Investigating factors influencing students' attitude and performance when using web-enhanced learning in developing countries: The case of Saudi Arabia

A thesis submitted for the degree of Doctor of Philosophy

By

Saud Al-Nefaie

School of Information Systems, Computing and Mathematics

Department of Information Systems and Computing

Brunel University

August, 2015

Abstract

This thesis aims to explore learning management systems use and usefulness in Higher Education (HE) environments in a Middle Eastern developing country (Saudi Arabia) and gauge what factors influence the attitudes of the learners and by the same token investigate which of these, if any, do affect their performances in such environments.

This study intends to delve into these factors and single out any relationships that might exist among these factors. The LMS (learning management system) chosen for the purpose of this research is the 'Blackboard' LMS. To enable the researcher to look thoroughly at the issue, three separate studies were conducted to achieve comprehensive results.

Qualitative and quantitative methodologies were combined for maximum Data collection from participants using questionnaires, interviews and numerical data from the Blackboard tracking system. A framework encompassing all the perceived critical variables that could play a part in affecting students' attitudes in the use of the Blackboard LMS and their overall achievements was designed, developed and then tested.

The framework consists of four main parts, 1) Learners interaction with their peers; their ability to use the Internet and associated technologies, named 'learner dimension'. 2) Instructors' technical knowledge and competence, the manner in which they deliver lessons to learners using 'Blackboard' and the interactions taking place between the two parties named ' instructor variable or dimension'. 3) The technology itself variable or dimension: usability, flexibility and quality. 4) The HE institution's support dimension: training and technical support.

The results have indicated that students were keen to adopt the LMS Blackboard for their courses. Instructor attitudes and behaviours when using Blackboard were found to play a major role in students' attitudes and performances. A major relationship was found in relation to student gender, academic specialization and attitude towards using the LMS, but not in the way the system is used. Students varied and various academic specializations were found to impact positively on their attitude towards the use of the

system and in their learning (in terms of performance on a specific course). The learner variable was found to be a good indicator of how students behaved towards VLE and Blackboard and their achievements. The Instructor dimension was also found to be a positive indicator of students' attitudes, their use of Blackboard and achievements in its use. Similarly the technology and the HE institution variables were also found to be sound indicators of their attitudes.

Acknowledgements

I would like to express my deepest appreciation to my supervisor, Dr. Steve Love, for his guidance, patience, encouragement, interest and cooperation. His comments always helped me to improve the quality of my thesis and kept me on the right track throughout my program of study.

From the bottom of my heart, a special thanks goes to my wife and children, for their support, and efforts in helping me to focus on my study.Without them, I would never have been able to complete the work.

It is difficult to find words to express my gratitude to my late father who was dreaming in this moment, but he died before it became a reality, I would also like to express my deepest gratitude to him through my mother who has kept faith in me all along.

Finally, I would like to sincerely thank Taif University for providing the funds and the time to enable me to do my PhD at Brunel University, London. Without their sponsorship and trust, this work would have never seen the light of day.

Publications:

The following papers are under publication:

Alnefaie, S., Love, S. (2015) Students' perceived satisfaction, behavioral intentions and effectiveness of the Blackboard system at Taif University. *The international review of research in open and distance learning.*

Alnefaie, S., Love, S. (2015) A Framework for explaining the relationship between the main success factors in web-based learning in developing countries. *International Journal of Information & Communication Technology Education*.

Table of Contents

List of Figures

List of Tables

Chapter 1

Introduction

1.1. Introduction

This thesis aims to examine and gauge the factors that affect students' attitudes and performances in web-enhanced learning environments (VLEs). This chapter begins by discussing the motivation behind this research and presents a brief background to the work. The aims and objectives are herein identified and the methodologies employed to investigate the research questions are introduced. Finally, an outline of the thesis structure is presented, giving a brief description of the contents of the remaining chapters.

1.2. Research motivation

The World Wide Web (www) has nowadays become known and used as an important new and alternative vehicle for the delivery of local online courses or distance learning (Lee and Shih 2001). Interest in web-based learning and the technologies associated for its delivery and support has increased no end in higher education (HE) and this can be seen and is reflected in large number of HE publications and journals (Hoskins and Hooff 2005). Large numbers of HE institutions are now offering web-based courses (Owston 2000) or starting to use course management systems, such as WebCT or Blackboard (Mazzaand and Dimitrova 2004). The Blackboard Learning System (LMS), which was originally established in 1997, is a virtual learning environment that is licensed to colleges and other institutions and is now being used in many professional education institutions for e-learning (Blackboard, 2014). Blackboard Inc., the developer of the learning system, is a private company, which has merged its operation with other learning platforms, like Angel and WebCT

(Vilela-Malabanan 2014). It is an LMS that was designed to facilitate the creation and development of teaching materials to be delivered remotely in VLE environments.

As the number of students seeking entry to HE has increased gradually in recent years, educational institutions in order to keep up with the demands, have looked at means in the form of technological learning management systems to facilitate learning to their applicants as comprehensively and as efficiently as in classroom environments (Carbone 1998).

HE institutions using technology for the delivery and support for their courses have to know about the suitability, efficiency and efficacy of their systems. ICT research clearly shows that one of the most important factors to access that is user satisfaction (Delon and McLean 1992). For this reason a host of studies have been carried out to assess students' satisfaction with their web-enhanced learning. Web-enhanced learning although a traditional face-to-face classroom learning has the benefit and the innovation of adopting a learning management system (LMS) for enhancement and enriching of materials. As an example, we cite Blackboard (Sivo, Pan *et al.* 2007).

Empirical research that has attempted to develop a conceptual framework that gauges the success of e-Learning implementation is thin on the ground worldwide (Sun *et al.*, 2008). There is therefore a need for a conceptual framework that can be used to identify the factors that result in the success of learning management systems. Few developing countries have attempted such steps, especially in the Arab region (AL-Fadhli 2008; Abbad, Morris *et al.* 2009;AbuSneineh and Zairi 2010). The research carried out in developed countries is not to be taken however as generally relevant to all because of the diversity of traditions and customs of their developing counterparts, as it may not be suitable or applicable (Abouchedid and Eid 2004). According to (AL- Ammary and Hamad 2008; Al-Harbi 2010; AL-Fadhli 2011; Zewayed, Maynard *et al.* 2011) the major problems E-Learning projects were faced with in the Arab region related to a low level of user awareness, attitudes and motivation, lack of a conceptual framework, absence of a clear vision and strategy, insufficient ICT infrastructure, lack of adequate internet connectivity, lack of technical and administrative support and lack of E-Learning repositories containing educational material and content in Arabic language.

To use computer technology in education does not mean to simply provide the technology and expect the students and teachers to use it in their courses. It is important to investigate and develop an understanding of the best ways to use technology in teaching and learning (Alavi 1994). The wide use of learning management systems in higher education has highlighted the need for research to address subjects like users' attitudes and what factors affect students' performance when using computer mediated communication (CMC), in particular in developing countries. The program of research in this thesis will focus on web-enhanced learning.

Therefore, the aim of the research reported in this thesis is to investigate the use of a learning management system in teaching / learning environments and the factors that affect students' attitudes and performance in developing countries, especially in Saudi Arabia. The learning management system that is used in this research is Blackboard. The research objectives driving the research programme reported in this thesis are as follows:

- To investigate undergraduate students' perceptions towards applying e-learning at Taif University, taking in consideration the effect of using e-learning on both gender, and academic specialization.

- To investigate learners' satisfaction, behavioral intentions and the effectiveness of LMS. Additionally, it undertakes to scrutinize the relationship, if any, between students' use of this LMS in particular, their performances and their attitudes towards it.

- To revise and modify the conceptual framework of the critical factors affecting students' attitudes towards Blackboard and test this framework in one course and in different specializations and to compare the findings.

1.3. Contributions of the research

This work is original, firstly in that it was conducted in the context of a developing country (Saudi Arabia). Secondly, the key source of originality here is that very few studies have been undertaken in developing countries on student performance and in web-based learning in particular. Therefore, the main contribution of this research is that it addresses the success factors affecting the adoption of LMS at a university in Saudi Arabia, as this area of research lacks theoretical and empirical studies. In addition, the research proposes a conceptual framework that integrates critical factors and demographic variables.

Thirdly, it was empirically concluded in this study that students' use of Blackboard is significantly influenced through the instructor factor. A likely reason for this is instructor attitudes towards LMS. The framework for the thesis was developed in order to understand the relationships among the main success factors in web-enhanced courses and has not been presented in any previous studies.

Fourthly, the role of social variables like gender and academic specialization has been proven in the revised conceptual framework, when the actual implementation of learning management system is explained.

(Hammod 2010) has only investigated the impact of student dimension, instructor dimension and technology dimension on the success of e-learning but university support dimension and instructor's attitude factor are not investigated in her study.

This thesis has investigated the influence of university support and instructor's attitude factor on the success of e-learning, and has found that university support and instructor's attitude factor are considered as the most important and significant factors that influences of e-learning with the rest of factors.

This provides a better understanding of the factors which need to be addressed to achieve an effective implementation of e-learning.

Also, this research fills the void with regard to the lack of studies in developing countries in general and in Saudi in particular related to the factors that influence e-learning implementation in higher education.

Finally, one of the main characteristics distinguishing this research is the methodological approach. The research meets (Al-Hadrami 2012)'s call for using a more objective measure of student participation (i.e., the student tracking tool available from the online learning system). Based on the researcher's knowledge, no other study was observed to use this particular approach to students' actual use of Blackboard from the tracking system in Saudi Arabia. This research depended on the quantitative and qualitative data that were collected from participants. The unique feature is that the quantitative data for this work were gathered from the log file of the system, which explained exactly how students used Blackboard. These data allowed the researcher to compare students' and course instructors' attitudes towards the system and how they actually used it. Moreover, it gave the possibility to support the results concluded from the qualitative work using this type of quantitative data.

1.4. Research methods

Three studies were conducted for the purpose. A combination of quantitative and qualitative research methodologies was used. The mixed approach was chosen to - hopefully- enhance findings and results. Naturally field studies were conducted on site in order to accurately gauge the everyday conditions of usage of 'Blackboard' and to subsequently perhaps increase the results ecological validity.

Data was collected from not only all participants (students, instructors), but also from the 'Blackboard tracking systems'; a very useful tool indeed. A number of instruments were used (questionnaires, interviews and numerical data from the Blackboard tracking system). In each study, students' attitudes towards the adoption and use 'Blackboard' were measured using questionnaires designed for the purpose. This was complemented by a series of interviews to gauge instructors' opinions and experience of the LMS 'Blackboard'. In addition numerical data about students' use of Blackboard were also collected from the log files in 'Blackboard'. Chapter three provides a detailed discussion of these instruments and the data collection tools used.

1.5. Organization of the thesis

Chapter two highlights and reviews the pertinent literature. The latter provides the background to the justification of the research undertaken. An overview of E-learning in general is presented and is followed by a broad explanation of learning management systems in general and a detailed account of the LMS Blackboard and its tools in particular. The chapter consists of a number of sections on the use of Learning Management Systems in higher education in Saudi Arabia and those variables and factors surrounding the adoption and use of ICT in VLEs (virtual learning environments) in developing countries such as students' satisfaction and performance in web-enhanced learning, those affecting achievements and those related to institutional support to all users of this new Technology.

The general methodologies and techniques used to carry out empirical tests are highlighted in chapter three, which is in turn divided into four main sections giving an overview of the research problems/questions, of the research approaches adopted, the data collection instruments and the data analysis techniques.

Chapter four lays out the first study which investigates undergraduate students' perceptions towards applying e-learning at Taif University by looking at the effects e-learning on both gender and academic specialization. The first study is described in details and is enhanced by a clarification of the research methods. In other words the data collection instruments, participants, the procedure adopted and data analysis are then explained. Finally, the results are reported and discussed and a conclusion is presented.

Chapter five describes the second field study, which examines learners' attitudes towards e-learning, to understand how to improve e-learning satisfaction, behavioural intention, and to enhance learning effectiveness. The research methodology is presented, including sampling, data collection instruments, participants, procedure and data analysis. The results are then documented, followed by a discussion section, concluding with a chapter summary.

Chapter six deals with the third and final study. A framework to explore the various variables and the relationships governing their impact on e-learning/wed-enhanced

learning is put forward and tested. Similarly as for previous chapters, the methodology and findings are presented and summarised.

In chapter seven the overall results and findings are discussed and potential areas of limitations are identified and highlighted leaving to others the possibility to further explore the gaps and extend the research in the future, as ICT is in continuous development in every sphere of life and indeed in education.

1.6. Summary

A brief explanation of the motivation behind this research is presented in this chapter, in addition to a brief background to it and the research aims and objectives. The methodological approach and a brief outline of the thesis were presented. The chapter that follows is to tackle the background to the research which will be the backdrop for the aims and objectives of the research undertaken.

Chapter 2

Literature Review

2.1. Introduction

This chapter sets out to review some of the previous research on web-based learning and 'Blackboard', in order to help to clarify the aim of the thesis in relation to previous work in the area. First of all, this research aims to examine the use of course management tools in undergraduate courses and to study factors that affect the students' use, achievements and attitudes towards the learning management systems (LMSs) used on their courses. The learning management system under study in this research is 'Blackboard'. This chapter begins with an overview of E-learning, and then focuses on specific details relating to LMS. The significance of using Blackboard in higher education in Saudi Arabia is explained, and, following on from that, the factors that should be considered when studying web-based courses are reviewed. The focus is here on the medium of communication that the technology creates, rather than the technological products themselves. The chapter concludes with an indication of how the author arrived at the research question, based on a perceived gap in the literature.

2.2. E-Learning overview

Since the inception of E-Learning in 1990, it has become a core element in the educational process, transforming traditional learning environments, in order to integrate technology for the creation of more efficient and more attractive learning experiences. Before E-Learning was widely adopted as the term for electronic learning, various other names were used, and are referenced in the literature, namely: web-based learning (WBL), web-based instruction (WBI), web-based training (WBT), Internet-based training (IBT), distributed learning (DL), advanced distributed learning (ADL), distance learning (DL), online learning (OL), mobile learning (m-learning), nomadic learning, remote learning and off-site learning (Khan 2005; Masrom 2007; Taha 2014).

There are wide range of E-Learning definitions. For example, (Okiki 2011) defined it as "the use of network technologies to create, foster, deliver and facilitate learning anytime and anywhere". (Xaymoungkhoun, Bhuasiri *et al.* 2012) defined it as "an innovative approach to education delivery via electronic forms of information, which enhances learners' knowledge, skills or other areas of performance". (Mbarek and Zaddem 2013) defined E-Learning as "educational and learning instruction supported by the use of ICT allowing learners to acquire new knowledge and skills that are delivered electronically without worrying about the space-time shift". (Al-Homod and Shafi 2013) define E-Learning as "an educational system that delivers information using information technology resources, using the Internet, intranet, satellite broadcasting and multimedia applications".

Many researchers and practitioners from the fields of information and communication technology, computer science, education and educational technology have contributed to defining the concept of e-Learning. E-Learning is claimed to be the new generation's mode of learning and education and is also considered as a new mode of delivering information in the educational field (Malik 2010; Xaymoungkhoun, Bhuasiri *et al.* 2012;Odunaike, Olugbara *et al.* 2013).

2.3. Learning management system

Multiple networks have emerged as a fourth generation in the e-learning field. Their three main features are: the retrieval of large amounts of information, the ability to interact via computer-mediated communication (CMC) and the processing power of the Java language. These characteristics facilitate the creation of a set of new e-learning technologies and Learning Management Systems (LMSs), namely WebCT, Blackboard, Moodle, and Lotus Notes (Garrison and Anderson 2003). A learning management system is important to learning models, since it provides the flexibility for learning to exist outside of the traditional classroom. A learning management system allows traditional courses to migrate to new learning and delivery models to reach a broader audience. The most popular learning management systems used in education are Blackboard, Moodle, Desire2Learn, Sakai, Jenzabar, Pearson Learning Studio/e College, Canvas, Angel, Cengage, Loud Cloud, Adrenna and McGraw-Hill Connect (Riddell 2013). Most universities use a learning management system to deliver web-based technologies for online learning to virtual and on-campus students (Schartz 2014).

LMSs are also called Virtual Learning Environments (VLEs) or Course Management Systems (CMSs). The key word here is 'Virtual'. This means physical presence in a traditional classroom environment is not needed as any course can be offered remotely over huge distances. They offer solutions for both students and instructors not only locally but also around the globe (Altun, Gulbahar *et al.* 2008; Chang 2008). An LMS is defined as a web-based technology that can assist in the planning, distribution, and evaluation of a specific learning processes (Alias and Zainuddin 2005). As for (Sallum 2008), it is a high solution package that allows for the delivery and administration of content and resources to students, instructors and employees alike. LMSs are conceived to contain specific software applications and features designed to make learning contents easily accessible and manageable. In addition, registration of students and delivery of programmes is at finger tips and interactions between instructors and students can be done almost at leisure without the hassle of making appointments.

These LMSs are also valuable databases in which students activities are logged and can be monitored at any time over the course of their studies and beyond according to

(Mazza and Dimitrova 2004). Instructors can view accurate statistical data about students' use of course pages and even times of log-ins log-outs of any student on the course such as a student's first and last log-ins, the history of pages visited, the number of messages students have read and posted in discussions, grades achieved in quizzes and assignments, etc. Instructors are therefore able to use the information to monitor students' progress and by the same token intervene early to correct the situation if potential problems are discovered.

2.4. Blackboard

The Blackboard Learning System was introduced to the educational field back in 1997. It is a virtual learning environment (VLE) licensed to HE institutions (colleges and other institutions) and is now used in K-12, in professional education institutions as an e-learning tool (Blackboard, 2014). Blackboard Inc., the mother company and its developer is a private company which has merged its operation with other learning platforms like Angel and WebCT (Schartz 2014).

At present its share of the educational market is around 41% which makes it the most popular and the most widely used LMS across the world in HE institutions. It includes Blackboard-owned products in addition to Angel and WebCT (Green 2013). (Hill 2014) has found that Blackboard was the leading provider of learning management systems for all schools with larger than 800 enrolment. In 2014 Blackboard held 33.9% of market share well above its nearest rival Moodle with 19.5%, though open-source options were growing (Chung, Pasquini *et al.* 2013; Schartz 2014).

Blackboard contains many web-based applications and software tools for educators to use and as the main source of course delivery. These tools take the form of discussion boards, videos, live lecture chats, group content sharing, quizzes, exams, wikis, journals, scheduling systems, reminders, emails, and messaging. The tools that faculties may choose and wish to implement for a particular course are left at their discretion.

2.5. The importance of learning management systems in higher education in Saudi Arabia

Learning management systems and their facilities are being adopted increasingly frequently in Saudi Arabian universities, a phenomenon mainly caused by the steady rise in the Saudi Arabian student population in higher institutions. In the academic year 2012/2013, the student population in altogether 25 universities totalled 880,000 students (Ministry of Higher Education, 2012). Saudi Arabian universities are now facing problems of overcrowding. In response to increased demand, the use of information technology is generally viewed as the most viable solution to meet the challenge. However, the pressing need to adopt computer technology and e-learning in higher education also means that Saudi Arabian faculty members have to integrate information technology into their classrooms and use IT facilities as part of their teaching processes.

Like other universities in developing countries, Saudi Arabian universities suffer from a shortage of faculty members, especially in applied and medical specializations (Mazi and Obuamh 2002). One of the greatest benefits of e-learning is that it helps to reduce dependency on local teaching staff (Alzamil 2006). Thus, through the use of e-learning, the problem of staff shortages can be minimized, because the internet allows the design of interactive course materials, which are then delivered over the network to attending students (Clark and Mayer 2008).

The education system in Saudi Arabia is, like all domains in Saudi Arabian public life, based on complete separation of students and staff by gender. Hence, educational institutions have to provide separate buildings and staff for their male and female students. This puts a considerable strain on available resources and accommodation. In this respect, (Alaugab 2007) affirms that "the number of female instructors is lower than male instructors at all academic levels." E-learning and its various applications is viewed as the perfect solution in the face of this challenge. Saudi Arabian universities are thus encouraged to introduce e-learning tools to provide e-courses for female students in different faculties, since such an arrangement would require only a minimum number of female instructors.

2.6. Critical Success Factors Influencing e-learning (CSFs)

For (Selim 2007) students, teachers, information technology and institution support are the major factors that have a significant influence on e-learning and its success or failure. Similarly, (Frimpon 2012) has added that the role by each of the above participants is crucial too. A number of studies such as (Sun, Ray *et al.* 2008), on the other hand have concentrated on more technical dimensions as requirements for e-Learning success; namely learner, instructors, course, technology, design and environmental factors. In turn, (Malik 2010) has also identified that students, instructors, course design, and other technical factors are significant as well. In addition, (Mosakhani and Jamporazmey 2010) have identified the following as E-Learning CSFs: instructor characteristics, student characteristics, content quality, information technology quality, participant interaction, and educational institutes' support and knowledge management. In summary most of studies have highlighted the significance of the human element in e-Learning such as the roles played by students and institutions staff as being the most critical components for the success or failure of e-Learning (Taha 2014).

A host of studies have explored the factors that may play a critical role in the implementation of e-Learning programmes. (Selim 2007) has identified students' characteristics as one of the major factors that have an impact during the implementation and adoption of integrated technologies such as in the case of e-learning technology (Presley and Presley 2009; Hammoud 2010; Chokri 2012;Taha 2013). In turn, (AL- Fadhli 2008) has found that the teacher dimension was the most important factor in e-Learning environments which directly influences students' satisfaction (Sun, Ray *et al.* 2008; Chen, Liao *et al.* 2009; Owens and Price 2010; Jan and Contreras 2011; Musa and Othman 2012). In terms of the technology factor (Pituch and Lee 2006) showed that technology used and the level of its effectiveness are considered the most significant. These factors seem to highly influence the acceptance of e-learning. This finding has also been supported by studies conducted by (Volery and Lord 2000; Masoumi 2006; Selim 2007; AbuSneineh and Zairi 2010; AL-Fadhli 2011; Musa and Othman 2012), these scholars have indicated that technology plays an essential role in the successful implementation of e-Learning. As for the findings of (Masoumi 2006) and (Selim 2007) studies, they have revealed that the institutional support factor plays a significant role in terms of increasing the use of

e-Learning and enhancing user satisfaction and acceptance of it (Goi and Ng 2009; Ahmed 2010; Al-Harbi 2010; Mosakhani and Jamporazmey 2010).

2.7. The framework development

Information system research clearly shows that user satisfaction is one of the most important factors in assessing the success of system implementation (Delon and McLean, 1992). Wu et al. (2006) stated that this model has partially contributed to understanding the success of e-Learning. The Technology Acceptance Model theory is useful in explaining people's attitudes and behaviour towards using information technology (IT) (Davis et al., 1989). The theory was built upon Ajzen & Fishbein's (1977) theory of reasoned action which asserts that beliefs could influence attitudes which lead to intentions to use such systems and eventually influence actual usage behaviours. Understanding this causal relationship would be helpful in explaining behaviour in adopting information technology (including e- Learning systems).

Davis (1993) stated that perceived usefulness and perceived ease of use represent beliefs finally leading to actual use of information technology. Perceived usefulness is the degree to which a person believes that a particular system will enhance his or her job performance (i.e., by reducing the time to accomplish a task or providing timely information). Perceived ease of use is the degree to which a person believes that using a particular system will be free of effort. The attitude toward use is the user's evaluation of the desirability of employing a particular information system application. Behavioural intention to use is a measure of the likelihood a person will employ the application (Ajzen & Fishbein, 1977). Both attitude and behavioural intention are critical in studying the use of information technology (Oliver, 1980). The technology acceptance model (TAM) describes that a person's behavioural intention concerning the use of an application is determined by perceived usefulness and perceived ease of use. Since its introduction by Davis, TAM has been widely used for predicting the use of information technologies (Selim, 2003).

(Selim, 2003) introduced a model for the use of ICT in education. He used the Technology Acceptance Model proposed by Davis et al. (1989) as a basis for research. Selim (ibid.) studied the effect of usefulness and ease of use of a course website on students' course website use. Course Website Usefulness is defined as the

student's belief that using the course website will increase his or her learning performance, efficiency, and effectiveness. As mentioned above, Course Website Ease of Use refers to the degree to which the student expects the use of the course website to be free of effort. Course Website Use is the intention to use the course website, which is used as an indicator of the acceptance of course websites.

These models (TAM and CWAM) have tended to focus on technology. In addition, frameworks have been developed to identify critical factors influencing the success of web-based learning such as the six-dimension integrated model developed by Sun et al. (2008). Sun et al. (2008) identified critical factors influencing e-Learning satisfaction. They designed a model consisting of thirteen factors in six dimensions. They examined the validity of their model by conducting interviews with various experienced e-Learning learners. Then they developed a questionnaire based on the interview comments. The questionnaire results showed that only seven factors of their model affected students' perceived satisfaction which were: learner computer anxiety, instructor attitude toward e-Learning, e-Learning course flexibility, e- Learning course quality, perceived usefulness, perceived ease of use, and diversity in assessments.

Based on previous models and frameworks, a model was developed as the theoretical. The framework consists of three main dimensions with ten variables; technology dimension, instructor dimension, and learner dimension. The framework has three dependent variables which are students' attitude towards using WebCT, students' achievement, and students' use of WebCT while the literature models only have one variable which is students' attitude or satisfaction with the web-based learning system. The study aimed to investigate the relationship between the three dimensions and three dependent variables: students' attitude towards using WebCT, students' achievement, and students' use of WebCT (Hammoud 2010). These were explained in detail in chapter 6.

2.8. Students' attitudes towards information and communication technology (ICT) and e-learning in developing countries

Research undertaken in the area of attitude and attitude formation shows that attitudes and beliefs are linked, and attitudes and behaviours are linked; moreover, attitudes are

essentially divided into likes and dislikes (Siragusa and Dixon 2008). With the broad expansion of ICT in education during the last decade, many studies have explored the attitudes of users (educators and students) towards the integration of ICT in education (Mishra and Panda 2007; Wen and Shih 2008;Gasaymeh 2009).

A survey carried out in 2002 to gauge undergraduate students attitudes towards the use of multimedia tools in Pakistan's Virtual University has found that over 90% of its 387 final year students viewed learning through satellite TV and the Internet as advantageous, and have in general shown a positive and encouraging attitude toward the use of such technological tools and e-learning (Hussain 2007). (Omidinia, Masrom *et al.* 2011) have identified that it was student attitudes towards modern multimedia technology which was the dominant factor that determined the adoption of e-learning in Iran's Educational institutions. (Selim 2007) has stated that users who were very familiar with web technologies and who had the skills needed to comfortably manipulate computer and mobile devices for use in instruction have developed positive attitudes for multimedia use in education. However those students who did not have much experience in ICT, have shown anxiety in front of computers and never had high expectations from this modern educational technology. Indeed they often tended to believe in there were not any benefits in e-learning (Vrana, Fragidis *et al.* 2013).

Having had a critical look at the topic, (Friedrich and Hron 2010;Malik 2010;Zewayed, Maynard *et al.* 2011) concluded that there is no doubt that students' attitudes had major influence on E-Learning implementation. For them it is Students' behaviour and attitude that determine their satisfaction and acceptance of E-Learning. They have found that the more positive the attitude towards a newly introduced technology is, the enhanced the experience and the satisfaction rates are.

2.9. Students' satisfaction with and performance in web-enhanced learning

Technology has the possibility to enhance and transform teaching, but it can also be used incorrectly or in ways that may interfere with learning, so it is important to know how to achieve effective learning online (Salter 2003). Different ways can be used to measure the effectiveness of web-based courses. Therefore, studies in distance

education differ in what they use as evidence of online course effectiveness. As an example one can cite (Volery and Lord 2000). These scholars have collected data from students enrolled on a Global Business course in which WebCT was used to deliver the course materials. They investigated factors that could affect the online course delivery. Factors such as: ease of access and navigation, interface, interaction with the instructor, attitudes towards students, instructor technical competence, and classmates' interaction were explored. (Volery and Lord 2000) have found that WebCT is easy to use, well designed and a well-structured system that allowed students to spend considerable amounts of time on the site. The technology itself was not enough in their view. It has been supplemented by a sound and effective approach on the part of instructors. Here, the ability to motivate students from going astray by religiously following instructions and adhering to the content of the course, is the key to the effectiveness of e-learning remotely or in the classroom. Ability means not only familiarity with the technology, but also sound knowledge of how it can be manipulated to the advantage of students and learning outcomes.

Factors that could influence students' performance was investigated by (Al-Hadrami 2012) in web-based courses. Variables such as computer experience, student attitude toward web-based learning, self-efficacy, motivation, and prior performance were explored. In addition to that, environmental variables such as student perceptions of instructor interactions taking place, the usefulness of technology and participation in the online learning environment were thoroughly looked at one of themselves in Jordan. The findings have revealed that the input variables (in particular, 'prior performance' and 'student attitudes toward web-based learning') were the most significant direct input factors affecting student performances. In addition to that, environmental variables (particularly student participation in web-based courses and student perceptions on instructors' instructions) were found to have a considerable direct effect on student performances.

