predict the students' E-learning acceptance. Therefore, five hypotheses were assumed. A summary of the results obtained from the tested null hypotheses regarding the contributive variables are as follows:

- Enjoyment, Computer anxiety and Computer Self-efficacy significantly predicted the students' E-learning acceptance.
- Image and Self-Identity significantly predicted the students' E-learning acceptance.
- System functionality, System Interactivity and System Response significantly predicted the students' E-learning acceptance.
- Individualism/Collectivism was the only single significant predictor of students' E-learning acceptance.
- Facilitating Conditions, Training and Institutional Technical support significantly predicted the students' E-learning acceptance.

Research Question Five

This question set out to examine the mediating effect of students' attitude on the relationship between the internal independent variables, namely perceived ease of use/ perceived usefulness and students' E-learning acceptance. It also tested the original TAM's direct relationship between perceived usefulness and both perceived ease of use and behavioural intention to use E-learning. The mediating effects were examined using hierarchical regression analysis and Baron and Kenny's (1986) approach. Therefore, four hypotheses were assumed. The first two null hypotheses related to mediation effects were fully and partially rejected while the other null hypotheses related to the original TAM relations were also rejected. The obtained results are summarised below:

- Attitude towards using E-learning mediated fully and significantly the relationship between perceived usefulness and E-learning acceptance.
- Attitude towards using E-learning mediated partially and significantly the relationship between perceived ease of use and E-learning acceptance.
- There was a significant positive relationship between perceived Ease of use and perceived usefulness.
- There was a significant positive relationship between perceived usefulness and E-learning acceptance.

5.5 Discussion of the Findings

5.5.1 Research Question One

The results of the tested hypotheses related to this question indicated that there were not any statistically significant differences in students' acceptance of E-learning in terms of gender and the level of experience in using both the computer as well as E-learning. However, there were statistically significant differences in the students' E-learning acceptance based on their majors and their level of using the Internet.

Gender

As mentioned earlier, T-test was performed in assessing the effect of students' gender differences in their acceptance of E-learning. The result yielded that there was no significant differences in E-learning acceptance based on their gender. The finding is supported by Masrom (2007) who investigated TAM related work tasks and E-learning in the Malaysian higher education context. The result indicated that no significant difference was found between the students' gender and their intention to use E-learning. Furthermore, the result confirms work done by Milis, Wessa, Poelmans, Doom and Bloemen (2008), who conducted a research to investigate the impact of gender on the acceptance of virtual learning environment particularly E-learning system in the educational context. With regard to the main result, the researcher confirmed that no significant difference existed between male and female in his proposed research model. However, the result contradicts some previous findings (Gefen & Straub, 1997; Jackson, 2001; Ong & Lai, 2006; Speier & Venkatesh, 2002; Tolhurst & Debus, 2002; Yuen and Ma 2002). Ong and Lai (2006) who investigated the gender differences in students' perceptions of E-learning. The researchers showed that gender had a significant effect on students' utilization of E-learning tools. Males were found to have more knowledge than females in using the online tools. The result of the study showed that significant gender differences affected the main dominant factors of -learning acceptance. Similarly, Ibrahim Abu Daud and Abu Samah (2002) conducted a research to investigate students' attitude towards online learning. The researchers showed that male students had a positive attitude and greater readiness than female students. The findings also revealed that gender differences significantly influenced the students' behavioural intention to use online tools.

The inconclusive findings in the literature and the result obtained from the present research might be due to the fact that all the higher education students in Saudi Arabia are equally provided with E-learning courses irrespective of gender. The female and male students are equally exposed to E-learning programs in all of the government universities. Furthermore, the registered female and male students have the same opportunity to access online courses using all the facilities provided by E-learning centers or Learning Resources Centres (LRC). The insignificant difference of gender was consistence with the cultural examined variable in this research namely masculinity and femininity. The masculinity and femininity variable had no significant influence on the students' E-learning acceptance.

Major

The results showed that there was a statistically significant difference in students' acceptance of E-learning in terms of their majors. The Science students had a significantly higher positive acceptance toward using E-learning compared to the Arts students. This result is supported by Alexander and Golja (2007) who conducted a research to investigate the students' experiences in deriving the best quality in using the E-learning system. The researchers indicated that there were significant differences among students of different majors and their use of E-learning activities. The possible demonstration with the result of the significant difference in students' acceptance of E-learning in terms of their majors is that because the sciences students prepared to use online technology more than Arts students due to the nature of their studied subjects. In addition, science students were required to pass successfully one year foundation in order to join their program while the Art students were not. The foundation year was designed to provide students with essential skills of their majors and using the ICT for academic purposes. Therefore, the significant difference in students' acceptance of E-learning in terms of their majors could be justified.

Computer, Internet and E-learning experience

The students' experiences were divided into three major experiences: (1) the experience in using computer, (2) experience in using the Internet and (3) experience in using E-learning. The results showed that there were no significant differences in students' E-learning acceptance based on experience in using the computer and E-learning while there were statistically significant differences in E-learning acceptance in terms of students' experience in using the Internet. In contrast, it was found that the users with prior experience in using computer technology had a positive intention towards using IT more than the users who were not experienced in using computer technology. Stoel and Lee (2003) also found similar findings to that of Taylor and Todd (1995). Their results indicated that experience directly influenced the students' intention to use the courseware as well as increased the students' perceptions the usefulness of the courseware and its ease of use. In this study, the most probable explanation of not having significant differences in the students' E-learning acceptance based on experience in using the computer is that the majority of the students had high level of experience in using the computer. This is expected as the findings of this research indicated that Computer Anxiety and Computer self-Efficacy were found to be significant in influencing the students' acceptance of E-learning. Logically, once the students had a good experience in using the computer, the anxiety of using the computer will be reduced and the students computer self efficacy will be increased. Hence, the students experience in using the computer would not significantly influence their acceptance unless they have deficient experience in using the computer.

Nevertheless, Internet experience was statistically significant in influencing the students' acceptance of E-learning. The finding is supported extensively by many scholars who had tested Internet experiences as an external variable with the intention to use distance and E-learning (Fusilier & Durlabhji, 2005; Kerka, 1999, Rezaei et al. 2008). Rezaei et al. (2008) had applied and extended the Technology Acceptance Model to predict the students' acceptance of E-learning application at the higher educational level. The results demonstrated that there was a statistically significant relationship between students' intention to use E-learning and perceived Internet experience. Fusilier and Durlabhji (2005) also conducted a study to explore the behavioural intention of users' acceptance of Internet technology. They incorporated the experience with the direct relationship with the intention to use the Internet technology. The findings indicated that the relationship between the intention of using the internet and experience was stronger and that it depended on the level of experience. The result also concluded that the experience has a complex influence on the students' intention to use internet technology. The potential explanation with the significant finding of Internet experience in influencing the students' acceptance of E-learning is that the internet tools are quite similar to the tools used in E-learning system and using E-learning system is dependent on the Internet electronic channels to deliver its educational content and materials. Therefore, students who had a good experience in using the internet would have positive attitude towards using E-learning and ultimately accept using a particular E-learning system. For this reasons Alexander & Golja (2007) claimed that understanding students' experiences is critical in improving the quality of E-learning and engaging them effectively in using E-learning system. At this time, the internet experience is important also due to the lack of institutional technical support and training which had to be crucial factors in influencing students' E-learning acceptance in this research. Therefore, the level of Internet experience plays a significant role in encouraging the student to use a particular system and need to be considered in any future investigation practical or theoretical problem related to the issue of E-learning acceptance and usage.

5.5.2 Research Question Two

The findings showed that the psychological, social, technological and institutional factors statistically influenced the students' E-learning acceptance. Only the cultural factor did not influence the students' acceptance of E-learning.

Psychological Factor

The findings showed that the psychological factor (enjoyment, computer anxiety & computer self-efficacy) has a significant influence on students' E-learning acceptance. Unanimously, many researchers agreed that these variables were considered as successful key variables in the area of technology acceptance in general and E-learning in particular (Agarwal et al.,1999; Anandarajan, Igbaria & Anakwe, 2000; Compeau & Higgins, 1995; Davis et al., 1992; Lee, et al., 2005; Saadé & Kira, 2006; Saadé, Tan, & Nebebe, 2008; Venkatesh, 2000; Tan & Teo, 2000; Venkatesh et al., 2003; Yi & Hwang, 2003). The findings were supported by a recent study by Min , Xiaoqing and Liying (2010) who found that the psychological factor had significant influence on the students' learning and engagement using online system. The finding of this research was also consistent with Saadé, Tan, and Nebebe (2008) research. Saadé, Tan, and Nebebe (2008) conducted an empirical research examining students' acceptance of a web-based learning system. The results demonstrate that both perceived usefulness and enjoyment have a significant impact on students' intention to use the system in two different cultures. Similarly, Lee, Cheung and Chen (2005) in their study to investigate the role of extrinsic and intrinsic motivation on students' acceptance of Internet-based learning medium, found that perceived enjoyment significantly influenced the students' acceptance of online learning and directly influenced their intention towards using online tools. Moreover, Saadé and Kira (2006) conducted a research to assess the emotional state of students' perception towards an online learning system based on the Technology Acceptance Model (TAM). They found that computer anxiety has a positive influence on students' acceptance of using an online system. Furthermore, Lim (2000) found that computer self-efficacy had a direct influence on the students' participation in distance education activities. As stated in the above discussion, these variables had significant influence on the users' acceptance of using technology particularly E-learning. The findings of this study could be justified because when the students' perceived the use of E-learning system in enjoyably way, their psychological behaviour and attitude will positively influence. Similarly, if the students have less computer anxiety and high level of computer self-efficacy, they will have positive attitude and behaviour towards using E-learning system.

Social Factor

The findings revealed that the social factor (image, subjective norm & self-identity) has a significant influence on students' E-learning acceptance. The finding was consistent with that of many researchers who had examined the influence of social variables on technology acceptance (Benbasat, 1995; Fishbein & Ajzen, 1975; Granberg & Holmberg, 1990; Harrison et al., 1997; Igbaria et al., 1996; Mao;2006; Lee et al., 2003; Lee et al., 2006; Sparks et al., 1995; Venkatesh, V. & Davis, F. D., 2000; Venkatesh, et al., 2003; Shen, Laffey, Lin, & Huang, 2006). Furthermore, Shen, Laffey, Lin, and Huang (2006) investigated the role of subjective norm on the students' perception towards using online learning. The results showed that the three components of subjective norm had significantly influenced the online courses. Moreover, Moore and Benbasat (1995) adapted the Innovation Diffusion Theory as a theoretical basis for their study. Their findings indicated that Image has a positive influence on the users' acceptance of using new technology. In addition, Lee et al. (2006) investigated social influence on using WebCT behaviour. The findings demonstrated that self-identity has significant direct and indirect influences on students' intention to use WebCT in the classroom. It also confirmed that self-identity seems to be significant in both voluntary and mandatory settings. The study was consistent with previous studies regarding the subjective norm influence in a voluntary setting. The study showed that the subjective norm had no significant effect on the students' intention to use WebCT in voluntary situations. Moreover, self-identity had a significant effect on perceived usefulness and perceived ease of use. The researchers suggested that further research should be carried out to determine the self-identity influence in different domains and in different settings. The possible explanation with the result of significant effect of social factor is that the significant role played by the social factor in regard to the technology acceptance. The examined social factor consisted of three important variables which are proven to be significant in influencing the issue of acceptance. Therefore, the social variables were significant in influencing the students' acceptance of E-learning in consistent with previous literature review.

Technological Factors

The obtained findings showed that the technological factors (system performance, system functionality, system interactivity & system response) proved to be significant factors influencing the students' acceptance of using the E-learning system in a higher education environment as was in line with previous studies (Palloff & Pratt, 1999; Pituch & Lee, 2006; Selim, 2003). The findings are supported by Liu and Ma (2006) who extended the Technology Acceptance Model with the construct of perceived system performance. System performance consisted of two sub-constructs, reliability and responsiveness. Perceived system performance explained around 46% of the variance in perceived ease of use and 56% of the variance in behaviour intention in cooperation. Thus, the perceived system performance seems to be vital in terms of its applicability to predict the users' perception towards a specific system. Furthermore, when the perceived system is nonexistent, the relations between the TAM constructs are still supporting. However, the association between perceived ease of use and intention of using the system is weak. Likewise, Pituch and Lee (2006) investigated the influence of system characteristics on E-learning use. The results indicated that the system characteristics influenced both the E-learning usage outcomes and the users' beliefs. They indicated that the system characteristics must be considered at the development stage of the E-learning design. The researchers also mentioned that the developers of the E-learning system should select the specific system characteristics before the implementation stages. The researchers also indicated that the system response has a crucial influence on the students' acceptance of using the E-learning system. The significant role of technological factor could be justified due to the nature of adapted variables which related to the system specific characteristics such as system performance, system functionality, system interactivity and system response. The TAM main predictors (perceived usefulness & perceived ease of use) are considered as system characteristics and it had great influence in predicting the users' acceptance. The technological factor related variables were also related to specific system characteristics. Therefore, the influence of technological factor was expected due to its significant effects that supported extensively in the above literature discussion. Hence, we could assume that the students who perceived the E-learning system to be function, interactive and responsive, it will positively encourage them to participate effectively in their online system and eventually, their level of acceptance will be enhanced.

Institutional Factor

The research finding indicated that the Institutional factor (facilitating conditions, training & technical support) significantly influenced the students' acceptance of E-learning. Many studies indicated the positive influence of Institutional variables on technology acceptance and E-learning acceptance in particular (Igbaria et al., 1997; Ngai et al., 2005; Venkatesh et al, 2003; Wolski & Jackson, 1999). The present research findings were supported by Venkatesh et al. (2003) who proposed and built a Unified Theory of Acceptance and Use of Technology (UTAUT). The facilitating conditions were direct determinants of users' usage behaviour and have shown enormous impact on the users' acceptance. Venkatesh et al. (2003, p.470) suggested that " future research should attempt to "test additional boundary conditions of the model in an attempt to provide an even richer understanding of technology adoption and usage behaviour". The researchers suggested investigating facilitating conditions and many other conditions due to its strong impact on technology acceptance specially on the early stage of implementation. The result is also confirmable with Wolski and Jackson (1999) who applied the Technology Acceptance Model in educational institutions. They investigated the teachers' acceptance of new technology used for academic purposes. Besides the TAM and its ability to predict the users' acceptance, the results suggested that the role of the incentives and training on technology acceptance would be the most significant keys that determine the acceptance, and need to be considered in other technology acceptance studies. In line with the previous findings, Igbaria et al. (1997) conducted a study to investigate the factors affecting personal computing acceptance. The findings indicated that training has a positive influence on technology acceptance as well as the variable of management support. In consistent, Ngai et al. (2005) investigated the students' perception towards the WebCT tools. The authors investigated around 836 students in Hong Kong. The study findings indicated that perceived usefulness and perceived ease of use are able to predict the students' acceptance of web course tools through a positive attitude. The Institutional technical support (ITS) had a direct influence on the TAM. The possible clarification of the Institutional variables significant influence is that due to the delayed introduction of the E-learning system in Saudi Arabian universities compared with the global experience. Therefore, the students will need labs, technical support and training courses to overcome any expected difficulties that could face them. Otherwise, the students' willingness will diminished particularly with the students who had weak experience in using online tools. The researchers concluded that technical support is a significant factor that could influence the students' acceptance of E-learning and it would provide the students with a good learning atmosphere.