In another study, (Jurczyk, Benson *et al.* 2004) results have indicated that students' attitudes can change during web-based courses. (Hisham, Campton *et al.* 2004) state that many factors can affect student satisfaction with asynchronous e-learning systems having gauged that when they explored the use of WebCT. They have found that a feedback tailored and personalized was an important factor that plays a significant

role in the success of any asynchronous e-learning system. Supportive learning was another factor affecting students' satisfaction. This can be achieved by the use of tools such as discussion boards that can enhance student-instructor and student-student interactions. Ease of use and ease of manipulation of the LMS by both students and instructors is a key variable for the satisfaction of participants'. Finding the right and suitable interface to facilitate the use of the LMS is the right way forward. For this reasons a well-designed interface is mandatory. This will in no doubt give students not only the opportunity but also urge to easily access course contents.

(Reisetter, Lapointe *et al.* 2007) in their investigation of the topic have found that students taking an online course of study have attributed their successful mastery of the course contents was due to a large extent to the structure of the website itself, coupled with the feedback from, and access to instructors. Larger classes in e-learning are found to affect e-learning according to (Arbaugh and Duray 2002). The larger they are, the more negative the relationship with online learning and course satisfaction is. However, flexibility of delivery can reduce participants' negative feelings and can in the long run affect students' learning and satisfaction positively. Students with previous experience in using the internet and on-line courses were found to be more satisfied with the course delivery medium than those who were not. Other scholars the likes of (Klobas and McGill 2010) chose to look at the issue to gauge the role of participants involvement and its effect on Learning Management Systems (LMS) success. The researchers measured LMS success in terms of students' satisfaction, use, and benefits. The results have shown that both instructors and students involvements can significantly affect information quality, with instructor involvement having the stronger effect.

A study by (Hammoud, Love *et al.* 2008), it was found that instructors attitudes affect student attitudes toward web-based learning considerably. In turn, this has proved to have a significant effect on student achievement. By being positive instructors encourage students to interact with each other and with their instructors and this engenders motivation which reflects in their achievements. This work which was conducted at Brunel University in London has explored the effects of instructor attitudes on student attitudes and achievements. The participants were 131 undergraduates enrolled in the second level of a web-based course offered by the

School of Information Systems that used the WebCT system. The researchers have discovered that student attitudes and performance were significantly affected by their instructor's attitudes. However, in another study conducted by (Hammoud 2010) which investigated the relationship between the independent model variables (Learner, instructor, and technology dimensions) and the dependent variables (student attitudes toward using WebCT, their achievement, and their way of using WebCT there was no relationship found between the instructor dimension and the students' use of WebCT. In a similar study undertaken by (Al-Busaidi 2012) the key factors that could affect and influence LMSs success in blended learning in terms of actual usage, perceived usefulness, perceived ease of use, and user satisfaction from the learners' perspective were investigated. In other words critical factors related to the major entities of LMS adoption: learner characteristics (computer anxiety, technology experience, self-efficacy, and personal inventiveness and innovation), instructor characteristics (attitude, teaching style, control, and responsiveness), LMS characteristics (system quality, information quality, and service quality), classmates characteristics (attitude and interaction), course characteristics (quality and flexibility), and organization characteristics (management support and training) were all explored and thoroughly scrutinized. The results indicated that most of these factors played a critical role to one or several success measures, except those of learner self-efficacy, management support, and instructor online responsiveness. (Al-Busaidi 2012) stressed that instructors' attitude toward LMS and their control over LMS are significant factors that could affect learners' perceived ease of use; instructors' interactive teaching style is a significant factor for learners' perceived usefulness and satisfaction, whereas the instructor's attitude is a significant factor for learners' actual use.

(Yang and Tsai 2008) stated that what students think and feel about any learning tool might indeed affect their learning behaviour. These learner characteristics have not been widely explored in web-based contexts. For these scholars, interactions between students and instructors were found to be one of the most significant features of web-based learning environments.

A host of studies have highlighted various and numerous factors that affect user satisfaction with web-based learning. (Sun, Ray *et al.* 2008) have developed an integrated model containing the following six dimensions: learners, instructors,

courses, technology, design, and environment. They found that student satisfaction with e-learning is drastically affected by what they call 'critical factors'; namely learner computer anxiety, instructor attitude towards e-learning, course quality and flexibility, perceived usefulness, perceived ease of use, and assessments methods and diversity. For them, the way forward to improve students' satisfaction toward web-based courses was to conduct more research and take students views into account to enable institutions to satisfy the needs of their learners. These researchers have also stated that many other important variables were identified in studies of psychology and information system fields that could be relevant to web-based courses. Indeed they put forward a six dimensions model: student dimension, instructor dimension, course dimension, technology dimension, design dimension, and environment dimension, which are in turn made up of thirteen factors.

Learner attitude toward computers, computer anxiety and learner Internet self-efficacy make up the learner dimension. Instructor response, time and instructor attitude toward e-Learning form the instructor dimension. Course flexibility and course quality are the main variables in the course dimension. In the technology dimension technology quality and Internet delivery quality are the main factors. Finally, how usefulness and ease of use were perceived was identified as the design dimension variables and how learners perceived the diversity in assessments and the interactions with others made up the environmental dimension. They concluded that all the above factors are closely tied to learner satisfaction. They stated that course quality is every important variable in e-Learning environment. In other words, course content must be carefully designed and delivered. This means that the technology used must be user friendly and easy to manipulate by instructors and students alike, not only to be perceived easy to use and useful, but also truly useful and easy to handle for satisfying end users. Easy to manipulate, means flexible in time and content, which gives it an advantage on traditional classroom learning as it allows learners to choose the most suitable learning methods and choose their time to accommodate their needs. LMS administrators have to make sure that all system functions are available and ready to be accessed (e.g. communication board, mail tool and chat rooms) to provide fluid and uninterrupted effective environment that enhances student satisfaction with the whole experience of e-Learning. (Sun, Ray *et al.* 2008) stress the importance of students' confidence in using computers as very an important factor in making them

enjoy their e-learning experience. A prerequisite for any online course to better prepare students must be the preparation of end users instructors and learners alike. Similarly to other studies, instructors' attitudes were found to impact positively on e-Learning and consequently on students' satisfaction. Real commitment on the part of instructors and real enthusiasm will rub off on their students and that would in turn increase their motivation and eventually their satisfaction with to e-Learning. Here, institutions careful choice of instructors is paramount. Not only instructors must be competent and knowledgeable, they must also be enthusiastic and motivating. Continuous training for instructors to adapt to innovation in technologies should be the way forward to keep on top of changes in the e-learning domain, (Sun, Ray *et al.* 2008).

Other researchers, the likes of (Gil 2008) opted to focus on identifying the critical incidents that may impact on learners' satisfaction with e-learning. Four categories of critical incidents were found to affected e-learning satisfaction: administration, functionality, instruction, and interaction. Interactions between participants and instruction were found to have the most significant impact on students' satisfaction.

To gauge the effects of prior internet use, computer knowledge and experience and learning styles on students' attitudes, (Wells 2000) investigated the attitudes of a cohort of students enrolled in a computerized on-line multimedia communication course. Learning activities and instructional strategies were found to play a key and effective role in teaching the necessary skills that nudge students to have positive attitudes and allow them to focus on methods of integration. Prior computer experience was not found to be an issue for graduate students taking an on-line course, as they seem to adapt quickly and easily because of knowledge in mobile gadgets manipulation. There was no need for students to be taught advanced computer skills as their basic skills were adequate for computer-mediated communication participation. The course delivery method itself did not give rise to any student concern, but the course assignment formats raised some concern. Students pointed out that instructors should focus their attention on how to facilitate activities, rather than set assignments regardless of whether students have accepted and the technology or not, because it is the main requirement for multimedia communication. Despite the fact that sound computer skills on the part of learners had a positive effect on their attitudes toward the web, little influence was found on overall student performance.

This can only indicate that computer-aided communication, course delivery and transfer of information back and forth, do accommodate a variety of learning styles with hardly any negative consequences learning and learning outcomes.

For (Malik 2010) the quality of the technological tools and the infrastructure efficiency not only encourage students and teachers to interact with the multimedia resources in e-learning environments, but also increase their satisfaction regarding the e-learning implementation. In turn, (Friedrich and Hron 2010)) have pointed out that certain technical variables have a significant impact on the perceived usefulness of the technology used and this allowed administrators to successfully predict students' acceptance of the e-Learning system used. By comparison, (Zewayed, Maynard *et al.* 2011) have shown that a determinant and important factor which nudged students to accept e-learning systems was none other than their perception of how the technology was easy to use and manipulate despite their basic computer skills.

Students' perception of the quality and quantity of interactions online is closely tied to the perception of their performances according to (Picciano 2002). However this does not tally when comparing student interaction as defined by actual postings on a discussion board with actual performances. As measures are designed specifically to measure course objectives, the results were not consistent. Actual student interactions are measured by the number of postings on discussion boards. Looking at this, the above scholar has found that there were not any differences between the three (low, moderate & high) interaction groups in terms of performance on the examination. This was explained by the fact that all students, and especially the low interaction group, have preferred to focus their attention on the examination instead. As for the high interaction group, results have shown that the high level of interactions impacted somewhat on written assignments.

(Hong, Lai *et al.* 2003) explored a Malaysian university postgraduate students' perception of success in a web-based learning environment in terms of problem-based learning. Problem-based learning is a student-centered instructional approach in which students work in collaboration to solve problems and reflect on their experiences, while instructors/teachers just take a learning facilitator role. They endeavoured to map out the differences between learning outcomes of a web-based course and a face-to-face version of it. The results showed that most students were on

the whole satisfied with their web-based learning experiences, because they have found the web-based course flexible enough for them learn anytime, anywhere. A few students however, felt a little isolated and needed face-to-face lectures. This was attributed to their lack of computer skills. For this reason, supporting students to develop these skills is mandatory in order to improve learning outcomes in problem-based learning. Therefore it was recommended that a better design of problem-based modules and clear structures must be put in place for the guidance of students to surmount problems in web-based environments.

A huge and pertinent amount of data was collected by (Storey, Phillips *et al.* 2002) for the purpose of evaluating the usability of WebCT and blackboard following a survey of students during course time. Students' satisfaction was found to be closely tied the convenience and flexibility in the use of web-based tools. Being able to access information anytime, anywhere and web-based tools that cater for their different learning styles were also found to be of high importance to students. The scholars also added that web-based learning tools are not only supporting traditional teaching and learning by offering new means of delivering education, but also satisfying students learning needs.

To determine the factors that influence students satisfaction with online learning, a host of researchers (Peltier, Schibrowsky *et al.* 2007; Lin, Lin *et al.* 2008; Klobas and McGill 2010) have conducted various empirical studies. What they found was that satisfaction with online learning is influenced by numerous factors; factors mostly related with the issues of course content, instructors, students, technology, and support service and learning environment.

2.10. Factors affecting students' achievements in web-enhanced learning

As there has been a rapid increase in on-line corporate training, the future of internet-based courses can only be brighter and more lucrative (Arbaugh, 2000). For this to occur, Arbaugh argues that much more research needs to be conducted to investigate the effectiveness of using ICT in teaching more closely. What is recommended in future research is to try and determine accurately what the most appropriate ways of teaching internet-based courses are and what type of student and instructor function

are best suited in an online environment (Arbaugh, 2000). The effects of student gender on learning and class participation in a web-based MBA course were scrutinized. The results indicated that there were not any significant differences in learning, but only some moderately significant differences in class participation between males and females. Interaction difficulties were used as a predictor of class participation as the male students showed the more difficulty in interacting on the course than their female counterparts.

A host of studies link student characteristics and behaviours to their learning experience perceptions and attitudes, such as satisfaction, frustration and anxiety. The impact of perception on learning outcomes and performance was explored. Kim and Moore for instance, following the investigation of a 2005 web-based course came to the conclusion that students' interaction with their classmates and instructors may have an impact on their satisfaction with Web–based courses. Eighty-two graduate students enrolled on a web-based course at a Midwest university took part. The finding indicated that those students' who had more interactions with an instructor and other peers tended to be more satisfied with their web courses (Kim and Moore 2005). On the whole, interactions seemed to be central in teaching and learning; students interactions with each other, their interactions with instructors and indeed with the course itself. As the learning process is based on these interactions, the success or the failure in learning outcomes depend largely on this social characteristic (Lei, Pahl *et al.* 2003). Once communication and collaboration are well established between the participants, i.e. students and instructors, the world wide web seems to work its magic in enhancing the working relationships between the two (Cheng and Yen 1998).

In a course delivered in three different ways, (Rivera, McAlister *et al.* 2002) looked at the achievements and satisfaction of a cohort of voluntarily enrolled students. A traditional face to face delivery and assessment method, a web base method in which both delivery and assignments were online and a hybrid one where the LMS WebCT was used to deliver the course to a cohort of students physically present in a classroom. The exam questions for all the participants were taken from the same test bank. The results showed that students' performances were not affected by the course delivery methods. However, the different methods seemed to impact on student

satisfaction. In addition, students under the traditional and the hybrid methods have shown to be more satisfied with their courses than the web-based counterparts.

Student perception of online learning was explored by (Hoskins and Hooff 2005). They looked at the issue through two questions: "one, which students use web-based learning voluntarily; and two, is their academic achievements influenced by this?" One hundred and ten (110) undergraduate students of different ages and both genders took part. WebCT was used as the course delivery vehicle. The findings indicated that the older students accessed WebCT much more than their younger counterparts, spent longer time on it, and used the notice board more frequently. In addition male students used the chatting facility more than their female peers. In summary, the age and gender of learners were found to play a considerable role in determining students' use of web-supported learning. There was also a definite relationship between the use of discussion boards and the students' achievements. Those students who posted messages on the discussion board performed better and obtained better grades than those who did not. The scholars cited above, despite the fact that they considered their findings to be important, have called for more research to be conducted on more students and more courses to confirm the results.

The factors that influence students grades in online course, were the subject of an investigation by (Coldwell, Craig *et al.* 2008). These scholars tested student participation in online discussions. The sample was a cohort of 500 Australian students that took an ICT bachelor's degree course online. The e-learning LMS tracking tools were used to track student participation and collect the necessary data that would provide statistics about the time each student spends online, number of messages read and posted by each student and course documents viewed by each student. Students were divided into five categories according to their final grades: high distinction, distinction, credit, pass and fail. The findings revealed that the students who obtained high grades (i.e., high distinction, distinction and credit) were those who participated fully and substantially more than their peers.

Students performances with and without the use of WebCT were compared by (Sayers, Nicell *et al.* 2004). Two different groups of students doing the same module in two different academic years were looked at. The authors hypothesized that online assessments could have unfavourable effect on the students' end of semester

examination grades. However this did not materialize as the results indicated that online assessments do not necessarily have a detrimental effect on students' end of semester examination results. The participant students in this study had the traditional end of semester exam along with two on-line multiple choice tests delivered by WebCT. The findings showed that the students who used WebCT achieved slightly better results than the previous year students who did not use WebCT.

2.11. University support aspects and satisfaction with technology

Being a very recent tool in the educational field, E-learning is still growing and will in doubt continue to be refined as requirements and services expand and more applications are introduced. The technological multimedia revolution of the last decades of the twentieth century have pushed the e-learning process into the fore of many an educational institution. With more and more institutions moving to e-learning platforms and technology cost decreasing because of competition, there is no doubt that e-learning will be challenging traditional face to face learning. Hence technological and technical support in those establishments that adopt LM systems is crucial. Teaching and operating problems due to the introduction of such LMSs can be minimized and even overcome through training, user involvement, and commitment from institutions and their IT departments. For encouraging - not to say great - results in e-learning outcomes, coaching and training students and instructors alike on how to maximize the use of the technologies involved effectively is crucial during both pre- and post -implementation. Like anything in life, training and practice breed self-confidence and eventually expertise. Evidence to that has been provided by several researchers, the likes of (Igbaria 1990; Thompson, Higgins *et al.* 1991; Igbaria 1993).

For them, the level of training is most important. They found that users' beliefs regarding the technology and their subsequent behaviour are positively influenced by the amount and level of training, as training students on the use and manipulation of the e-learning system used is thought truly to enhance their awareness on the system’s usefulness and ease of use. This is congruent with (Thompson, Higgins *et al.* 1991) findings. According to these scholars, technical support to users on the e-learning delivery technology has been shown to enhance not only their perceived ease of use of

it, but also their views and perceptions regarding the institution's commitment to and investment in resources that facilitate e- learning for its learners. This would further demonstrate that institutions, having invested in new technologies and technical support, would indeed expect their students to use the systems introduced and persevere with it, (Lopez. and Manson. 1997). Other researchers, the likes of (Igbaria 1990; Thompson, Higgins *et al.* 1991; Trevino and Webster 1992;Igbaria 1993) also see technical support as an important facilitator for user attitudes and subsequent acceptance of LMSs. (Igbaria 1990; Igbaria 1993) goes further as to show that 'Top management' support is one of the most important factors for the successful implementation and use of ICT systems in general

Training – (Masrom, Zainon *et al.* 2008; Mosakhani and Jamporazmey 2010; Puri 2012), all these researchers agree that training for all groups concerned, is a very crucial factor in the development and the success of e-learning. As technologies are dynamic and innovations - hardware and software alike - are in constant change all the time, no e-learning can progress and become very efficient unless users are being constantly supported and training periodically evaluated and enhanced to satisfy the needs of learners, (Selim 2003; Selim 2007;Bacsich, Bastiaens *et al.* 2009). For many, training on its own is not enough. Scholars suggest that, in order to increase student satisfaction and by the same token enhance learning outcomes, instructors have to show not only competence, but also real motivation and sincere enthusiasm during interactions to coach students and nudge them steadily forward in order to increase their expertise and satisfaction with LMSs and ultimately enhance their learning outcomes using multimedia tools (Selim 2005) and (Cruz 2010) totally agree.

Technical Support- By nature, people are always apprehensive when faced with unfamiliar settings and it is not different for people faced with new technology. For this reason the availability of technical support is one of the most significant factors in determining the acceptance of technology for teaching and learning (Williams 2002). Normally it is often the case in the early implementation stages of technology. (Venkatesh 1999) found that facilitating conditions and monitoring use are markers that serve as anchors to inform institutions on the students perception of the ICT used. Empirical evidence indicates that e-learning projects that were not successful in achieving their goals did not have access to technical help desks to support users, (Alexander, McKenzie *et al.* 1998; Soong, Chan *et al.* 2001). (Ngai, Poon *et al.* 2007)

extended the TAM to include technical support as an external variable to gauge and explain the use of WebCT. Their findings showed that technical support played a significant direct role on perceived ease of use and usefulness. Similarly, (Abbad, Morris *et al.* 2009) found that technical support available to users can have a direct impact in terms of perceived usefulness and a reasonable indirect impact on the intention to use the ICT available to the parties involved.

Like in many other domains of social life, there is a general acceptance in the domain of education that new technologies in general and the World Wide Web in particular, will continue to have important influence on the ways data is used, shared, stored and retrieved, stored and shared in learning environments (Jones and Jones 2005). A huge amount of empirical research in this field was conducted to investigate and compare traditional methods of course delivery with the new technological ways that use VLE as a tool in education, to gauge the advantages, disadvantages and effectiveness of each.

Web-based or VLE teaching is similar to traditional teaching in many ways as it often has the same amount of face-to-face instruction, but the main difference, according to (Allen and Seaman 2014), is that web-facilitated instruction uses multimedia technology to deliver around 29% of course content. The other three quarters plus of the content is delivered traditionally in this teaching model. Many HE institutions have in recent years, with the expansion of the web and new platforms, introduced new technologies in the delivery of education, including social networking tools such as Twitter (Junco, Heiberger *et al.* 2011) and classroom blogs (Cakir 2013). These new platforms have shown a significant increase in student engagement and improvement in grades in an on-campus environment if their use is integral to instructional outcomes. However, the classification of the course is determined by the extent to which these technologies are used in a traditional a teaching model, alongside other technologies.

Like many other innovations, online learning has created its own challenges for stakeholders. Despite the continuous developments, the sophistication and the user friendly designs, student dissatisfaction with the lack of interaction coupled with technical problems that keep plaguing learning management systems, remain a cause for concern for educators wishing to promote and extend e-learning (Watters and

Roberston 2009). The public perception that online courses are somewhat inferior to on-campus courses does not seem to shift (Parker, Lenhart *et al.* 2011), although that has been changing over the years (Allen and Seaman 2014), the fact remains that online learning is not making the huge strides technologist and educators were wishing for, in spite of the fact that students have reported that this sort of learning offers more flexibility and convenience, which may in the long run outweigh its numerous disadvantages (Serhan 2010; Johnson 2012). Perhaps the greatest benefit of online learning to HE institutions is cost cutting.

Over recent years, learner satisfaction with e-learning environments was meticulously examined in several studies (Santhanam, Sasidharan *et al.* 2008; So and Brush 2008; Wu, Tennyson *et al.* 2010;Zhu 2012) to gauge out the factors affecting take up. The findings have indicated that a positive learning climate and performance expectations affected student satisfaction, with performance expectations providing the greatest contribution (total effect). Users (students and instructors) attitudes are positive regarding e-learning when the latter is not only seen, but also felt and recognized to be helpful in improving their learning and teaching effectiveness and efficiency (Wu, Tennyson *et al.* 2010; Rahamat, Shah *et al.* 2012). For (Chen and Huang 2012) gauging and understanding student attitudes is paramount in order to be able to better develop and indeed expand e-learning system functions to meet student needs. In turn this would in no doubt increase the impact of learning and enhance their satisfaction with the e-learning process. (Aixia and Wang 2011) have found that students who showed or held positive attitudes and feelings towards e-learning are those who were the most satisfied with it the whole process of VLE. This perceived satisfaction was identified as one of four factors that helped explain 83.8% of the variance of student attitude.

2.12. Summary

The use of learning management systems to support face-to-face courses is widely discussed in the current literature. As student population has been expanding over the years, a large numbers of institutions have been offering courses supported by LMSs such as the Blackboard system to meet the needs of a greater number of students.

This chapter has looked at the background research on which this thesis would be based in order to help formulate the research question. The review highlighted the significance of using learning management systems to support the traditional teaching-learning process. Students' satisfaction in using these systems and their achievements are markers and indicator of the learning taking place. For this reason, it is important to investigate factors that influence this learning. As the literature shows, student attitudes towards any LMS is an important factor that influences their use of the system and eventually their satisfaction or dissatisfaction with it. Instructor attitudes are factors that play a significant role in the motivation of students to use LMSs and should be considered when institutions are introducing or offering web-based courses. Additionally in order to improve user satisfaction with LMSs and enhance learning experience and effectiveness, a need to examine, ascertain and understand learners' needs and behavioral intentions is mandatory. To fully grasp how effective or not the Blackboard system would be for such or such course, comprehensive training for users on the technology and continuous institutional support and commitment to them over the period of the course must be paramount.

The review showed that none of the reviewed studies has attempted to combine the four dimensions in one research. Further, it was found that no study on the adoption of e-learning from the Saudi students' perspective has been conducted. The chapter also looked in depth at the constructs comprising the research conceptual model.

Therefore, the aim of the research reported in this thesis is to investigate the use of a learning management system in teaching / learning environments and the factors that affect students' attitudes and performance in developing countries, especially in Saudi Arabia. The learning management system that is used in this research is Blackboard. The research objectives driving the research programme reported in this thesis are as follows:

• investigating undergraduate students' perceptions towards applying e-learning at Taif University, taking in consideration the effect of using e-learning on both gender, and academic specialization.

• investigating learners' satisfaction, behavioral intentions and the effectiveness of LMS. Additionally, it undertakes to scrutinize the relationship, if any, between

students' use of this LMS in particular, their performances and their attitudes towards it.

• revising and modify the conceptual framework of the critical factors affecting students' attitudes towards Blackboard and test this framework in one course and in different specializations and to compare the findings.

In general, it can be identified that there is a shortage of studies on E-Learning implementation in higher education in Arab countries and subsequently a lack of a conceptual framework to enhance the success of E-Learning when implemented or the adoption of E-Learning in educational settings. Despite the shortage of a significant number of studies in Arab countries, it can be seen from the previous studies that there are some common challenges and issues for implementing and adopting E-Learning in educational settings, challenges such as the significant and the most important factors for successful implementation and adoption of E-Learning.

The next chapter will describe the research methods used in the studies reported in this thesis.

Chapter 3

Research Methodology

3.1. Introduction

Four main parts make up this chapter. A review of the questions that this thesis is attempting to answer is followed by a general definition and explanation of the approach used in conducting the research. The third part gives an account of the data collection procedure, and finally, the findings obtained and analysis are presented in the last part.

3.2. Overview of the research questions

This study aims to examine students' use of the learning management system (‘Blackboard’) in undergraduate courses. Specifically, the relationship between the main variables and the success or the failure of web-based courses will be explored. The first study cited therein looks at investigating undergraduate students' perceptions towards applying e-learning at Taif University, taking into consideration the effect of use of e-learning on both gender and academic specialization. The second study investigates learners’ satisfaction, behavioural intentions and the effectiveness of the Blackboard system and, additionally, the relationship between students' use of the Blackboard, their performance and students' attitudes towards it. Finally, in the third

study, a framework showing the relationships between the most relevant variables in web-based courses is developed and tested.

The research to be carried out will benefit from the experience gained at Taif University, one of the leading universities in the KSA, which has invested in and implemented the Blackboard learning management system to support many courses offered to students. This avant-garde teaching and learning programme began in 2012, and soon became important in the assessment of user satisfaction following implementation and delivery. The investigation looked at the factors that could affect students' use of the system and their learning outcomes. These factors are multifaceted, and can originate from any associated variable: the system itself, the institution's support, as well as student and instructor characteristics.

The first study, as will be reported in Chapter 4, starts by investigating undergraduate students' perceptions towards applying e-learning at Taif University taking in consideration the effect use the Blackboard system on both gender, and academic specialization. It will describe general students' perceptions towards the new system and various attitudes from the instructors. The second study, as will be presented in Chapter 5, investigates learners' attitudes towards e-learning, in order to understand better how to improve e-learning satisfaction, behavioural intention, and also to enhance learning effectiveness.

This study uses Blackboard as the Taif university e-learning system. Additionally, the relationship between students' uses of Blackboard, their performance and students' attitudes towards it. The second study shows the level of student satisfaction with the system and its effectiveness. A significant relationship was found between students' gender, academic specializations and students' attitude, but not their way of using it. Students with different academic specializations were found to have a positive attitude towards the Blackboard system, and use it in their learning. Consequently, based on the first and second study, a framework was developed to explore the critical factors influencing student satisfaction, their performance and achievements in coursework supported by this LMS.

3.3. Overview of the research approaches employed in the thesis

A combination of qualitative and quantitative approaches was used to draw on the strengths of each in order to attempt to obtain empirical results that could lead to sound conclusions, in a similar fashion to (Owston 2000), who used mixed-method evaluation strategies to evaluate web-based learning environments. In his opinion, the richness and complexity of a web-based learning environment can only be captured and fully understood to its greatest potential by combining research methods rather than using a single approach. (Creswell 2003) seems to agree. In using this combination method, the researcher gathered a wealth of data by employing a host of instruments, such as surveys, experiments, interviews and observations, in order to arrive at a set of comprehensive results or findings and consequently answer the pending research questions. This method is a very useful way to truly capture the dynamics of a topic, as it offers the best of both worlds; the quantitative and the qualitative.

(Breakwell, Hammond *et al.* 1995) state: "*... hypotheses are formal statements of predictions derived from evidence from earlier research and theory or simply the result of a hunch*". These hypotheses can be thoroughly tested by the manipulation of one or more of the variables involved (Preece, Rogers *et al.* 2002). By assigning participants to different conditions and manipulating the various variables involved, researchers can obtain results by measuring the effects of this manipulation on one or more dependent variables and the control of others in a controlled experiment (Robson 2002).

Researchers have two kinds of experiment at their disposal: laboratory tests and field experiments. Laboratory tests take place in a controlled environment resembling the real one, but, in essence, differ physically and environmentally. This could affect participants due to the fact that this closed, laboratory environment is alien. This could be a blessing in disguise. (Coolican 1994) explains that the advantage of the laboratory is that it allows the manipulation and control of variables in order to obtain accurate cause and effect measurements, thus facilitating comparison between the many different designs. Moreover, laboratories allow a large number of technological devices and apparatus to be stocked and easily used, being close at hand, unlike in

remote field work, thus enabling researchers to carry out extensive data recordings in an environment where all participants concerned are free from everyday distractions.

On the same issue, (Coolican 1994) singled out two potential weaknesses that laboratory settings seem to be prone to. One is the fact that they are artificial, and there is an inability to generalize. Because the setting, or more precisely the situation, is not real, there is no doubt that this may affect the participants taking part. Taken out of their natural and customary environment, laboratory settings could cause them to be anxious or overawed. These feelings of anxiety and awe, if accentuated and accumulated, could no doubt affect performance negatively, especially if the persons carrying out the experiment decide to be inflexible in following rigid or standardized protocols, without giving a second thought or appropriate consideration to the human element involved. Neglecting interaction norms may lead to a negative impact on performance, and, by the same token, to a disappointment in the desired outcomes and perhaps even an all-round failure to meet the objectives and targets set.

An element of bias may also creep in, as a result of the experimental situation's demanding characteristics. In other words, the participants may alter their behavioural ways in order to satisfy not only the requirements of the experiment, but also their interpretation of what the experiment is testing, and thus accommodate for the demands of the experimenter. This effect has been shown to be always present and is indeed most pronounced among participants who have volunteered for an experiment (Rosenthal and Rosnow 1975). Despite the fact that bias could be mitigated by keeping experimenter-participant interactions to a minimum, as is often the case when dealing with human-computer interaction experiments, many scholars have argued that there will always be weaknesses which prevent results from being generalized to the real world outside the laboratory.