Cultural Factor

However, besides the positive effect of the mentioned factors, the cultural factor was not significant in influencing the students' acceptance of the E-learning system. The finding contradicted other related studies on national culture, and its impact on technology acceptance has been extensively studied (Al-Gahtani et al, 2007; Calantone et al., 2006, Srite, 2006). The study instrumentation regarding the culture issue was adapted from a recent study in the area of national culture and E-learning by Srite (2006) who conducted a study to examine the issues of the technology acceptance across two cultures: China and the US. The researcher has extended the TAM to include Hofstede's cultural model and tested independently across two different cultures. In both cultures, the perceptions of perceived ease of use significantly influenced the perceptions of usefulness and behavioural intention to use. However, the relationship between subjective norm and behavioural intention was insignificant in US sample whereas it was significant in Chinese's sample. In the US sample, the relationship between perceived usefulness and behavioural intention was significant while in Chinese sample, it was not. In terms of uncertainty avoidance and power distance, there was no significant difference, which was consistent with this study which eliminated both variables during the early stage of the factor analysis due to its low eigenvalues. However, in the Chinese sample, Individualism and collectivism were strongly significant. This was confirmed in the later step of stepwise regression analysis. However, in this research, masculinity and femininity in stepwise regression analysis were insignificant. This was consistent with insignificant differences of gender findings regarding its influence with the students' acceptance. Similarly, and particularly in Saudi Arabia, Al-Khaldi and Wallace (1999) examined the computer usage between two different cultures, Saudi Arabian and Canadian. Their study aimed to identify the influencing factors that may affect computer usage in both cultures. The researchers found that dissimilar cultures generate different perceptions towards using a particular system and it creates different attitudes. Therefore, the culture influences on technology acceptance have no effect on the E-learning acceptance due to the fact that Saudi Arabian higher education students have and share the same cultural values and elements since there are no international students allowed to join Saudi government universities. Therefore, no differences appeared between them regarding their acceptance of using the E-learning system. The present research findings might be different from the other research due to the fact that the mentioned researches were conducted in two different cultures in different countries as a cross-cultural study or within the country that has different races. However, this research was consistent with Straub et al. (1997) who conducted an empirical study across three different cultures. They indicated that the TAM did not fit the Japanese culture. Therefore, the issue of western and non-western culture influence could be reason since the TAM model has shown different findings related in terms of the constructs capability in predicting users' acceptance.

5.5.3 Research Question Three

The tested hypotheses results indicated positive relationships between psychological, social, technological, cultural and institutional factors and the students' E-learning acceptance.

Psychological Factor and E-Learning Acceptance

The psychological factor variables, namely enjoyment, computer anxiety and computer self-efficacy were found to have positive relationships with the TAM constructs especially behavioural intention to use a particular system, which indicate the students' acceptance in this research (Lee, Cheung & Chen,2005; Lee, et al., 2005; Madorin & Iwasiw, 1999; Ndubisi, 2004; Sun & Zhang, 2005; Saadé, Tan, & Nebebe, 2008; Teo, Tan, & Wong, 1998; Yi & Hwang, 2003). The results of the study confirmed the study findings reported by Sun and Zhang (2005), who conducted an empirical study on causal relationships between perceived enjoyment and perceived ease of use. The findings indicated that the causal direction of perceived enjoyment was stronger on perceived ease of use while the direct relationship between perceived ease of use was not that strong in the path analysis. The finding is also supported by Teo, Tan, and Wong (1998) who investigated the role of perceived usefulness, perceived ease of use and perceived enjoyment on the intention to use the internet. The findings indicated that usefulness was not significant, while, the perceived enjoyment had a strong and positive relationship with internet usage. One of the most important psychological variables are computer anxiety, which is reported to have significant and positive relationship with students' intention to use E-learning as mentioned by Ndubisi (2004) who conducted a research to investigate the critical factors that influenced the students' intention to adopt E-learning tools in Malaysia. The researcher examined many factors bearing on students' intention to use the Blackboard system such as users' attitude, subjective norm, perceived behavioural control, perceived usefulness and ease of use of the system. Some of those factors were used to mediate and others to test directly the proposed variables. The findings show that computer anxiety has a positive relationship with the students' behavioural intention as well as with perceived behavioural control. The findings also indicated that the students with a high level of computer anxiety have less perceived behavioural control, which will ultimately influence the behavioural intention to use E-learning tools. Furthermore, this is consistent with Madorin and Iwasiw (1999), who investigated the effects of computer self-efficacy on using instructional technology in education particularly computer-assisted instruction among nursing students. The findings stated that the students' computer self-efficacy had a strong influence on the perceived ease of use. However, computer self-efficacy did not have a positive relationship with the perceived usefulness. This result is inconsistent with Venkatesh and Davis's (1996) findings regarding the effect of computer self-efficacy and perceived usefulness. The findings also indicated the positive effect of computer self-efficacy on the students' intention to use online learning.

Social Factor and E-Learning Acceptance

The results showed a positive relationship between the social factor and students' acceptance of E-learning. The social factor included three variables, namely image, subjective norm and self-identity. The findings revealed that social factor has a significant and positive relationship with E-learning acceptance. This research findings were confirmed by many researchers who had examined the relationship between social variables and technology acceptance (Benbasat ,1995; Fishbein &

Ajzen, 1975; Granberg & Holmberg, 1990; Harrison et al., 1997; Igbaria et al., 1996; Mao;2006; Lee et al., 2003; Sparks et al., 1995; Venkatesh, & Davis , 2000; Venkatesh, et al., 2003; Lin, Hu, & Chen, 2003; Shen, Laffey, Lin, & Huang, 2006; Lee et al., 2006). In consistence, Lin, Hu, and Chen (2003) study which investigated the acceptance of e-government services. The main finding of their study indicated that subjective norm was the significant key factor of the system acceptance. They also indicated that the person's opinion could influence the users' trend to evaluate the system's usefulness or the ease of using it. Thus, subjective norm seems to be a promising variable that could affect the students' acceptance of E-learning implementation in higher education environments. Furthermore, Venkatesh and Davis (2000) realized the importance of Image as a social construct by extending the original TAM to include the social factors. They developed TAMII to include many constructs for better understanding of users' acceptance. The research findings indicated that in voluntary settings the subjective norm seem to be the most significant determinant for the users' acceptance and their intention to use a particular system. However, in a mandatory setting, the subjective norm may influence the image, intention to use and perceived usefulness while image was recorded to be significant on the users' perceived usefulness. Thus, in this research the influence between Image and Intention to use E-learning was confirmed through the influence of the social factor in general. The findings are also confirmed by the study by Giddens (1991) who stated that self-identity has to be a very crucial construct on the social system because it has given a clear social interpretation in addition to other related social constructs.

Technological Factor and E-Learning Acceptance

The technological factors had a significant and positive relationship with E-learning acceptance. The social variables also proved to have a positive relationship with the students' acceptance of using the E-learning system in a higher education environment (Liu, &Ma, 2006; Mahinda & Whitworth, 2005; Palloff & Pratt, 1999; Pituch & Lee, 2006; Seels & Glasgow, 1998; Selim, 2003). This research finding was consistent with Liu and Ma (2006), who had extended the Technology Acceptance Model with the construct of perceived system performance. The results indicated a strong relationship between system performance and acceptance. Similarly, Mahinda and Whitworth (2005) indicated that the system variables were significant and positive with the TAM and needed to be considered as a crucial step in promoting online purchases. Seels and Glasgow (1998) conducted a research in investigating the factors affecting on instructional design decisions. The research indicated that the system function is related to its capabilities to integrate different types of the media such as the video and audio. The researchers indicated that the high level of the system functionality can be derived from making a clear and interactive instructional design in order to gain the students intention to use a specific system. Similarly, Pituch and Lee (2006) have investigated the influence of system characteristics, namely system response, system interactivity and system functionality on e-learning use. The results indicated that the system response, system interactivity and system functionality have a positive relationship with E-learning usage and intention. The study also indicated that the system characteristics must be considered at the development stage of the E-learning design. The researchers also mentioned that the developers of the E-learning system should select the specific system characteristics before the implementation stages.

Cultural Factor and E-Learning Acceptance

As mentioned earlier, the results revealed that there is a positive relationship between the cultural factor and E-learning acceptance. Even though the cultural factor did not significantly influence the students' acceptance of E-learning in the regression analysis, the correlation existed between the study variables as consistent with previous studies (Downey, Wentling, Wentling, & Wadsworth, 2005). The findings were also supported by original dimensions of Hofstede (1991). Furthermore, this research finding was consistent with Srite's (2006) findings, who conducted a study to examine the issues of the technology acceptance across two cultures. As stated earlier in the literature, in both cultures the perceptions of perceived ease of use significantly influenced the perceptions of usefulness and behavioural intention to use. However, the relationship between subjective norm and behavioural intention was not significant in the US sample whereas it was significant in the Chinese sample. Likewise, Myers and Tan (2002) indicated that cultural dimensions have strong and positive relationships with both the web design and users' interface acceptance. Furthermore, Srite et al. (2000) studied the cultural dimension on IT system use in the Arab world. The researchers affirmed that cultural dimensions seem to be significantly positive variables in relation to the users' acceptance or resistance to use the proposed system. Finally, the present research findings are supported by Kovacic (2005) who conducted a study to investigate the impact of national culture dimensions on the web E-government's readiness. The researcher indicated that countries with strong uncertainty avoidance would have less acceptance and readiness with adopting new ICTs. However, the countries with weak uncertainty avoidance will be willing to adopt the new ICTs because of its ability to take the risk of unsuccessful implantation. Moreover, the country with strong uncertainty avoidance would have a negative attitude towards using new ICT tools and vice versa. Kovacic also concluded that the proposed cultural dimensions were positively correlated to electronic government readiness.

Institutional Factor and E-Learning Acceptance

The findings showed that institutional factor is positively associated with students' acceptance of E-learning. In analyzing the relationship between the institutional factor including its related variables namely facilitating conditions, training and technical support, the majority of researches indicated positive and significant relationships between the institutional variables and technology acceptance (Igbaria et al., 1996, 1997; Ngai et al., 2005; Thompson et al., 1991; Venkatesh et al, 2003; Wolski & Jackson, 1999). Thompson et al. (1991) adapted the Triandis model of human behaviour to build the Model of PC Utilization. They predicted the usage behaviour rather than the intention to use. Their findings indicated that the facilitating conditions play a crucial role to capture the users' behaviour and not only the intention. These findings also indicated the positive relationship between the facilitating conditions and users' acceptance. For instance, Bock and Kim (2000) investigated the model of PC utilisation by expanding the facilitating conditions factors to include the rewards. They found that facilitating conditions also had a positive relationship with the users' behaviour. Similarly, Wolski and Jackson (1999) applied the Technology Acceptance Model in educational institutions. The TAM in this study has shown its ability to predict the users' acceptance. The findings suggested that the incentives and training are positively associated with the users' acceptance. Furthermore, the findings is supported by Venkatesh and Davis (2000), who examined the role of management support, internal computing support and external computing support on users' acceptance. The researchers confirmed that different sorts of organization support were positively related to the users' intention to use the computer technology.

5.5.4 Research Question Four

As mentioned earlier, this question is set out to determine variables that were most contributive to each external factor that would significantly predict the students' E-learning acceptance. Therefore, stepwise regression was performed independently in each factor.

Psychological Variables (Enjoyment, Computer Anxiety & Computer Self Efficacy)

The result showed that all the three psychological related variables, namely enjoyment, computer anxiety and computer self-efficacy significantly contributed to E-learning acceptance. The most contributive variable was computer anxiety, followed by computer self-efficacy and finally followed by enjoyment. The results obtained were extensively supported by the literature review. In terms of most significant contributive variable, which is computer anxiety, many studies have confirmed its effect and positive relationships to the area of technology acceptance especially E-learning (Ndubisi, 2004; Saadé & Kira, 2006). The result is confirmed with the recent study by Saadé and Kira (2006), who conducted a research to assess the emotional state of students' perception towards the online learning system based on the Technology Acceptance Model (TAM). The findings revealed that the computer anxiety had a strong and positive influence on students' acceptance of using online system. The findings also confirmed the original influence of TAM model constructs. Similarly, Ndubisi (2004) conducted a research in order to investigate the critical influential factors affecting the student intention to adopt E-learning in Malaysia. The findings show that computer anxiety has contributed significantly with 22% of variation in students' intention to adopt E-learning. The findings also indicate that the students with a high level of computer anxiety have less perceived behavioural control which will ultimately influence the behavioural intention to use E-learning tools. The second most contributive variable in the psychological factor was the computer self-efficacy. The result was supported by Lee (2006), who conducted an empirical research to investigate the factors influencing the adoption of E-learning system in both mandatory and voluntary settings. The research confirmed the capability of perceived usefulness and perceived ease of use in predicting the success of E-learning adoption in both contexts and the findings related to computer self-efficacy were also important. Computer self-efficacy demonstrated a significant impact on the behavioural intention indirectly through the perceived ease of use. Furthermore, Lim (2000) found also that computer self-efficacy had a direct influence on the students' participation in distance education activities. Even though the enjoyment showed less contribution compared to other two related variables, it is extensively supported by the literature. Saadé, Tan, and Nebebe (2008) conducted an empirical research examining students' acceptance of a web-based learning system. The results revealed that enjoyment had a significant influence on students' intention to use the web-based learning system in two examined groups. Likewise, Lee, Cheung and Chen (2005) conducted a research in order to investigate the role of extrinsic and intrinsic motivation on students' acceptance of an Internet-based learning medium. The study findings showed that perceived enjoyment had a significant relationship with the students' acceptance of online learning and directly influenced their intention to use online learning tools.

Social Variables (Image, Subjective Norm & Self-Identity)

The stepwise regression sought out that Image and self-identity were significantly contributive in close values and in respect to E-learning acceptance. Conversely, subjective norm insignificantly influenced the students' acceptance of E-learning. The results showed that the first contributive variable was image and followed by self-identity. The results were not surprising since the literature supported both variables. For instance, Venkatesh and Davis (2000) indicated the importance of image as a social construct by extending the original TAM to include the social factors. They tested image in two different settings. They developed TAMII to include many constructs for better understanding of users' acceptance. The research findings indicated that the subjective norm seemed to be the most significant determinant for the users' acceptance, and their intention to use a particular system. However, the insignificant effect of the subjective norm was also confirmed by previous literature. The recent study by Lee et al. (2006) indicated that the subjective norm had no significant effect on the students' intention to use WebCT in voluntary situations. Similarly, Srite (2006) indicated that the relationship between subjective norm and behavioural intention was insignificant in the US sample whereas it was significant in the Chinese sample. Likewise, Wolski and Jackson (1999) utilised the TAM in educational institutions. The results indicated that the extended factor "Subjective Norm" insignificantly influenced the acceptance. Despite the previous findings supporting these research findings, it is contradicted by several studies that confirm the positive influence of subjective norm on technology acceptance

(Bagozzi et al., 1992; Fishbein & Ajzen, 1975; Venkatesh & Morris, 2000; Miller et al., 2003; lee et al., 2003; Pan, Sivo, & Brophy, 2003). Therefore, the obtained results can be justified by two reasons. Firstly, the contradicted findings might be due to the fact that the influence of subjective norm is related to the specific settings such as mandatory and voluntary settings (Lee et al., 2006). As a result of that, the findings of Lee et al. (2006) revealed that the subjective norm had no significant effect on the students' intention to use WebCT in voluntary situations. Secondly, the subjective norm effect was influenced by the culture differences because the Srite's (2006) findings indicated that the relationship between subjective norm and behavioural intention was not significant in the US sample, whereas, was significant in Chinese's sample. Therefore, the effect of subjective norm might be positive or negative depending on the examined cultures and its mandatory or voluntary settings.

Technological Variables (System Performance, System Functionality, System Interactivity & System Response)

The result indicated that among the technological-related variables, system functionality, system interactivity and system response were significant. However, system performance was not significant. The variable that contributed the most was system performance, system functionality and interactivity respectively. The results obtained are confirmed by Pituch and Lee (2006), who investigated the influence of system characteristics on e-learning use. The results indicated that the system response, system interactivity and system functionality have a positive relationship with the TAM constructs and that it had influenced the E-learning acceptance. However, the obtained findings regarding system performance were inconsistent with that of Shankaranarayanan (2001) in addition to that of Liu and Ma (2006). Liu and Ma (2006) extended the Technology Acceptance Model with the construct of perceived system performance. The results indicated a strong relationship between system performance and users' acceptance which explained 56% of the variance in behaviour intention. However, in this research system performance was insignificant in stepwise regression compared to other related variables in the technological factor. The reason could be the reduced intention paid to system performance problems since the recent enhanced and updated new E-learning systems that are provided by the national centre of E-learning. At the same time, the students' intention might be intended to evaluate the provided new system characteristics such as system functionality, system interactivity and system response.

Cultural Variables (Individualism / Collectivism & Masculinity /Femininity)

In analyzing the cultural variables namely individualism/collectivism and masculinity /femininity, it was found that individualism / collectivism significantly influenced the students' acceptance of E-learning. However, masculinity /femininity did not significantly influence E-learning acceptance. Srite's (2006) findings was consistent with this research as demonstrated earlier. However, the masculinity and femininity were found to be not significant in this research. This is consistent with the examination of gender differences in this research which indicated that there was no significant difference between students' gender and their acceptance of the E-learning system. As stated earlier, the obtained result of this research might be due to the fact that the majority of Saudi Arabian universities provide E-learning courses equally to both female and male students. Furthermore, the female and male students have an equal opportunity to access online courses using the facilities provided by the university.

Institutional Variables (Facilitating Condition, Training & Institutional Technical Support)

The last examined variables belonged to the institutional factor, namely the facilitating conditions, training and institutional technical support. The most contributive variable was institutional technical support, followed by facilitating conditions, and lastly by training. The obtained findings were consistent with Kleinman and Entin's (2002) suggestion, which stated that technical support must be available during the online courses in order to offer the sense of confidence for the online learners. Many studies indicated the positive and significant influences of these variables on technology acceptance and E-learning acceptance in particular (Igbaria et al., 1997; Ngai et al., 2005;; Venkatesh et al, 2003; Wolski & Jackson, 1999). In terms of institutional technical support, the findings of Ngai et al. (2005) were consistent with this research results. Ngai et al. (2005) investigated the students' perception towards the WebCT tools. The findings of the study indicated that the institutional technical support (ITS) had a direct influence on both perceived usefulness and perceived ease of use and eventually influence the students' acceptance. Likewise, Igbaria et al. (1997) showed that the original relationships between the TAM constructs were proven. The researchers examined the training and institutional support and its influence on perceived usefulness and perceived ease of use. The findings pointed out that training had a positive influence on technology acceptance as well as variable of the management support. In light of facilitating conditions as a second contributive variable, its influence on the users' acceptance of new technology, especially online learning has been confirmed (Succi, 2007; Thompson et al., 1991; Venkatesh et al., 2003). The obtained findings confirmed Venkatesh et al, (2003), who stated that facilitating conditions have been identified to be a stronger predictor for the usage behaviour. The attained findings of last contributive variable were consistent with several researchers' findings (Igbaria et al, 1997; Wolski & Jackson, 1999). Moreover, in consistent with research findings, Wolski and Jackson (1999) indicated that the TAM and its ability to predict the users' acceptance were confirmed. The results suggested that the role of the incentives and training on technology acceptance would be the most significant keys that determined the acceptance, and need to be considered in other technology acceptance studies. Furthermore, Igbaria et al. (1997) conducted a study to determine the factors affecting computer technology acceptance. The original relationships between the TAM constructs were confirmed. The researcher examined the training and institutional support and its influence on the TAM main constructs. The results revealed that training had significantly influenced the technology acceptance. The possible explanation could refer to the students' perception of important needs of institutional support such as providing labs, technical support and training courses particularly in this early stage of implementation in order to conquer any future difficulties.

5.5.5 Research Question Five

The tested hypotheses set out to examine the mediating effect of students' attitude on the relationship between the internal independent variables, namely perceived ease of use/ perceived usefulness and students' E-learning acceptance. It also tested the original TAM direct relationship between perceived usefulness and both perceived ease of use and behavioural intention to use E-learning.

The Mediation Effect of Attitude

The obtained findings indicated that the attitude towards using E-learning fully mediated the relationship between perceived usefulness and E-learning acceptance . It also partially mediated the relationship between perceived ease of use and E-learning acceptance. The results contradicted to Davis et al. (1989) findings, which demonstrated that the power of the TAM in predicting the individual's acceptance is equally good and parsimonious without the attitude mediating effects. Likewise, Venkatesh and Davis (1996) eliminated the attitude variable from their proposed model because the attitude as a mediating construct did not seem to mediate fully the effect of perceived usefulness and perceived ease of use on behavioural intention as confirmed also by Wolski and Jackson (1999), who stated that the relationship between attitude and behavioural intention was not supported. Hence, the present research findings could be dissimilar with above authors' findings by reason of the struggling capability of TAM main constructs in predicting the users' acceptance in different settings particularly with the present of attitude as mediator variable. So, the mediating effect of the attitude could be absent or present due to the nature of study and the examined culture. Conversely, the present research finding was supported by many studies in the area of technology acceptance which had confirmed the positive relationships of the Attitude with perceived ease of use, perceived usefulness and intention to use e-learning in mandatory settings (Brown, 2002; Lee et al., 2005; Ngai et al., 2005; Saadé & Bahli, 2005). The research findings were confirmed by Brown (2002), who conducted a research in South

African universities in order to investigate factors affecting perceived ease of use of web-based learning technologies. The proposed factors were directly tested with TAM's main constructs. In terms of attitude findings, the result indicated that attitude has an important role in enhancing the students' ease of using the web-based learning. Lee, Cheung and Chen (2005) modelled the students' acceptance using the TAM extension to include extrinsic factors (perceived usefulness and ease of use) and intrinsic factors (perceived enjoyment). The findings related to the mediating attitude role with perceived usefulness were fully confirmed. However, the relationship between the perceived ease of use and the students' acceptance to use online activities through attitude were partially supported. Therefore, these research findings could be justified since the literature review provides contradicting findings in the relationship between them. In consistent with this research findings, Ngai et al. (2005) in his research findings confirmed that usefulness and ease of use are the main factors affecting the attitude of students using WebCT, and ultimately affect their intention to use WebCT activities.

Perceived Ease of Use and Perceived Usefulness

As pointed out earlier, the finding indicated that there was a positive relationship between perceived ease of use and perceived usefulness. This can be confirmed by the majority of technology acceptance research findings particularly E-learning acceptance findings (Babenko-Mould, Andrunsyszyn, & Goldenberg , 2004; Davis et al., 1992; Gefen & Straub, 2000; Masrom, 2007; Ngai et al., 2007; Ong et al., 2004; Rezaei, Mohammadi, Asadi, and Kalantary, 2008; Selim, 2003;; Sun, Tsai, Finger, Chen, & Yeh, 2008; Szajna, 1996; Tung & Chang, 2008; Saadé & Bahli, 2005). In consistent with this research finding, Sun, Tsai, Finger, Chen, & Yeh

(2008) conducted an empirical study to investigate the significant factors affecting online system satisfaction. The research confirmed the positive relationship between perceived ease of use in relation to perceived usefulness. The findings also indicated that perceived usefulness of the online learning system would positively influence the learners' satisfaction with this system. Furthermore, Tung and Chang (2008) utilised the TAM in order to investigate the students' intention to use online courses. This study investigated whether the Taiwanese students accepted the online courses or not. The study findings also indicated the original positive relationship between ease of use and usefulness as proposed by Davis et al. (1989). In line with this research finding, Ong and Lai (2004) conducted a research to examine the students' acceptance of E-learning by extending the TAM with gender as a demographic characteristic. The study showed that the students who had a high level of belief that online courses were easy to use showed an increase in their acceptance of online learning. In addition, they found that the perceived ease of use has a significant relationship with the perceived usefulness of using E-learning system. Therefore, the relationship between perceived ease of use and perceived usefulness is possibly justified because of their natures which are related somehow to the E-learning system characteristics.

Perceived Usefulness and E-Learning Acceptance

The final tested hypothesis showed that there is a positive relationship between perceived usefulness and E-learning acceptance, which indicated through the behavioural intention variable. The previous research findings were confirmed and support this research finding of the relationship between perceived usefulness and students' acceptance (Davis et al., 1992; Gefen and Straub, 2000; Ong et al., 2004;

Masrom, 2007; Ngai et al., 2007; Rezaei, Mohammadi, Asadi, & Kalantary, 2008; Saadé & Bahli, 2005; Selim, 2003; Szajna, 1996; Tsai, Finger, Chen, & Yeh, 2008, Tung and Chang, 2008). For instance, Rezaei, Mohammadi, Asadi, and Kalantary (2008) conducted a research in order to predict the factors affecting the E-learning system in Agriculture schools in higher education. The study showed "a strong direct influence of perceived usefulness on students' intention to use e-learning" (Rezaei et al., 2008, p.90). It also indicated that there was a positive relationship between students' intention to use E-learning and perceived usefulness besides the internet experience, computer self-efficacy and affect.

In conclusion, the results of the discussion of this question provide support for many previous studies that utilised the TAM as a theoretical basis. This study has proven the mediating effects of attitude in relationships between main original TAM's predictors and students' acceptance. It also proved the positive direct relationships between perceived usefulness with both perceived ease of use and behavioural intention to use E-learning.

5.6 Research implications

As a result of the obtained findings and the discussion, several implications have surfaced. These implications are divided into theoretical and practical implications.

5.6.1 Theoretical implications

This research has extensively extended, elaborated and validated the Technology Acceptance Model's (TAM) applicability to determine, predict and understand the factors affecting students' acceptance of E-learning in the Saudi Arabian higher education context. The suggestion of Davis et al. (1989), who stated that testing TAM with additional factors would provide richer understanding of the users' acceptance and their behaviour toward using the technology, was considered as a successful key factor of the extension and elaboration of the TAM in the present research. Hence, the examined factors indeed contributed significantly to provide in-depth understanding of how these factors were influenced the students' acceptance, and how considering these factors could improve the students' acceptance towards using the E-learning system.

The applicability and validity of the TAM and its related original constructs were confirmed in the educational context especially in the area of E-learning in Saudi Arabian institutions of higher education as consistent with the research that examined the TAM's applicability in the area of E-learning (Lee et al., 2006;Masrom ,2007; Rezaei, Mohammadi, Asadi, & Kalantary ,2008; Saadé, Tan, & Nebebe ,2008). The perceived ease of use influenced the perceived usefulness and both constructs significantly influenced E-learning acceptance through the mediating effects of students' attitude. Thus, it also confirmed that the TAM is able to include additional factors that could influence technology acceptance besides the confirmed original directions and relationships between TAM's constructs. The significant role of attitude in influencing the relationships between the main TAM constructs and the students' behavioural intention towards using E-learning has been confirmed. Thus, despite the claims of many researchers in eliminating the mediation effect of attitude, this research proved the importance of attitude as a mediator between the TAM main predictors and behavioural intention. Yet, future research is needed to investigate the mediating role of attitude.

Even though there are many studies that investigated the issue of students' acceptance using the TAM, there is limited research addressing the influence of demographic variables. Hence, this research examined the effects of proposed demographic variables on the students' acceptance of E-learning. The suggestions of studies in investigating the influence of the demographic variables such as gender, age and level of experience in E-learning acceptance were achieved in this research (Ong, Lai, & Wang, 2004; Yi-Cheng, Chen; Chun-Yu, Yi-Chen, & Ron, 2007). However, while many researchers investigated the role of demographic variables as moderators or antecedents, this research examined the direct effects of examined demographic variables on the students' acceptance of E-learning. The examined demographic variables were students' gender, age, majors and three different types of experience which are the students' experience in using the computer, the Internet and E-learning. Therefore, the obtained demographic significant variables need to be taken into account by higher education stakeholders, system designers and the academic staff who are interested with online-based teaching. Furthermore, the future researchers could test and investigate the influence of significant demographic variables as moderators in the relationship between proposed factors and the students' attitude rather than their behavioral intention towards E-learning.

The significant factors have been derived from well known theories and validated studies. Hence, it could provide richer understanding in the nature of the previous relationship between these variables and the TAM constructs whether agreeing with or contradicting previous findings. It can also give an indication in the significance of examined variables compared with previous research recommendations and suggestions. Theoretically, this research only examined the direct influence of these factors on the students' acceptance of E-learning. Therefore, examining these factors through the mediating effect of attitude is indeed important.