Fieldwork places participants into a real or natural environment, causing real situation interactions between participants and technology systems such as LMS (Coolican 1994). Participating parties act and interact in real world situations, with all their input of ambient noises, different and varied movements, natural interruptions and occasional distractions, which are hard to replicate in laboratories. This enables results to be generalized to the real world, thus increasing the validity and the reliability of results; bias is largely reduced. The natural environment in which

fieldwork takes place does not give rise to participants altering their behaviour to satisfy experimental demand characteristics. In this way performance is not affected. For (Robson 2002), using ethical means to randomly allocate participants to experimental conditions makes field studies preferable to laboratory ones.

Taking into consideration the potency and relevancy of the above arguments, this study has cast aside laboratory work and has opted instead for field studies using the mixed methodology approach to gather a wealth of data and consequently enhance results through sound analysis. The LMS (Blackboard) was the target topic for on-site evaluation, i.e. in real and natural everyday teaching and learning situations and venues, to yield results better than could be achieved if laboratory conditions were to apply.

3.4. Data collection

A number of instruments were used to collect the data. Questionnaires, interviews and Blackboard tracking system's numerical data were the main tools for gathering them. A brief outline of each instrument is presented in the next sub-sections.

3.4.1. Questionnaires

According to (Coolican 2004) "A questionnaire is one of the basic research techniques for gathering structured information from individuals or group of individuals". Questionnaires are often designed to gauge participants' views, opinions, attitudes, behaviours or thoughts about a specific topic, and tend to gather a wealth of data. Researchers have to adhere to a set of commonly agreed rules and bear certain principles in mind while designing such questionnaires.

In questionnaire design, time has to be given serious consideration, as it may be very precious to respondents. Questions have to be to the point; any excess time spent answering them will affect mood and by the same token may affect answers. Questionnaires must contain clear, concise, usable and answerable questions fit to the purpose; they must be designed to allow for honest, natural and truthful responses, as complicated, difficult or wide-ranging questions may not be answered truthfully, or

may not reflect the individual's real beliefs. The subject of parenting may be used as an example. If questions on child upbringing are not phrased sufficiently clearly, they may lead to responses that conform with general expert views on good practice rather than to parents' actual practice. Finally, there is the issue of ethics. Here, researchers have to take extra care not to offend respondents, and to make sure that questions will be answered and not rejected. Some might refuse to answer questions about sensitive topics (Coolican 2004).

The researcher took great care in the formulation of questionnaires for this study, details of which are presented in Chapters four, five and six, respectively. The three questionnaires were generally set to gauge students' attitudes about the use and usefulness of the Blackboard LMS for their courses and to gather information about students' experiences. These questionnaires contained closed and open-ended questions, divided into two groups of positively and negatively worded statements, in order to obviate the bias effects that may be caused by a respondents' tendency to habitually agree or disagree with the statements.

In accordance with (Coolican 2004) and other authors, we believe that open-ended questions have several advantages, in that they tend to deliver richer information and encourage respondents to answer in accordance with their own views and beliefs and not stick with fixed-choice answers. Open-ended questions are more realistic, because they tend to nudge respondents to give reasons or explanations for why they agree or disagree with such or such a statement.

For accurate and more comprehensive results, a 5-point Likert scale was used to measure students' attitude. (Coolican 2004) states that: "... *attitude scales are highly structured measures which usually contain statements to which respondents provide the most appropriate response*". Here, the researcher is aware that each attitude scale attempts to be a unitary measuring instrument, not an opinion questionnaire. Several popular types of scales are used by researchers (Coolican 2004).

Equal-appearing intervals (Thurstone 1931): on this scale a score values equate with the equivalent agreement or disagreement strength of every statement that a respondent makes. To well re-structure such a scale, the researcher needs to take the following steps:

- Offer quite a large number of both positive and negative statements regarding the attitude issue.

- Refer this to a chosen group of judges to rate the statements ranging from 1 (highly negative) to 11 (highly positive).

- Take the mean value of all the ratings for each statement to set the scale values.

- The overall attitude score should be the total of all scale values on items respondents agreed with.

Despite all these measures, the scale remained problematic and plagued with difficulties. Although the respondents were honest and truthful, they could never be completely neutral, as it is difficult to select the most discriminating statements from items that have the same scale value.

(Osgood, Suci *et al.* 1957) refer to the concept of semantic differential. The scale is used when the connotative meaning of an object for an individual needs to be measured. Here, respondents are asked to mark a scale between bi-polar adjectives according to which they feel the object pertains.

The semantic differential tends to correlate with other attitude scales used in attitude measurement and often produces good reliability values. However this scale seems to carry a weakness. This weakness resides in the fact that respondents may have a tendency towards a position response bias, usually marking at the extreme end of the scale (or won't use the extreme at all) without considering possible weaker or stronger responses.

In summated rating (Likert 1932), researchers need to take the following steps in order to structure the scale:

- As for the Thurston scale, they need to create a set of favourable and unfavourable statements about an attitude.

- Respondents should be requested to give their response to each statement, using a scale ranging between strongly disagree to strongly agree.

The most effective method for field measurements is to choose a moderate range scale amid the many scales available (Dix, Finlay *et al.* 2003). In other words, scales that

range from 1 to 3 points (too low) and those that range from 1 to 9 (too high) should be avoided, and scales between 1 to 5 or 1 to 7 should be selected. Taking this into consideration, it was decided to use a scale of 1 to 5 for the measurements. As a score for each respondent for each item, a single value is attributed, five for strongly agree and one for strongly agree. Overall attitude scores are calculated by summing the scores for each item.

The Likert scale also has its problems. "Undecided" or score 3 is ambiguous. Does it represent no opinion or an on-the-fence opinion? This makes the response unclear, which makes the central value in an overall score distribution quite unclear, not to say inaccurate. Median values such as 25 out of 50 or 30 out 60 could be 'undecided', or could represent a collection of ‘strongly for’ and ‘strongly against’ responses, which can be frustrating.

Nevertheless, the Likert scale was adopted for this research, because of the advantages indicated by (Coolican 1994). He states that it is more natural to complete and maintain the respondents' direct involvement, and this scale has been shown to have a high degree of validity and reliability, and has also been shown to be effective in measuring changes over time.

3.4.2. Interviews

For the first study (discussed in Chapter four) the researcher used interviews to collect information from the participants. For the collection of qualitative data scholars agree that interviews are a suitable and easy instrument to use and may contain both open-ended and closed questions. An array of face-to-face interview techniques that range from fully structured to totally unstructured is available to researchers according to use (Coolican 2004):

Non-directive interview: As the term indicates, in this type of interview, the subjects had the freedom to express themselves about the topic and say what they liked or felt without guidance or direction, to avoid affecting the topic under discussion. This type of interview is often used in studies where interviewees need assistance in dealing with personal problems or to increase their self-awareness. This sort of research

instrument is used by psychotherapists and counsellors, but it is not favoured in academic research circles for data gathering.

***Informal interview**:* If there is no need for the research questions to be pre-set, this type of interview is perfect for the job in hand. Here, interviewees are free to talk about any aspect of a topic. The interviewer may just give direction to keep them on track and sometimes prompt them. Interviewees should be made aware of the reason for the interview, what the topic is and what is really expected from them and how the information will be used.

Semi-structured interview (informal but guided): This type of interview rates among the most popular instruments, because procedures and administration are kept quite informal. Here the questions are not organized in the same order each time, and the interviewer alters them to reduce monotony and formality and to put the interviewee at ease.

***Structured but open-ended interview**:* For this instrument a pre-set and pre-determined number of open-ended questions are asked in a certain order to keep the interviewer focused solely on data gathering, thus avoiding two-way conversations and time-wasting, especially if field studies are carried out at a long distance from base, by the same token reducing costs. In this type of interview, the inconsistency and looseness that may creep into other types of interviews can be side-stepped by the interviewer. However, respondents are left to express themselves freely and can still respond in any way they wish. This type was employed in the studies reported in Chapters four and five.

***Fully structured interview**:* As the name indicates, this sort of interview consists of a number of pre-set questions asked in a pre-determined order. This format is characterised by yes-no questions, multi-choice response statements or multiple-answer questions. They are easy and less time-consuming to administer, and can be used in conjunction with other instruments to gather data, even in the street. Responses can be counted and analysed numerically.

3.4.3. Blackboard tracking system data

Following in the footsteps of previous scholars like (Wellman and Marcinkiewicz 2004; Hoskins and Hooff 2005; Johnson 2005; Hammoud 2010; Al-Busaidi 2012), objective data were gathered from the Blackboard tracking system database. To faithfully comply with this method of data collection, statistical data relating to students' use of LMS (Blackboard) were collected weekly from the start of term (for each study reported in this thesis). The Blackboard tracking system is that it provides information regarding the students' use and visits to every tool and page on Blackboard.

The students' use of the LMS (Blackboard) can be monitored, indeed measured. In other words, it is possible to compute and record the number of Blackboard page hits, the total amount of time spent using Blackboard, the number of times they accessed Blackboard and bulletin board use. A ‘hit’ is the number of times a user accesses a page such as homepage or content page (containing lecture notes) or any other page. Bulletin board use is the number of messages each student reads or posts on the discussion board. Statistical information can be collected in various ways, and scholars like (Owston 2000) used Web Trends and the server log files analysis tool, as a data collecting tool, to perform similar operations as Blackboard's tracking system log files. This researcher has regarded log files as a potentially useful and rich data source for evaluating web-based learning.

The present research makes use of the valuable and readily available data on the Blackboard tracking system, enabling the researcher to obtain accurate information about students and course leaders, without asking them a huge number of questions or resorting to conducting interviews. Tracking system data has facilitated the researcher's task of matching the results obtained following the analysis of the data gathered from questionnaires and interviews with results obtained from the tracking system numerical data analysis.

3.5. Analysis of data

The students' general use of Blackboard was measured as the number of times each student visited any of the Blackboard pages or made use of the discussion board, by either reading or posting information. Their achievements were measured by the grades they obtained while they were doing the course, and their attitudes towards the LMS (Blackboard) were measured using a Likert scale. The data were analysed using SPSS.

All information obtained from the students' study records was kept strictly confidential at all times, and none of the identifying information was disclosed or referenced in an identifiable way, in either a written or verbal form or context.

For reliability, validity and transparency purposes, all statistical tests to be applied to the data are agreed upon at the planning stage of the study, to ensure that data can be meticulously manipulated and properly and carefully analysed, in order to fully test the hypotheses and either support them or refute them (Breakwell *et al.* 2000). For all the three studies presented, the numerical data obtained after the administration of the questionnaires were analysed using frequency measurements. The qualitative data from interviews with lecturers and students' comments were subjected to thematic analysis, in line with what (Bryman and Cramer 2005) perceived as suitable for this sort work. In other words, they saw that correlation was one of the most important and reliable tools to show explain and clarify the relationships among the various variables involved, as measuring the correlation between variables would show the strength, significance and the direction of this relationship.

In the sphere of the social sciences, one of the most widely employed techniques for data analysis currently used is regression analysis, and, for this reason, it was used to explore relationships between pairs of variables. This study makes it apparent that regression is a powerful tool for showing and summarizing the nature of the relationships among variables and for making predictions about the likely values of the dependent variable (Bryman and Cramer 2005).

The measurements of students' academic achievements for the courses used in the studies cited in this research were correlated using the Pearson's Product Moment Correlation Coefficient with the measurements of the LMS use (e.g. Blackboard hits

and communication board usage). The researcher also endeavoured to test the potential significance of the relationships between students' achievements and their use of Blackboard, and it was used to illustrate the relationships that exist among these variables.

(Bryman and Cramer 2005) stated that one of the most important explanations of the relationship between variables is the correlation. The measures of correlation between variables indicate the strength, significance and the direction of the relationship. Pearson's (r) gives the strength and the direction of the linear relationship between variables to be assessed. Pearson's (r) varies between -1 and +1. A relationship of -1 or +1 would indicate a perfect relationship, negative or positive respectively, between two variables. The significant (p) value tells us how confident we can be that there is a relationship between two variables.

An ANOVA is a "statistical technique used to determine whether samples from two or more groups come from populations with equal means (i.e., Do the group means differ significantly?)" (Hair et al.2010). Thus, it is a statistical procedure that uses the F-ratio to test the overall fit of a linear model (Field, 2009).

A paired *t*-test was used to compare means on the same or related subjects over time or in differing circumstances. However, the observed data are from the same subject. An extension to this test, the repeated measurement ANOVA, was added, because it is known to be a powerful means of analysing differences among three or more conditions, and it is a sound and efficient technique used for studies similar to the work undertaken in this thesis. In other words, we can use a one Way ANOVA test to compare three or more groups or conditions in an experiment. A one Way ANOVA can help you find out if the means for each group / condition are significantly different from one another or if they are relatively the same. If the means are significantly different, you can say that the variable being manipulated Independent Variable, had an effect on the variable being measured Dependent Variable.

3.6. Summary

In the chapter 'Methodology', the researcher carefully laid and described the methodologies and techniques that he has used to carry out the work conducted for this thesis. At first, the researcher presented an overview of the research problem; then, the general research approach was explained and a justification for the selection of the methodological approach was provided. Following that, a detailed explanation of the data collection instruments and procedures was put forward. Finally, an explanation of the data analysis procedure and the tests that have been conducted in order to draw conclusions from the findings were presented.

Chapter 4

Learners' perceptions on integrating e-learning into Teaching and Learning at Taif University

---

4.1. Introduction

E-learning (or Internet-based learning) has become one of the fastest moving modes to provide exceptional opportunities for increasing access to education for a greater number of learners. The rapid growth in its use over the last couple of decades has naturally – and for obvious reasons – occurred in developed countries, such as the United States (US) and the United Kingdom (UK). In the US, this mode of learning has taken different names, such as CMS (course management system) or LMS (learning management system), while in the UK, VLE (virtual learning environment) and MLE (managed learning environment) are more commonly used terms (Martin-Blas and Serrano-Fernandez 2009).

E-learning platforms come in different shapes and forms. Some are very professional and are intended to be used as commercial software, such as 'WebCT' and 'Blackboard' (www.blackboard.com), whereas others are open-source software, such as 'Moodle' (www.moodle.org) and 'Atutor' (www.atutor.ca) or even amateurish products such as individual teachers or educational groups with small projects designed locally just to satisfy the needs of local learners. Most applications have common features, but some are more flexible and complete than others (Martin-Blas and Serrano-Fernandez 2009). What make these platforms very attractive to learners and instructors alike are quality, superior instructional design and ease of delivery. In addition they are very cost efficient for teaching in institution

(Ettinger, Holton *et al*. 2006). If the make-up of the instructional design is not sufficiently easy for students to follow, no amount of modern technology will be able to help, even if motivation is very high and teachers or instructors are exceptionally committed, as technology is merely an aiding tool to the teaching and learning processes (Kamarulzaman, Madun *et al.* 2011).

As indicated in Chapter 2, the use of Information and Communication Technology (ICT) in delivery of education has major implications for learners and institutions. It is widely accepted that advances in information technology and new developments in learning science provide opportunities to create well-designed, learner-centred, interactive, affordable, efficient and flexible e-learning environments (Khan 2005). Considering that students' perceptions of e-learning are important to the successful development of e-learning in higher education, the attitude of the user towards the application of information technology has become an important factor. The first study in this thesis is presented in the current chapter. It focuses on the students' attitudes that play a substantial role in improving the efficiency of the e-learning system.

At the beginning of the 2012 academic year, Taif University took the courageous decision to introduce and adopt Blackboard as an online learning management system for all of its students. In the face of such rapid growth in the use of LMS systems, it is important to understand how these platforms and the technologies associated with them are being used, and how they impact on users. As Coates puts it, LMSs are here to stay, because, apart from providing resources for distance learning, they add a virtual dimension to traditional campus-based study and a huge reduction in educational costs (Coates 2007). In addition to that, because of their flexibility, they also facilitate hybrid or blended studies that combine online and on-campus components.

In exploring the factors that affect and indeed influence this non-traditional learning sphere in Saudi HE institutions, Al-Harbi carried out a study in 2011 (Al-Harbi 2011). He looked at students' attitudes and perceptions and their impact on the acceptance or dislike, not to say refusal, of this mode of education. The findings will be discussed in due course. We believe we need to carry out further research in the Kingdom to truly gauge Saudi male and female students attitudes to, and their perceptions of, new learning platforms using contemporary communication technologies, because, in my

view, e-learning is here to stay. Like anything new, some non-conformist or non-traditional users are at first very uncomfortable, especially if the topic has not been well researched and well tested on large samples of users.

(Alobiedat and Saraierh 2010) agree, believing that at a multitude of HE institutions and universities around the world, the effectiveness of this new mode of learning and all its tools, instruments and methodologies have not been fully researched prior to adoption. My aim in conducting this study is to better understand the mechanisms involved, and the impact of remote learning technologies on student attitudes towards e-learning in general and its deployment by HE institutions. The objective is to achieve that by investigating the faculty of education's students' attitudes towards e-learning in general, and the use of the platform as a learning resource in particular. We shall look at the effects of accessing and using the internet in general and endeavour to gauge the impact of using the platform as a learning resource on gender in particular.

Studies by (Oye, Iahad *et al.* 2012) have confirmed that, positive perceptions on not only the use, but also the continuation in using this sort of learning are crucial to nourish individuals' intentions. Their study demonstrated that attitudes do impact significantly on intentions, and that actual e-learning usage produces ample and much-welcomed effects on students' performances in their studies. It was found that continuous e-learning use is indeed associated with students' increased academic performance. For e-learning and m-learning processes to improve and become more efficient for better students learning outcomes, it is recommended that HE institutions focus on how the technology involved needs to be, not only adequate, but indeed effective to help facilitate the said processes.

To this end, (Aixia and Wang 2011) presented a survey of an e-learning environment which they had carried out using the integrated E-learning process. This was the outcome of a survey that they had conducted to investigate and gauge the critical factors surrounding the e-learning environments that had affected student satisfaction or their unhappiness with it, and also their attitudes and that of the universities implementing them. We shall endeavour to dissect the findings below.

Others, such as (Sun, Ray *et al.* 2008), developed models that included six dimensions: the main participants, the learners and the instructors, the courses offered, the technology involved, the design proposed and finally the environment hosting the event. They succeeded in deriving an integrated model after they had investigated which critical factors affected learners' satisfaction with this new type of learning. The results revealed many variables and factors were in play: learners' anxiety about using computers, instructors' behaviour comportment regarding this way of learning in general, its quality, flexibility, usefulness and how it's easy to use by both parties and finally assessment methods and diversity.

Recently, the Jordanian scholar Al-Shboul carried out a study to explore to what extent e-Learning has been integrated within the University of Jordan (UJ). He investigated the variables which could impact on user attitudes relating to e-learning introduction in the teaching process, in order to gauge what factors, if any, that could affect e-Learning tools used at the institution (users and non-users) (Al-Shboul 2013).

A year or so earlier, one of his colleagues (Alwraikat 2012) also examined the corpus of literature surrounding the issue of e-learning and its adoption by universities and other HE institutions in various parts of the world. He concluded that most of the qualitative and quantitative studies that had investigated the factors involved, such as the academic achievement of students, specialization, attitudes of end users, the learner perception, processes adopted, skills used, evaluation and assessment, have indeed indicated that e-learning as an effective mode of learning was accepted. As a result, he conducted a study to examine graduate students' attitudes at the Educational Sciences faculty of Educational Sciences.

As gender was found to play a key role in understanding the differences in perception about the usefulness of technology and its ease of use, with regard to attitudes and perceptions about e-learning, scholars like (Suri and Sharma 2013) state that gender has a significant simultaneous impact on both attitude towards computer technology and e-learning. They found that the impact of gender touches even the basic e-learning forms of e-learning, such as uploading/downloading, course content, interactive videos and pod casting.

Other scholars have looked at various other variables that could impact on e-learning. Among these, (Agboola 2013) conducted a comprehensive study on the topic and

investigated the socio-demographic variables which may affect take-up and acceptance of e-learning in the International Islamic University of Malaysia (IIUM) by its academic staff. The findings will be discussed in due course.

The results obtained from previous studies indicate that learners' perceptions do have a substantial impact on how to make the e-learning system more efficient. Accordingly, the present study investigates undergraduate students' perceptions about applying e-learning at Taif University, taking into consideration the effect of the use of e-learning on both gender and academic specialization. It reflects the aspiration of how the Saudi educational establishment are trying to nudge ahead to emulate western countries and adopt new contemporary technologies in the educational sphere, albeit at HE level. However, before this can be achieved, Saudi education officials need to have an a thorough understanding of user (learners, instructors and support staff) attitudes and behaviours in the face of the introduction of this new form of learning and potentially transforming the educational social environment. Hence this study seeks and needs to answer the following questions to be able to make a significant contribution in nudging the country towards a VLE environment. Taking Taif University as the first sample in the move towards the new revolution in HE, we propose to look for solutions that would encourage this new form of learning not only in the Kingdom, but also in the Arab world who tends to lag well behind its western counterpart.

1. How do undergraduate students perceive the application of e-learning?
2. Does gender significantly affect user perceptions regarding this mode of learning?
3. Does academic specialization (Scientific, Humanities and Health sciences) have any impact, significant or otherwise on how undergraduates view and perceive e-learning?

4.2. Research Methodology

The study target population were first year undergraduates. They had neither used computers and laptops for learning purposes, nor have they experienced e-learning elsewhere. They were anticipating applying e-leaning to complement face-to-face

learning. The target population also included the academic staff who had experience in using LMS. The study was conducted at Taif University as the environment under consideration. A number of students was chosen randomly as the sample for this study, as any group from the cohort would have been suitable at the university of Taif.

4.3. Data collection instruments

Both qualitative and quantitative methods were used. The instruments were developed according to the objectives of the study. The questionnaire consisted of two parts. Part 1 was designed to identify respondents' demographics. It contained demographic questions, such as their academic year, gender and subject of study.

Reliability Test:

In this stage, pilot testing is a very important phase, it helps the researcher in making the necessary modification before full-scale adoption (Lanphear, 2001) and helps in specifying fields that need attention (Schwarz and Sudman, 1995). It also allows for identifying the reliability of the instrument and the question wording and whether the instrument includes any mistakes or mysterious items. In a pilot study, the questionnaire is tested using a sample from the targeted population and also using the same procedures that will be used in the main study. The researcher distributed questionnaires to a sample of twenty-five students, and used an internal consistency measure (Cronbach Alpha, Table 4.1, below). The reliability of the scale was: Attitude (0.897), Perceived usefulness (0.865), Behavioural intention (0.878), E-learning self-efficacy (0.864), Interactive learning activities (0.867), and Confidence in using technology (0.863). All scales and subscales were greater than 0.7, which, according to (George and Mallery 2003), is considered “acceptable” for exploratory research. (Nunnaly 1978) suggested that 0.7 be an acceptable reliability coefficient.

4.1: Alpha Coefficients for Constructs with Items

Construct	Number of Items	Cronbach Alpha
Attitude	4	.897

e-learning self-efficacy	3	.865
Perceived usefulness	5	.878
Behavioral intention	3	.864
Interactive learning activities	2	.867
Confidence in using technology	3	.863

Questions were selected to explore and assess both positive and negative students' perceptions about e-learning. The items and constructs were an adaptation of others' work in the literature (Park 2009; Hammoud 2010; Worrall 2011). Items were developed for the study that included twenty-two questions in two parts, which could be classified into six dimensions, namely: Attitude, perception regarding usefulness, intentional behaviour, self-efficacy, learning activities and confidence in using technology for e-learning. To measure students' responses to the above six dimensions, a 5-point Likert scale was used. (see Appendix 1). Twenty statements needed to be responded to by the sample. In addition, two open-ended questions, the aim was to collect information regarding the following:

- What are the problems encountered by students with e-learning?
- What do students think of the administrators' management of the courses?

Hence, the researcher interviewed five lecturers. (see Appendix 2 for the full interview questions). The interviews were structured and yet with open-ended questions. Here the interviewers' skills are called upon to guide the interviewer to obtain the information sought. The focus is on gathering honest, clear and concise information on the experiences, if any, of lecturers regarding e-learning, namely:

- What do they generally and honestly think about e-learning?
- What effects, if any, does this type of learning have on the learning process on one hand and their and their students' performances on the other?

4.4. Participants

The participants consisted of undergraduate students who were required to participate in a specific number of subject hours in year one as part of the credits towards their degree.

The study was conducted to understand learners' attitudes regarding VLEs. These were undergraduates of both genders in three main major subjects. Respondents' ages ranged between 18 and 22. The questionnaire was distributed randomly to 180 university students. Participants who were guaranteed confidentiality, were asked to complete a questionnaire on their demographics. A total of 180 students answered the questionnaire after being informed on the purpose of the work undertaken and given instruction on how to complete it. Eight students (8) were found to have missed a few responses. Hence, only 172 students responded fully. These were a cohort taking three subject areas, namely: Scientific majors N= 65, Humanities majors N= 55, Health sciences majors N=52 and both genders: Male N= 79 (45.9%), Female N=93 (54.1%). In addition, five lecturers were interviewed regarding the use of e-learning and the courses they taught using this mode of teaching.

4.5. Procedure

Halfway through 2012, the researcher undertook to interview five lecturers regarding e-learning and the courses delivered. These interviews have been carried out online via Skype. The questionnaires were distributed to participants during class time and the data were gathered on paper. They were distributed randomly.

4.6. Data analysing

The Likert scale was used for the questionnaires complemented by a Thematic analysis for the interviews (Braun and Clarke 2006). Descriptive statistics for all statements were computed to obtain the means and standard deviations for all responses according to major and gender. The data were analysed using SPSS software functions and tools. The Wilcoxon Test to gauge students' attitudes regarding gender to compare and look for any significant differences

Students' perceptions regarding e-learning in three academic specializations were monitored to gauge if any differences that might occur. An ANOVA test was carried out on the findings. A *post-hoc* test was conducted with the aim of determining where the differences were between the three academic specializations.

Linear regression was used to predict changes in students' perception of the e-learning environment. Multiple regression analysis was selected to test the linear relationship between students' gender and major, which were taken as independent variables, while the six constructs were taken as dependent variables.

The five lecturers' interviews were recorded with the permission of the interviewees, and a Thematic analysis of the data obtained was made for comparison with data and results obtained from the questionnaires.

4.7. Findings

4.7.1. Academic instructor behaviour

The academic staffs concerned were from various majors; all of them had previous experience in using e-learning. The learners were first year of undergraduate students. The instructors did not try to use the LMS tools to design special course materials but used it as delivery tool only. They had various and different between opinions and attitudes towards the use of e-learning and the advantages and disadvantages of LMSs and their effects on the learning process.

One instructor showed a negative attitude towards the use of e-learning. He found the experience a little daunting as he could not get to grasp with the whole atmosphere saying: "*I don't like using e-learning ... it is more complex for what I need. For me face-to-face learning is preferable as feedback from students is prompt and can be heard*". The others believed otherwise. They were well impressed by the flexibility of this teaching tool and the multi-tasking it enables. They stated that *"using e-learning was useful, not only to learning and teaching, but also for better communication between them and their learners, especially those students who are shy in traditional face-to-face classroom settings".* The lack of training and experience has made the first instructor a little weary of the LMS because he was treading on new unfamiliar grounds. The other instructors had previous experience of e-learning and for this reason, they did appreciate the new system and felt it completely met all their requirements.

All academic staff agreed that introducing an e-learning system in learning and teaching would in doubt - if correctly used - have a beneficial impact on both students'

performances and teaching in general. One of them said: "*using LMSs in learning and teaching would surely bring enormous benefits to both students and institutions and especially for females because of the gender segregation in place in the kingdom*." His opinion is a direct result of this long standing gender segregation in the Saudi educational system.

4.7.2. Questionnaire results

172 students took part in the questionnaires on students' perceptions regarding the introduction of e-learning into teaching and learning. A five-point Likert scale from 1 (strongly disagree) to 5 (strongly agree) was used for statistical purposes. The outcome indicated that in general, students have shown a positive response to e-learning.

Table 4.2 below illustrates a comparison of the means' across gender (male and females). To the 20 questions, the average for both genders was above three out of five (Neutral). The means were somewhat similar, which is a good indicator of the students' understanding about gender in relation to e-learning needs, taking into consideration the difference in constructs and the variety of the questions in each construct. The students of both genders were at the early stage of experience, but, even so, the desire for e-learning led them to almost similar responses.

The results show the means based on gender. The means ranged for males between 3.46 to 4.14, while the means for each construct were between 3.85 to 3.97.The means for females ranged from 3.45 to 4.32, and the means for each construct were between 3.82 and 4.13, which indicates a positive perception about using the E-learning environment for both genders.

4.2:The comparison of mean's across gender

statements	Male's mean	Female's mean
I do not believe that using e-learning requires technical ability.	4.03	4.17
I do not believe that using e-learning will help me to obtain good grades.	3.95	4.03
E-learning will help me to achieve the learning outcomes required for my studies.	3.77	3.83

Using e-learning in my studies will help me to learn the subject thoroughly.	3.84	3.77
I would not feel confident using e-leaning.	4.11	4.17
I would feel confident using online learning content.	3.46	3.45
I have the necessary skills for using an e-learning system.	3.97	3.83
I do not believe e-learning content is informative.	3.96	4.06
E-learning would not increase my academic productivity.	4.14	4.26
E-learning would not make it easier to study course content.	4.08	4.20
The e-learning in my course will in the future help me to get a better job.	3.75	3.89
E-learning will improve my learning performance.	3.84	4.01
I am going to use e-learning content to assist my learning.	3.84	3.88
I am not going to use e-learning as an autonomous learning tool.	4.10	4.32
I am not going to be a heavy user of an e-learning system.	3.97	4.11
I would like to share my knowledge through e-learning tools.	3.80	3.78
I do not believe e-learning can assist teacher-learner interaction.	4.09	4.18
Using e-learning in my course will not increase my confidence in using computers and technology.	4.10	4.25
I feel the information technologies used in e-Learning have many useful functions	3.73	4.03
Having e-learning to support face-to-face lectures will improve the quality of the learning	3.73	4.12

*Male N= 79 Female N=93

To gauge if there were any significant differences, Wilcoxon Test was applied, as illustrated in Table 4.3, below. The statements on gender represented males and females. The difference was statistically significant, as Z= 3.083, $p<0.01$,which means that the results found positively significant differences in mean scores between males and females, favouring males with regard to their level of confidence in using technology, as shown in Table 4.12 at the end of the chapter.

4.3:The comparison of mean's between males and females using the Wilcoxon Test

		N	Mean Rank	Sum of Ranks
female - male	Negative Ranks	4[a]	5.63	22.50
	Positive Ranks	16[b]	11.72	187.50
	Ties	0[c]		
	Total	20		

a. female < male
b. female > male
c. female = male

Test Statistics[a]

	female - male
Z	-3.083-[b]
Asymp. Sig. (2-tailed)	.002

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

The comparison of means' across different constructs (Major: Scientific, Humanities, and Health Sciences) reflected the students' responses. Table 4.4 below shows how these different majors are similar in responses to all the 20 questions; all the responses were over 3 points (Neutral); some questions (Q5 and Q14) were above 4 points (Agreed). These levels indicate that student confidence in e-learning technology is varied across majors/academic specializations.

4.4: The means across three academic specializations

statements	Scientific mean	Humanities mean	Health sciences mean
I do not believe that using e-learning requires technical ability.	4.03	4.05	4.25
I do not believe that using e-learning will help me to obtain good grades.	3.88	4.09	4.04
E-learning will help me to achieve the learning outcomes required for my studies.	3.83	3.82	3.75
Using e-learning in my studies will help me to learn the subject thoroughly.	3.82	3.80	3.79
I would not feel confident using e-leaning.	4.14	4.20	4.10
I would feel confident using online learning content.	3.32	3.64	3.42
I have the necessary skills for using an e-learning system.	3.71	4.00	4.02
I do not believe e-learning content is informative.	3.92	4.02	4.13
E-learning would not increase my academic productivity.	4.25	4.15	4.21
E-learning would not make it easier to study course content.	4.08	4.16	4.21
The e-learning in my course will in the future help me to get a better job.	3.86	3.80	3.81
E-learning will improve my learning performance.	3.88	4.02	3.90
I am going to use e-learning content to assist my learning.	3.75	3.82	4.04
I am not going to use e-learning as an autonomous learning tool.	4.02	4.27	4.42
I am not going to be a heavy user of an e-learning system.	3.98	4.04	4.13
I would like to share my knowledge through e-learning tools.	3.52	3.98	3.92

I do not believe e-learning can assist teacher-learner interaction.	4.09	4.02	4.33
Using e-learning in my course will not increase my Confidence in using computers and technology.	4.15	4.13	4.27
I feel the information technologies used in e-Learning have many useful functions	3.83	3.93	3.94
Having e-learning to support face-to-face lectures will improve the quality of the learning.	3.83	3.82	4.21

*Scientific major N= 65, Humanities major N= 55, Health sciences major N=52

After using ANOVA analysis, the results in Table 4.5 below show that there are no significant differences in scores across academic specializations (Scientific, Humanities and Health Sciences), and the twenty statements have statistically significant differences in mean scores at $p<0.05$, except for Q14 (F [5.842] = 0.004, $p<0.01$), and Q16 (F [3.319] = 0.039, $p<0.05$).

4.5: Comparisons across three academic specialization

		Sum of Squares	df	Mean Square	F	Sig.
Q1	Between Groups	1.591	2	.796	1.962	.144
	Within Groups	68.525	169	.405		
Q2	Between Groups	1.510	2	.755	1.606	.204
	Within Groups	79.484	169	.470		
Q3	Between Groups	.209	2	.104	.093	.911
	Within Groups	189.070	169	1.119		
Q4	Between Groups	.021	2	.011	.010	.990
	Within Groups	179.258	169	1.061		
Q5	Between Groups	.293	2	.147	.313	.731
	Within Groups	79.073	169	.468		
Q6	Between Groups	2.993	2	1.496	1.121	.328
	Within Groups	225.635	169	1.335		
Q7	Between Groups	3.689	2	1.845	1.829	.164
	Within Groups	170.427	169	1.008		
Q8	Between Groups	1.293	2	.646	1.525	.221
	Within Groups	71.655	169	.424		
Q9	Between Groups	.307	2	.153	.290	.749
	Within Groups	89.571	169	.530		
Q10	Between Groups	.551	2	.275	.639	.529
	Within Groups	72.816	169	.431		
Q11	Between Groups	.137	2	.068	.063	.939
	Within Groups	184.631	169	1.092		
Q12	Between Groups	.646	2	.323	.363	.696
	Within Groups	150.516	169	.891		
Q13	Between Groups	2.485	2	1.242	1.153	.318
	Within Groups	182.166	169	1.078		

Q14	Between Groups	5.019	2	2.509	5.842	.004
	Within Groups	72.586	169	.430		
Q15	Between Groups	.658	2	.329	.883	.415
	Within Groups	62.970	169	.373		
Q16	Between Groups	7.576	2	3.788	3.319	.039
	Within Groups	192.890	169	1.141		
Q17	Between Groups	2.781	2	1.390	2.451	.089
	Within Groups	95.870	169	.567		
Q18	Between Groups	.611	2	.306	.595	.553
	Within Groups	86.801	169	.514		
Q19	Between Groups	.442	2	.221	.187	.830
	Within Groups	199.674	169	1.182		
Q20	Between Groups	5.425	2	2.713	2.183	.116
	Within Groups	209.993	169	1.243		

4.6: The *post-hoc* tests across Scientific, Humanities and Health Sciences factors

Tukey HSD

Dependent Variable	(I) Major	(J) Major	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
ATT	science	Humanities	-.05245-	.10401	.869	-.2984-	.1935
		Health Sciences	-.06827-	.10562	.795	-.3180-	.1815
	Humanities	science	.05245	.10401	.869	-.1935-	.2984
		Health Sciences	-.01582-	.10980	.989	-.2755-	.2438
	Health Sciences	science	.06827	.10562	.795	-.1815-	.3180
		Humanities	.01582	.10980	.989	-.2438-	.2755
ESE	science	Humanities	-.22238-	.12531	.181	-.5187-	.0739
		Health Sciences	-.12308-	.12726	.599	-.4240-	.1778
	Humanities	science	.22238	.12531	.181	-.0739-	.5187
		Health Sciences	.09930	.13230	.734	-.2135-	.4121
	Health Sciences	science	.12308	.12726	.599	-.1778-	.4240
		Humanities	-.09930-	.13230	.734	-.4121-	.2135
PU	science	Humanities	-.03217-	.09781	.942	-.2634-	.1991
		Health Sciences	-.05692-	.09932	.835	-.2918-	.1779
	Humanities	science	.03217	.09781	.942	-.1991-	.2634
		Health Sciences	-.02476-	.10326	.969	-.2689-	.2194
	Health Sciences	science	.05692	.09932	.835	-.1779-	.2918
		Humanities	.02476	.10326	.969	-.2194-	.2689
BI	science	Humanities	-.12448-	.10149	.439	-.3644-	.1155
		Health Sciences	-.28077-*	.10306	.019	-.5245-	-.0371-
	Humanities	science	.12448	.10149	.439	-.1155-	.3644
		Health Sciences	-.15629-	.10714	.313	-.4096-	.0970
	Health Sciences	science	.28077*	.10306	.019	.0371	.5245
		Humanities	.15629	.10714	.313	-.0970-	.4096
ILA	science	Humanities	-.19231-	.12106	.253	-.4786-	.0939
		Health Sciences	-.31731-*	.12293	.029	-.6080-	-.0266-
	Humanities	science	.19231	.12106	.253	-.0939-	.4786
		Health Sciences	-.12500-	.12780	.592	-.4272-	.1772
	Health Sciences	science	.31731*	.12293	.029	.0266	.6080
		Humanities	.12500	.12780	.592	-.1772-	.4272

CUIT	science	Humanities	-.01911-	.13781	.989	-.3450-	.3067
		Health Sciences	-.20256-	.13995	.319	-.5335-	.1283
	Humanities	science	.01911	.13781	.989	-.3067-	.3450
		Health Sciences	-.18345-	.14549	.419	-.5275-	.1606
	Health Sciences	science	.20256	.13995	.319	-.1283-	.5335
		Humanities	.18345	.14549	.419	-.1606-	.5275

*. The mean difference is significant at the 0.05 level.

The *post–hoc* test Table 4.6 showed there were not any noticeable differences in Attitude, Perceived usefulness, E-learning self-efficacy and Confidence in using technology across the three academic specializations (Scientific, Humanities and Health Sciences) (p>0.05). However, the test results indicated varied differences in Behavioural intention and Interactive learning activities between only Scientific subject and Health sciences (p<0.05), while there are no significant differences between Sciences and Humanities, and neither between Health sciences and Humanities (p>0.05).

One can notice that the majority of students did not answer the open-ended questions, and a few of them just gave silly answers. Therefore, all these answers were excluded.

The linear multiple regression analyses of the relationships between the six variables were: Attitude (ATT), Perceived usefulness (PU), Behavioural intention (BI), E-learning self-efficacy (ESE), Interactive learning activities (ILA) and Confidence in using technology (CIUT);they were based on students' gender and students' major. The results were as follow:

4.7: Regression across students' gender, major and ATT

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.069[a]	.005	-.007-	.56712	.005	.409	2	169	.665

a. Predictors: (Constant), Gender, Major

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	3.779	.170		22.231	.000
Major	.033	.053	.049	.634	.527
Gender	.054	.087	.047	.618	.537

a. Dependent Variable: ATT

A regression analysis was conducted taking Attitude (ATT) as dependent variable, and students' gender and major as independent variables. (see Table 4.7). As can be observed, the coefficient of regression (R_2) is 0.005; this means that students' gender and major have no statistically significant effect on Attitude (ATT) (p>0.05).

4.8: Regression across students' gender, major and ESE

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.085[a]	.007	-.005-	.68791	.007	.613	2	169	.543

a. Predictors: (Constant), Gender, Major

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	3.755	.206		18.212	.000
Major	.068	.064	.082	1.067	.287
Gender	-.036-	.105	-.026-	-.339-	.735

a. Dependent Variable: ESE

Table 4.8 shows that there is no statistically significant influence between E-learning self-efficacy (ESE) as the dependent variable and students' gender with major as the independent variable. The coefficient of the regression (R_2) is 0.007; this means that students' gender and major have a statistically significant effect on E-learning self-efficacy (ESE) (p> 0.05).

4.9:Regression across students' gender, major and PU

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.132[a]	.017	.006	.52969	.017	1.500	2	169	.226

a. Predictors: (Constant), Gender, Major

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	3.772	.159		23.760	.000
Major	.025	.049	.039	.511	.610
Gender	.132	.081	.125	1.631	.105

a. Dependent Variable: PU

As shown in Table 4.9, perceived usefulness (PU) is the dependent variable and students' gender and major is the independent variable. The coefficient of regression

(R^2) is 0.017; this means that students' gender and major had no statistically significant effect on Perceived usefulness (PU) as p>0.05.

4.10: Regression across students' gender, major and BI

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.232[a]	.054	.043	.55047	.054	4.820	2	169	.009

a. Predictors: (Constant), Gender, Major

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	3.589	.165		21.753	.000
Major	.137	.051	.200	2.670	.008
Gender	.124	.084	.110	1.468	.144

a. Dependent Variable: BI

Table 4.10 presents the result with students' Gender and Major as the independent variables and Behavioural intention (BI) as the dependent variable. It also shows that the coefficient of regression (R^2) is 0.054, which means that students' gender and major have a significant effect on BI (p>0.05). In the second table, however, it appears that students' gender has no significant influence on BI (level β=0.110; p>0.05), while students' major had a significant effect on BI (level β=0.200; p<0.05.

4.11: Regression across students' gender, major and ILA

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.198[a]	.039	.028	.66077	.039	3.438	2	169	.034

a. Predictors: (Constant), Gender, Major

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	3.613	.198		18.245	.000
Major	.159	.061	.196	2.591	.010
Gender	.030	.101	.022	.292	.771

a. Dependent Variable: ILA

The summary Table 4.11 shows that the coefficient of regression ($R2$) is 0.039 between students' Gender and Major as independent variables and Interactive learning activities (ILA) as the dependent variable ($p<0.05$), which means that students' Gender and Major have a significant effect on ILA. The second table, however, shows that students' gender has no significant influence on ILA (level $\beta=0.022$; $p>0.05$), whereas students' major had a significant effect on BI (level $\beta=0.196$; $p<0.05$).

4.12: Regression across students' gender, major and CUIT

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.209[a]	.044	.032	.74091	.044	3.845	2	169	.023

a. Predictors: (Constant), Gender, Major

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	3.415	.222		15.377	.000
Major	.091	.069	.100	1.326	.187
Gender	.270	.113	.179	2.376	.019

a. Dependent Variable: CUIT

The results in Table 4.12 show students' Gender and Major as independent variables and Confidence in using technology (CIUT) as the dependent variable. The coefficient of regression ($R2$) is .044 ($p<0.05$), which means that students' Gender and Major have a significant effect on CIUT. In the second table, the results indicate that students' major had no significant effect on CIUT (level $\beta=0.100$; $p>0.05$), while students' gender had a significant influence on CIUT (level $\beta=0.179$; $p<0.05$.

4.8. Discussion

E-learning has certainly become an important and growing trend in the use of e-learning in Saudi Arabia. It has been shown that students and instructors at Taif University see this new and innovative mode of learning as a good facilitator of learning; a technological tool that can surely enhance education in the future, especially that of female in this uncommon segregated environment. Having focused

on participants (students & instructors) perceptions and attitudes, this study has shown a favourable response to e-learning overall at the said university. This result is congruent with the findings of (Jafar, Iraj *et al.* 2008; Al-fahad 2009; Aixia and Wang 2011; Al-Harbi 2011; Alwraikat 2012; Oye, Iahad *et al.* 2012; Al-Shboul 2013). These study findings, in calculating students' actual opinions on this new genre of learning, taking into consideration the two variables of gender and specializations have indicated that:

1- Learner perceptions of e-learning are very positive overall, for both gender and academic specializations. The highest mean score was 4.32 for both gender and 4.42 for all subjects. Moreover, the mean statements in females were higher than those for males. The results can be attributed to students' attitudes towards contemporary educational technology and their willingness to adopt e-learning systems in their learning.

It is evident from the data analysis that gender and specialization do impact on how learners view e-learning. Nevertheless the great majority do believe that this new mode of learning would engender net benefits for their education.

2- To gauge the linear relationship between the key six constructs and students' gender and subjects, multiple linear regression was used. The study has found that statistically there is no significant differences between students' gender and attitude, e-learning self-efficacy and perceived usefulness at the level of $p<0.05$; neither is there any statistically significant influence between students' subject and attitude, e-learning self-efficacy and perceived usefulness. This may be attributed to the availability of ICT courses to students and tutors to bridge the gap in their lack of computer knowledge. Besides, social media has put computer culture right bang in the middle of every learner's life and has nudged everyone and especially students to delve into this mode of acquiring knowledge, albeit in primary, secondary or tertiary education. This result is consistent with what was found in previous studies (Alwraikat 2012; Agboola 2013; Suri and Sharma 2013), but it is inconsistent with (Alobiedat and Saraierh 2010).

The results of this study suggest that students' gender had no statistical significant effect on behavioural intention and interactive learning activities ($p<0.05$), while

there is a statistically significance effect between students' subjects and behavioural intention and interactive learning activities. According to this study, there is no statistical significance influence between students' major and confidence in using technology ($p<0.05$), whereas students' gender had a statistically significant effect on confidence in using technology. This finding corresponds with that of (Agboola 2013).

This study also shows noticeable differences in behavioural intention and interactive learning activities, in students' sciences and health sciences, whereas there were no differences in students' of humanities studies.

It is important to mention that one of the academic staff's negative attitude towards using e-learning may have affected the students' attitude towards adopting e-learning. This is congruent with the findings of (Sun, Ray *et al.* 2008), who link instructors' attitudes with the impact they have on e-learner satisfaction. In similar research, (Mahdizadeh, Biemans *et al.* 2008) studied factors influencing teachers and VLEs, Mahdizadeh et al. noted that teachers' perceptions of e-learning directly influenced learner attitudes to this mode of learning.(Mahdizadeh, Biemans *et al.* 2008), teachers' attitudes and opinions about web-based learning activities are effective in shaping their attitude towards the e-learning environment.

4.9. Chapter summary

VLEs have increasingly become an integral part of educational life. In recent years HE institutions have scrambled hurriedly to integrate ICT in the delivery of courses and the internet has played a major role in the popularity of such mode of education.
This technology, with all its negatives, is a blessing that has made education reach those places in the world impossible to reach by traditional means. The results obtained at Taif University have shown that students' perceptions about e-learning were positive. Testing the main constructs and related questions through statistical analysis raised two aspects:

1- Students' responses reflected the willingness of the students in all different categories to have e-learning established to greater benefit by its application in the

academic environment. Table 4.13 clearly shows the main constructs means and deviation, taken as an average of the questions' sub-sets, where the mean shows how high are the expectations with student involvement. The standard deviation showed how these responses were grouped around the mean, as indicators of students' enthusiasm for e-learning.

4.13: Mean and standard deviations in the main constructs

Descriptive Statistics			
constructs	Mean	Std. Deviation	N
ATT	3.9259	.56515	172
ESE	3.8314	.68635	172
PU	4.0244	.53123	172
BI	4.0426	.56264	172
ILA	3.9651	.67013	172
CUIT	4.0058	.75314	172

2- The above statistical analysis for correlation between the 20 questions and the main constructs can be observed, as reflected by the sub-sets of the 20 questions. A number of questions reflected each one of the main constructs, where the constructs illustrated different aspects of the first year students' engagement in academic life.

This chapter has constituted an exploratory study to determine students', as well as academic staff's attitudes towards using e-learning. The study showed that students have positive attitudes towards using e-learning on their courses. The results also show that the academic staff's attitudes towards using e-learning affected students' attitudes. Students had a more positive attitude towards using e-learning, while the academic staff had a less positive attitude towards it, which means that the academics' perspective may affect students' actual use of the learning management system.

In this chapter, the researcher has demonstrated that student attitudes regarding the use of LMSs and indeed ICT in their studies are a significant variable. More variables need to be explored and for this reason, the next chapter will first explore learner

satisfaction, behavioural intentions and the effectiveness of the Blackboard LMS, then look for ways to understand how to increase learner and instructor acceptance of this new mode of learning and finally how to enhance learning effectiveness.

Chapter 5

Students' perceived satisfaction, behavioral intentions and effectiveness of the Blackboard system at Taif University

---

5.1. Introduction

The first study (Chapter 4 of the thesis) has examined undergraduate students' perceptions towards applying e-learning at Taif University taking into consideration the effect of e-learning on both gender and academic specialization. Students were found to show positive attitudes about the use of LMSs in their studies, to be more positive than academic staff and the attitudes of the latter have an effect on those of the former.

Learner satisfaction is linked to their performance and is an important element for the investigation of a successful learning management system (Bolliger and Wasilik 2009). The study reported in this chapter investigate student satisfaction, behavioural intentions and the effectiveness of the Blackboard system, as well as the relationship between the students' use of Blackboard, their performance and students' attitudes towards it.

(Frederickson, Reed *et al.* 2005) noted the importance of evaluating distance education innovations, in terms of both learner outcomes and learner satisfaction. They argued for the need for well-designed and carefully controlled studies that

Investigate them. In particular, they emphasized that evaluation should be an integral part of the online course implementation stage, rather than an add-on at the end.

Technology when correctly used can enhance and transform teaching (Salter 2003). There is a wide variety of ways to measure the effectiveness of web-based courses. Scholars the likes of (Wells 2000) have explored the effects of mediated communication courses, and investigated variables such as prior computer knowledge, internet experience and learning styles on students' e-learning attitudes.

In examining students' satisfaction with the LMS (Blackboard), (Telia 2012) paid special attention to the factors that could play a part and predict their levels of satisfaction. He concluded that all the variables and factors in terms of net benefits, system content and quality and learning and delivery issues all seem to correlate with student satisfaction. This study has shown that these factors, when taken jointly, do predict 54% of the variations in student satisfaction. The consequence is that, were universities and other HE institutions to offer e-learning using LMS systems, they must work tirelessly to deliver the most comprehensive service and support to their users after their implementation.

To investigate the effectiveness of multimedia courseware and whether it enhances learning or not, scholars the likes of (Chang, Chen *et al.* 2011) have used Augmented Reality (AR) technology to implement an AR-learning system for English vocabulary learning. They concluded that it does indeed enhance learning, as many other studies have indicated, but there were various and important issues that are susceptible to hinder or cause negative effects. By investigating learners' satisfaction and behavioural intention, as well as how effective AR-learning systems were or can be, they showed that system quality was one of the most critical factors that affect, not only users' perceived satisfaction, but also their perceived usefulness of the system and AR-learning effectiveness. They also found that perceived self-efficacy, along with multimedia instruction, played a significant part in perceived satisfaction and perceived usefulness and AR usefulness, which can be verified.

In an attempt to explore the gender differences influencing E-Learning, Jung (2012) found a relationship between gender differences in the perceptions of dimensional impact on the quality of E-Learning. The researcher indicated that females had

perceived all quality domains and dimensions as being more important in evaluating the quality of E-Learning than males. Keller et al. (2007) also found gender to influence acceptance and in line with Jung's study (2012), females experienced a higher degree of performance expectancy than males did. Gonzalez-Gomez et al. (2011) found significant differences in E-Learning satisfaction between male and female students. The researchers indicated that female students achieve higher scores in E-Learning courses than male students. Moreover, female students assign more importance to teaching methods and planning than male students.

For (Sun, Ray *et al.* 2008) the following six variables: learners, instructors, courses, technology, design and environment sufficed to develop an integrated model. They needed to conduct a survey to investigate what factors may affect learners' satisfaction. Their work put forward some solutions that may help HE institutions in the integration of VLE technology, on how to overcome obstacles, and by the same token, reduce risks of failure during implementation. Their findings revealed that learners' perceived satisfaction with e-learning was affected by the following critical factors: Course quality and flexibility, Usefulness and easy use of the LMS and the technology involved, the variety and diversity of assessments, and above all, learner ICT anxiety.

Other scholars like (Liaw and Huang 2013) turned their attention to learner self-regulation in e-learning environments, to try and understand learner attitudes towards the whole process of e-learning. Their findings show that the following factors: interactive learning environments, users' perceived satisfaction and ICT system perceived usefulness were all key variables necessary to predict perceived self-regulation in e-learning environments. They concluded that perceived usefulness can be impacted by interactive learning environments, perceived self-efficacy and perceived satisfaction, and the latter is closely linked to the perceived anxiety of users.

If one takes the issue from a user's perspective, there is no doubt that all the above cited factors are critical variables that play influential roles in the success of LMS in blended learning environments. Another scholar (Al-Busaidi 2012) conducted an examination of how the above factors impacted learners' continuous intention to use LMS in blended learning. He found that, for the adoption of LMS, these factors are

closely related to various characteristics, such as instructor and learner characteristics, attitudes of both participants, their ICT use anxieties, their technological experiences, their motivation and responsiveness to, control of and, more importantly, to the quality and flexibility of LMSs themselves, and the efficiency of their delivery and subsequent user training and support. The study was based on 512 learners, and the results were congruent with the findings of other researchers in the field. However, in this particular study, it was clear that learner self-efficacy, instructor online responsiveness and management support were more than a hindrance, and this was perhaps was due to the lack of ICT literacy in general on both sides and the attitudes of teachers being entrenched in the past. In other words, it was difficult for some instructors to come to terms with this new mode of teaching, having spent the best part of their professional lives in the traditional face-to-face learning environments.

The introduction of internet use in the traditional face-to-face educational field in general and in distance learning or e-learning in particular has aroused the curiosity and the interest, not only of education organization officials, but also many a scholar and researcher around the world. (Sandersa and Morrison 2011) undertook the task of looking at the introduction of a web component into the delivery of courses and its effect or effects on student attitudes. For this, they decided to examine the delivery of a general biology course in e-learning mode to midsize rural university non-major undergraduates. They discovered that the web component, in allowing asynchronous learning outside the classroom, was favoured by many students for varied reasons: it hugely increased student-to-student interaction in class and over the web. By setting essays, short questionnaires and MCQs (multiple choice questions) and engaging in class discussion, they managed to assess and measure the effects of the introduction of this web-enhancement tool. The results were startling and unexpected to say the least, and quite contrary to what was generally thought and accepted. In this instance, the attitudes of female students on the course towards web-based learning were found to be significantly more positive than those of their male counterparts. What is more significant is that they discovered that female students were found to use the internet more often than their male colleagues. The course was designed to allow students to use the web to solve quizzes, use the bulletin board, download lessons and do problem-solving questions, respond to lecturer queries and access their marks and grades. All of these facilities allowed for asynchronous learning.

Looking into the topic, (Al-Hadrami 2014) investigated the factors and variables that could have a significant impact on e-learning. In examining a host of factors closely associated with the learner, such as the demographic, physical, behavioural, financial and emotional factors, and an array of variables associated with the technical side of e-learning, he drew the following conclusions: age was very influential on motivation and there were significant gender differences in student perceptions of interaction with instructors. Computer ownership also showed significant differences regarding student participation and performance.

Other researchers (Erdogan, Bayram *et al.* 2011) decided to investigate the factors that affect learner achievements and attitudes to VLEs education. The participants consisted of a cohort of 127 male and female students enrolled on an e-MBA at Bilgi University. The findings of this study revealed that web-based education does indeed have a positive effect on improvement in academic results. As for the effect of web-based education on attitudes towards e-learning, the study indicated that using the internet had impacted on learners' motivation and indeed increased their interest in attending lessons.

As technologies have developed and become, not only more readily available and easily and cheaply accessible, but also very practical, extremely useful and, more importantly, far reaching and even life-changing for those who cannot afford the exponentially increasing cost of traditional face-to-face education. We believe that it is imperative, and of huge and significant interest, even if it is from only an academic perspective, to try and determine whether this availability and increased use of online teaching resources have enhanced students' academic performances, and, by the same token, improved learning outcomes.

In dissecting and analyzing the findings of a survey conducted on a cohort of first-year accounting students to gauge the level of their engagement with and commitment to the use of online learning resources, the scholar (Wong 2013) indicated that, despite the availability of three new online options easily accessible to them via WebCT, the majority of students have not only expressed, but have shown strong support for the traditional face-to-face delivery approach as the more effective learning option. Furthermore the results also revealed a close and extremely positive

relationship between students' academic results and the level of their engagement with online resources.

Similar work was carried out by (Daniel Strickera, Weibela *et al*. 2011). These scholars took the steps to explore the topic. They looked at a psychology undergraduate course where a virtual learning environment (VLE) was blended with traditional face-to-face lectures. Demographic data, attitudes towards the subject, motivation, computer literacy, quality and availability of the e-learning resources and learning efforts were gauged by means of participants' self-reporting. To this they added grades obtained in the final exam as a learning outcome. Their objective was to determine differences in the impact on performance between the cohort of VLE users and its non-user counterpart. The mean performance in the VLE was taken as a predictor for success in the final exam. The results have shown that 'heavy' VLE users performed better than non-users in the final exam. After careful analysis of the findings, they concluded that the best predictor for grades in the final examination was how often the VLE was used.

Another scholar (Hammoud 2010) looked at the issue from a different angle. This time the relationship between learner attitudes to WebCT and that of their instructors and the relationship between their use of WebCT and their eventual performance were investigated. The study indicated that learners have shown a positive attitude to using WebCT and their instructors' attitudes to it have had huge and positive effects on learner attitudes. The more positive the leaders' attitudes were the more positive and enthusiastic the students were in using the platform. In turn, this enthusiasm was found to impact positively on students' achievements. However, there no indication that or compelling evidence to confirm or refute that the students performances were affected by their instructors knowledge and use of WebCT.

Scholars (Mazza and Dimitrova 2004) have shown that data generated by learning management systems was important, because it can be used to help instructors become aware of their students' performance in online courses. Monitoring students' learning is mandatory in order to ensure high quality education. Blackboard log file data was found to be useful for instructors to quickly and more accurately grasp information about the social, cognitive and behavioural aspects of students. This information was provided in the form of tables, which was found to be helpful in

clearly explaining problems with LMS, the log files used being a main source of data that the study's results were based on.

Taking all the previously cited studies, the current study looks at e-learning platforms and duly explores learner satisfaction and their behaviour and the effectiveness of the LMS (Blackboard). Additionally, it undertakes to scrutinize the relationship, if any, between students' use of e-learning platforms in general and this LMS in particular, and their performances and attitudes towards both.