5.6.2 Practical implications

Based on the research findings, several practical implications are discussed. The study showed that students' E-learning acceptance was affected by the psychological variables namely enjoyment, computer anxiety and computer self efficacy. Therefore, the universities' management and academic staff should take into consideration the important role of these variables in enhancing the students' acceptance of using the universities available E-learning system fully. Thus, the lecturers can upload E-learning materials such as the subject's guidelines, lecture notes, subject quizzes and case studies in enjoyable organizations and interactions in order to attract the students to accept and fully participate in the universities' online activities. Furthermore, the management can provide the students with all the significant institutional variables namely facilitating conditions, training and technical support in order to achieve the other two important psychological variables namely computer anxiety and self-efficacy. For instance, the management and the university administrators could provide the students with appropriate technical support and training workshops in order to overcome the problems of computer anxiety or the lack of computer self-efficacy if any.

The significant influence of the social factor should be taken into the educators' and administrators' consideration. Since the importance of image and self-identity in influencing the students' acceptance of E-learning is confirmed, the lecturers can play a crucial role in positively influencing the students' acceptance. The lecturers can provide the students' with incentive such as giving 10 marks participation upon their effective participation on using E-learning tools such as online discussion to induce them to use the E-learning system. They can also promote E-learning acceptance by highlighting the benefits and features that can be derived from using E-learning through giving live examples of these features during the lecturers' introduction of the E-learning system. The university management should also encourage the lecturers to use E-learning system. Since the image and the self-identity was significant in influencing E-learning acceptance, the lecturers image can be used as enforcement tools for the students to encourage them to participate efficiently in the online activities.

In terms of significant technological variables, the findings are likely to be relevant to learning and content management system designers. System response, interactivity and functionality were significantly influenced the students' acceptance. In other words, when the students' perceived the system as interactive, functional and highly responsive, their acceptance level will be increased. Therefore, system designers must take this into consideration in achieving these significant system characteristics. Furthermore, the influence of original TAM's main constructs, namely perceived usefulness and perceived ease of use were also confirmed. Thus, the e-learning system should be perceived as both easy to use and useful to maximize use of the system. Universities' learning management system should be perceived as both useful and easy to use in order to maximize the system acceptance and ultimately increase the students' participation.

Based on the institutional significant variables, lecturers and administrative officers should take into account the importance of providing the students with initial exposure to E-learning. This can be achieved through providing the students with workshops in using the E-learning system. The first experience in using a new system is always fraught with technical difficulties and problems. Here, the role of institutional technical support need can be offered. For instance, the University of Florida in the United States has special department called e-learning support services which provide for both lecturers and students online tutorial and face to face training courses. It also provides two different help desk phone line for the faculty members and students if they have any technical enquiry. Finally, the management should provide the students with suitable facilitating conditions such as high speed networks, wireless services and computer labs in order to overcome any unexpected problems that could be caused by institutional oversight. They could also provide the students with 24 hours help desk or online live support.

5.7 Recommendations for Future Research

Based on the obtained findings, discussion and research implications, the following recommendations are formulated for academic staff, E-learning system designers, university' management and administrations and IT experts to undertake in order to achieve a high level of students acceptance and successful implementation of new systems.

1. In this research, the demographic variables were examined directly with students' behavioural intention as external factors. Therefore, future research could possibly investigate the effects of these variables as moderators or antecedents to other factors and specifically to its related variables.

2. Due to the limitation of sample size with only five government universities, it would be certainly useful for future research to implement the research examining factors and instrumentations with more universities either government or private ones, in order to obtain a better representation for entire population and ultimately represent optimum generalization. Furthermore, the research was limited only to university students. It is therefore future research should consider other university members such as research assistants, lecturers and administrators in order to identify their trend to accept E-learning and determine the important factors that could affect their acceptance.
3. The scope of this research was limited due to the higher education environment and Saudi Arabian institutions of higher education. Future research could study different organizations such as the government and business sectors, in order to investigate the influence of examined factors on their online users. The future research could implement this proposed research factors on other countries in order to confirm the instrumentation accuracy and assess the questionnaire validity and reliability.
4. This research did not examine the causal relationship between the external factors and the internal factors. It also did not completely examine the mediating effect of attitude on the relationship between the external factors and the students' acceptance. Hence, future research could examine the suggested relationships, which could add more richness to the area of interest and to the body of knowledge.

5. The significant factors proposed in the research framework can be implemented by IT experts to evaluate and develop new systems and creates new prototypes which would help them to design successful online systems
6. The reported R-square yielded other additional variables that might be needed particularly from the technical perspective since the technological factor was the most contributive factor among the proposed factors. Therefore, future research could investigate and test more additional technological related variables such as system interface design, credibility, privacy, quality and complexity.
7. The present research used quantitative methods in collecting the data. Thus, it would be useful if future investigation could use qualitative or triangulation methods which can help the researcher to discover additional factors that could influence the students' acceptance and also help them understand more about how the students could accept using new technology.
8. The research examined the proposed factors in light of the Technology Acceptance Model (TAM) as a theoretical basis. Future research could examined these factors with other acceptance theories or models. It could confirm and validate the significance of these variables in relation to other main indictors of acceptance in these models and theories.

5.8 Conclusion

The research was conducted to investigate factors affecting the students' acceptance of E-learning in institutions of higher education in Saudi Arabia. The findings showed that the students' acceptance can be modelled by the TAM's original constructs in addition to other significant variables that derived from other related theories. The present research model was tested and validated with 402 undergraduate students at five universities. This study on the factors affecting the students' acceptance of E-learning in Saudi Arabian universities was deemed necessary in order to increase the students' acceptance towards using universities' E-learning systems.

The results of testing the demographic variables showed that the students' major background and their internet experience significantly influenced the students' acceptance while other related examined variables did not indicate statistically any significant differences. The result also indicated that attitude significantly mediated the relationship between the TAM main constructs and the students' behavioral intention to use E-learning. Moreover, the perceived ease of use and perceived usefulness were found to be significant with the students' acceptance. Meanwhile, perceived ease of use was found to influence perceived usefulness significantly, which indicates that all of the obtained results regarding the relationships between the TAM's original variables was consistent with the findings of Davis (1998) and Davis et al. (1998).

In terms of psychological, social, technological, cultural and institutional factors, the results indicated that the technological factor was the significant contributive factor compared with other factors. In addition, the institutional factor was the second contributive factor followed by social and psychological factors, respectively. It also showed that the relationships between the psychological, social, technological and institutional factors were significant. However, the cultural factor insignificantly contributed to the students' acceptance of E-learning.

Finally, stepwise regressions were performed in order to determine variables that contributed the most in each factor. The results showed that the variables related to psychological factor all significantly contributed to the students' E-learning acceptance, namely computer anxiety, computer self-efficacy and enjoyment. Furthermore, the regressed variables of the social factor revealed that the most contributive variables were, respectively, image and self-identity while subjective norm insignificantly contributed to students' acceptance. Moreover, variables that contributed the most in the technological factor were system response, system functionality and system interactivity while system performance did not contributed significantly. In addition, the stepwise regression in institutional variables indicated that all the variables significantly contributed. In order, institutional technical support, facilitating conditions and training significantly contributed to students' acceptance of E-learning.

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Appendix (A): Research questionnaire (English Version)

(Survey Cover Letter)
QUESTIONNAIRE
On the factors affecting the Students' Acceptance of E-learning in Institutions of Higher Education in Saudi Arabia

The purpose of my thesis is to investigate the students' acceptance of E-learning in institutions of higher education in Saudi Arabia. This study also aims to identify, analyse and determine the critical factors that strongly affect the students' acceptance of the E-learning system particularly, in government universities in Saudi Arabia.

The survey questionnaire is conducted to gain data for the research leading do the degree of Doctor of Philosophy in Instructional Technology at Universiti Utara Malaysia (UUM). The survey will take not more than 20 minutes to complete and your responses will be strictly confidential. All information received will be used for academic purposes only. Your help and participation are greatly appreciated it. If you wish to obtain an E-copy of the survey results, please contact me via Email at A.Alenezi@hotmail.com.

This questionnaire is divided into seven sections:
Section One: Demographic questions
Section Two: Foundation model (TAM) constructs
Sections Three to Seven are related to Psychological, Social, Technological, and Cultural and Institutional factors respectively.
For **Section One** questions' simply **tick** in the square (✔) that matches your answer, and for **other sections,** just **circle the number** that matches your response as in the examples below.

Please, tick (✔) any of the following, which are relevant to your response (chose one option only).		
1	What is your Gender?	☑ Male ☐ Female

10	I find the E-learning system to be flexible to interact with my lecturer.	1	2	3	4

In this study most of items will be measured on a **4-point Likert-type scale**: ranging from 1to 4

1. **Strongly Disagree (SD).**
2. **Disagree (D).**
3. **Agree (A).**
4. **Strongly Agree (SA).**

I thank you in advanced for your cooperation
Abdulhameed Rakan Alenezi
Universiti Utara Malaysia (UUM)

Section (1): This section consists of Demographic questions and questions related to students' experience in using the computer, Internet and E-learning tools. Please, tick (✔) any of the following which are relevant to your response (chose one option only).		
1	**What is your gender?**	☐ **Male** ☐ **Female**
2	**Which age category are you in?**	☐ **<18 yrs** ☐ **> 35 yrs** ☐ **18-24 yrs** ☐ **25-30 yrs**
3	**Do you own a PC?**	☐ **Yes** ☐ **No**
4	**For how many years have you been using the computer?**	☐ **< 1 year** ☐ **1-3 years** ☐ **4- 8 years** ☐ **> 8years**
5	**For how many years have you been using the Internet?**	☐ **Never use the Internet** ☐ **< 1 year** ☐ **1-4 years** ☐ **> 5 years**
6	**Which of these listed online tools have you used for learning purposes?**	☐ **E-mail** ☐ **Threaded Discussion** ☐ **Chat Room** ☐ **Teleconferences/ Videoconferences**

7	**Does your university or institution implement and use the E-learning system?**	☐ **Yes** ☐ **No**
8	**On average, how frequently do you use E-learning?**	☐ **Once a month** ☐ **A few times a month** ☐ **A few times a week** ☐ **About once a day**
9	**Please, specify your university**	☐ **KSU** ☐ **KAU** ☐ **KFU** ☐ **KKU** ☐ **JU**
10	**Indicate your major, please**	☐ **Science** ☐ **Art**

Section (2): This section consists of questions regarding to Technology Acceptance Model constructs, which are capable of determining and predicting the extent of students' acceptance of E-learning implementation.

Please, state how strongly you agree or disagree with each of the statements listed below based on the shown scale (Circle One option Only):

1. **Strongly Disagree (SD).**
2. **Disagree (D).**
3. **Agree (A).**
4. **Strongly Agree (SA).**

	Items	SD	D	A	SA
1	Using the E-learning system improves my learning performance.	1	2	3	4
2	Using the E-learning system allows me to accomplish learning tasks more quickly.	1	2	3	4

3	**Using the E-learning system enhances my learning effectiveness in the course.**	**1**	**2**	**3**	**4**
4	**I find the E-learning system useful in my study.**	**1**	**2**	**3**	**4**
5	**Overall, I find the E-learning system to be advantageous to my learning.**	**1**	**2**	**3**	**4**
6	**Learning to operate the E-learning system is easy for me.**	**1**	**2**	**3**	**4**
7	**My interaction using the E-learning system is easy and clear.**	**1**	**2**	**3**	**4**
8	**It is easy for me to become skillful at using the E-learning system.**	**1**	**2**	**3**	**4**
9	**I find the E-learning system easy to use.**	**1**	**2**	**3**	**4**
10	**I find the E-learning system to be flexible for interacting with my lecturer.**	**1**	**2**	**3**	**4**
11	**Overall, I believe that the E-learning system is easy to use.**	**1**	**2**	**3**	**4**
12	**The E-learning system provides an attractive learning environment.**	**1**	**2**	**3**	**4**
13	**Using E-learning is a good idea.**	**1**	**2**	**3**	**4**
14	**Overall, I like using E-learning.**	**1**	**2**	**3**	**4**
15	**I intend to take more courses using the E-learning system in the future.**	**1**	**2**	**3**	**4**
16	**I intend to use E-learning regularly.**	**1**	**2**	**3**	**4**
17	**I intend to recommend others to use the E-learning system.**	**1**	**2**	**3**	**4**
18	**I intend to use the E-learning system frequently.**	**1**	**2**	**3**	**4**

<u>Section (3):</u> This section consists of questions regarding to Psychological Factors (PF) which could affect the students' acceptance of E-learning implementation. Please, state how strongly you agree or disagree with each of the statements listed below based on the shown scale (Circle One option Only):

1. **Strongly Disagree (SD).**
2. **Disagree (D).**
3. **Agree (A).**
4. **Strongly Agree (SA).**

	Items	SD	D	A	SA
1	I find using that the E- learning system is enjoyable.	1	2	3	4
2	The actual process of using the E- learning system is pleasant.	1	2	3	4
3	I have fun using the E- learning system.	1	2	3	4
4	I feel apprehensive about using computers.	1	2	3	4
5	It scares me to think that I could cause the computer to destroy a large amount of information by hitting the wrong key.	1	2	3	4
6	I hesitate to use a computer for fear of making mistakes I cannot correct.	1	2	3	4
7	Computers are somewhat intimidating to me.	1	2	3	4
8	I am able to operate the E-learning system with less support and assistance.	1	2	3	4
9	I am confident that I can overcome any obstacles when using the E-learning system.	1	2	3	4
10	I am confident of using the E- learning system even though I have never used such a system before.	1	2	3	4
11	I believe that I can use different E-learning software and systems to receive education.	1	2	3	4

<u>Section (4):</u> This section consists of questions regarding Social Factors (SF) which could affect the Students' acceptance of E-learning implementation. Please state how strongly you agree or disagree with each of the statements listed below based on the shown scale (One option Only):

1. **Strongly Disagree (SD).**
2. **Disagree (D).**
3. **Agree (A).**
4. **Strongly Agree (SA).**

	Items	SD	D	A	SA
1	People who use the E-learning system have a high status in the organization.	1	2	3	4
2	People who use the E-learning system have more prestige than those who do not.	1	2	3	4
3	Using the E-learning system is a status symbol in my university.	1	2	3	4
4	Using the E-learning system improves my image within the university.	1	2	3	4
5	Most of the people who are important to me think I should use the E-learning system.	1	2	3	4
6	Most of the people who influence my behaviour think I should use the E-learning system.	1	2	3	4
7	Using the E-learning system will increase the university's profit.	1	2	3	4
8	Using the E-learning system will be efficient for me.	1	2	3	4
9	To use the E-learning system in my study is an important part of who I am as a faculty student.	1	2	3	4
10	As a faculty student, I am not the type of person who is oriented to use E-learning in my study.	1	2	3	4