Understanding learners' attitudes towards e-learning is an important and critical step in the path to increasing e-learning usage and positively improve its overall effects. For this reason, the present study endeavours to investigate learners' attitudes towards e-learning in general, to try to understand how to improve user satisfaction, to understand their behavioural intentions, how to facilitate and increase accessibility and how to enhance e-learning effectiveness. The LMS (Blackboard) adopted by Taif University as an e-learning platform and the cohort of students using it will be the subject of this investigation.

Following in the footsteps of a study carried out by (Liaw and Huang 2007), this present study looked at the environmental characteristics such as the e-learning system quality and multimedia instruction. Other characteristics like learner self-efficacy and perceived satisfaction with Blackboard were also explored. This has brought the researcher to formulate the following hypotheses:

H1: Satisfaction with the LMS Blackboard system is influenced by the LMS quality, learning activities and the self-efficacy of learners.
H2: Usefulness of the LMS is influenced by its quality and also to instruction and learners' self-efficacy.
H3: User behaviour is affected by how satisfied one is with the LMS in use; here the LMS Blackboard
H4: Effectiveness of the Blackboard system is influenced by multimedia instruction, learning activities and the LMS quality.

5.2. Research Methodology

Similarly to the first study, the participants in this second study were undergraduate students enrolled on traditional face-to-face courses supported by a learning management system; in this study the Blackboard LMS. The study was conducted at the University of Taif in The kingdom Saudi Arabia. The use of Blackboard was mandatory for both students and academic staff. Considered as the most effective tool for virtual learning across the world, Blackboard was chosen and adopted as the main vehicle for student course information (lecture notes, timetables and study guides). The sample for the study was made up of students taking an English language course. It was selected in order to examine studies in three different subject areas with both genders, simultaneously. The participating students, albeit chosen at random, were split into three groups made up of second year undergraduate students in different academic specializations.

5.3. Data collection instruments

A combination qualitative and quantitative approach was used to gauge how this LMS faired in this newly introduced VLE at Taif University. This combined approach was chosen to allow for the complexity of a web-based learning environment to be captured and understood in greater detail by mixing methods, rather than using one single research approach as stated by (Owston 2000).

A questionnaire was designed to measure students' attitudes towards using the Blackboard system. A 5-pointer Likert scale was used in the design of the questionnaire (ranging from 1 “strongly disagree” to 5 “strongly agree”). The questionnaire consisted of two parts: demographics and statements. It was developed to be valid and reliable after examining survey methods previously used such as in studies by (Liaw 2008; Chang, Chen *et al.* 2011).

Reliability Test:

The aim of carrying out the pilot study in this research is to increase confidence that no essential issues have been missed by predicting the response rate and thus ensuring the reliability and validity of the measures used to measure the variables of interest, and to obtain valuable feedback regarding the wording and general appearance of the questionnaire. The pilot study is performed in the same fashion as that used in the main study. Thirty copies (30) were distributed to the undergraduates taking part. They were from three majors (Sciences, Humanities and Health sciences) in a pilot study at Taif University. Twenty one (21) questionnaires were completed. The study tested for the reliability of each of the constructs using Cronbach's *alpha*. The data was analysed using SPSS version 20. The values as shown in Table 5.1. Although the results were not as high as those obtained in some prior studies, they were are above 0.70 and still in a range deemed acceptable, based on common values recommended in the contemporary literature by Nunnally & Berstein, 1994 cited in (Moran, Hawkes *et al.* 2010; Tagoe 2012). Hence, the results demonstrate that the questionnaire is a reliable measurement instrument, and can be used in this research.

The students could add any comment or concerns they had regarding using the Blackboard system as an answer to the open-ended question (Appendix 3). In addition, the questions aimed at collecting information on the following areas:

- The use of the Blackboard system in their courses.
- Student-student interaction via the Blackboard system.
- Student-information interaction via the Blackboard system.
- Student-teacher interaction via the Blackboard system.

5.1: Alpha coefficients for constructs

constructs	items	Cronbach Alpha
Perceived self-efficacy	3	0.784
Perceived satisfaction	4	0.728
Perceived usefulness	3	0.752

Behavioral intention	3	0.717
e-learning system quality	4	0.763
Interactive learning activities	3	0.728
E-learning effectiveness	3	0.711
Multimedia instruction	3	0.762

The Blackboard tracking system provides detailed information on the number of times students visit a page using Blackboard and the amount of time they spend exploring it. It also provides the number of hits or students' communications not only with their peers, but also with their course leaders. All the data obtained from the tracking system is gathered and analysed to gauge the actual use of the LMS by students, to calculate accurately the amount of time spent using it and to find out if that has any bearing on achievements and what activities enhance learning. The data is meant to describe how students perform on Blackboard; in other words how many times they had accessed each page, how much time they had spent, how many times they had used the communication board, the home page, the content page, the assignment page, and read or posted, etc. Data from one course term time which covers samples of students of both genders and course leaders from three academic specializations is collected and saved each week right through term time. The Log file data is essential to fully understand student behaviour and performance on web-based courses and to obtain information about how instructors are or are not using the LMS Blackboard to meet their students' needs (Mazza and Dimitrova 2004)

Appendix 4 shows the open-ended structured interviews which the researcher has endeavoured to conduct skilfully in order to obtain the information sought and required (Hammoud 2010). Such interviews which focus on gathering pertinent information about specific issues were designed to obtain background information on the academic staff and their experience of using the LMS Blackboard for the delivery of the modules to be studied. Moreover, these interviews were also aimed to gather information about a number of variables:

- Instructors' satisfaction and experience of using the Blackboard system after applying e-learning.

- The effects of using Blackboard on the teaching-learning processes and its influence on learners' behavioral intention
- The communication between the learners and the instructors via the Blackboard communication software.

5.4. Participants

A cohort of Taif University undergraduates took part and used the LMS Blackboard as a learning tool. Questionnaires were randomly distributed to 135 of them. After using the system for seven months, participants were asked to complete the questionnaire that included demographic information covering age, gender and academic specialization. Eight different constructs were tested (see Table 5.3) Students in all specializations were to respond after they were guaranteed confidentiality. All the 135 students filled the questionnaire, but 16 chose to miss some answers and these were discarded, living of 119 students in three subjects, namely: Scientific major N= 39, Humanities major N= 39, Health sciences major N=41 and both genders: Male N= 58 (48.7%), Female N=61 (51.3%). In addition, three lecturers were interviewed during the course.

5.5. Procedure

The population in the study consists of male and female undergraduate students at the University of Taif chosen at random. Statistical data showing student use of the Blackboard system were collected regularly using the on board tracking system. The statistical data was mainly figures giving information about the number of times each student has visited web pages of the course and the number of times each student has read or posted something on the communication board. It also provided information about how many times each page within a course was visited and how the time the learner has spent on it. In order to measure student attitude to the Blackboard system, questionnaires was given to the students during term time. These were submitted on paper to all the students taking part during class time. Three course leaders were interviewed, and their attitudes to the use of the LMS used on the courses were

measured. The information was saved for each subject separately for both genders in order to be able to compare the results later on in the study.

5.6. Data analysis

A descriptive statistical analysis method was used to reveal the means and standard deviations in the demographic information that covered gender and field of study. This method allowed for the means (average across items) and standard deviations for the constructs to be included (using SPSS software). The ANOVA test was used to measure whether the means of several groups were significantly different or not. A *post-hoc* test to compare the different scores to a critical value was carried out to gauge the differences between the means of all of the academic specializations in order to find out if there were any significant differences.

To indicate the strength, significance and the direction of the relationship between the independent variable (academic specialization and gender) and the dependent variables (learners' attitude towards the Blackboard system, learners' use of Blackboard and learners' achievements), the researcher opted for a Pearson's correlation. Results of students' academic achievement on the courses were correlated with the measures of Blackboard system in use (e.g. Blackboard hits and communication board use). The relationship between the students' achievements and their use of Blackboard was also analysed.

Frequency tests were used to analyse the numerical data given by the tracking system log files. This data encompasses the figures giving the learner accurate details on the use of Blackboard, for example: the number of messages that learners' read and posted on the communication board.

As there were only three interviews in this study, a thematic analysis technique was used to analyse them to explain the results obtained from the questionnaires and the tracking system.

5.7. Findings

5.7.1. Academic instructor behaviour

Instructors used the Blackboard system in a similar way for their observed courses (three subjects and both genders). All of them were teaching English language course in three subjects. One of them was teaching male and female students via a video link from another room, while the others were just teaching male students. The education system in Saudi is unique, because it is gender segregated. Some of these instructors chose to publish lecture slides, course materials and various information and avoided using the available LMS tools or any other functions on the Blackboard system to design specific course materials. Notably, the attitudes of the instructors towards using the Blackboard system were positive. They suggested that it was a useful learning system, since it gave practical helped to shy students

One of them stated: "*The Blackboard system is very helpful to shy people, to give them a good opportunity to engage in the learning process* ". In addition, they stated that students' use of Blackboard is still weak on their courses. A second respondent said: "*...but I noticed that the students do not use the Blackboard system lots in the course throughout the semester*". Importantly, the instructors stated what the reasons were behind that, one of them, who was teaching both genders, saying: "*I see that the technical problems and the lack of training for using the Blackboard system by students and instructors are one of the important problems which led to reduce the motivation for the students at the University* ". Another instructor confirmed that, saying: "*There has been zero training. I am sure there are many useful tools, but where is the training for teachers and students*". He added: " ... *Until then, the university spent huge amount of money with no benefits like smart boards in rooms with no working software*". A third one claimed:*"... but because I cannot fully understand some blackboard tools work, students do not get the feedback they need. I am about to stop using them because it is too much work to figure out*".

The majority of instructors agreed that the LMS Blackboard was a great help for both themselves and their students despite the fact that neither them nor learners had much

experience in using LMSs. However, they complained about the lack of technical support and training on the part of the institution and viewed it as set back in the face of the introduction of this new technological learning tool.

5.7.2. Questionnaire findings

Frequency tables were constructed to look at the data gathered to summarise the statistics related to the questionnaires (mean, standard deviation). Table 5.2 shows the general characteristics of learners; 51.3% of the respondents (N=61) were female students, while 48.7% were male (N=58). 10 students were below 19 years old, 104 students were in the age range 19–21, and 5 students were over 21 years. The findings showed that 39 students were from Sciences, 39 students from Humanities and 41 students from Health Sciences

5.2: Demographic profile of participates

Variable	Category	Frequency	Valid Percentage
Age	Less than 19 y	10	8.4%
	From19 to 21 y	104	87.4%
	Bigger than 21 y	5	4.2%
Gender	Male	58	48.7%
	Female	61	51.3%
Academic specialization	Science	39	32.8%
	Humanities	39	32.8%
	Health sciences	41	34.5%

5.3: The mean, standard deviation and item-total correlation

items	Mean	Std. Deviation	Corrected Item-Total Correlation
Perceived self-efficacy	3.09	1.111	
I do not feel confident using the Blackboard system	3.04	1.272	.613
I feel confident operating the Blackboard system functions	3.03	1.221	.694
I feel confident using online the Blackboard system contents.	3.20	1.232	.719

Perceived satisfaction	3.04	1.060	
I am dissatisfied with using the Blackboard system as a learning assisted tool**.**	3.09	1.456	.733
I am satisfied with using the Blackboard system functions	3.03	1.245	.730
I am dissatisfied with the Blackboard system contents	2.93	1.240	.638
I am satisfied with multimedia instruction	3.12	1.373	.623
Perceived usefulness	3.31	1.090	
I believe the Blackboard system contents are informative	3.29	1.151	.670
I believe the Blackboard system is a useful learning tool	3.44	1.332	.843
I do not believe the Blackboard system contents are useful	3.22	1.354	.672
Behavioral intention	3.04	1.071	
I intend to use the Blackboard system to assist my learning	3.24	1.396	.785
I do not intend to use the Blackboard system content to assist my learning	3.13	1.369	.721
I intend to use the Blackboard system as an autonomous learning tool	2.74	1.218	.504
e-learning system quality	2.71	.939	
I am dissatisfied with the Blackboard system functions	2.82	1.249	.621
I am satisfied the Internet speed	2.66	1.457	.452
I am satisfied with the Blackboard system content	3.07	1.280	.776
I am dissatisfied with the Blackboard system interaction	2.30	1.161	.404
Interactive learning activities	3.08	1.203	
I would like to share my the Blackboard system experience	3.18	1.306	.756
I do not believe the Blackboard system can assist teacher-learner interaction	2.99	1.476	.693
I believe the Blackboard system can assist learner-learner interaction	3.08	1.462	.703
E-learning effectiveness	3.21	1.145	
I believe the Blackboard system can assist learning efficiency	3.38	1.315	.726
I believe the Blackboard system can assist learning performance	3.25	1.329	.826
I do not believe the Blackboard system can assist learning motivation	3.00	1.269	.767
Multimedia instruction	2.88	1.030	
I like to use voice media instruction	2.74	1.224	.603
I like to use video media instruction	3.07	1.307	.576
I do not like to use multimedia instruction	2.82	1.332	.526

In Table 5.3 above, descriptive statistics analysis reveals the mean and standard deviation of items in each dimension; in other words the means for responses ranged from 2.30 to 3.44. Question 9 being: "I believe the Blackboard system is a useful learning tool" scored the highest. The lowest scores were for question 17: ''I am dissatisfied with the Blackboard system interaction", while the means for the factors were close to each other, ranging from 2.71 for e-learning system quality to 3.31 for Perceived usefulness.

A Wilcoxon Test was carried out to single out any differences between males and females as shown in Table 5.4 below. The findings indicated that the difference was statistically significant (Z=3.989, p=000). The results also showed that female students were more positive about using the Blackboard system than males.

5.4: Comparison of mean's across males and females using the Wilcoxon Test

		N	Mean Rank	Sum of Ranks
Female - Male	Negative Ranks	5[a]	3.70	18.50
	Positive Ranks	21[b]	15.83	332.50
	Ties	0[c]		
	Total	26		

a. Female < Male

b. Female > Male

c. Female = Male

	Female - Male
Z	-3.989-[b]
Asymp. Sig. (2-tailed)	.000

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

5.5: *post-hoc* tests across Sciences, Humanities and Health Sciences

Tukey HSD

Dependent Variable	(I) Major	(J) Major	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Perceived self-efficacy	Science	Humanities	-.44444-	.24132	.161	-1.0174-	.1285
		Health sciences	-.83782-*	.23836	.002	-1.4037-	-.2719-
	Humanities	Science	.44444	.24132	.161	-.1285-	1.0174
		Health sciences	-.39337-	.23836	.229	-.9593-	.1725

	Health sciences	Science	.83782*	.23836	.002	.2719	1.4037
		Humanities	.39337	.23836	.229	-.1725-	.9593
	Science	Humanities	-.44231-	.23644	.152	-1.0037-	.1190
		Health sciences	-.51986-	.23354	.071	-1.0743-	.0346
Perceived satisfaction	Humanities	Science	.44231	.23644	.152	-.1190-	1.0037
		Health sciences	-.07755-	.23354	.941	-.6320-	.4769
	Health sciences	Science	.51986	.23354	.071	-.0346-	1.0743
		Humanities	.07755	.23354	.941	-.4769-	.6320
	Science	Humanities	-.52137-	.23810	.077	-1.0867-	.0439
		Health sciences	-.76193-*	.23518	.004	-1.3203-	-.2036-
Perceived usefulness	Humanities	Science	.52137	.23810	.077	-.0439-	1.0867
		Health sciences	-.24057-	.23518	.564	-.7989-	.3178
	Health sciences	Science	.76193*	.23518	.004	.2036	1.3203
		Humanities	.24057	.23518	.564	-.3178-	.7989
	Science	Humanities	-.52991-	.23598	.068	-1.0902-	.0303
		Health sciences	-.64353-*	.23308	.018	-1.1969-	-.0902-
Behavioral intention	Humanities	Science	.52991	.23598	.068	-.0303-	1.0902
		Health sciences	-.11361-	.23308	.877	-.6670-	.4398
	Health sciences	Science	.64353*	.23308	.018	.0902	1.1969
		Humanities	.11361	.23308	.877	-.4398-	.6670
	Science	Humanities	-.78205-*	.20169	.001	-1.2609-	-.3032-
		Health sciences	-.31848-	.19921	.250	-.7914-	.1545
e-learning system quality	Humanities	Science	.78205*	.20169	.001	.3032	1.2609
		Health sciences	.46357	.19921	.056	-.0094-	.9365
	Health sciences	Science	.31848	.19921	.250	-.1545-	.7914
		Humanities	-.46357-	.19921	.056	-.9365-	.0094
	Science	Humanities	-.82051-*	.25962	.006	-1.4369-	-.2041-
		Health sciences	-.84449-*	.25643	.004	-1.4533-	-.2357-
Interactive learning activities	Humanities	Science	.82051*	.25962	.006	.2041	1.4369
		Health sciences	-.02397-	.25643	.995	-.6328-	.5848
	Health sciences	Science	.84449*	.25643	.004	.2357	1.4533
		Humanities	.02397	.25643	.995	-.5848-	.6328
	Science	Humanities	-.52991-	.25285	.095	-1.1302-	.0704
		Health sciences	-.67626-*	.24975	.021	-1.2692-	-.0833-
E-learning effectiveness	Humanities	Science	.52991	.25285	.095	-.0704-	1.1302
		Health sciences	-.14634-	.24975	.828	-.7393-	.4466
	Health sciences	Science	.67626*	.24975	.021	.0833	1.2692
		Humanities	.14634	.24975	.828	-.4466-	.7393
	Science	Humanities	-.72650-*	.22349	.004	-1.2571-	-.1959-
		Health sciences	-.63811-*	.22075	.013	-1.1622-	-.1140-
Multimedia instruction	Humanities	Science	.72650*	.22349	.004	.1959	1.2571
		Health sciences	.08839	.22075	.915	-.4357-	.6125
	Health sciences	Science	.63811*	.22075	.013	.1140	1.1622
		Humanities	-.08839-	.22075	.915	-.6125-	.4357

*. The mean difference is significant at the 0.05 level.

To look for signs of any differences between academic specializations, a test was carried out. Table 5.5 above shows that there are significant differences in terms of Perceived self-efficacy, Perceived usefulness, Behavioural intention, e-learning system quality, Interactive learning activities, E-learning effectiveness, Multimedia instruction ($p < 0.05$), while no significant differences were found between the means for Perceived satisfaction, at $p > 0.05$ to academic specializations. It is noted that statistically significant differences were mostly between Science and Health science subjects.

Table 5.6. indicates that most of variables correlate significantly with one another and the correlations are less than 0.82.

5.6: Correlation analyses of variables

Variables	1	2	3	4	5	6	7	8
Perceived self-efficacy								
Perceived satisfaction	.678**							
Perceived usefulness	.653**	.781**						
Behavioral intention	.634**	.770**	.785**					
e-learning system quality	.607**	.723**	.646**	.638**				
Interactive learning activities	.614**	.727**	.744**	.731**	.662**			
E-learning effectiveness	.650**	.762**	.773**	.806**	.678**	.817**		
Multimedia instruction	.499**	.548**	.650**	.595**	.575**	.649**	.675**	

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

Table 5.7 shows the stepwise multiple regression results.

5.7: Regression findings of predicted path relationships

H*	Dependent Variable	Independent Variables	β	R^2	p
H1	Perceived satisfaction	e-learning system quality	0.531	0.632	0.000
		Interactive learning activities	0.152	0.014	0.029
		Perceived self-efficacy	0.464	0.607	0.000
H2	Perceived usefulness	e-learning system quality	0.540	0.648	0.000
		Multimedia instruction	0.417	0.553	0.000
		Perceived self-efficacy	0.277	0.315	0.003
H3	Behavioral intention	Perceived satisfaction	0.503	0.619	0.000
		Perceived usefulness	0.470	0.606	0.000
H4	E-learning effectiveness	e-learning system quality	0.592	0.623	0.000
		Interactive learning activities	0.213	0.031	0.008
		Multimedia instruction	0.452	0.504	0.000

To examine H1, the effect of the variables involved, i.e. e-learning system quality, Interactive learning activities and perceived self-efficacy on perceived satisfaction were analysed. The results have proved that quality of the LMS was the most significant contributor to the satisfaction of users (F= 130.925, R^2= 0.528, p = 0.000).

Similarly for H2, the analysis has indicated that in this study too, quality was most significant variable in terms of satisfaction of users. (F= 144.830, R^2= 0.553, p = 0.000). E-learning system quality was the biggest contributor.

To test H3, the results of the analysis have revealed that both factors perceived satisfaction was the biggest contributing factor. (F= 187.323, R^2= 0.616, p = 0.000).

To investigate H4, the biggest predictor on e-learning effectiveness was the LMS quality (F = 135.133, R^2= 0.536, p = 0.000).

The answers to the open-ended question have indicated most students had faced technical problems and needed help using Blackboard in all subjects. Moreover, the students stated that they were not given training on how to use the Blackboard system by the University, except for some instructions in a hand-out. The only difference noticed was that female learners liked the LMS Blackboard more than their male counterparts and were more complementary about it.

5.7.3. The findings from the Blackboard tracking system

These results have indicated that students tended to use the LMS Blackboard frequently in three subjects. Students visited the "home page", "content page", "assignment page", "files page" and board assigned for communication.

5.8: Summary of learners' use of Blackboard

	N	Minimum	Maximum	Mean	Std. Deviation
Homepage	119	3	8	5.49	1.00105
Time	119	2.34	6.30	4.67	.85749
Read	119	3	8	5.67	1.06034
Post	119	0	1	.1712	.09186
Assignment submit	119	1	1	.7563	.10527
Content folder	119	2	4	3.25	.36352
Files	119	2	4	2.79	.43023

Learner use of Blackboard on the observed course is summarized in Table 5.8 above. The following details explain that fully and clearly: “Homepage” is the number of times a student accessed Blackboard on the observed course; “Time” is the total time, in minutes, that each student spent using Blackboard; “Read” and “Post” is the number of messages that students read and posted on the communication tool; “Assignment submit” shows if the students submitted their assignment; “Content folder” is the number of times students accessed the content folder containing all the

lecture slides and other course materials; "Files" is the number of times that students accessed or saved a file in the content folder.

5.9: Means of learner visits to each page on Blackboard. (The learners were grouped based to gender)

		Sum of Squares	df	Mean Square	F	Sig.
Homepage	Between Groups	4.604	2	2.302	2.350	.100
	Within Groups	113.645	116	.980		
	Total	118.249	118			
Time	Between Groups	7.044	2	3.522	5.125	.007
	Within Groups	79.719	116	.687		
	Total	86.763	118			
Read	Between Groups	15.028	2	7.514	7.409	.001
	Within Groups	117.642	116	1.014		
	Total	132.670	118			
Post	Between Groups	.057	2	.028	3.489	.034
	Within Groups	.939	116	.008		
	Total	.996	118			
Assignment submit	Between Groups	.059	2	.029	2.719	.070
	Within Groups	1.249	116	.011		
	Total	1.308	118			
Content folder	Between Groups	.700	2	.350	2.726	.070
	Within Groups	14.894	116	.128		
	Total	15.594	118			
Files	Between Groups	5.743	2	2.871	20.690	.000
	Within Groups	16.099	116	.139		
	Total	21.842	118			

An ANOVA test was used to determine if they were any differences between students' use of Blackboard because of gender. Table 5.9 shows statistically significant differences in time (F=5.125, $p<0.05$, read F=7.409, $p<0.01$, post F=3.489, $p<0.05$ and files F=20.690, $p<0.001$), whereas no significant differences were found for homepage (F=2.350, $p>0.05$, assignment submit F=2.719, $p>0.05$ and content folder F=2.726, $p>0.05$).

5.10: Means of learner visits to each page on Blackboard. (The learners were grouped based to field of study)

Tukey HSD

Dependent Variable	(I) Major	(J) Major	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Homepage	Science	Humanities	.23397	.22414	.551	-.2982-	.7661
		Health Sciences	-.24578-	.22139	.510	-.7714-	.2799
	Humanities	Science	-.23397-	.22414	.551	-.7661-	.2982
		Health Sciences	-.47975-	.22139	.081	-1.0054-	.0459

	Health Sciences	Science	.24578	.22139	.510	-.2799-	.7714
		Humanities	.47975	.22139	.081	-.0459-	1.0054
	Science	Humanities	-.02808-	.18773	.988	-.4738-	.4176
		Health Sciences	-.52547-*	.18543	.015	-.9657-	-.0852-
Time	Humanities	Science	.02808	.18773	.988	-.4176-	.4738
		Health Sciences	-.49739-*	.18543	.023	-.9376-	-.0572-
	Health Sciences	Science	.52547*	.18543	.015	.0852	.9657
		Humanities	.49739*	.18543	.023	.0572	.9376
	Science	Humanities	.83974*	.22805	.001	.2983	1.3812
		Health Sciences	.20184	.22525	.644	-.3329-	.7366
Read	Humanities	Science	-.83974-*	.22805	.001	-1.3812-	-.2983-
		Health Sciences	-.63790-*	.22525	.015	-1.1727-	-.1031-
	Health Sciences	Science	-.20184-	.22525	.644	-.7366-	.3329
		Humanities	.63790*	.22525	.015	.1031	1.1727
	Science	Humanities	.00321	.02038	.986	-.0452-	.0516
		Health Sciences	-.04417-	.02013	.076	-.0920-	.0036
Post	Humanities	Science	-.00321-	.02038	.986	-.0516-	.0452
		Health Sciences	-.04737-	.02013	.053	-.0952-	.0004
	Health Sciences	Science	.04417	.02013	.076	-.0036-	.0920
		Humanities	.04737	.02013	.053	-.0004-	.0952
	Science	Humanities	-.05449-	.02350	.057	-.1103-	.0013
		Health Sciences	-.02228-	.02321	.604	-.0774-	.0328
Assignment submit	Humanities	Science	.05449	.02350	.057	-.0013-	.1103
		Health Sciences	.03221	.02321	.351	-.0229-	.0873
	Health Sciences	Science	.02228	.02321	.604	-.0328-	.0774
		Humanities	-.03221-	.02321	.351	-.0873-	.0229
	Science	Humanities	.13141	.08114	.242	-.0612-	.3241
		Health Sciences	-.05058-	.08015	.803	-.2409-	.1397
Content folder	Humanities	Science	-.13141-	.08114	.242	-.3241-	.0612
		Health Sciences	-.18199-	.08015	.064	-.3723-	.0083
	Health Sciences	Science	.05058	.08015	.803	-.1397-	.2409
		Humanities	.18199	.08015	.064	-.0083-	.3723
	Science	Humanities	.54167*	.08436	.000	.3414	.7420
		Health Sciences	.29917*	.08333	.001	.1013	.4970
Files	Humanities	Science	-.54167-*	.08436	.000	-.7420-	-.3414-
		Health Sciences	-.24250-*	.08333	.012	-.4403-	-.0447-
	Health Sciences	Science	-.29917-*	.08333	.001	-.4970-	-.1013-
		Humanities	.24250*	.08333	.012	.0447	.4403

*. The mean difference is significant at the 0.05 level.

A *post-hoc* test was carried out to determine the differences between students' use of the Blackboard system according to academic specialization. Table 5.10 indicates that academic specialization does not impact significantly, ($p>0.05$), while there was a significant effect between academic specializations in the total time that students spend using Blackboard, ($p<0.05$), but this did not occur in all subjects.

5.11: Means of learners' grades on all their assignments and exams for the course. (The students were grouped based to gender)

		Sum of Squares	df	Mean Square	F	Sig.
Total grade	Between Groups	105.463	2	52.732	2.110	.126
	Within Groups	2898.385	116	24.986		
	Total	3003.849	118			
Mid-term exam	Between Groups	6.386	2	3.193	1.223	.298
	Within Groups	302.892	116	2.611		
	Total	309.277	118			
Final exam	Between Groups	46.666	2	23.333	4.611	.012
	Within Groups	586.981	116	5.060		
	Total	633.647	118			
Coursework	Between Groups	3.132	2	1.566	.608	.546
	Within Groups	298.801	116	2.576		
	Total	301.933	118			

To find out if there were any the differences between students' grades because of gender, a test ANOVA was performed. The results, as indicated in Table 5.11, were that gender did not affect students' grades (coursework) (F=0.608, p>0.05), but it is significant in exams (F=4.61, p<0.05).

5.12: Means of learners' grades on all their assignments and exams for the course. (The students were grouped according to field of study)

Tukey HSD

Dependent Variable	(I) Major	(J) Major	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Total grade	Science	Humanities	-1.051-	1.132	.623	-3.74-	1.64
		Health Sciences	-2.293-	1.118	.105	-4.95-	.36
	Humanities	Science	1.051	1.132	.623	-1.64-	3.74
		Health Sciences	-1.241-	1.118	.510	-3.90-	1.41
	Health Sciences	Science	2.293	1.118	.105	-.36-	4.95
		Humanities	1.241	1.118	.510	-1.41-	3.90
Mid-term exam	Science	Humanities	-.359-	.366	.590	-1.23-	.51
		Health Sciences	-.559-	.361	.273	-1.42-	.30
	Humanities	Science	.359	.366	.590	-.51-	1.23
		Health Sciences	-.200-	.361	.845	-1.06-	.66
	Health Sciences	Science	.559	.361	.273	-.30-	1.42
		Humanities	.200	.361	.845	-.66-	1.06
[illegible]	Science	Humanities	-.308-	.509	.818	-1.52-	.90

		Health Sciences	-1.445-*	.503	.013	-2.64-	-.25-
	Humanities	Science	.308	.509	.818	-.90-	1.52
		Health Sciences	-1.138-	.503	.066	-2.33-	.06
	Health Sciences	Science	1.445*	.503	.013	.25	2.64
		Humanities	1.138	.503	.066	-.06-	2.33
Coursework	Science	Humanities	-.385-	.363	.542	-1.25-	.48
		Health Sciences	-.288-	.359	.702	-1.14-	.56
	Humanities	Science	.385	.363	.542	-.48-	1.25
		Health Sciences	.096	.359	.961	-.76-	.95
	Health Sciences	Science	.288	.359	.702	-.56-	1.14
		Humanities	-.096-	.359	.961	-.95-	.76

*. The mean difference is significant at the 0.05 level.

A *post-hoc* test was conducted if there were any significant differences between students' grades linked to academic specialization. The findings in Table 5.12 suggest that there were no statistically significant differences. However there was a slight the only difference linked to Science subject and Health sciences in the exam ($p<0.05$).

Student activities on Blackboard and achievements and the relationship or links involved were then examined and Pearson correlations were undertaken to gauge the relationship between student grades and the use of the different pages accessed using this LMS. Here, no significant correlations were found, as indicated in Table 5.12 above.

5.13: Correlations between learners' use of Blackboard & their grades

		Total grade	Mid-term exam	Exam	coursework
Homepage	Pearson Correlation	-.018-	.004	-.029-	-.019-
	Sig. (2-tailed)	.844	.968	.751	.840
	N	119	119	119	119
Read	Pearson Correlation	-.020-	.003	.027	-.107-
	Sig. (2-tailed)	.825	.972	.770	.246
	N	119	119	119	119
Content folder	Pearson Correlation	.098	.119	.054	.111
	Sig. (2-tailed)	.288	.198	.559	.229
	N	119	119	119	119
Files	Pearson Correlation	-.107-	-.110-	-.138-	-.028-
	Sig. (2-tailed)	.245	.234	.134	.765
	N	119	119	119	119

5.8. Discussion

The questionnaire results have shown that student overall attitude to the LMS was positive. This result is congruent with that of those obtained by (Liaw 2008; Sun, Ray *et al.* 2008; Hammoud 2010; Chang, Chen *et al.* 2011;Alkhalaf, Drewa *et al.* 2012). The results in Table 5.4 indicated that female students were more positive towards using the Blackboard system than males. This finding was confirmed by (Sandersa and Morrison 2011). This can perhaps be explained by the fact that, in Saudi Arabia higher education, males and females do receive their instruction in separate classes; i.e. in segregation, for cultural and religious reasons. This puts further strains on the limited facilities and human resources available, which explains why women are often among the strongest supporters of e-Learning because it potentially facilitates their access to higher education.

If one takes learner behavioural intention, Table 5.3 shows that learners have shown a mild positive attitude to the use of the Blackboard LMS at a rate of (M = 3.04). Indeed, they believed that the LMS used was useful (M = 3.31) and effective (M = 3.21) as learning tool. The quality of this LMS seemed to have had an important effect on student satisfaction despite the fact this cohort of students were first time users of such a learning tool. Their lack of experience has led them to be a mildly self-efficient in using it. Some of these students however, seemed to have truly enjoyed the Interactive learning activities made easy by the Blackboard system.

Based on the results in Table 5.7 the most important factors that positively affected students' satisfaction in using Blackboard were system quality (β = 0.531), Interactive learning activities (β= 0.152) and perceived self-efficacy (β = 0.464). As indicated above, due to their lack of familiarity with the Blackboard system and lack of e - earning experience, lower system quality and lower self-efficacy led to lower student satisfaction. The result indicated that students' perceived usefulness was affected by system quality (β= 0.540), perceived self-efficacy (β= 0.277) and multimedia instruction (β= 0.417). Students' behavioural intention was affected by two important factors, i.e. satisfaction (β= 0.503) and perceived usefulness (β= 0.470). It indicated that the Blackboard system has to make the student feel satisfied and that the system is useful; thus, they will intend to use it. On the other hand, Blackboard's effectiveness was affected by system quality (β= 0.592), Interactive learning activities

(β= 0.213) and multimedia instruction (β= 0.452). Focusing more on interactive learning activities materials can clearly enhance learning effectiveness, which may help in interaction and content that can satisfy the students. These findings support the findings of (Chang, Chen *et al.* 2011;Al-Busaidi 2012; Telia 2012;Liaw and Huang 2013).

The tracking data facility which is an integral part the Blackboard LMS makes it easy to calculate learner actual use of this learning tool and allows researchers to monitor the methods instructors use to present course materials on Blackboard is very useful. With it on board, one can gauge learner attitudes, performance and achievement with respect to those of their instructors, while using Blackboard (see Table 5.8).

The tracking system inherent to the LMS blackboard has helped in determining when how students used the system. The results have shown that students had positive attitudes towards using the Blackboard system as a web-based tool to support their learning. One of the students commented: *"I like using the Blackboard system but because I do not know how to using it I need helping to use it."* which is congruent with what (Hammoud 2010; Chang, Chen *et al.* 2011) have discovered.

Statistically, gender and also academic specialization (Scientific, Humanities, Health Sciences) seem to play a significant role in the differences between students' attitudes in time spent using the LMS. Moreover, gender also affected the way students' use this tool (e.g. time spent exploring a page, posting or reading messages and the number of times that students accessed or saved a file in the content folder). These results are congruent with those of (Liaw and Huang 2011; Sandersa and Morrison 2011;Al-Hadrami 2014). They found that gender plays a role in the degree of activity on bulletin boards when using WebCT.

In addition, the researcher has found that achievements in final exams while using web-enhanced courses were affected by gender and academic specializations. These results although interesting seem to be lacking sufficient evidence in this study to fully explain them (see Table 5.11).

Therefore, a significant positive relationship was found between students' use of the Blackboard system and their achievements. This result differs from those of other

researchers, the likes of (Hammoud 2010; Daniel Strickera, Weibela *et al.* 2011; Erdogan, Bayram *et al.* 2011;Wong 2013).

As the data collected for this study were from three groups of students on one course, a comparison could be made between students' attitudes and behaviour. During the semester, students had to use the Blackboard LMS regularly regardless of the variation in their specialization. The differences in attitudes related to the use of the LMS can't be explained by one single reason. However, the significant differences in using it seem to be linked to the way course leaders use it and this, can perhaps be considered as an essential factor for this student behaviour. Somehow, this could and may be attributed to the nature of learner academic specialization as well as their instructors' previous knowledge and experience of the system. This could be considered as evidence to confirm that learner use has been affected by their course leader's competence in using the system. This result supports the results obtained in the first study.

This study's findings tend to suggest that students are able to use the Blackboard LMS but unfortunately not quite efficiently. This can be attributed to the absence or the lack of a prominent and effective institutional role that can provide technical support and training to all users, learner and instructor alike, as well as the lack of ability to take advantage of what the Blackboard LMS offers technically in the delivery of e-learning. This result is similar to (Telia 2012). The focus should therefore be concentrated on interactive learning activities materials to enhance learning effectiveness, which, in turn, would affect e-learning quality in general.

The success of any learning management system, as for any other information system, can be gauged in terms of user acceptance, usage and satisfaction. Learners' continuous acceptance and use is mandatory for the success of any LMS adoption and deployment. Measuring user acceptance and satisfaction is a "basic marketing element" in managing e-learning initiatives (Kelly and Bauer, 2004).

To gauge what critical factors affected web-enhanced courses, (Hammoud 2010) has looked at some course supported by a course management system (WebCT) at Brunel University in London. The study was conducted to check the impact of learner, instructor and dimension technology elements on students' attitudes, performance and achievements. The findings indicated that student attitude to using WebCT was found

to have a positive relationship with all three elements. Student achievement was found to have a positive relationship with the instructor and learner elements. In addition, the technology and learner elements were found to have a close and positive link with the students' use of WebCT. Regarding the instructor's technical knowledge, competence, and the method of presentation and delivery of course materials, the findings have indicated that there were no effects or bearing on the actual use of WebCT. The results have also suggested that the above factors had no impact on the learner perception of how useful, easy to use, flexible, and good the course management system is, and this falls within the learner achievements element.

The issue of the critical factors that may have a great influence on the success of an LMS in blended learning in terms of actual usage, perceived usefulness, perceived ease of use, and user satisfaction from the learners' perspective were examined by (Al-Busaidi 2012) at Sultan Qaboos University, Oman. Six dimensions were tested, including the instructor dimension (attitude, teaching style, control and responsiveness).The results indicated that the instructor's attitude towards the LMS factor had a significant impact on learners' actual use.

Hammoud's study did not examine the university support factor either, which might affect the success of learning management systems. *"The university support factor is the second wing of the technology factor"* (Selim 2007). (Sumner and Hostetler 1999) indicated that organizational factors, such as training, incentives, strategic alignment and technical support might affect the adoption of technology in teaching. Likewise, (Wan *et al.* 2007), in a theoretical study, proposed that the primary participants (learners and instructors), technology quality and instructional design impacted learning processes, and, consequently, learning outcomes.

Furthermore, in a confirmatory study, (Selim 2007) has categorized the critical factors of LMS acceptance according to learner, instructor, technology and institution support elements. It is common knowledge that e-learning in the Saudi Kingdom is still in its infancy, especially in higher education and for this reason there is an urgent need for learners and instructors to be familiar with the new and contemporary technologies used in the delivery of distant or virtual learning processes (Aljabre 2012). As some university students cannot use LMSs, or might face difficulties in trying to use them effectively, there is a need to explore the factors that may have a bearing on students'

acceptance of such learning tools in order to be able to overcome the challenges that face the adoption of new technologies in web-enhanced learning.

Following on from the results discussed in Chapters 4 and 5, the next chapter shall try to examine and develop an understanding of the factors pertinent to a successful adoption of contemporary technologies being used in web-enhanced teaching and learning processes such as the LMS the Blackboard. In order to do that, one has to endeavour to investigate whether instructor attitudes to LMSs affect actual use. Hence, we intend to adopt and further develop Hammoud's framework, with Saudi Arabia higher education institutions such as the University of Taif in mind.

5.9. Chapter summary

The LMS 'Blackboard' is an prominent learning management tool that has known an exponential increase in its use in higher education around the globe in recent years. The study discussed in Chapter 5 was conducted to determine how effective this LMS was and what impact, if any, it did have on issues such as learner satisfaction, behavioural intentions after being introduced at the University of Taif. The researcher has endeavoured to look at the relationships that may exist between this newly adopted learning and teaching medium and the end user. By focusing not only on the attitudes and the behaviours of both instructor and learner, but also on the role that the institution offering it should play to make a success of the whole experience, the researcher has explored the topic within the current pertinent literature to gauge what effect or impact the use of LMS on students' performances and their achievements based on gender and academic specializations.

The variables gender and academic specializations (Scientific, Humanities, Health Sciences) of students were explored to look for any links or relationships that may exist between them and the actual use of the Blackboard LMS, the attitudes of the learners and their achievements. A significant relationship was found between student gender, academic specializations and students' attitude to using the Blackboard system, but none with their way of using the LMS under study. Indeed, across all the different academic specializations, students have shown a positive attitude to the Blackboard system and its use in their learning.

On the basis of Chapters four and five findings, Chapter six will endeavour and seek to develop and adopt a framework aiming at understanding the relationship between the variables that relate to web-enhanced courses using the Blackboard LMS as a learning support tool. This framework for will be based on Hammoud's study and will consist of an advanced trellis of ideas that can be applied to web-enhanced courses for undergraduate students (Hammoud 2010). It is somewhat a complex, but the framework suitable for adoption in the present work. Variables from Chapters 4 and the present chapter were found to have a significant impact on student attitudes and performance while using the LMS. These variables were grouped under four dimensions and added to some other demographic variables to form the main parts of the framework that will put forward in the next chapter.

Chapter 6

A Framework for explaining the relationship between the main success factors in web-based learning in developing countries

---

6.1. Introduction

The findings in Chapter 4 have indicated that a significant relationship existed between learner attitude towards the use of the Blackboard LMS and that of the instructor despite the fact that learners were more eager and more motivated in trying this new mode of learning

In Chapter 5 the importance of the role of the institution through the provision of technical support and training for both learner and instructor was highlighted. In addition a significant relationship between learner academic specialization and the LMS used was discovered. Moreover, the link between achievement and the use of this tool was established.

On the basis of these previous findings a framework was developed. Chapter 6 looks into some critical success factors (CSFs) that may possibly enhance e-learning. It has provided suggestions on how web-enhanced learning in developing countries, particularly Saudi Arabia, can be a success. The research framework for this work is adopted from Hammoud's Brunel university study, UK, (2010).

Hammoud's framework was drawn from the works of (Davis 1993; Selim 2003;Sun, Ray *et al.* 2008)**.** which focused on technology and previously tackled by (Sun,Ray *et al.*2008). The framework has three dependent variables, namely, learner attitudes, achievements and use of WebCT, as shown in Figure 6.1.

Various factors affect success in Technology. Both technical and non-technical issues play an important role in whether or not such or such technology is successful and useful. Measures such as user perception, intention, satisfaction, actual usage and perceived usefulness are dealt with in the current literature. The technology acceptance model (Davis 1986; Venkatesh and Davis 2000) and the information system success model (DeLone and McLean 1992; DeLone and McLean 2003) are two of the most popular models of user acceptance of information technologies.

For the scholars (Davis 1989) and (Venkatesh and Davis 2000), technology acceptance should and must be assessed by not only, how learners feel and behave in using it, but also by the degree of the resulting benefits (DeLone and McLean1992).

Several have an impact on the success of technology. (DeLone and McLean 2003) indicate that variables such as information quality, system quality and service quality are some of the success factors of an information system (IS). As for the use of technology in learning and teaching environments, (Webster and Hackley 1997), following in the footsteps of (Dillon and Guawardena 1995) recommendations, stated that the success of technology-mediated teaching and learning might be influenced by several issues, such as the expertise and knowledge of the instructor, the quality of the course, the motivation of the learners and the cooperation of classmates. Management issues and organizational matters also have an important influence on learning management systems (Sumner and Hostetler 1999). They indicate that training, incentives, strategic alignment and technical support are some of the organizational factors that have a direct impact (or might affect) the adoption of technology in teaching environments.

Similarly, (Wan, Fang *et al.* 2007) made a theoretical study, which found that participants and other factors, such as technology quality and instructional design, do impact on learning processes, and consequently on learning outcomes. Furthermore, along the same lines of study, (Selim 2007) categorized the critical factors of LMS

acceptance according to the variables involved, i.e. learners, instructors, technology, and university support factors.

Various empirical studies were carried out to investigate and gauge the success of LMSs in educational institutions from the learner's perspective. Among these we find the work undertaken by (Arbaugh 2000), who explored the effect of instructor characteristics on learners satisfaction with LMS. Similarly (Pituch and Lee 2006) examined learner characteristics and system characteristics on how these LMSs are used and how useful for their learning. (Roca, Chiu *et al.* 2006) similar work on those same characteristics that could have a major impact completed on learning outcomes in e-learning environments.

In similar fashion (Liaw 2008) looked at these same learner characteristics. However (Lee 2008) chose to examine the effects of organizational factors on how easy are these LMSs to use. Others, the likes of (Liaw 2008), turned their attention to assessing the effects of perceived efficacy, system quality and multimedia instruction on learners' perceived satisfaction with the usefulness of LMSs. Scholars (Raaij and Schepers 2008) have also looked at learner characteristics and their impact on LMSs usefulness. Works carried out by (Sun, Ray *et al.* 2008) looked at e-learning and the impact of learner characteristics, instructor characteristics, course characteristics, system quality and classmates' interaction on the satisfaction of users. Similarly (Al-Busaidi 2009) examined the impact of learner characteristics and LMS characteristics on LMS use, as did (Cheng 2011), to gauge the effects of this new mode of learning on user satisfaction.

Other scholars like (Wang and Shen 2011) opted to concentrate on quality for learner satisfaction. (Lee 2010; Limayem and Cheung 2011;Lin, Chen *et al.* 2011) examined the predictors of intention to continue e-learning. (Al-Busaidi 2012), like many of his contemporaries, spent time on gauging the effect of various characteristics, those of participants, systems and the organization involved.

Few studies have been carried out on what the critical priority factors that could influence LMSs success in developing countries are (Selim 2007; Masrom, Rahiman *et al.* 2008). A few however, thought that it might be quite an upheaval task to do that successfully in developing countries.

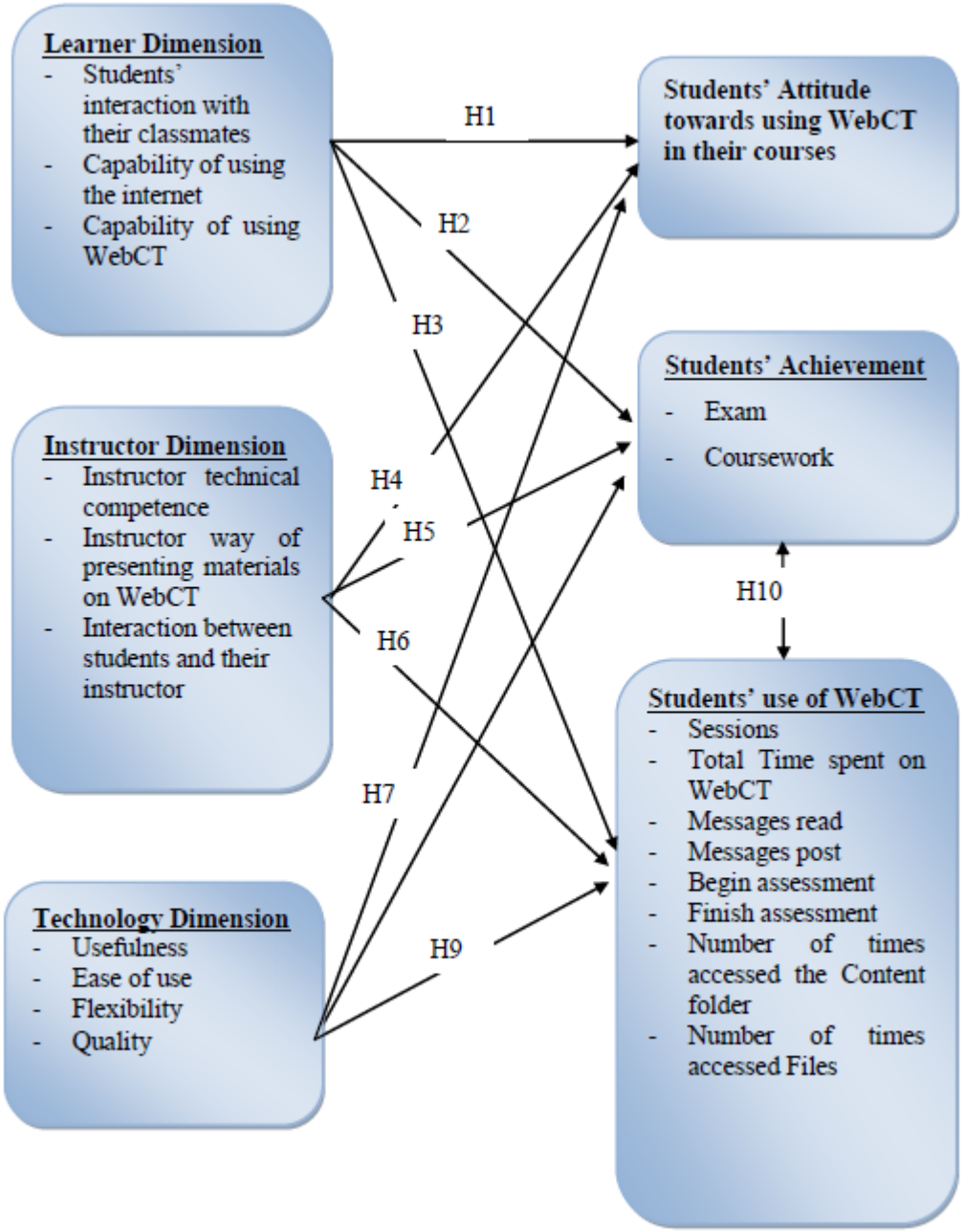

Figure 6.1: A framework for Studying Student Achievements, Attitudes and the use of Web-based Courses in Relation to Technology, Instructors and Learners (Hammoud 2010)

After considering the variables that might affect e-Learning take up and acceptance in developing countries, and research in this area in the developing countries is scarce compared with the developed countries; hence, we propose to extend and test Hammoud's framework (see figure 6.1), combined with one specific dimension, university support. This dimension consists of two factors, namely training students,

and technical user support. Instructor attitude towards LMS, in addition to the instructor dimension to investigate whether instructor attitude towards LMS affects actual use, becomes the framework shown in Figure 6.2, which consists of four main dimensions with thirteen variables: the learner dimension, the instructor dimension, the technology dimension and the university support dimension. Demographic differences will be taken into account in this study, as social independent variables, in an attempt to explain the differences between learning management system users.

The framework has three dependent variables, namely learners' attitude to using Blackboard, their achievements, and their use of the LMS Blackboard. The study aims to investigate explore the relationships that exist between the four dimensions and the above three dependent variables.

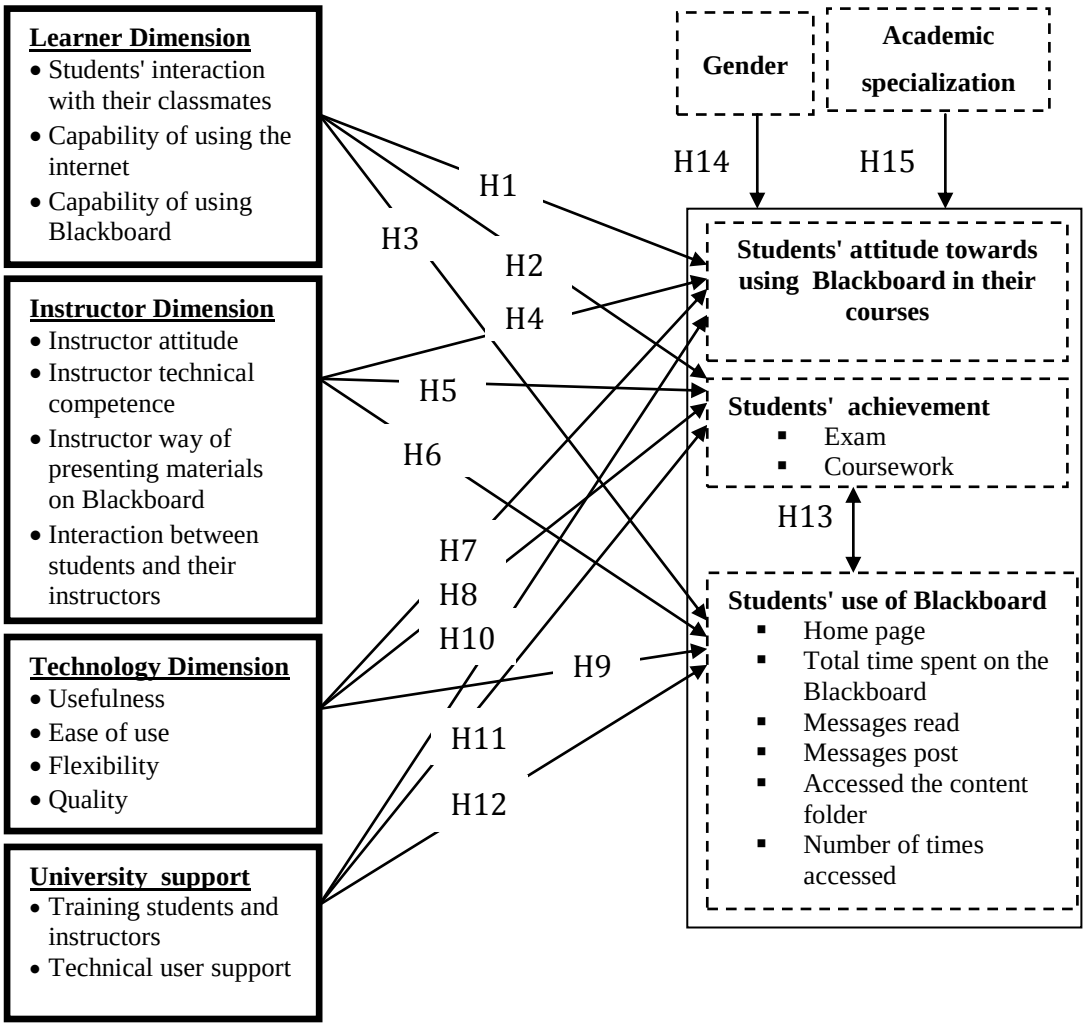

Figure 6.2: Illustrates the model (research framework) used in this study.

6.2. Research dimensions and hypotheses

6.2.1. The learner dimension

The learner dimension has three factors (Hammoud 2010). As shown in Figure 6.2

- "Students' interaction with their classmates"
- "Students' capability of using the internet"
- "Students' capability of using the Blackboard system"

(Arbaugh 2000) indicated that researchers have noted a positive relationship between learners when satisfied with LMS lead courses. Complete interaction in the classroom (learner-learner and learner-instructor) increases motivation from all quarters, increases take-up and therefore accelerates the learning progress (Piccoli, Ahmad *et al.* 2001). An essential factor for learner satisfaction, and by the same token learner success, was identified to be sound and interactive instruction design (Arbaugh 2000; Hong 2002). Student-teacher, students-materials and student-student interactions were found to be very important during learning activities (Moore 1989). These variables must be scrutinised carefully, and the LMS design should seek to increase the frequency, and the quality of such interactions in order to improve learner satisfaction (Sun, Ray *et al.* 2008). For this study, the learners' interaction with peers variable was measured by their perceptions of the number and the level (frequency and quality) of learner-learner interactions.

Student satisfaction with this learning tool has been widely and academically measured, using the evaluation of the impact of learning environments and activities (Alavi 1994). Student satisfaction was found to be the main indicator for the continuous acceptance and adoption of such tools (Arbaugh 2000). The influence of prior knowledge and experience of online web-based learning was shown by scholars to be an important area to be studied (Paris 2004).

In this study, we intend to explore web-based learning systems and their effects on learning. By investigating the learner dimension and its relationship with the dependent variables involved (students' attitude towards interactive boards and their

use in general by learner and instructor alike), we propose to gauge the learning outcomes and the level of learner achievement and any satisfaction that may or may not result.

For that we need to formulate and test the following hypotheses:

H1: *The learner dimension would impact positively on learners' attitude towards using Blackboard in their courses.*
H2: *The learner dimension would impact positively on learners' achievements.*
H3: *The learner dimension would impact positively on the learners' way of using Blackboard.*

6.2.2. The instructor dimension

This dimension (Hammoud 2010; Al-Busaidi 2012) includes four factors:

- Instructor's attitude towards the Blackboard system
- "Instructor's technical competence"
- "Instructor's way of presenting materials on the Blackboard system"
- "Interaction between students and their instructor"

Learners' acceptance of ICT (information & communication technology) and learning outcomes are more than closely related to, indeed they go hand in hand with, not only instructors' attitude to technology, but also to their expertise in the subject (Dillon and Guawardena 1995; Webster and Hackley 1997; Piccoli, Ahmad *et al.* 2001). The instructor's attitude is also crucial to learners' perceptions, use of and satisfaction with LMS (Al-Busaidi 2012; Taha 2014). In a virtual learning environment, social influence impacts its acceptance positively (Keller 2009). Instructor attitude plays a significantly important role and improves learners' technological self-efficacy and their attitude towards its continuous use (Webster and Hackley 1997). Thus, the more the instructor seems to have a good attitude towards LMS (views it as easy, useful and satisfactory), the more the learners will adopt a similar attitude in their quest to accept technology as a means for learning (Al-Busaidi and Al-Shihi 2010; Lee, Hsiao *et al.* 2014).

Teacher-student interaction was found to be a significant catalyst for, not only acceptance of web-based courses by students, but also an increase in student motivation, engendering successful learning outcomes (Mahdizadeh, Biemans *et al.* 2008). However, for this to occur, instructional and learning strategies related to computer technology have to be thoroughly scrutinized before adoption, in order to maximize ICT uptake and encourage learning outcomes (Lowerison, Sclater *et al.* 2006).

A host of researchers have highlighted various other influential factors governing user attitudes to the use of ICT in the teaching-learning process. Assessing the impact of technology is not only closely linked to, but also related to, the attitudes and approaches of both teachers and learners, and the extent of their impact should be a main focus (Brett and Nagra 2005). For (Lowerison, Sclater *et al.* 2006), learning strategies and techniques are very important and truly effective variables in user perceptions of how effective computer technology is. Sound teacher and instructor knowledge and their prompt and timely response were found by a host of researchers to be significantly influential in learners' satisfaction. Timely intervention and assistance by instructors when learners face problems on-line does encourage them to persevere with their e-learning. Belated or delayed intervention by instructors or their failing to respond affects students confidence and eagerness, and thus impacts negatively on their learning (Arbaugh 2002; Thurmond, Wambach *et al.* 2002) and, similarly, (Soon, Sook *et al.* 2000). (Arbaugh 2002) agrees: thus, the ability of instructors to set web-enhanced learning activities and respond to learner queries promptly will in doubt improve user satisfaction.

Instructor response is defined as how swift it is and how learners perceive that (Sun, Ray *et al.* 2008). Similarly, (Piccoli, Ahmad *et al.* 2001) found that, because of the essential instructing, tutoring and teaching roles of instructors and their attitude towards e-Learning, students results can be impacted positively or negatively.(Volery and Lord 2000) have stated that the attitudes of instructors to distance remote learning should be considered to gauge how learners have truly behaved because these attitudes impact heavily on user perceptions in VLE situations.