<u>Section (5):</u> **This section consists of questions regarding Technological Factors (TF) which could affect the students' acceptance of E-learning implementation. Please state how strongly you agree or disagree with each of the statements listed below based on the shown scale (One option Only):**

1. **Strongly Disagree (SD).**
2. **Disagree (D).**
3. **Agree (A).**
4. **Strongly Agree (SA).**

	Items	SD	D	A	SA
1	The E-learning system loads quickly.	1	2	3	4
2	The E-learning system reliably handles my queries.	1	2	3	4
3	It is fast to login into the E-learning system.	1	2	3	4
4	The E-learning system allows the learner to have control over his or her learning activity.	1	2	3	4
5	The E-learning system offers flexibility in learning as to time and place.	1	2	3	4
6	The E-learning system offers multimedia (Audio, video, and text) types of course content.	1	2	3	4
7	The E-learning system provides a means for taking tests and turning in assignments.	1	2	3	4
8	The E-learning system can present course material in a well-organized and readable format.	1	2	3	4
9	The E-learning system can present course content clearly.	1	2	3	4
10	The E- learning system enables interactive communication between instructor and students.	1	2	3	4
11	The communicational tools in the E- learning system (email, Bulletin Board, chat room, etc) are effective.	1	2	3	4
12	When you are using the E-learning system, system response is fast.	1	2	3	4
13	In general, the response time of the E-learning system is consistent.	1	2	3	4
14	In general, the response time of the E-learning system is reasonable.	1	2	3	4

Section (6): This section consists of questions regarding Cultural Factors (CF) which could affect the students' acceptance of E-learning implementation. Please state how strongly you agree or disagree with each of the statements listed below based on the shown scale (One option Only):

1. Strongly Disagree (SD).
2. Disagree (D).
3. Agree (A).
4. Strongly Agree (SA).

	Items	SD	D	A	SA
1	Being loyal to a group is more important than individual gain.	1	2	3	4
2	Being accepted as a member of a group is more important than being independent.	1	2	3	4
3	Rules and regulations are important because they inform students what the organization expects of them.	1	2	3	4
4	Students should not question their lecturer's decisions.	1	2	3	4
5	In teaching Jobs in which a man can always do better than a woman.	1	2	3	4
6	It is more important for men to have a professional career than it is for women to have a professional career.	1	2	3	4

Section (7): This section consists of questions regarding Institutional Factors (IF) which could affect the students' acceptance of E-learning implementation. Please, State how much you agree or disagree with each of the statements listed below based on the shown scale (One option Only):

1. Strongly Disagree (SD).
2. Disagree (D).
3. Agree (A).
4. Strongly Agree (SA).

		SD	D	A	SA
1	I have the knowledge necessary to use the E-learning system.	1	2	3	4
2	I have the resources necessary to use the E-learning system.	1	2	3	4
3	A specific person (or group) is available for assistance with any difficulties involving the E-learning system.	1	2	3	4

4	**The E-learning center provides most of the necessary assistance and resources for using the system.**	**1**	**2**	**3**	**4**
5	**I think that using the E-learning system fits well with the way I study.**	**1**	**2**	**3**	**4**
6	**My level of understanding of the E-learning system was substantially improved after going through the training program.**	**1**	**2**	**3**	**4**
7	**The training gave me confidence in using the E-learning system.**	**1**	**2**	**3**	**4**
8	**The trainers were knowledgeable and, they aided me in my understanding of the E-learning system.**	**1**	**2**	**3**	**4**
9	**The E-learning training was of adequate length and detail.**	**1**	**2**	**3**	**4**
10	**A help desk is available for helping with technical problem.**	**1**	**2**	**3**	**4**
11	**A hotline is available for helping with technical problem.**	**1**	**2**	**3**	**4**
12	**Fax enquiries can be made when there are any technical problems.**	**1**	**2**	**3**	**4**
13	**Web-based enquires can be made when there are any technical problems.**	**1**	**2**	**3**	**4**
14	**E-mail enquiries can be made when there are any technical problems.**	**1**	**2**	**3**	**4**

Appendix (B): Research questionnaire (Arabic version)

(معلومات الاستبيان)

استبانه لدراسة العوامل المؤثرة على قبول الطلاب لتطبيق التعلم الإلكتروني في مؤسسات التعليم العالي في المملكة العربية السعودية

تحية طيبة وبعد :

يقوم الباحث بإعداد رسالة الدكتوراة في تخصص تقنيات التعليم (التعلم الإلكتروني) في جامعة أوتارا الماليزية بهدف معرفة العوامل المؤثرة على قبول الطلاب لتطبيق التعلم الإلكتروني في مؤسسات التعليم العالي الحكومية في المملكة العربية السعودية ، كما تهدف الدراسة إلى تعريف وتحليل وتحديد العوامل المؤثرة على قبول الطلاب لنظام التعلم الإلكتروني سواءً كانت شخصية ، إجتماعية ، تكنولوجية ، ثقافية أو مؤسساتية.

لايستغرق الإجابة على هذه الاستبانة أكثر من 20 دقيقة ، وجميع الإجابات سوف تعامل بسرية تامة وتستخدم للأغراض الأكاديمية فقط .إذا رغبت في الحصول على نسخة إلكترونية من نتائج هذا الاستبيان ، أرجو مراسلة الباحث الكترونياَ عبر الإيميل التالي A.ALENEZI @HOTMAIL.COM

يحتوي هذا الاستبيان على سبعة أجزاء : العوامل الديموغرافية ، عوامل نموذج تقبل التقنية ، العوامل الشخصية ، العوامل الإجتماعية ، العوامل التقنية ، العوامل الثقافية ، العوامل المؤسساتية.

ُصمم هذا الاستبيان وفق نظام ليكرت الرباعي لدقة أكثر، وهناك طريقتان للإجابة عن الأسئلة إما بوضع علامة صح على الاجابة المحددة أو وضع دائرة على الرقم المشير لمدى إتفاقك مع العبارة ، كما هو مشار بالامثلة التالية:

2	حدد نوع الجنس	ذكر ☑ أنثى ☐

10	أجد نظام التعلم الالكتروني مرن لعملية التفاعل مع المحاضر.	1	2	3	4

إجابتكم عن هذا الاستبيان سوف تثري الدراسة وتساهم في إنجاحها ، شاكراً ومقدراً سلفاً لكم حسن تعاونكم واهتمامكم .

وتفضلوا بقبول فائق التقدير والاحترام ،

البـــاحث

عبدالحميد بن راكان العنزي

جامعة أوتارا

<u>الجزء الأول</u> : يتكون هذا القسم من أسئلة الخصائص الديموغرافية والأسئلة المتعلقة بمدى خبرة الطلاب في أستخدام الكمبيوتر والانترنت وأدوات التعلم الإلكتروني.
الرجاء اختيار الإجابة المناسبة بوضع إشارة(✔) في المربع المناسب(خيار واحد فقط)

1	اسم الجامعة التي تنتمي لها	☐ جامعة الملك سعود ☐ جامعة الملك عبدالعزيز ☐ جامعة الملك فيصل ☐ جامعة الملك خالد ☐ جامعة الجوف
2	الكلية التي تنتمي لها	☐ آداب ☐ علوم
3	نوع الجنس	☐ ذكر ☐ أنثى
4	ماهي الفئة العمرية التي تنتمي لها؟	☐ 21-18 ☐ 25-22 ☐ 29 - 25 ☐ 30 <
5	هل تملك كمبيوتر شخصي؟	☐ نعم ☐ لا
6	عدد سنوات استخدامك للكمبيوتر؟	☐ أقل من سنة ☐ 3-1 سنوات ☐ 8-4 سنوات ☐ أكثر من 8 سنوات

7	كم عدد سنوات استخدامك للإنترنت؟	☐ لم أستخدم الإنترنت أبداً ☐ أقل من سنة ☐ 4-2 سنوات ☐ أكثر من 5 سنوات
8	حدد أي من تقنيات الإنترنت التالية استخدمتها لغرض التعلم أن وجد (يمكنك أختيار أكثر من تقنية)	☐ البريد الإلكتروني ☐ المنتديات الحوارية ☐ غرف الدردشة ☐ المحادثات الهاتفية أو المرئية
9	هل جامعتك تطبق وتستخدم نظام التعلم الإلكتروني ؟	☐ نعم ☐ لا
10	تقريباً ، كم معدل استخدامك للتعلم الإلكتروني ؟	☐ مرة واحدة في الشهر ☐ عدد قليل من المرات في الشهر ☐ عدد قليل من المرات في الأسبوع ☐ مرة واحدة يومياً

الجزء الثاني : يتكون هذا الجزء من عوامل نموذج قبول التقنية والتي تهدف لقياس وتحديد مدى تقبل الطلاب لإستخدام وتطبيق التعلم الإلكتروني.
الرجاء وضع دائرة حول الرقم الذي يبين مدى أتفاقك أو اختلافك مع كلَ من العبارات التالية (ضع دائرة حول خيار واحد فقط)
1. لاأوافق بشدة
2. لاأوافق
3. أوافق
4. أوافق بشدة

		لاأوافق بشدة	لاأوافق	أوافق	أوافق بشدة
1	استخدام نظام التعلم الإلكتروني يطور من أدائي التعليمي.	1	2	3	4

2	استخدام نظام التعلم الإلكتروني يمكنني من تأدية مهامي التعليمية بسرعة.	1	2	3	4
3	استخدام نظام التعلم الإلكتروني يعزز من فعاليتي على التعلم خلال الفصل الدراسي.	1	2	3	4
4	أعتقد أن نظام التعلم الإلكتروني مفيد جداً في دراستي.	1	2	3	4
5	أجد نظام التعلم الإلكتروني مفيد جدا لتطوير عملية التعلم.	1	2	3	4
6	تعلم تشغيل نظام التعلم الإلكتروني سهلَ بالنسبة لي.	1	2	3	4
7	تفاعلي مع نظام التعلم الإلكتروني واضح ومفهوم.	1	2	3	4
8	من السهولة أن أصبح ماهراً في استخدام نظام التعلم الإلكتروني.	1	2	3	4
9	أجد نظام التعلم الإلكتروني سهل الاستخدام.	1	2	3	4
10	أجد نظام التعلم الإلكتروني مرن لعملية التفاعل مع المحاضر.	1	2	3	4
11	أنا اعتقد بأن نظام التعلم الإلكتروني سهل الاستخدام.	1	2	3	4
12	يوفر التعلم الإلكتروني بيئة تفاعلية لعملية التعلم.	1	2	3	4
13	أستخدام التعلم الإلكتروني يعُد فكرة جيده.	1	2	3	4
14	بشكل عام، احب استخدام التعلم الإلكتروني.	1	2	3	4
15	من المحتمل أن آخذ محاضراتي عن طريق التعلم الإلكتروني في المستقبل.	1	2	3	4
16	أنوي أستخدام التعلم الإلكتروني بانتظام .	1	2	3	4
17	لدي الرغبة في توصية الآخرين لاستخدام نظام التعلم الإلكتروني.	1	2	3	4
18	أنوي استخدام التعلم الإلكتروني بشكل مكثف.	1	2	3	4

<u>الجزء الثالث</u> : يتكون هذا الجزء من العوامل النفسية والشخصية التي من الممكن أن تؤثر على مدى تقبل الطلاب لتطبيق التعلم الالكتروني.
الرجاء وضع دائرة حول الرقم الذي يبين مدى أتفاقك أو اختلافك مع كلَ من العبارات التالية (ضع دائرة حول خيار واحد فقط)

	العبارات	لاأوافق بشدة	لاأوافق	أوافق	أوافق بشدة
1	أجد نظام التعلم الإلكتروني ممتع.	1	2	3	4
2	أجد العملية الفعلية لاستخدام التعلم الإلكتروني ستكون ساره.	1	2	3	4
3	أقضي وقتاَ ممتعاً في استخدام التعلم الإلكتروني.	1	2	3	4
4	أشعر عند استعمال الحاسب الآلي (الكمبيوتر) بالراحة.	1	2	3	4
5	لا يخيفيني الأعتقاد بأن الكمبيوتر قد يدمر كل البيانات المهمه لدي بضغطي لأي زر بالخطأ.	1	2	3	4
6	لا اتردد في أستخدام الكمبيوتر لخوفي من ارتكاب خطأ لايمكن تصحيحة.	1	2	3	4
7	يخيفيني الحاسب الآلي بعض الشيء .	1	2	3	4
8	سأكون قادر على تشغيل نظام التعلم الإلكتروني بأقل دعم ومساعدة.	1	2	3	4

9	أثق بانه يمكنني التغلب على أي عقبة تواجهني أثناء أستخدامي للتعلم الإلكتروني.	1	2	3	4
10	أثق بأنه يمكنني أن استخدم نظام التعلم الالكتروني حتى وان لم أستخدمه من قبل.	1	2	3	4
11	أعتقد بانني أستطيع استخدام برامج وأنظمة التعلم الإلكتروني المختلفة.	1	2	3	4

<u>الجزء الرابع</u> : يتكون هذا الجزء من العوامل الاجتماعية التي من الممكن أن تؤثر على مدى تقبل الطلاب لتطبيق التعلم الالكتروني.
الرجاء وضع دائرة حول الرقم الذي يبين مدى أتفاقك أو اختلافك مع كلَ من العبارات التالية (ضع دائرة حول خيار واحد فقط)

	العبارات	لاأوافق بشدة	لاأوافق	أوافق	أوافق بشدة
1	الأشخاص الذين يستخدمون نظام التعلم الإلكتروني لديهم تقدير عالي في الجامعة.	1	2	3	4
2	الأشخاص الذين يستخدمون نظام التعلم الإلكتروني لديهم شهرة (برستيج) أكثر من الذين لايستخدمون.	1	2	3	4
3	أستخدام التعلم الإلكتروني دليل رفعة اجتماعية في جامعتي.	1	2	3	4
4	أستخدام التعلم الإلكتروني يحّسن صورتي داخل الجامعة.	1	2	3	4
5	معظم الناس المهمين لدي ، يعتقدون بأنني يجب أن أستخدم التعلم الإلكتروني.	1	2	3	4
6	معظم الناس الذين يؤثرون على سلوكي ، يعتقدون بأنني يجب أن أستخدم التعلم الإلكتروني.	1	2	3	4
7	أستخدام نظام التعلم الإلكتروني سيزيد من فوائد الجامعة العلمية.	1	2	3	4
8	أستخدام نظام التعلم الإلكتروني سيكون مهم بالنسبة لي.	1	2	3	4
9	من المهم بالنسبة لدي قبل استعمال نظام التعلم الإلكتروني أن أعرف مكانتي كطالب جامعي.	1	2	3	4
10	كطالب كلية ، أنا لست ذلك الشخص الذي يُوّجه لإستخدام نظام التعلم الإلكتروني.	1	2	3	4