Consequently we propose the following hypotheses:

H4: *The instructor dimension would have a positive effect on the learners' attitude towards using Blackboard in their courses.*
H5: *The instructor dimension would have a positive effect on the learners' achievement*s.
H6: *The instructor dimension would have a positive effect on the learners' way of using Blackboard.*

6.2.3. The technology dimension

This dimension consists of the following:

- "Usefulness"
- "Ease of use"
- "Flexibility"
- "Quality" (Hammoud 2010)

Because of their nature, e-learning and VLE (virtual learning environment) courses are naturally easy to handle and therefore easily accepted by learners, due to their flexibility in time and location (Arbaugh 2000). (Salmon 2000) finds that VLEs are god-sent teaching and learning media, as clashes of personalities and other barriers, physical or otherwise are eliminated, and this facilitates dynamic interaction, and increases opportunities for cooperative distance learning. (Bangert 2005) adds that, because of the ease in instantaneous communication at any time day or night and anywhere or on the move, because of hand-held smart devices, opportunities for learning are extensively increased. Flexibility in e-Learning courses can increase learners' perceptions of their efficiency, and often nudges them into accepting and adopting e-Learning (Sun, Ray *et al.* 2008).

In addition to the above variables, good quality and sound design of e-Learning programmes must be given high priority as important factors when considering e-Learning. These factors are closely linked, and do impact, on learner satisfaction in VLE environments (Piccoli, Ahmad *et al.* 2001). Harnessing all the capabilities of the LMS is very important for VLE success. All the characteristics and variables involved

should be scrutinized and responded to continuously (Piccoli, Ahmad *et al.* 2001). For this to happen, technology and Internet quality alike, which are significant factors in e-Learning, must be dynamically monitored and improved, indeed tailored and targeted efficiently to improve take-up and learning outcomes (Piccoli, Ahmad *et al.* 2001). Hardware, i.e. microphones, earphones, electronic boards and smart devices, added to application software and networks must be of sound quality, in order, not only to satisfy learners, but also for learners to be seen to be well-motivated and satisfied with their e-learning and making steady progress using IT.

Various firms and organizations moved for usability testing in the process of product development in order to satisfy user needs. Hence usefulness is subjective. For (Davis 1989), usefulness is related to perception of the degree to which users believe that using a particular system would enhance their motivation and job performance. He also state that the less the effort needed by the user, the higher the perceived belief in the ease of use of such or such IT system. The easier and the more useful a software tool is, the more attached the user becomes to it. This in turn would engender positive learning attitudes towards web-based courses and increase future ICT use (Arbaugh 2000; Arbaugh 2002;Pituch and Lee 2006).

Based on the above discussion, we have developed the following hypotheses:

H7: *The technology dimension would have a positive impact on the learners' attitudes towards using Blackboard in their courses.*
H8: *The technology dimension would have a positive impact on the learners' achievements.*
H9: *The technology dimension would have a positive impact on the learners' way of using Blackboard.*

6.2.4. The university support dimension

In this study University supports dimension consists of two factors:

- Training
- Technical user support

"The university support factor is the second wing of the technology factor" (Selim 2007). Institutional support is indicated as a very crucial variable for both e-learning and traditional learning (Salmeron 2009). Technical assistance in the form of or a help desk is more than essential (Selim 2007). It is mandatory for Higher Education institutions such as universities and institutes to have an IT technical department ready to support instructors and learners when they offer e-learning courses or programmes as organisation is the key to the delivery of online courses (Masrom, Rahiman *et al.* 2008; Parsazadeh, Megat *et al.* 2013). (Al-Busaidi and Al-Shihi 2010) totally agree.

Higher Education institutions' support consists of various dimensions in the shape of user training and support and network choices (Moore and Benbasat 1991; Park and Chen 2007). Training is considered important for end users. This factor helps to develop some of the online stakeholder group characteristics, especially those of learners and instructors. Personal development, which enable all stakeholders to become efficient in online learning (Bussakorn, Praweenya *et al.* 2012; Puri 2012; Nisperos 2014).

Training is mandatory for all users. Without it, end users would lack the technological skills and necessary know-how to use the system (Nelson and Cheney 1987). This point is critical if learners and instructors alike are to, not only accept, but also master technology in order to increase motivation and enhance user learning outcomes, and, by the same token, help education officials reach their educational technology use targets (Igbaria, Zinatelli *et al.* 1997). With continuous training updates, learners will become more and more comfortable in e-learning environments and more skilful in the use of technology for better learning outcomes (Al-Busaidi 2012). A study by (ALhomod and Shafi 2013) found that Training, Organizational Commitment, Management Support and Technical Support are considered important factors for the success of e-learning.

Compelling evidence was provided by a host of eminent researchers regarding the importance of student training in using technologies prior and post implementation of e-learning programmes (Igbaria 1990; Igbaria 1993). The sounder and more thorough the training is, the better the student take-up and the more positive the results and the learning outcomes are, because the better their knowledge and awareness, the more

the positive student attachment to technology and its use (Alkharang and Ghinea 2013; Parsazadeh, Megat *et al.* 2013). One of the reasons that e-learning is not yet common currency could be the absence of sound training of end users. In such situation, frustration creeps and this in turn would breed resistance to changes in the teaching and learning process and even perhaps miss use of the LMS or a reduction in its use (Solomon, Oludayo *et al.* 2013). (Tabak and Nguyen 2013) suggest that when users are aware of the availability of technical support it encourages them to use the LMS.

Continuous technical support and cyclical training in new products and systems have been shown to enhance users ability to use LMSs and acceptance of the challenges faced (Thompson, Higgins *et al.* 1991). Technical support for all users, students, academic staff and administrators would improve student perceptions about Higher Education institutions' commitment to invest in the modern resources and practices that facilitate the usage of remote learning (Al-Busaidi and Al-Shihi 2010). This would nudge students and other users to continue using the new ICT resources for, and justify expenditure on and support for, newly introduced technologies and technical aids in these HE institutions (Lopez. and Manson. 1997). Other scholars and researchers, the likes of (Igbaria 1990) and (Akour 2009) have also highlighted the benefits of technical support as important facilitators for users to, not only tackle new technologies, but to accept them as part of modern learning life.

(Soong, Chan *et al.* 2001; Alshaher 2013) found that many e-learning projects did not succeed because of the lack technical support, and stated that research carried out in HE institutions showed that, with lack of technical support, the implementation of e-learning systems and programmes is doomed to failure. Hence the availability of technical support would in no doubt help learner cope with new technologies and in the process encourage them to master online learning systems which would in turn enhance their online course performances and achievements (Tabak and Nguyen 2013).

In University support, we have developed the following hypotheses:

H10: *The University support dimension has a positive influence on the learners' attitude towards using the Blackboard system in their courses.*

H11: *The University support dimension has a positive influence on the learners' achievements.*
H12: *The University support dimension has a positive influence on the learners' way of using the Blackboard system.*

Scholars (Webster and Hackley 1997) state that learner performance represents a key aspect of how effective the leaning process was. The students' use of the LMS "Blackboard" was gauged by a number of ways. The findings in Chapters 4 and 5 have shown that there was relationship between students' use of Blackboard and their achievement.

To test these findings, we had to formulate the following hypotheses:

H13: *There is relationship between learners' activities on Blackboard and their achievement.*

6.3. Demographic differences

The demographic variables are found to have some sort of role that links them to perception of E-Learning, acceptance of technology and satisfaction (Okazaki and Santos 2012; Taha 2014). Age, gender and academic specialization are included in the research framework as independent variables. (Dwivedi and Lal 2007; Al-Shafi and Weerakkody 2010;Alkhunaizan and Love 2013), who considered gender and age as an independent social variables found them to be closely tied to satisfaction with the LMS under scrutiny.

In the past few years, researchers have even suggested that the leaner's age and gender do play much more important roles than previously thought, when examining social factors (Dabaj 2009; Mazman 2011;Jan, Lu *et al.* 2012). The problems seem to rise when systems are not designed without taking the learner perspective into consideration, due to differences in terms of moderating variables like age, gender and experience (Nawaz 2013).

Since a majority of students in the first year fell within the same age group (18-22), the effect of age was not tested. However, whether gender and academic specialization, as well as students' way of using Blackboard and their attitude towards the Blackboard system, would have an influence on their achievements was investigated.

Gender

Gender has been the subject of much research. Numerous studies have looked at the impact of this variable on e-learning, user acceptance and use of new technologies (Cooper 2006; Islam, Rahim *et al.* 2011;Ashong and Commander 2012). These scholars found that gender-based differences in education are now recognized as an important variable in the e-learning process, and, consequently, research focus has turned to exploring it over time, especially since the number of online female student users seems to have soared, even overtaking male counterparts. Others on the other hand, in reviewing gender-related studies, have found that the effects of this variable were inconclusive on student experiences in distance learning.

A host of studies have shown that gender plays a major role in the acceptance new technologies and males and females experience online environments differently and as a result performance, motivation, perception and study habits do differ somewhat (Chyung 2007; Tawei and Chang 2011). Other studies however, have suggested that gender does not have any significant impact (Astleitner and Steinberg 2005; Yukselturk and Bulut 2007;Asiri, Mahmud *et al.* 2012).

(Asiri, Mahmud *et al.* 2012) looked at the variables involved when using that the Jusur Learning Management System (Jusur LMS) in state universities in Saudi Arabia and discovered that found that three demographic factors play a critical role during this LMS use. These are: gender , past experience in ICT and, user training.

(Tawei and Chang 2011) explored learning styles in VLEs and looked at the strategies employed by students and what are factors that could affect these learning styles and learning strategies in colleges in Taiwan. Their findings have indicated that female students showed higher motivation than male counterparts.

Similarly a study by (Tsai and Tsai 2010) found that female students were more active on the internet and tended to interact more with their peers than boys. Males however tended to be were more exploitative. Hence, this has led to girls experiencing a richer, more connected and more valuable online learning experience than boys (Johnson 2011). Additionally, (Rovai and Baker 2005) in looking at the same topic, have discovered that female students tended to be more sociable online and this has benefited them more than boys and has made them more satisfied with in using VLEs. (González-Gómez, Guardiola *et al.* 2012) also tended to agree.

In conclusion, it seems that, owing to the various conflicting findings regarding gender and other variables, such as perception, satisfaction, success, communication behaviour in VLE/e-learning, the arguments cannot be accepted or refuted as more decisive research needs to be carried out. As gender was found to be an important social factor in VLEs, the researcher proposes the following hypothesis:

H14. *Students' attitude: the Actual Use of Blackboard and their achievements will be greater amongst males than females*.

Discipline type

The relationship between academic practice variations in HE institutions and students' academic specialization types has not been thoroughly investigated as yet, and research on the topic is meagre to say the least. However disciplinary differences between academics have been broadly investigated. In investigating the topic, (Breen and Lindsay 2002) discovered that students' achievement goals and motivators are linked, but variety seems to be the key, especially in the realm of discipline area. (Kemp and Jones 2007) found that one the most influential factors affecting ICT use and usefulness in education at HE institutions was discipline and subject area. This means that digital resources usage varies according to the types of disciplines and is closely related to academic progression.

(Bush, Squire *et al.* 2008) also explored the subject, indicating that a host of scholars have noted numerous differences in learning styles, in the academic disciplines in the sphere of e-learning. Differences were also found to exist between the actual learning

taking place and subjects' perceived learning. As VLE and e-learning techniques are now embraced by many academic disciplines in HE institutions, the onus is on the developers of digital courses, and the software used to facilitate and encourage take-up and increase motivation, must take into consideration the varied and different reactions and behaviours of students in the face of digital courseware, given the diversity and the choice of academic disciplines offered to them.

Disciplinary differences were found to play a significant role in the matters of how academic work is organized (Becher and Trowler 2001; Neuman 2001). These differences seem, and have been shown, to have a significant impact on how instructors view the ways of passing knowledge to their learners and how graduate and undergraduate students view their instructors and the type of knowledge and achievement outcomes sought in their respective discipline areas. Scholars (Kemp and Jones 2007), have looked at the discipline (specialization) variable and have concluded that the array and the variety of disciplines taught in HE institutions are now thought be a contextual influence that affects the digital processes of teaching and learning.

Research by (Islam, Rahim *et al.* 2011) looked into the effects, if any, of demographic factors on the effectiveness of e-learning systems in a HE institutions. The findings confirmed that age, programme of study and level of education had significant effects on the effectiveness of E-learning.

A recent study by (Xu and Jaggars 2013) examined how well students coped with LMSs and VLEs and found that Some have coped well while others struggled, especially in the areas of English and the social sciences. They found that e-learning is affected differently across academic subject areas and this may be due to intrinsic characteristics that make some subjects (disciplines) better suited than others to online learning. Thus the following hypothesis:

H15. *There would have a significant difference between academic disciplines in terms of students' attitude, students' use of Blackboard and their achievements.*

6.4. Methodology

Research design

This study used a combination of qualitative and quantitative approaches. The study in this chapter was conducted at Taif University. The sample for the study comprised students from one course (English language). The data was analysed using SPSS software.

6.5. Data collection instruments

The study has intended to investigate the relationship between the four variables cited above and students' attitudes to the use of the LMS Blackboard, and in the process test the hypotheses put forward.

The Blackboard tracking system database was also used to collect part of the data in similar fashion to that of previous works (Wellman and Marcinkiewicz 2004; Hoskins and Hooff 2005; Johnson 2005; Hammoud 2010;Al-Busaidi 2012). A weekly collection of data was made on Blackboard use by learners, about the students' use of Blackboard starting at the beginning of term. The Blackboard tracking system provided not only, information about page hits and the communication board use, but also on the time spent by students using Blackboard.

Students' attitudes to using Blackboard are measured using the questionnaire. Constructs are in the manner used by pertinent studies with changes in wording, such as (Akour 2009; Hammoud 2010;Al-Busaidi 2012) (Appendix 5).

6.6. Participants

A cohort of undergraduates took part in this study to gauge the Blackboard LMS that has been used in conjunction with face-to-face courses at Taif University. The sample was made up from three different subject areas: Sciences, Humanities and Health sciences. The data collection took place during term time. Students were divided into three groups according to what they were studying. Each group comprised 100 students from each gender. Out of the 300 students who received the questionnaire, 118 completed and returned it. Therefore the final sample size was approximately 39.3% of the original sample, as shown in Table 6.1.

6.1: The study sample

Subject **Gender**	Sciences **M**	 **F**	Humanities **M**	 **F**	Health sciences **M**	 **F**	**Total**
Number of the student in the subject areas	50	50	50	50	50	50	300
Number of student who completed the questionnaire	20	19	17	20	20	22	118
Response rate %	33.1%		31.4%		35.6%		39.3%

6.7. Procedure

The LMS Blackboard was used in all subject areas. Students traditional classroom lectures with access course materials using Blackboard which made communication with each other and with instructors possible a click away. Assignments, workshops and marking schemes for every course were available online at any time. Students were monitored and tracked using the LMS.

The English language course was chosen because it was the one that had been taught to all students in all the three subject areas at the university. It was the only course taught to all students at the university. The same LMS was used under the same conditions and students could access all the information needed and do their assignments online.

Although traditional lectures were also given weekly, students had to use Blackboard for everything else: course materials, assessments, assignments, communications with peers and instructors.

The tracking system information was saved on a weekly basis. The questionnaire was filled in by students during one of their lectures and was supplemented by further information collected from the tracking system. The questionnaire was administered towards the end of the first semester before exam time. Students were asked to give their ID numbers and not their names. Only questionnaires that had the student's number were used. The aim was to match students' attitudes, achievements and their use of the LMS Blackboard, in order to fully examine the relationships governing not only the dependent variables, but also the students' perceptions of those independent variables included in the study framework.

6.8. Data analysis

Data gathered at the end of the semester related to the three undergraduate level courses supported by the Blackboard LMS. The pertinent information of interest to the heart of the research was extracted from the course information, the Blackboard tracking system, the end of course grade (performance) and the questionnaire data. Students' general use of Blackboard was measured by the number of times each student visited the course materials using Blackboard, the time they spent using Blackboard and their use of the discussion boards. Student achievements were measured by the grades they obtained for the observed subjects. Students' attitudes towards Blackboard were measured using a 5-point Likert scale questionnaire. A 5 point Likert scale was used to measure the independent variables (learner dimension,

instructor dimension, technology dimension, university support dimension) of the study framework.

Reliability Test:

In this chapter, This study has used the reliability analysis suggested by (Cronbach's *alpha*) with the aim of testing the internal consistency for dimensions. According to scholars (Gliem and Gliem, 2003), when one decides to use Likert-type scales, it is imperative that one tests and reports Cronbach's *alpha* coefficient for internal consistency reliability.

A total number of 30 questionnaires were distributed. The questionnaire was distributed to first-year students at Taif University. Three questionnaires were discarded due to being incomplete. Cronbach's *alpha* coefficient for internal consistency reliability for any scales or subscales used was then calculated. A value that is "*0.7 or higher suggests good reliability. Reliability between 0.6 and 0.7 may be acceptable provided that other indicators of a model's construct validity are good."* (Hair, Black *et al.* 1998). The Cronbach's *alpha* values ranged from .717 to .826, which are all above the 0.7 level. The results demonstrated that the questionnaire was a reliable measurement instrument and could be used in the research, as shown in Table 6.2 below.

6.2: Reliability of measurements

Constructs	N	number of items	Cronbach's Alpha(α)
Learner dimension	**27**	**4**	**0.803**
Instructor dimension	**27**	**8**	**0.717**
Technology dimension	**27**	**8**	**0.734**
University support	**27**	**6**	**0.826**
Students attitude	**27**	**7**	**0.792**

Everything was done in complete anonymity and the study records were kept strictly confidential. Identifying information about learners was not disclosed or referenced in an identifiable way either verbally or in written form.

SPSS software was used for analysis. ANOVA and T-tests were carried out to identify the effect of demographic factors on students' attitudes to Blackboard, actual use and final achievements. The mean was measured for the independent demographic variables and the T-test evaluated the differences in means between two groups. ANOVA (*post-hoc* test) was used for academic specialization, whilst the T-test was used for gender.

Correlation is one of the most important ways to explain the relationships between variables (Bryman and Cramer 2005). *Pearson's Correlation Coefficient* between variables point out the direction, strength and the significance of a relationship. (*r*) value shows the direction of the linear relationship, significance and the strength between variables to be evaluated. The significance of (*p*) gives us gives us the confidence in if there is a relationship between two variables. *Pearson's* correlation is beneficial in understanding whether there is any correlation between the measured variables. Also, we can use *Pearson's* correlation to clarify any the fundamental advantages of correlation; it displays the strength and the direction of the relationship.

Therefore, the gauges of learners' attitude to Blackboard use, their achievement and use of Blackboard in the three specializations were correlated using *Pearson's Coefficient* with the gauges of instructor construct, learner construct, technology construct, and university support construct. The Significant relationships are found between the measured variables. As shown in (Tables 6-5, next).

6.9. Findings

The English language courses in three subject areas were coded S1, S2, and S3, the reason for that being confidentiality. S1 is a science specialization, S2 is a Humanities specialization and S3 is a Health science specialization. To test the model proposed in this study, only data from students who completed the questionnaire and provided their ID numbers were used. This resulted in data for a total of 118 participants used.

Table 6.3 shows the mean and standard deviations of the five variables gauged by the questionnaire.

6.3: Mean and SD of the variables measured by the questionnaire

Subject areas	**Attitude**		**Learner dimension**		**Instructor dimension**		**Technology dimension**		**University support**	
	M	SD	M	SD	M	SD	M	SD	M	SD
S1 (39)	3.58	0.94	3.41	0.78	3.95	0.49	3.39	0.72	3.18	0.70
S2 (37)	3.25	1.15	3.48	0.53	3.98	0.59	3.19	0.56	2.71	0.50
S3 (41)	3.13	1.08	3.14	0.73	3.95	0.47	3.32	0.66	2.89	0.46

An independent sample t-test was conducted to investigate the impact of gender on learners' attitude towards using Blackboard, learners' actual use and their achievements on Blackboard. The results in Table 6.4 indicate that males significantly differed from females with respect to their attitude towards using Blackboard ($p<0.01$). However, the impact of gender on learners' actual use of Blackboard and their achievements was not significant, as can be seen in Tables 6.5 and 6.6.

6.4: Students' attitudes toward the use of Blackboard with regard to gender

Area	**gender**	**N**	**Mean**	**Std. Deviation**	**t**	**df**	**Sig.**
Attitude	Male	57	3.81	0.86	5.219	114.71	.000
	Female	61	2.89	1.06			

6.5: Results of the *t*-test for students' achievement with regard to gender

Area	gender	N	Mean	Std. Deviation	t	df	Sig.
Coursework	Male	57	11.98	1.747	0.937	109.58	.351
	Female	61	11.71	1.465			
Exam	Male	57	20.86	2.279	1.651	115.57	.102
	Female	61	20.16	2.296			

6.6: Results of the *t*-test for students' actual use of Blackboard with regard to gender

Area	gender	N	Mean	Std. Deviation	t	df	Sig.
Homepage	Male	57	2.95	1.11	.077	114.45	.939
	Female	61	2.93	1.33			
Time	Male	57	1.65	0.73	.505	115.38	.614
	Female	61	1.57	0.85			
Read	Male	57	1.27	0.94	.766	113.86	.964
	Female	61	1.26	0.87			
Post	Male	57	0.25	0.30	.308	110.14	.289
	Female	61	0.31	0.26			
Content	Male	57	3.20	1.37	.558	113.05	.123
	Female	61	2.47	1.25			
Files	Male	57	1.60	0.68	.416	116.11	.235
	Female	61	1.13	0.70			

One way ANOVA: a *post-hoc* test was performed to examine the effect of academic specialization on learners' attitude towards using Blackboard, their actual use and their achievements on Blackboard. The findings in Table 6.9 reveal that academic specialization had a significant effect on learners' actual use of Blackboard ($p<0.05$) for all variables, while it did not have any effect on learners' attitude towards using Blackboard or their achievements, as shown in Tables 6.7 and 6.8.

6.7: Results of *post hoc*-tests for student's attitudes toward the use of Blackboard with regard to their academic specialization

Dependent Variable	(I) Subject	(J) Subject	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Attitude	science	Humanities	.32759	.24347	.373	-.2505	.9057
		Health Sciences	.44296	.23591	.150	-.1172	1.0031
	Humanities	science	-.32759	.24347	.373	-.9057	.2505
		Health Sciences	.11537	.23920	.880	-.4526	.6833
	Health Sciences	science	-.44296	.23591	.150	1.0031	.1172
		Humanities	-.11537	.23920	.880	-.6833	.4526

6.8: Results of *post hoc* tests for students' achievements with regard to their academic specialization

Dependent Variable	(I) subject	(J) subject	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Coursework	science	Humanities	.09217	.37072	.967	-.7881	.9724
		Health Sciences	-.20513	.35922	.836	1.0581	.6478
	Humanities	science	-.09217	.37072	.967	-.9724	.7881
		Health Sciences	-.29730	.36422	.694	1.1621	.5675
	Health Sciences	science	.20513	.35922	.836	-.6478	1.0581
		Humanities	.29730	.36422	.694	-.5675	1.1621
Exam	science	Humanities	.66667	.52757	.419	-.5860	1.9194
		Health Sciences	-.11905	.51120	.971	1.3329	1.0948
	Humanities	science	-.66667	.52757	.419	1.9194	.5860
		Health Sciences	-.78571	.51832	.287	2.0164	.4450
	Health Sciences	science	.11905	.51120	.971	1.0948	1.3329
		Humanities	.78571	.51832	.287	-.4450	2.0164

6.9: Results of *post hoc*-tests for students' actual use of Blackboard with regard to their academic specialization

Dependent Variable	(I) subject	(J) subject	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Homepage	science	Humanities	1.16857-*	.24974	.000	-1.7616-	-.5756-
		Health Sciences	.11859	.24199	.876	-.4560-	.6932
	Humanities	science	1.16857*	.24974	.000	.5756	1.7616
		Health Sciences	1.28716*	.24536	.000	.7046	1.8697
	Health Sciences	science	-.11859-	.24199	.876	-.6932-	.4560
		Humanities	1.28716-*	.24536	.000	-1.8697-	-.7046-
Time	science	Humanities	-.20589-	.17529	.471	-.6221-	.2103
		Health Sciences	.33622	.16985	.122	-.0671-	.7395
	Humanities	science	.20589	.17529	.471	-.2103-	.6221
		Health Sciences	.54211*	.17222	.006	.1332	.9510
	Health Sciences	science	-.33622-	.16985	.122	-.7395-	.0671
		Humanities	.54211-*	.17222	.006	-.9510-	-.1332-
Read	science	Humanities	.12673	.19061	.784	-.3259-	.5793
		Health Sciences	.80723*	.18470	.000	.3687	1.2458
	Humanities	science	-.12673-	.19061	.784	-.5793-	.3259
		Health Sciences	.68050*	.18727	.001	.2358	1.1252
	Health Sciences	science	.80723-*	.18470	.000	-1.2458-	-.3687-
		Humanities	.68050-*	.18727	.001	-1.1252-	-.2358-
Post	science	Humanities	.36019-*	.05231	.000	-.4844-	-.2360-
		Health Sciences	-.01809-	.05069	.932	-.1384-	.1023
	Humanities	science	.36019*	.05231	.000	.2360	.4844
		Health Sciences	.34210*	.05139	.000	.2201	.4641
	Health Sciences	science	.01809	.05069	.932	-.1023-	.1384
		Humanities	.34210-*	.05139	.000	-.4641-	-.2201-
Content	science	Humanities	-.46708-	.25881	.173	-1.0816-	.1475
		Health Sciences	1.31364*	.25078	.000	.7182	1.9091
	Humanities	science	.46708	.25881	.173	-.1475-	1.0816

		Health Sciences	1.78073*	.25427	.000	1.1770	2.3845
	Health Sciences	science	-1.31364-*	.25078	.000	-1.9091-	-.7182-
		Humanities	-1.78073-*	.25427	.000	-2.3845-	-1.1770-
Files	science	Humanities	.23545	.15813	.300	-.1400-	.6109
		Health Sciences	.59364*	.15323	.001	.2298	.9575
	Humanities	science	-.23545-	.15813	.300	-.6109-	.1400
		Health Sciences	.35819	.15536	.059	-.0107-	.7271
	Health Sciences	science	-.59364-*	.15323	.001	-.9575-	-.2298-
		Humanities	-.35819-	.15536	.059	-.7271-	.0107

*. The mean difference is significant at the 0.05 level.

6.9.1. Findings from science specialization:

Learners' used Blackboard widely in this specialization (S1). Many of the learners' used different pages, such as "home page", "content page", "assignment page" and the "discussion board", as shown in Table 6.10.

6.10: Descriptive statistics of learners' use of Blackboard for S1

	N	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**
Sessions	39	2	118	24.85	25.47
Total time	39	0	21:05	3:44	4:31
Read messages	39	0	96	16.38	25.34
Post messages	39	0	11	34	1.47
Content folder	39	1	423	103.42	93.29
files	39	0	132	43.36	31.17

This study investigated the correlation between the pertinent variables using the Pearson's correlation test.

There was a significant positive correlation (r=0.291, p=0.01) between learners' perception of the learner variable and their attitude to using Blackboard, as indicated in Table 6.11. However, there was no significant correlation between the learner

variable and learners' achievement or their use of Blackboard, as indicated in Table 6.12.

Similarly, a significant correlation (r=0.353, p=0.01) was found between learners' perception of the instructor variable and their attitude to the LMS Blackboard, as indicated in Table 6.11. Various other correlations were found to exist when the LMS was used as indicated below: the number of times learners accessed Blackboard (r=0.199, p=0.01), the total time learners spent using Blackboard (r=0.259, p=0.01), the number of messages learners read on the discussion boards (r=0.188, p=0.05), as indicated in Table 6.13.

However, there was no significant correlation between the instructor variable and coursework grades (this is an indicator of learners' achievement), as indicated in Table 6.12.

6.11: Correlations across the four independent variables and the students' attitudes towards Blackboard in S 1

		Learner dimension	Instructor dimension	Technology dimension	University support
Attitude	Pearson Correlation	.291**	.353**	.244**	.172*
	Sig. (2-tailed)	.000	.000	.001	.024
	N	39	39	39	39

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

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

6.12: Correlations across the four independent variables and the students' achievement in S1

		Learner dimension	Instructor dimension	Technology dimension	University support
Course work	Pearson Correlation	.109	.136	.081	.044
	Sig. (2-tailed)	.156	.076	.291	.565
	N	119	119	119	119
exam	Pearson Correlation	.148	.099	.050	.108
	Sig. (2-tailed)	.058	.195	.518	.157
	N	39	39	39	39

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

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

There was a significant positive correlation (r=0.244, p=0.01) between learners' perception of the technology variable and their attitude to the LMS Blackboard, as shown in Table 6.11. Also, significant correlation was found between learners' perception of the technology variable and the number of times learners' accessed blackboard (r= 0.212, p= 0.01), the total time learners' spent using blackboard (r=0.198, p=0.01), the number of messages learners' read on the discussion boards (r=0.173, p=0.05), and the number of times students accessed the content folder (r=0.163, p=0.05), as shown in Table 6.13, while there was no significant correlation between the technology variable and their exam grades, as indicated in Table 6.12.