<u>الجزء الخامس</u> : يتكون هذا الجزء من العوامل التقنية (التكنولوجية) التي من الممكن أن تؤثر على مدى تقبل الطلاب لتطبيق التعلم الالكتروني.
الرجاء وضع دائرة حول الرقم الذي يبين مدى أتفاقك أو اختلافك مع كلَ من العبارات التالية (ضع دائرة حول خيار واحد فقط)

	العبارات	لاأوافق بشدة	لاأوافق	أوافق	أوافق بشدة
1	تحميل نظام التعلم الإلكتروني سريع.	1	2	3	4
2	يّسلم نظام التعلم الإلكتروني استفساراتي بشكل موثوق.	1	2	3	4
3	الدخول الى نظام التعلم الإلكتروني سريع.	1	2	3	4
4	يسمح نظام التعلم الالكتروني للمتعلم بالتحكم بفعالياتي التعليمية.	1	2	3	4
5	يوفر نظام التعلم الإلكتروني مرونة في التعلم فيما يتعلق بالزمان والمكان.	1	2	3	4

6	يّوفر نظام التعلم الإلكتروني مجموعة من الوسائط المتعددة (صوت ، صورة ، كتابة) للمحتوى التعليمي .	1	2	3	4
7	يّوفر نظام التعلم الإلكتروني معنى لاستلام الواجبات وتسليمها الكترونياً.	1	2	3	4
8	يقدم نظام التعلم الإلكتروني المحتوى التعليمي بصيغة منظمة ومقروءة.	1	2	3	4
9	يقدم نظام التعلم الإلكتروني المحتوى التعليمي بشكل واضح.	1	2	3	4
10	يُمَكن نظام التعلم الإلكتروني التفاعل بين المحاضر والمتعلم.	1	2	3	4
11	أدوات التواصل في التعلم الإلكتروني كالشات والمنتديات والإيميل فعّاله لعملية التعلم.	1	2	3	4
12	يستجيب نظام التعلم الإلكتروني بشكل سريع أثناء عملية الاستخدام.	1	2	3	4
13	عموماً ،الوقت في أستجابة نظام التعلم الإلكتروني ثابت.	1	2	3	4
14	عموماً ، الوقت في أستجابة نظام التعلم الإلكتروني معقولة جدا .	1	2	3	4

الجزء السادس : يتكون هذا الجزء من العوامل الثقافية التي من الممكن أن تؤثر على مدى َتقبل الطلاب لتطبيق التعلم الالكتروني.
الرجاء وضع دائرة حول الرقم الذي يبين مدى أتفاقك أو اختلافك مع كلَ من العبارات التالية (ضع دائرة حول خيار واحد فقط)

	العبارات	لاأوافق بشدة	لاأوافق	أوافق	أوافق بشدة
1	الولاء للعمل مع المجموعة أهم من العمل بشكل فردي.	1	2	3	4
2	من الأهمية أن تكون مقبول ضمن مجموعة أكثر من كونك مستقل.	1	2	3	4
3	التعليمات والتشريعات في العمل الإلكتروني مهمة لانها تحدد للمتعلمين ماهو متوقع منهم.	1	2	3	4
4	يجب على الطلاب عدم سؤال المحاضرين لاتخاذ قرار معين.	1	2	3	4
5	تأدية الاعمال الإلكترونية لدى الرجال غالباً ماتكون أفضل من تأدية النساء.	1	2	3	4
6	من المهم جداً أن يحصل الرجال على وظائف تخصصية أكثر من حصول النساء على وظائف تخصصية.	1	2	3	4

الجزء السابع : يتكون هذا الجزء من العوامل الإدارية التي من الممكن أن تؤثر على مدى تقبل الطلاب لتطبيق التعلم الإلكتروني. الرجاء وضع دائرة حول الرقم الذي يبين مدى اتفاقك أو اختلافك مع كلَ من العبارات التالية (ضع دائرة حول خيار واحد فقط)					
	العبارات	لاأوافق بشدة	لاأوافق	أوافق	أوافق بشدة
1	يوجد لدي المعرفة اللازمة لإستخدام نظام التعلم الإلكتروني.	1	2	3	4
2	يوجد لدي المصادر اللازمة لإستخدام نظام التعلم الإلكتروني.	1	2	3	4
3	يوجد أكثر من شخص لمساعدتي مع أي صعوبات تواجهني مع نظام التعلم الإلكتروني.	1	2	3	4
4	يُوّفر مركز التعلم الإلكتروني في الجامعة المصادر والمساعدة اللازمة لاستخدام نظام التعلم الالكتروني.	1	2	3	4
5	أعتقد بأن استخدامي لنظام التعلم الإلكتروني يتوافق مع الطريقة التي أحبها للتعلم.	1	2	3	4
6	مستوى فهمي لنظام التعلم الإلكتروني تغير جوهرياً بعد حضوري لدورة تدريبية.	1	2	3	4
7	يمنح التدريب مستوى من الثقة لاستخدام التعلم الإلكتروني.	1	2	3	4
8	يمتلك المّدربون المعرفة الكاملة للمساعدة على نظام التعلم الإلكتروني.	1	2	3	4
9	التدريب للتعلم الإلكتروني كان كافي من ناحية المدة والمعلومات.	1	2	3	4
10	يتوفر مركز مساعدة في الجامعة عند حصول أي مشكلة تقنية.	1	2	3	4
11	يتوفر خدمة هاتفية للمساعدة عند حدوث أي مشكلة تقنية.	1	2	3	4
12	بالإمكان إرسال فاكس عند حدوث مشكلة تقنية.	1	2	3	4
13	تستطيع المراسلة عن طريق موقع الجامعة عند حدوث إي مشكلة تقنية.	1	2	3	4
14	تستطيع إرسال بريد الكتروني عند حدوث اي مشكلة تقنية.	1	2	3	4

Appendix (C): The research factors, variables, original adapted items, reliability and sources

Factor	Variable	No. Items	Cronbach alpha (a)	Reference
TAM	Perceived Usefulness (PU)	5	0.79	Suh, C & Lee, T (2007)
	Perceived Ease of Use (PEU)	6	0.89	
	Attitude toward Using E-learning (A)	3	0.88	
	Behavioral Intention to Use E-learning (BI)	4	0.90	
Psychological Factor (PF)	Enjoyment(EN)	3	0.86	Saade, R ;Tan, W &Nebebe, F (2008)
	Computer anxiety(ANX)	5	0.87	Saade, R& Kira,D (2006)
	Computer Self-efficacy(CSE)	4	0.91	Pituch, K.& Lee, Y. (2006)
Social Factor (SF)	Image (IM)	4	0.80	Moore, G. & Benbasat, I. (1991).
	Subjective Norm (SN)	2	0.90	Ndubisi, N. O(2004)
	Self-Identity(SI)	4	0.95	Lee, Y.; Lee, J.& Lee, Z(2006)-Nasution, F(2007)
Technological Factor (TF)	System Performance(SP)	3	0.77	Liu, L.&Ma, Q (2006)
	System functionality (SF)	6	0.83	Pituch, K. Lee, Y. (2006)
	System Interactivity (SIN)	2	0.90	
	System response (SR)	3	0.92	
Cultural Factor (CF)	Individualism/Collectivism(IC)	2	0.84	Srite, M.(2006)
	Uncertainty Avoidance (UA)	1	NA	
	Power Distance(PD)	2	0.79	
	Masculinity/Femininity(MF)	2	0.87	
Institutional Factor (IF)	Facilitating Conditions (FC)	5	0.72	Curtis, M. &Payne, E. (2008)
	Training (TR)	4	0.88	Amoako-Gyampah, K.& Salam, A. F(2004)
	Institutional Technical support (ITS)	5	0.83	Ngai, E. W. T.;Poon, J. K. L.& Chan, Y. H. C. (2007)

Appendix (D): SPSS output of the Research Pilot Test: Reliability Analysis

The TAM Variables

Perceived Usefulness (PU)

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.815	.814	5

Perceived Ease of Use (PEU)

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.795	.796	6

Attitude (A)

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.723	.724	3

Behavioral Intention (BI)

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.797	.797	4

The Psychological Factor

Enjoyment (EN)

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.846	.846	3

Computer Anxiety (ANX)

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.809	.810	4

Computer Self-Efficacy (CSE)

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.739	.734	4

The Social Factor

Image (IM)

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.809	.810	4

Subjective Norm (SN)

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.714	.716	2

Self-Identity

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.812	.812	4

The Technological Factor

System Performance (SP)

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.862	.863	3

System Functionality (SF)

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.802	.803	6

System Interactivity (SIN)

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.743	.744	2

System Response (SR)

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.758	.760	3

<u>The Cultural Factor</u>

Individualism/Collectivism (IC)

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.716	.716	2

Masculinity/Femininity (MF)

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.814	.814	2

The Institutional Factor

Facilitating conditions (FC)

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.753	.753	5

Training (TR)

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.787	.796	4

Institutional Technical Support (ITS)

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.801	.799	5

Appendix (E): Descriptive statistics of the demographic variables

UNIVERSITY

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	KSU	125	30.6	30.6	30.6
	KAU	161	39.5	39.5	70.1
	KFU	38	9.3	9.3	79.4
	KKU	45	11.0	11.0	90.4
	JU	39	9.6	9.6	100.0
	Total	408	100.0	100.0	

MAJOR

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SCIENCE	237	58.1	58.1	58.1
	ART	171	41.9	41.9	100.0
	Total	408	100.0	100.0	

GENDER

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	MALE	254	62.3	62.3	62.3
	FEMALE	154	37.7	37.7	100.0
	Total	408	100.0	100.0	

AGE

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-21	127	31.1	31.1	31.1
	22-25	259	63.5	63.5	94.6
	26-29	22	5.4	5.4	100.0
	Total	408	100.0	100.0	

PC OWNER

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	383	93.9	93.9	93.9
	NO	25	6.1	6.1	100.0
	Total	408	100.0	100.0	

YEARS USING COMPUTER

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<1 Year	104	25.5	25.5	25.5
	1-3 Years	150	36.8	36.8	62.3
	4-8 Years	126	30.9	30.9	93.1
	>8 Years	28	6.9	6.9	100.0
	Total	408	100.0	100.0	

YEARS USING INTERNET

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<1 Year	230	56.4	56.4	56.4
	2-4 Years	142	34.8	34.8	91.2
	>4 Years	36	8.8	8.8	100.0
	Total	408	100.0	100.0	

FREQUENTLY E-LEARNING USE

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	ONCE PER MONTH	199	48.8	48.8	48.8
	LITTLE PER MONTH	110	27.0	27.0	75.7
	LITTLE PER WEEK	75	18.4	18.4	94.1
	ONCE PER DAY	24	5.9	5.9	100.0
	Total	408	100.0	100.0	

Appendix (F): SPSS output of instruments Factor Analysis

E-Learning Acceptance (Behavioral Intention)

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.761
Bartlett's Test of Sphericity	Approx. Chi-Square	457.676
	df	6
	Sig.	.000

Component Matrix[a]

	Component
	1
TAM(BI1)	.802
TAM(BI2)	.795
TAM(BI3)	.789
TAM(BI4)	.736

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Attitude (A)

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.639
Bartlett's Test of Sphericity	Approx. Chi-Square	222.718
	df	3
	Sig.	.000

Component Matrix[a]

	Component
	1
TAM(A1)	.830
TAM(A2)	.824
TAM(A3)	.701

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Internal Independent variables: Perceived Usefulness (PU)& Perceived Ease of Use(PEU)

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.815
Bartlett's Test of Sphericity	Approx. Chi-Square	998.357
	df	55
	Sig.	.000

Rotated Component Matrix[a]

	Component	
	1	2
TAM(PEU1)	.730	
TAM(PEU2)	.712	
TAM(PEU3)	.693	
TAM(PEU4)	.684	
TAM(PEU5)	.651	
TAM(PEU6)	.453	
TAM(PU1)		.771
TAM(PU2)		.726
TAM(PU3)		.724
TAM(PU4)		.678
TAM(PU5)		.634

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

Psychological Factor (PF)

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.668
Bartlett's Test of Sphericity	Approx. Chi-Square	1663.822
	df	55
	Sig.	.000

Rotated Component Matrix[a]

	Component		
	1	2	3
PF(ANX1)	.796		
PF(ANX2)	.761		
PF(ANX3)	.751		
PF(ANX4)	.749		
PF(CSE1)		.816	
PF(CSE2)		.791	
PF(CSE3)		.783	
PF(CSE4)		.573	
PF(EN1)			.890
PF(EN2)			.853
PF(EN3)			.834

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 4 iterations.

Social Factor (PF)

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.672
Bartlett's Test of Sphericity	Approx. Chi-Square	1532.609
	df	45
	Sig.	.000

Rotated Component Matrix[a]

	Component		
	1	2	3
SF(IM1)	.786		
SF(IM3)	.767		
SF(IM2)	.760		
SF(IM4)	.678		
SF(SI1)		.824	
SF(SI2)		.816	
SF(SI3)		.744	
SF(SI4)		.608	
SF(SN1)			.862
SF(SN2)			.851

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

Technological Factor (PF)

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.769
Bartlett's Test of Sphericity	Approx. Chi-Square	2516.701
	df	91
	Sig.	.000

Rotated Component Matrix[a]

	Component			
	1	2	3	4
TF(SF1)	.864			
TF(SF2)	.853			
TF(SF3)	.672			
TF(SF4)	.663			
TF(SF5)	.621			
TF(SR1)		.781		
TF(SF6)		.773		
TF(SR2)		.751		
TF(SR3)		.691		
TF(SP1)			.879	
TF(SP2)			.819	
TF(SP3)			.790	
TF(SIN1)				.832
TF(SIN2)				.752

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

Cultural Factor (PF)

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.700
Bartlett's Test of Sphericity	Approx. Chi-Square	657.608
	df	15
	Sig.	.000

Rotated Component Matrix[a]

	Component			
	1	2	3	4
CF(MF1)	.897			
CF(MF2)	.883			
CF(IC1)		.868		
CF(IC2)		.863		
CF(UA1)			.949	
CF(PD1)				.944

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 5 iterations.

Institutional Factor (PF)

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.759
Bartlett's Test of Sphericity	Approx. Chi-Square	2036.496
	df	91
	Sig.	.000

Rotated Component Matrix[a]

	Component		
	1	2	3
IF(ITS1)	.690		
IF(ITS2)	.677		
IF(ITS3)	.634		
IF(ITS4)	.600		
IF(ITS5)	.591		
IF(FC1)		.721	
IF(FC2)		.692	
IF(FC3)		.673	
IF(FC4)		.662	
IF(FC5)		.636	
IF(TR1)			.850
IF(TR2)			.831
IF(TR3)			.564
IF(TR4)			.520

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 5 iterations.

Appendix (G): The Reliability Analysis of the main research factors

Perceived Usefulness (PU)

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.760	.759	5

Perceived Ease of Use (PEU)

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.742	.742	6

Attitude (A)

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.702	.703	3

Behavioral Intention (BI)

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.765	.765	4

The Psychological Factor

Enjoyment (EN)

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.822	.823	3

Computer Anxiety (ANX)

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.778	.778	4

Computer Self-Efficacy (CSE)

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.754	.756	4

The Social Factor

Image (IM)

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.783	.783	4

Subjective Norm (SN)

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.686	.687	2

Self-Identity

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.783	.783	4

The Technological Factor

System Performance (SP)

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.792	.793	3

System Functionality (SF)

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.818	.817	6

System Interactivity (SIN)

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.695	.695	2

System Response (SR)

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.722	.722	3

The Cultural Factor

Individualism/Collectivism (IC)

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.741	.741	2

Masculinity/Femininity (MF)

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.804	.804	2

The Institutional Factor

Facilitating conditions (FC)

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.754	.755	5

Training (TR)

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.757	.758	4

Institutional Technical Support (ITS)

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.730	.731	5

Appendix (H): Correlation Analysis of the research factors

Correlations

		SYCHOLOG CALFACTOR	SOCIAL FACTOR	ECHNOLOG CAL FACTOR	CULTURAL FACTOR	NSTITUTION AL FACTOR	ELEARNING ACCEPTAN CE
PSYCHOLOGICALF. R	Pearson Correlat	1	.430**	.352**	.078	.430**	.507**
	Sig. (2-tailed)	.	.000	.000	.115	.000	.000
	N	408	408	408	408	408	408
SOCIAL FACTOR	Pearson Correlat	.430**	1	.453**	.054	.407**	.538**
	Sig. (2-tailed)	.000	.	.000	.278	.000	.000
	N	408	408	408	408	408	408
TECHNOLOGICAL FACTOR	Pearson Correlat	.352**	.453**	1	.078	.510**	.717**
	Sig. (2-tailed)	.000	.000	.	.114	.000	.000
	N	408	408	408	408	408	408
CULTURAL FACTOI	Pearson Correlat	.078	.054	.078	1	.185**	.105*
	Sig. (2-tailed)	.115	.278	.114	.	.000	.034
	N	408	408	408	408	408	408
INSTITUTIONAL FA	Pearson Correlat	.430**	.407**	.510**	.185**	1	.626**
	Sig. (2-tailed)	.000	.000	.000	.000	.	.000
	N	408	408	408	408	408	408
ELEARNING ACCEPTANCE	Pearson Correlat	.507**	.538**	.717**	.105*	.626**	1
	Sig. (2-tailed)	.000	.000	.000	.034	.000	.
	N	408	408	408	408	408	408

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

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

Correlations

		PERCEIVED USEFULNE SS	PERCEIVED EASE OF USE
PERCEIVED USEFULNESS	Pearson Correlation	1	.274**
	Sig. (2-tailed)	.	.000
	N	408	408
PERCEIVED EASE OF USE	Pearson Correlation	.274**	1
	Sig. (2-tailed)	.000	.
	N	408	408

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

Correlations

		PERCEIVED USEFULNESS	ATTITUDE
PERCEIVED USEFULNESS	Pearson Correlation	1	.173**
	Sig. (2-tailed)	.	.000
	N	408	408
ATTITUDE	Pearson Correlation	.173**	1
	Sig. (2-tailed)	.000	.
	N	408	408

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

Correlations

		ATTITUDE	PERCEIVED EASE OF USE
ATTITUDE	Pearson Correlation	1	.261**
	Sig. (2-tailed)	.	.000
	N	408	408
PERCEIVED EASE OF USE	Pearson Correlation	.261**	1
	Sig. (2-tailed)	.000	.
	N	408	408

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

Correlations

		ATTITUDE	BEHAVIORAL INTENTION	ELEARNING ACCEPTANCE
ATTITUDE	Pearson Correlation	1	.146**	.146**
	Sig. (2-tailed)	.	.003	.003
	N	408	408	408
BEHAVIORAL INTENTION	Pearson Correlation	.146**	1	1.000**
	Sig. (2-tailed)	.003	.	.
	N	408	408	408
ELEARNING ACCEPTANCE	Pearson Correlation	.146**	1.000**	1
	Sig. (2-tailed)	.003	.	.
	N	408	408	408

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

Appendix (I): The regression analysis outputs of examined factors

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.816[a]	.666	.660	.390	1.859

a. Predictors: (Constant), PERCEIVED EASE OF USE, CULTURAL FACTOR, SOCIAL FACTOR, PERCEIVED USEFULNESS, PSYCHOLOGICALFACTOR, TECHNOLOGICAL FACTOR, INSTITUTIONAL FACTOR

b. Dependent Variable: ELEARNING ACCEPTANCE

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-2.490	.251		-9.926	.000		
	PSYCHOLOGICALF R	.282	.059	.163	4.810	.000	.730	1.371
	SOCIAL FACTOR	.217	.049	.154	4.450	.000	.696	1.437
	TECHNOLOGICAL FACTOR	.684	.054	.453	12.695	.000	.657	1.521
	CULTURAL FACTOI	.006	.039	.005	.155	.877	.962	1.039
	INSTITUTIONAL FA	.392	.056	.253	6.958	.000	.630	1.587
	PERCEIVED USEFULNESS	.061	.037	.050	1.643	.101	.915	1.093
	PERCEIVED EASE USE	.088	.038	.069	2.288	.023	.910	1.099

a. Dependent Variable: ELEARNING ACCEPTANCE

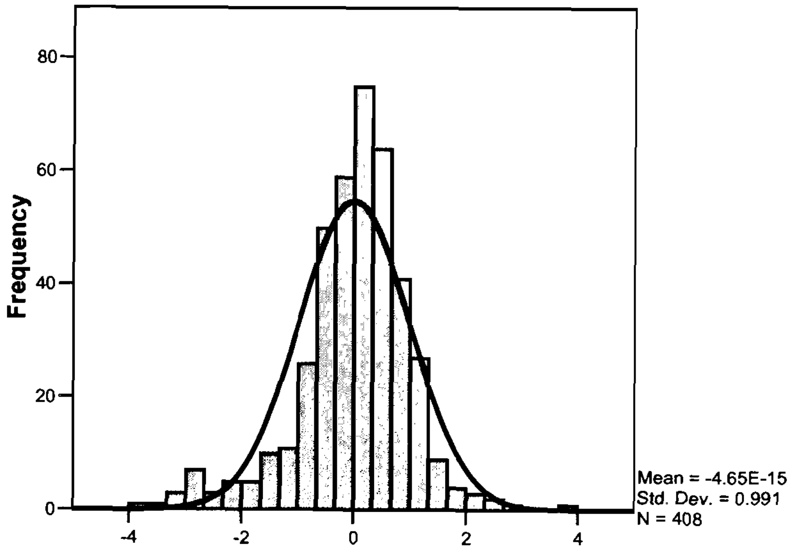
Casewise Diagnostics[a]

Case Number	Std. Residual	ELEARNING ACCEPTANCE	Predicted Value	Residual
38	3.918	4	2.22	1.528
216	-3.276	1	2.53	-1.278
244	-3.060	1	2.44	-1.193
297	-3.679	1	2.68	-1.435
380	-3.024	2	2.93	-1.179
385	-3.618	2	3.16	-1.411

a. Dependent Variable: ELEARNING ACCEPTANCE

Histogram

Dependent Variable: ELEARNING ACCEPTANCE

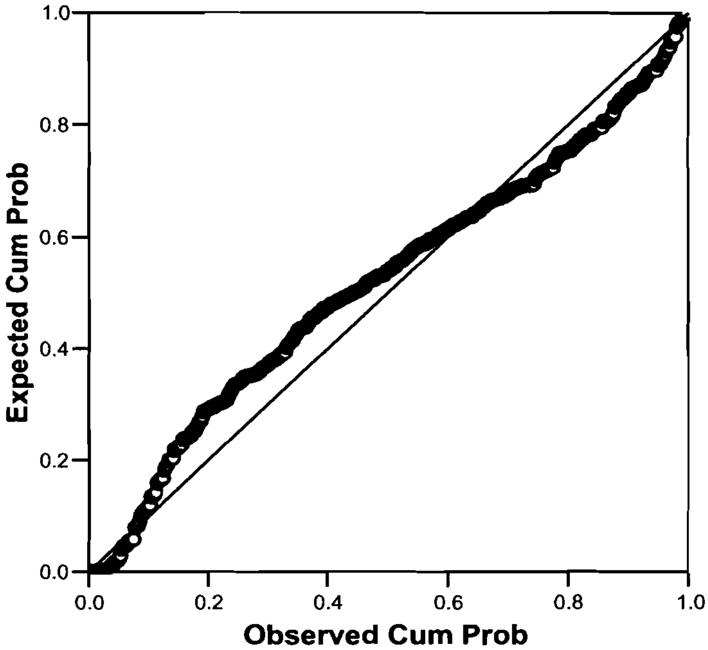


Descriptive Statistics

	N	Skewness		Kurtosis	
	Statistic	Statistic	Std. Error	Statistic	Std. Error
PSYCHOLOGICALFACTOR	408	-.411	.121	-.287	.241
SOCIAL FACTOR	408	-.408	.121	-.309	.241
TECHNOLOGICAL FACTOR	408	-.399	.121	-.495	.241
CULTURAL FACTOR	408	-.383	.121	-.331	.241
INSTITUTIONAL FACTOR	408	-.118	.121	-.524	.241
PERCEIVED USEFULNESS	408	-.541	.121	-.587	.241
PERCEIVED EASE OF USE	408	-.146	.121	-.765	.241
ATTITUDE	408	-.367	.121	-.734	.241
ELEARNING ACCEPTANCE	408	-.455	.121	-.418	.241
Valid N (listwise)	408				

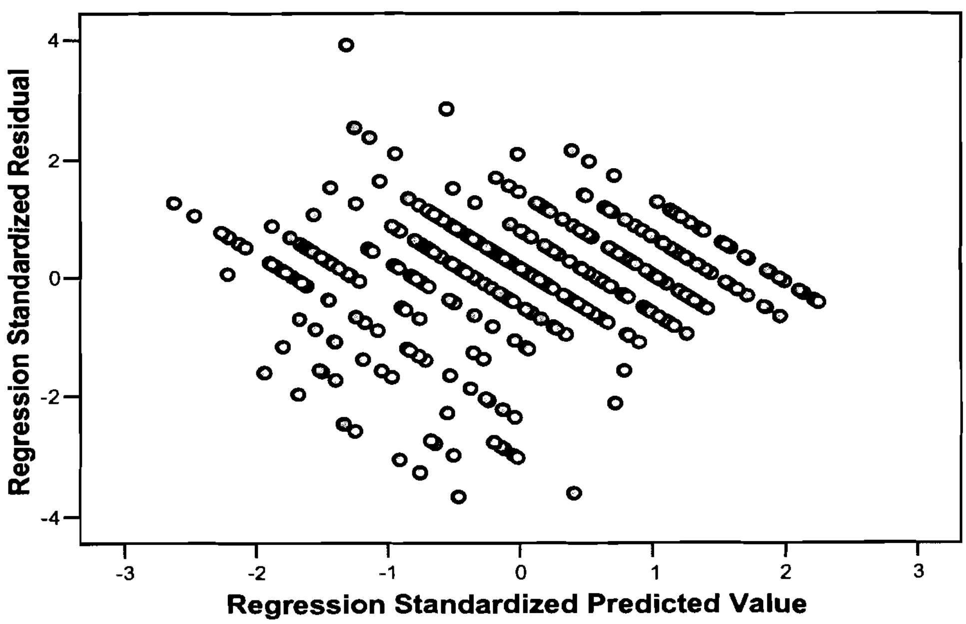
Normal P-P Plot of Regression Standardized Residual

Dependent Variable: ELEARNING ACCEPTANCE



Scatterplot

Dependent Variable: ELEARNING ACCEPTANCE



Appendix (J): T-test and One-way ANOVA SPSS output

Gender difference

Group Statistics

	GENDER	N	Mean	Std. Deviation	Std. Error Mean
ELEARNING ACCEPTANCE	MALE	252	2.94	.637	.040
	FEMALE	150	2.98	.688	.056

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
ELEARNING ACCEPTANCE	Equal variances assumed	.748	.387	-.628	400	.531	-.042	.068	-.176	.091
	Equal variances not assumed			-.615	294.418	.539	-.042	.069	-.178	.093

Age groups differences

Descriptives

ELEARNING ACCEPTANCE

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
18-21	124	2.96	.674	.060	2.84	3.08	1	4
22-25	256	2.96	.654	.041	2.88	3.04	1	4
26-29	22	2.85	.596	.127	2.59	3.12	2	4
Total	402	2.95	.656	.033	2.89	3.02	1	4

ANOVA

ELEARNING ACCEPTANCE

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.238	2	.119	.275	.760
Within Groups	172.450	399	.432		
Total	172.688	401			

Major difference

Group Statistics

	MAJOR	N	Mean	Std. Deviation	Std. Error Mean
ELEARNING ACCEPTANCE	SCIENCE	234	3.02	.626	.041
	ART	168	2.86	.687	.053

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
ELEARNING ACCEPTANCE	Equal variances assumed	3.500	.062	2.468	400	.014	.163	.066	.033	.292
	Equal variances not assumed			2.431	339.359	.016	.163	.067	.031	.294

Level of experience in using the computer difference

Descriptives

ELEARNING ACCEPTANCE

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean Lower Bound	95% Confidence Interval for Mean Upper Bound	Minimum	Maximum
<1 Year	102	3.01	.630	.062	2.89	3.14	1	4
1-3 Years	147	2.92	.636	.052	2.81	3.02	1	4
4-8 Years	126	2.97	.665	.059	2.86	3.09	1	4
>8 Years	27	2.81	.807	.155	2.50	3.13	1	4
Total	402	2.95	.656	.033	2.89	3.02	1	4

ANOVA

ELEARNING ACCEPTANCE

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.137	3	.379	.879	.452
Within Groups	171.551	398	.431		
Total	172.688	401			

Level of experience in using the Internet difference

Descriptives

ELEARNING ACCEPTANCE

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
<1 Year	227	2.89	.658	.044	2.81	2.98	1	4
2-4 Years	140	3.00	.658	.056	2.89	3.11	1	4
>4 Years	35	3.16	.594	.100	2.96	3.37	2	4
Total	402	2.95	.656	.033	2.89	3.02	1	4

ANOVA

ELEARNING ACCEPTANCE

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.609	2	1.305	3.061	.048
Within Groups	170.079	399	.426		
Total	172.688	401			

Level of experience in using the E-learning difference

Descriptives

ELEARNING ACCEPTANCE

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
ONCE PER MON	197	2.96	.632	.045	2.88	3.05	1	4
LITTLE PER MO	110	2.87	.704	.067	2.74	3.00	1	4
LITTLE PER WE	71	3.05	.647	.077	2.90	3.20	2	4
ONCE PER DAY	24	2.96	.645	.132	2.69	3.23	1	4
Total	402	2.95	.656	.033	2.89	3.02	1	4

ANOVA

ELEARNING ACCEPTANCE

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.434	3	.478	1.111	.344
Within Groups	171.254	398	.430		
Total	172.688	401			

Appendix (K): Simple Liner Regression Analysis (after regression assumptions are met)

External Factors and E-Learning Acceptance

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.839[a]	.704	.701	.359

a. Predictors: (Constant), INSTITUTIONAL FACTOR, CULTURAL FACTOR, SOCIAL FACTOR, PSYCHOLOGICALFACTOR, TECHNOLOGICAL FACTOR

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	121.621	5	24.324	188.622	.000[a]
	Residual	51.067	396	.129		
	Total	172.688	401			

a. Predictors: (Constant), INSTITUTIONAL FACTOR, CULTURAL FACTOR, SOCIAL FACTOR, PSYCHOLOGICALFACTOR, TECHNOLOGICAL FACTOR

b. Dependent Variable: ELEARNING ACCEPTANCE

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-2.070	.198		-10.440	.000
	PSYCHOLOGICALFACTOR	.189	.055	.111	3.423	.001
	SOCIAL FACTOR	.239	.045	.173	5.282	.000
	TECHNOLOGICAL FACTOR	.709	.050	.478	14.263	.000
	CULTURAL FACTOR	.024	.036	.018	.662	.509
	INSTITUTIONAL FACTOR	.443	.052	.291	8.441	.000

a. Dependent Variable: ELEARNING ACCEPTANCE

Appendix (L): Correlation Analysis of external examined factors

Correlations

		SYCHOLOG ALFACTOR	SOCIAL FACTOR	ECHNOLOG AL FACTOR	CULTURAL FACTOR	NSTITUTIO AL FACTOR	LEARNING CCEPTAN CE
PSYCHOLOGICAL R	Pearson Correl	1	.438**	.363**	.098*	.453**	.494**
	Sig. (2-tailed)	.	.000	.000	.049	.000	.000
	N	402	402	402	402	402	402
SOCIAL FACTOR	Pearson Correl	.438**	1	.449**	.060	.416**	.559**
	Sig. (2-tailed)	.000	.	.000	.227	.000	.000
	N	402	402	402	402	402	402
TECHNOLOGICAL FACTOR	Pearson Correl	.363**	.449**	1	.080	.514**	.747**
	Sig. (2-tailed)	.000	.000	.	.111	.000	.000
	N	402	402	402	402	402	402
CULTURAL FACT	Pearson Correl	.098*	.060	.080	1	.175**	.129*
	Sig. (2-tailed)	.049	.227	.111	.	.000	.010
	N	402	402	402	402	402	402
INSTITUTIONAL F	Pearson Correl	.453**	.416**	.514**	.175**	1	.662**
	Sig. (2-tailed)	.000	.000	.000	.000	.	.000
	N	402	402	402	402	402	402
ELEARNING ACCEPTANCE	Pearson Correl	.494**	.559**	.747**	.129*	.662**	1
	Sig. (2-tailed)	.000	.000	.000	.010	.000	.
	N	402	402	402	402	402	402

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

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

Appendix (M): SPSS output of the Stepwise Regression Analysis

Psychological Factor variables

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.600[a]	.360	.358	.526
2	.609[b]	.371	.368	.522
3	.615[c]	.378	.373	.520

a. Predictors: (Constant), Computer anxiety

b. Predictors: (Constant), Computer anxiety, Computer Self-efficacy

c. Predictors: (Constant), Computer anxiety, Computer Self-efficacy, Enjoyment

ANOVA[d]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	62.096	1	62.096	224.593	.000[a]
	Residual	110.592	400	.276		
	Total	172.688	401			
2	Regression	64.116	2	32.058	117.814	.000[b]
	Residual	108.572	399	.272		
	Total	172.688	401			
3	Regression	65.246	3	21.749	80.564	.000[c]
	Residual	107.442	398	.270		
	Total	172.688	401			

a. Predictors: (Constant), Computer anxiety

b. Predictors: (Constant), Computer anxiety, Computer Self-efficacy

c. Predictors: (Constant), Computer anxiety, Computer Self-efficacy, Enjoyment

d. Dependent Variable: ELEARNING ACCEPTANCE

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.792	.147		5.405	.000
	Computer anxiety	.693	.046	.600	14.986	.000
2	(Constant)	.539	.173		3.120	.002
	Computer anxiety	.636	.050	.550	12.612	.000
	Computer Self-efficacy	.136	.050	.119	2.725	.007
3	(Constant)	.844	.228		3.707	.000
	Computer anxiety	.637	.050	.552	12.697	.000
	Computer Self-efficacy	.137	.050	.120	2.756	.006
	Enjoyment	-.094	.046	-.081	-2.045	.041

a. Dependent Variable: ELEARNING ACCEPTANCE

Excluded Variables[c]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics
						Tolerance
1	Enjoyment	-.080[a]	-2.002	.046	-.100	.999
	Computer Self-efficacy	.119[a]	2.725	.007	.135	.828
2	Enjoyment	-.081[b]	-2.045	.041	-.102	.999

a. Predictors in the Model: (Constant), Computer anxiety

b. Predictors in the Model: (Constant), Computer anxiety, Computer Self-efficacy

c. Dependent Variable: ELEARNING ACCEPTANCE

Social Factor variables

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.499[a]	.249	.247	.569
2	.578[b]	.335	.331	.537

a. Predictors: (Constant), Image

b. Predictors: (Constant), Image , Self-Identity

ANOVA[c]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	43.053	1	43.053	132.845	.000[a]
	Residual	129.635	400	.324		
	Total	172.688	401			
2	Regression	57.782	2	28.891	100.321	.000[b]
	Residual	114.906	399	.288		
	Total	172.688	401			

a. Predictors: (Constant), Image

b. Predictors: (Constant), Image , Self-Identity

c. Dependent Variable: ELEARNING ACCEPTANCE

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.377	.140		9.862	.000
	Image	.519	.045	.499	11.526	.000
2	(Constant)	.741	.159		4.662	.000
	Image	.361	.048	.347	7.526	.000
	Self-Identity	.347	.049	.329	7.152	.000

a. Dependent Variable: ELEARNING ACCEPTANCE

Excluded Variables[c]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics
						Tolerance
1	Subjective Norm	.031[a]	.703	.483	.035	.949
	Self-Identity	.329[a]	7.152	.000	.337	.786
2	Subjective Norm	-.004[b]	-.100	.920	-.005	.936

a. Predictors in the Model: (Constant), Image

b. Predictors in the Model: (Constant), Image , Self-Identity

c. Dependent Variable: ELEARNING ACCEPTANCE

Technological Factor variables

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.917[a]	.841	.841	.262
2	.928[b]	.861	.861	.245
3	.929[c]	.863	.862	.244

a. Predictors: (Constant), System response

b. Predictors: (Constant), System response , System functionality

c. Predictors: (Constant), System response , System functionality , System Interactivity

ANOVA[d]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	145.237	1	145.237	2116.339	.000[a]
	Residual	27.451	400	.069		
	Total	172.688	401			
2	Regression	148.719	2	74.359	1237.815	.000[b]
	Residual	23.969	399	.060		
	Total	172.688	401			
3	Regression	148.996	3	49.665	834.314	.000[c]
	Residual	23.692	398	.060		
	Total	172.688	401			

a. Predictors: (Constant), System response

b. Predictors: (Constant), System response , System functionality

c. Predictors: (Constant), System response , System functionality , System Interactivity

d. Dependent Variable: ELEARNING ACCEPTANCE

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	.175	.062		2.835	.005
	System response	.916	.020	.917	46.004	.000
2	(Constant)	-.090	.068		-1.340	.181
	System response	.811	.023	.812	34.927	.000
	System functionality	.195	.026	.177	7.613	.000
3	(Constant)	-.011	.077		-.144	.886
	System response	.818	.023	.819	35.043	.000
	System functionality	.206	.026	.187	7.923	.000
	System Interactivity	-.042	.020	-.043	-2.157	.032

a. Dependent Variable: ELEARNING ACCEPTANCE

Excluded Variables[d]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics Tolerance
1	System Performance	-.005[a]	-.237	.813	-.012	.995
	System functionality	.177[a]	7.613	.000	.356	.644
	System Interactivity	-.012[a]	-.561	.575	-.028	.907
2	System Performance	-.025[b]	-1.332	.184	-.067	.976
	System Interactivity	-.043[b]	-2.157	.032	-.107	.872
3	System Performance	-.017[c]	-.860	.390	-.043	.923

a. Predictors in the Model: (Constant), System response

b. Predictors in the Model: (Constant), System response , System functionality

c. Predictors in the Model: (Constant), System response , System functionality , System Interactivity

d. Dependent Variable: ELEARNING ACCEPTANCE

Cultural Factor variables

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.119[a]	.014	.012	.652

a. Predictors: (Constant), Individualism/Collectivism(IC)

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.455	1	2.455	5.768	.017[a]
	Residual	170.233	400	.426		
	Total	172.688	401			

a. Predictors: (Constant), Individualism/Collectivism(IC)

b. Dependent Variable: ELEARNING ACCEPTANCE

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.603	.149		17.427	.000
	Individualism/ Collectivism(IC)	.115	.048	.119	2.402	.017

a. Dependent Variable: ELEARNING ACCEPTANCE

Excluded Variables[b]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics
						Tolerance
1	Masculinity/Femininity	.004[a]	.076	.939	.004	.943

a. Predictors in the Model: (Constant), Individualism/Collectivism(IC)

b. Dependent Variable: ELEARNING ACCEPTANCE

Institutional Factor variables

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.582[a]	.339	.337	.534
2	.664[b]	.441	.439	.492
3	.671[c]	.450	.446	.488

a. Predictors: (Constant), Institutional Technical support

b. Predictors: (Constant), Institutional Technical support , Facilitating Conditions

c. Predictors: (Constant), Institutional Technical support , Facilitating Conditions , Training

ANOVA[d]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	58.470	1	58.470	204.767	.000[a]
	Residual	114.218	400	.286		
	Total	172.688	401			
2	Regression	76.223	2	38.112	157.638	.000[b]
	Residual	96.465	399	.242		
	Total	172.688	401			
3	Regression	77.786	3	25.929	108.738	.000[c]
	Residual	94.902	398	.238		
	Total	172.688	401			

a. Predictors: (Constant), Institutional Technical support

b. Predictors: (Constant), Institutional Technical support , Facilitating Conditions

c. Predictors: (Constant), Institutional Technical support , Facilitating Conditions , Training

d. Dependent Variable: ELEARNING ACCEPTANCE

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.749	.156		4.789	.000
	Institutional Technical support	.728	.051	.582	14.310	.000
2	(Constant)	.056	.165		.339	.735
	Institutional Technical support	.516	.053	.413	9.765	.000
	Facilitating Conditions	.435	.051	.362	8.569	.000
3	(Constant)	-.101	.175		-.578	.564
	Institutional Technical support	.458	.057	.366	7.997	.000
	Facilitating Conditions	.412	.051	.344	8.058	.000
	Training	.129	.050	.111	2.560	.011

a. Dependent Variable: ELEARNING ACCEPTANCE

Excluded Variables[c]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics
						Tolerance
1	Facilitating Conditions	.362[a]	8.569	.000	.394	.783
	Training	.172[a]	3.722	.000	.183	.752
2	Training	.111[b]	2.560	.011	.127	.729

a. Predictors in the Model: (Constant), Institutional Technical support

b. Predictors in the Model: (Constant), Institutional Technical support , Facilitating Conditions

c. Dependent Variable: ELEARNING ACCEPTANCE

Appendix (N): SPSS output of the Hierarchical Regression Analysis

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.104[a]	.011	.008	.654
2	.144[b]	.021	.016	.651

a. Predictors: (Constant), PERCEIVED USEFULNESS

b. Predictors: (Constant), PERCEIVED USEFULNESS, ATTITUDE

ANOVA[c]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.856	1	1.856	4.346	.038[a]
	Residual	170.832	400	.427		
	Total	172.688	401			
2	Regression	3.595	2	1.797	4.241	.015[b]
	Residual	169.093	399	.424		
	Total	172.688	401			

a. Predictors: (Constant), PERCEIVED USEFULNESS

b. Predictors: (Constant), PERCEIVED USEFULNESS, ATTITUDE

c. Dependent Variable: ELEARNING ACCEPTANCE

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.541	.201		12.659	.000
	PERCEIVED USEFULNESS	.127	.061	.104	2.085	.038
2	(Constant)	2.284	.237		9.648	.000
	PERCEIVED USEFULNESS	.111	.061	.091	1.815	.070
	ATTITUDE	.098	.049	.101	2.026	.043

a. Dependent Variable: ELEARNING ACCEPTANCE

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.130[a]	.017	.015	.651
2	.155[b]	.024	.019	.650

a. Predictors: (Constant), PERCEIVED EASE OF USE

b. Predictors: (Constant), PERCEIVED EASE OF USE, ATTITUDE

ANOVA[c]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.939	1	2.939	6.926	.009[a]
	Residual	169.749	400	.424		
	Total	172.688	401			
2	Regression	4.123	2	2.062	4.880	.008[b]
	Residual	168.565	399	.422		
	Total	172.688	401			

a. Predictors: (Constant), PERCEIVED EASE OF USE

b. Predictors: (Constant), PERCEIVED EASE OF USE, ATTITUDE

c. Dependent Variable: ELEARNING ACCEPTANCE

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	2.452	.193		12.690	.000
	PERCEIVED EASE OF USE	.164	.062	.130	2.632	.009
2	(Constant)	2.274	.220		10.319	.000
	PERCEIVED EASE OF USE	.137	.064	.109	2.134	.033
	ATTITUDE	.083	.050	.086	1.674	.095

a. Dependent Variable: ELEARNING ACCEPTANCE