As for previously there was some significant correlations for some variables and none for others as shown below. A correlation (r=0.172, p=0.05) between learners' perception of the university support variable and their attitude to Blackboard (Table 6.11), but no significant correlation was to be found between the institutional support variable and learner achievement or their use of Blackboard, as indicated in Tables 6.12 and 6.13.

6.13: Correlations across the four independent variables and the students' use of Blackboard in S1

		Sessions	Total Time	Messages read	Messages post	Submit assessment	Content folder	Files
learner dimension	Pearson Correlation	.054	.119	-.107-	.027	.143	.044	.111
	Sig. (2-tailed)	.559	.198	.246	.770	.061	.565	.229
	N	39	39	39	39	39	39	39
Instructor dimension	Pearson Correlation	.199**	.259**	.188*	.067	.004	.003	.081
	Sig. (2-tailed)	.009	.001	.014	.381	.968	.972	.291
	N	39	39	39	39	39	39	39
Technology dimension	Pearson Correlation	.212**	.198**	.173*	.119	-.029-	.163*	-.018-
	Sig. (2-tailed)	.005	.009	.023	.198	.751	.033	.844
	N	39	39	39	39	39	39	39
University support	Pearson Correlation	.096	.145	.104	.126	-.019-	.073	.030
	Sig. (2-tailed)	.211	.058	.173	.100	.840	.339	.698
	N	39	39	39	39	39	39	39

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

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

Table 6.14 displays the significant positive correlations between learners' achievement and their use of Blackboard in science specialization**.**

6.14: Correlations across learners' grades and their use of Blackboard in S 1

		Sessions	Total Time	Messages read	Messages post	Submit assessment	Content folder	Files
Course work	Pearson Correlation	.301**	.383**	.213**	.202**	.078	.166*	.407**
	Sig. (2-tailed)	.000	.000	.005	.008	.307	.030	.000
	N	39	39	39	39	39	39	39
exam	Pearson Correlation	.421**	.451**	.289**	.272**	.198**	.225**	.342**
	Sig. (2-tailed)	.000	.000	.000	.000	.009	.003	.000
	N	39	39	39	39	39	39	39

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

6.9.2. Findings from Humanities specialization:

Blackboard was extensively used in this specialization (S2), as shown in Table 6.15.

6.15: Descriptive statistics concerning learners' use of Blackboard for S2

	N	Minimum	Maximum	Mean	Std. Deviation
Sessions	37	19	232	67.72	41.83
Total time	37	0:31	23:39	12:53	5:52
Read messages	37	0	129	44.51	40.36
Post messages	37	0	6	.44	1
Content folder	37	42	269	96.17	54.73
files	37	51	312	145.28	71.09

A significant correlation was found only between the learner variable and the learners' use of Blackboard: the number of times learners' accessed blackboard (r=0.236, p< 0.01) and the total time learners' spent using Blackboard (r=0.196, p<0.05), as indicated in Table 6.18.

There was no correlation between instructor and any of the other variables.

There was only a significant correlation between the technology variable and learners' attitude towards using Blackboard (r=0.371, p<0.01), as shown in Table 6.16.

6.16: Correlations across the four independent variables and the students' attitudes towards Blackboard in S2

		Learner dimension	Instructor dimension	Technology dimension	University support
Attitude	Pearson Correlation	.073	.047	.371**	.251**
	Sig. (2-tailed)	.342	.539	.000	.001
	N	37	37	37	37

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

6.17: Correlations across the four independent variables and the students' achievement in S2

		Learner dimension	Instructor dimension	Technology dimension	University support
Course work	Pearson Correlation	.145	.027	.078	.090
	Sig. (2-tailed)	.058	.770	.311	.242
	N	37	37	37	37
exam	Pearson Correlation	.126	.083	.139	.106
	Sig. (2-tailed)	.100	.277	.069	.166
	N	37	37	37	37

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

There was a positive significant correlation (r=0.251, p<0.01) between learners' perception of the university support variable and their attitude towards using Blackboard, as shown in Table 6.16. Also, there was a significant positive correlation between the university support variable and the learners' use of Blackboard, as follows: the number of times learners' accessed Blackboard (r=0.266, p< 0.01), the total time learners' spent using Blackboard (r=0.214, p<0.01), the number of messages learners' read on the discussion boards (r= 0.191, p<0.05), and the number

of messages learners' posted on the discussion boards (r=0.164, p<0.05), as shown in Table 6.18.

6.18: Correlations across the four independent variables and the students' use of Blackboard in S2

		Sessions	Total Time	Messages read	Messages post	Submit assessment	Content folder	Files
learner dimension	Pearson Correlation	.236**	.196*	.065	.099	-.020-	.040	.098
	Sig. (2-tailed)	.002	.010	.398	.198	.825	.606	.288
	N	37	37	37	37	37	37	37
Instructor dimension	Pearson Correlation	.090	.107-	.054	.027	.003	.003	.119
	Sig. (2-tailed)	.242	.246	.559	.770	.972	.972	.198
	N	37	37	37	37	37	37	37
Technology dimension	Pearson Correlation	.108	.149	.065	.100	.083	.139	.004
	Sig. (2-tailed)	.160	.050	.398	.194	.277	.069	.968
	N	37	37	37	37	37	37	37
University support	Pearson Correlation	.266**	.214**	.191*	.164*	.003	.098	.111
	Sig. (2-tailed)	.000	.005	.012	.031	.972	.288	.229
	N	37	37	37	37	37	37	37

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Table 6.19 displays a significant positive correlation between learners' achievement and their use of Blackboard (just in exam) in Humanities specialization.

6.19: Correlations across the learners' grades and their use of Blackboard in S2

		Sessions	Total Time	Messages read	Messages post	Submit assessment	Content folder	Files
Course work	Pearson Correlation	.112	.064	.135	.135	.108	.053	.118
	Sig. (2-tailed)	.144	.404	.077	.077	.160	.487	.122
	N	37	37	37	37	37	37	37

exam	Pearson Correlation	.357**	.409**	.220**	.189*	.152*	.240**	.264**
	Sig. (2-tailed)	.000	.000	.004	.013	.047	.002	.000
	N	37	37	37	37	37	37	37

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

6.9.3. Findings from Health science specialization:

Blackboard was widely used in this specialization (S3), as shown in Table 6.20.

6.20: Descriptive statistics of learners' use of Blackboard for S3

	N	Minimum	Maximum	Mean	Std. Deviation
Sessions	42	21	175	68.74	33.91
Total time	42	2:04	24:22	9:06	5:38
Read messages	42	0	105	45	22
Post messages	42	0	14	.79	2.41
Content folder	42	76	445	286.24	116.46
files	42	19	139	78.81	26.23

Positive significant correlations were for some variables and none were found for others as shown in Table 6.21 below. The figures are as follows: learner variable and their coursework (r=0.222, p<0.01) and exam grades (r=0.171, p<0.05), as shown in Table 6.22. There was also a positive significant correlation between students' perception of the learner variable and the students' use of Blackboard, namely the number of times learners accessed Blackboard (r= 0.282, p<0.01), the total time learners spent using Blackboard (r=0.202, p<0.01), the number of messages that learners read on the discussion boards (r=0.193, p<0.05), the number of messages learners posted on the discussion boards (r=0.185, p<0.05) and the number of times that learners accessed or saved a file (r=0.192, p<0.05), as shown in Table 6.23.

There was a significant correlation between students' perceptions of instructor variable and their attitude to the LMS Blackboard (r=0.453, p<0.01), as shown in Table 6.21. A significant correlation was also found between students' perceptions of the instructor variable and coursework grades (r=0.201, p<0.01), as shown in Table 6.22. A significant correlation was found between students' perception of the instructor variable and the number of times Blackboard was accessed (r= 0.218, p<0.01) and the number of messages that students read on the discussion boards (r=0.161, p<0.05), as shown in Table 6.23.

6.21: Correlations across the four independent variables and the students' attitudes towards Blackboard in S3

		Learner dimension	Instructor dimension	Technology dimension	University support
Attitude	Pearson Correlation	.168*	.453**	.381**	.078
	Sig. (2-tailed)	.027	.000	.000	.311
	N	42	42	42	42

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

6.22: Correlations across the four independent variables and the students' achievements in S3

		Learner dimension	Instructor dimension	Technology dimension	University support
Course work	Pearson Correlation	.222**	.201**	.064	-.019
	Sig. (2-tailed)	.003	.008	.404	.803
	N	42	42	42	42
exam	Pearson Correlation	.171*	.135	.111	.098
	Sig. (2-tailed)	.025	.077	.145	.202
	N	42	42	42	42

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

There was only a significant correlation between the technology variable and learners' attitude towards using Blackboard (r=0.381, p<0.01), as shown in Table 6.21.

The university support variable was found to only correlate with students' use of Blackboard, as follows: the number of times students accessed Blackboard (r= 0.266, p<0.01), the total time students spent using Blackboard (r=0.197, p<0.01) and the number of messages that students read on the discussion boards (r=0.152, p<0.05), as shown in Table 6.23.

6.23: Correlations across the four independent variables and the students' use of Blackboard in S3

		Sessions	Total Time	Messages read	Messages post	Submit assessment	Content folder	Files
learner dimension	Pearson Correlation	.282**	.202**	.193*	.185*	.098	-.020-	.192*
	Sig. (2-tailed)	.000	.008	.011	.015	.288	.825	.012
	N	42	42	42	42	42	42	42
Instructor dimension	Pearson Correlation	.218**	.111	.135	.161*	.119	.044	.109
	Sig. (2-tailed)	.004	.229	.077	.035	.198	.565	.156
	N	42	42	42	42	42	42	42
Technology dimension	Pearson Correlation	.098	.003	-.138-	.004	.054	.027	-.110-
	Sig. (2-tailed)	.288	.972	.134	.968	.559	.770	.234
	N	42	42	42	42	42	42	42
University support	Pearson Correlation	.266**	.197**	.152*	-.028-	.078	.136	-.107-
	Sig. (2-tailed)	.000	.010	.046	.765	.311	.076	.245
	N	42	42	42	42	42	42	42

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Table 6.24 displays a significant positive correlation between learners' achievement and their use of Blackboard in Health science specialization.

6.24: Correlations across learners' grades and their use of Blackboard in S3

		Sessions	Total Time	Messages read	Messages post	Submit assessment	Content folder	Files
Course work	Pearson Correlation	.391**	.247**	.373**	.153*	.190*	.186*	.179*
	Sig. (2-tailed)	.000	.001	.000	.044	.012	.014	.019
	N	42	42	42	42	42	42	42

exam	Pearson Correlation	.292**	.329**	.250**	.215**	.267**	.226**	.238**
	Sig. (2-tailed)	.000	.000	.001	.005	.000	.003	.002
	N	42	42	42	42	42	42	42

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

6.25: Summary of findings

Hypotheses		**Sig**		
	Learner dimension	**S1**	**S 2**	**S 3**
H1	*The learner dimension would impact positively on learners' attitude towards using Blackboard in their courses.*	**yes**		**yes**
H2	*The learner dimension would impact positively on learners' achievements.*			**yes**
H3	*The learner dimension would impact positively on the learners' way of using Blackboard.*		**yes**	**yes**
	Instructor dimension			
H4	*The instructor dimension would have a positive effect on the learners' attitude towards using Blackboard in their courses.*	**yes**		**yes**
H5	*The instructor dimension would have a positive effect on the learners' achievement*s.			**yes**
H6	*The instructor dimension would have a positive effect on the learners' way of using Blackboard.*	**yes**		**yes**
	Technology dimension			
H7	*The technology dimension would have a positive impact on the learners' attitudes towards using Blackboard in their courses.*	**yes**	**yes**	**yes**
H8	*The technology dimension would have a positive impact on the learners' achievements.*			
H9	*The technology dimension would have a positive*	**yes**		

	impact on the learners' way of using Blackboard.			
	University support dimension			
H10	*The University support dimension has a positive influence on the learners' attitude towards using the Blackboard system in their courses.*	**yes**	**yes**	
H11	The *University support dimension has a positive influence on the learners' achievements.*			
H12	*The University support dimension has a positive influence on the learners' way of using the Blackboard system.*		**yes**	**yes**
H13	**H13:** *There is relationship between learners' activities on Blackboard and their achievement.*	**yes**	**yes**	**yes**

6.10. Discussion

This research was carried out to develop a framework in order to explore the factors critical to the use of the LMS 'Blackboard' by a cohort of undergraduate students in the University of Taif in the kingdom of Saudi Arabia. The aim was to examine what links and relationships are in play between the framework independent variables (learner, instructor, technology and university support dimensions) and the dependent variables (student attitudes to the LMS use, their achievements, and their actual use of Blackboard). The results were presented in two sections:

An analysis of the demographic differences, namely gender and subject areas as social variables were put under a one-way ANOVA and *t*- tests. The results indicated that there are significant differences in terms of gender in their attitudes to the use of the LMS. In addition, there are significant differences as for the achievements between the genders.

A discussion on the relation between all framework variables is mainly based on the correlation relationships that were found to be positive between the variables, as shown in Figure 6.3 below.

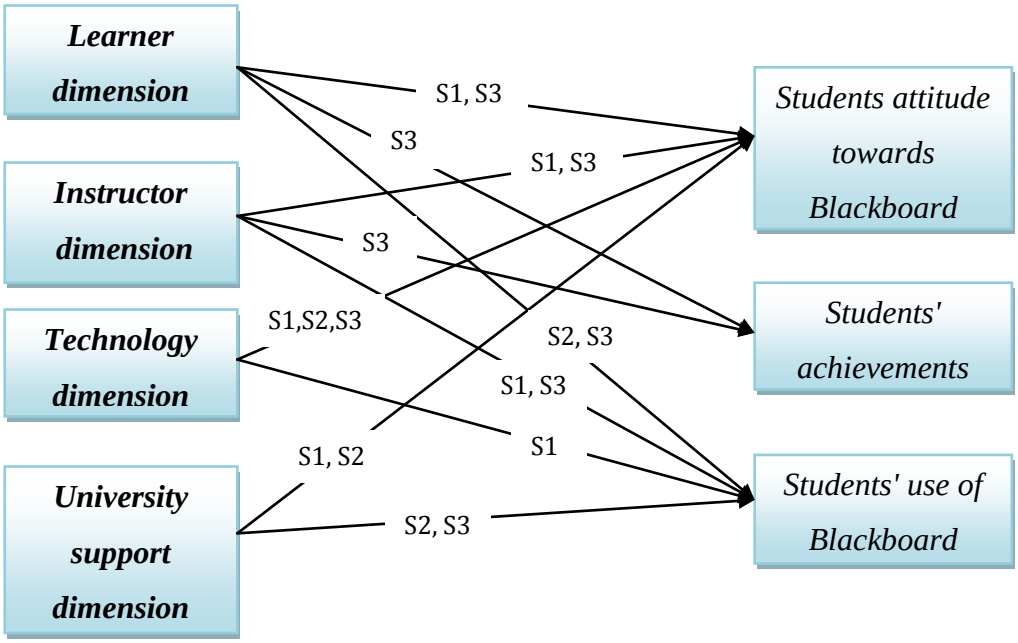

Figure 6.3: The significant relationships in the framework

6.10.1. Attitudes

The findings have indicated that learners have generally shown a positive attitude when using the LMS (Blackboard) in all subject areas. Regarding the learner dimension there was a significant positive correlation with respect to learner attitudes towards in two of the observed specializations (S1 and S3). The learner construct consisted of three variables, in the form of interaction with one other, learner ability to use the internet and the LMS itself. This greater is the use, the more is the learner attitude is positive. Internet experience seems to be the key in shaping attitudes. This finding are congruent with the results of previous research carried out by (Hammoud 2010; Al-Busaidi 2012). (Paris 2004) who states web know how does influence student attitudes positively. Similarly, (Ando, Takahira *et al.* 2004) has also concluded that an increase in the daily use of the web does in fact increase learner motivation to study, their interest and self-confidence.

The instructor dimension saw a significant positive correlation with respect to learner attitude to the use of Blackboard in two of the observed specializations (S1 and S3). The technical competence of instructors, the way of providing materials on Blackboard and their interaction with learners made up the instructor construct. Previous studies suggested that instructor interaction with students is considered an important factor. (Swan 2001; Ali and Ahmad 2011) found that instructor interaction with students had quite an impact on online learning.

The study findings do illustrate that the way of providing material on Blackboard and the technical competence of the instructor and their interaction with learners do affect students' attitudes to the LMS. (Sun, Ray *et al.* 2008) found that instructor activity in online learning does impact on students' attitude to the system used and this in turn affects learner satisfaction and motivation. Online courses run by active and motivated and experienced instructors tend to breed learners satisfaction and increase their motivation (Kim and Moore 2005; Hammoud 2010).

The technology dimension had a significant positive correlation with students' attitudes towards using Blackboard in the three specializations (S1, S2, S3) that were observed. The technology construct included four factors: namely students' perception of the usefulness, ease of use, the LMS flexibility and quality used to support their courses. A similar finding were obtained by a study by (Hammoud 2010), which have indicated that a positive correlation meant higher grades which in turn brought about a more positive attitude to using Blackboard.

A study by (Bangert 2005) has found that students appreciated the flexibility in accessing web-based courses anytime anywhere. This finding has also suggested that the more the LMS is found useful and easy to use by learners, the more positive their attitude is keeping with it. This result means that students would be using the LMS Blackboard more and more when they realize that it is an easy system where all sort of information is easy to access. This is in agreement with previous studies findings (Chi-Hong and Yuen-Yan 2003; Minton and Willett 2003; Jurczyk, Kushner-Benson *et al.* 2004; Hammoud 2010;Al-Busaidi 2012).

As for the university support dimension, it was found that there was a significant correlation regarding learners' attitude to the LMS Blackboard in two of the observed

specializations (S1 and S2). Two factors make up this construct: students' perception of training and technical support when using Blackboard. This result means that students who have received good training in how to use Blackboard and receive technical support in using any system will in doubt have a positive attitude when using it for their learning. This finding is in agreement with previous research (Alkharang and Ghinea 2013; Solomon, Oludayo *et al.* 2013). This indicates that technical support in using any LMS and being well trained would make learners more aware that such system cannot be but an aid or more exactly a valuable facilitator. This result also supports the findings of (Hammoud 2010; Al-Busaidi 2012; Parsazadeh, Megat *et al.* 2013;Nisperos 2014).

6.10.2. Use of the Blackboard system

The learner dimension: a significant positive correlation between this construct and the learner use of the said LMS for two of the specializations (S2 and S3). This indicates that learner experience is a key variable here because the more experienced learners are in using the web, the longer they keep with the LMS Blackboard and continue to use it. Peer interactions using the LMS Blackboard was found to enhance learner perception of how useful Blackboard is therefore make them more satisfied. Thus, students who liked interaction with others via Blackboard used it more than students who did not. A study by (Chi-Hong and Yuen-Yan 2003) suggested that computer skills play a significant role in learner progress and achievement when using e-learning. Furthermore, (Kalifa and Lam 2002) have indicated that learner interaction in web-based learning was one of the most significant variables in the learning process.

The instructor dimension showed a significant correlation when Blackboard is used in two of the observed specializations (S1 and S3). This indicates that, if instructors have a positive attitude towards Blackboard, then students will also have the same attitude; thus, they become satisfied with it, and use it. This is in agreement with (Al-Busaidi and Al-Shihi 2010; Al-Busaidi 2012;Taha 2014), who found that the instructor’s attitude is a significant factor in students' actual use. A well-designed course, the way instructors present the material on Blackboard, their technical competence and

student-instructor interaction enable students to realize the usefulness of Blackboard, and help improve their satisfaction with it, which has a significant impact on their actual use. This study confirmed the findings of some previous studies (Sun, Ray *et al.* 2008; Lee, Hsiao *et al.* 2014), who have stated that a good online course must have the means for learners to communicate with their peers and instructors anytime anywhere and to be able to collaborate, share course materials and engage in discussions and be able to do presentations using the LMS.

Regarding the technology dimension there was a significant and positive correlation with students' use of Blackboard in sciences specialization (S1). This means that the attributes known to the LMS Blackboard such as its flexibility, quality and ease of use do impact on learners' use of it. More precisely, good quality and more flexibility engender more use on the part of learners. Good system quality has been shown empirically to be positively linked to leaner satisfaction (DeLone and McLean 1992), as has flexibility, usefulness and ease of use (Roca, Chiu *et al.* 2006; Liaw 2008;Aixia and Wang 2011).

The university support dimension: there was a positively and significantly correlation between university support and the use of the LMS Blackboard for two of the specializations under scrutiny (S2 and S3). Such result gives an indication that it is with good training and technical user support learners would perceive this construct to be easy to use and very useful, which in turn would make them more satisfied and would continue to use it. Therefore, university support assures learners that Blackboard and new technologies are inherent to the institution forward thinking culture which should consequently encourage them to adopt and use the system. This is consistent with (Igbaria 1990; Alkharang and Ghinea 2013), who state that learners' acceptance, use and satisfaction with Blackboard may be associated with university support to end users, and significantly improves computer usage.

In the e-learning context, technical support has impacted significantly on student satisfaction. The findings of (Al-Busaidi 2012; ALhomod and Shafi 2013) support this result. Like for anything else in life, training does significantly influence the acceptance of any new tool, in this case, technology. In their work on the topic (Tabak and Nguyen 2013) seem to agree.

6.10.3. Achievements

The learner dimension was found to have a significant correlation with learner achievements in S3. This means that learners who had web and LMSs experience are able to attain higher and more encouraging scores than those who had not and students who liked to interact with their peers tended to obtain higher marks/grades than the others. This indicates that student achievement can be affected by student-student interaction. This is in agreement with previous research by (Picciano 2002; Hammoud 2010), who found that a relationship between student interaction and student achievement in VLEs does exist.

The instructor dimension in turn was known to have a correlation positively significant with student achievement in S3, which means that instructors' interaction with the students and their course leaders' way of using Blackboard affected student achievement. This supports the findings of (Hammoud 2010). Moreover, (Chi-Hong and Yuen-Yan 2003) suggest that how information is made available by course leaders affects student achievement.

An important aspect of this study is that the tracking system data analysis has illustrated the close link between the LMS Blackboard use and learner achievement. A significant positive link between the continuous use of the LMS and learner learning outcome was found, which indicates that students who visited Blackboard frequently have obtained higher grades. Moreover, the findings have also illustrated a significant link between the number of discussion board hits and learner learning outcome, which indicated the more the discussion board is hit the better the outcomes for both exams and coursework. One can safely suggest that higher number of discussion board hits causes a positive effect on learner learning achievements. It can be concluded from these findings that students who used the discussion board more frequently tended to be better achievers than those who did not.

This is in agreement with findings of (Hammoud 2010), who has obtained found that frequent use of the LMS Blackboard brought about similar results. The findings of (Hoskins and Hooff 2005) work have also indicated that peer- peer and learner-instructor dialogue can seriously affect learner achievements in assessed coursework.

(Sayers, Nicell *et al.* 2004) have found in their study that the use of this LMS students of the LMS produced better learning outcomes compared to the previous years where no LMSs were used.

Based on all of the above, the study illustrated that success in adopting LMS in learning positively impacts students' attitude to continuously using LMS. Once students use LMS, they perceive it to be easy and useful, and are satisfied with it, and they will continue to use it. Users' satisfaction and acceptance of LMS is an important element for its survival. Thus, all major entities of LMS adoption (students, instructors, LMS, course, classmates and organization) are critical to the success and survival of LMS. Owing to the importance of the role of instructors as a crucial variable or factor in the e-learning process, instructors must not only be knowledgeable and very experienced and well trained in web-based course delivery, but must also show a keen and positive attitude to their learners regarding the use of new technologies; in our case, the use of the Blackboard LMS to keep their learners constantly motivated and obtain the maximum out of them in matter of learning outcomes.

Any LMS acceptance is closely linked to how effective institutional support is. Universities must make sure that technical and support for all those stakeholders concerned is readily available and must update any available training to all users to keep up with user problems and demands. Training and technical support are indeed very crucial to any successful implementation of any e-learning programmes, a user base well trained and well supported is a happier and well satisfied user base. Hence, institutions must ensure that the implementation of any online learning processes must go hand in hand with sound technical support constantly and readily available to end users to facilitate their mission.

Few studies have made such investigations in the Middle East, and studies of this sort are indeed scarce to say the least in the Saudi kingdom . For this reason my research aims to increase governmental and institutional awareness of the potential technical and social hurdles faced by educational institutions when they chose or decide to adopt and implement online learning programmes. A thorough scrutiny and weighing of all the potential crucial factors involved in such processes for smooth, efficient and successful outcomes for both user and institution are mandatory. Indeed this applies to

all Saudi HE institutions in general and to Taif University in particular. A well thought out framework can provide universities with the necessary data that would allow them to choose and adopt the right LMS to improve learner performance. Hence, the current study may be thought of as the first corner stone on which to build a new technical revolution in the way teaching and learning processes ought to be conducted in Saudi from now on, to try and emulate western and Far-East countries.

6.11. Chapter summary

Learning management systems do play increasingly an important role in the development of teaching and learning processes in higher education. Owing to the lack of studies carried out on the critical success factors affecting e-Learning success in developing countries, it was not only important, but also necessary to design a framework to undertake such research, in order to enhance the effectiveness of these LM systems. Many studies have identified variables dealing with LMS and a host of LM systems have been studied over recent years and to my knowledge the Blackboard LMS is one of the most used among them.

In order to understand the relationship that exist between different variables related to web-enhanced courses when the LMS Blackboard is being used as a supporting tool, a framework has been presented in this chapter. It starts with a brief review of the several factors which might impact on the success of technology in academic institutions, as well as an explanation of the models and frameworks this study depended on. It then presents a new model framework. This new framework consists of four constructs: a learner construct, an instructor construct, a technology construct and a university support construct. These constructs were measured by a questionnaire submitted to students at Taif University in Saudi Arabia. The framework also consists of three dependent variables: learner attitude towards using Blackboard, their achievements and actual use of Blackboard. learner attitude towards using Blackboard was measured by a questionnaire. Information about the learners' use of Blackboard was collected from the Blackboard tracking system and learners' achievements were measured by their grades in coursework and exams. This study used information on

one course (English language) in different academic specializations (Sciences, Humanities, and Health sciences).

As shown in this chapter, the findings of hypotheses were different in the three specializations (S1,S2,S3); however, there is not enough evidence in this study to explain what caused these differences.

The relationships among the four constructs and the dependent variables were tested. Learner attitudes towards using Blackboard were found to have a positive relationship with the four constructs of the framework. The learners' use of Blackboard was also found to have a positive relationship with the four constructs. Learners' achievements were found to have a positive relationship with the learner and instructor constructs.

Overall, the positive findings obtained in this study could lead to the development of a more comprehensive and new framework that could be used to explain the complicated relationships governing success factors of web-enhanced courses. Hence, this study may be the first step in providing organizations with useful insights into the critical factors for adoption of learning management systems in academic institutions, at least those in developing countries.

The next chapter will be a summary of the research work findings in this thesis. It will also state the research contributions, limitations and proposals for future work.

Chapter 7

Discussion and conclusions

7.1. Introduction

E-learning is a new development in the teaching and learning processes, Education as we know, is no longer confined by time and space. The majority of educational institutions around the world and particularly in the developed countries are now offering web-based courses using sophisticated learning management systems such as Blackboard or WebCT. As interactions (student-student, student-instructor and learner-content interactions) are a central tenet in the teaching-learning process, it is mandatory to look at its many facets in order to understand its impact on the whole process of this technology lead course delivery.

We already know that in recent years the internet has enhanced communication and collaboration between learners and instructors no end. learners' attitudes to web-based education are significant in gauging the effectiveness of web-based courses. The body of literature on web-based education, although already extensive is growing all the time. Despite that, research dealing with factors that affect the success of web-enhanced courses and the relationships that govern these factors is limited, particularly in the developing countries. Most of the studies in the contemporary literature are based on comparing learner performance and attitude when the LMS Blackboard is being used and when it is not. Although, some studies have recently examined online environments and VLEs with regard to student achievements, the effectiveness of web-based education remains to be investigated in the developing countries. Therefore, research is needed to find out if a relationship between specific aspects of the online environment and student achievements exists and if it does, what sort of relationship it is.

The objective of this research is to examine a web-based tool – here the LMS Blackboard – on undergraduate courses in developed countries, specifically the Kingdom of Saudi Arabia and to try and investigate what factors could influence learners' attitudes and performances across a variety of subjects in order to find what relationship, if any, does exist between these factors. Three studies were conducted to achieve this research thesis stated aim. Three separate studies were conducted, in which one course and different groups of students were observed for each study to determine what influence or impact the use of Blackboard has in different subject areas. With regard to the methodology adopted, a mixed method approach was used in order to try and increase the richness of the data to be gathered for a truly comprehensive – and hopefully a sound - outcome to this thesis results. A study by (Owston 2000) suggested that the richness and complexity of a web-based education environment can be captured and understood to greater extend if a blended methodological approach was adopted. This is what the researcher opted for and carried out. Data from participants was gathered via a number of instruments (questionnaires, interviews, and numerical data from the Blackboard tracking system). The following is a summary of the three studies obtained results.

7.2. Summary of the studies' results

Three studies were conducted as reported in below.

7.2.1. learners' perceptions on integrating e-learning into Teaching and Learning at Taif University

The work presented in Chapter four of the thesis has examined undergraduate students' perceptions to the use of the Blackboard LMS the learning management at the University of Taif. It took into consideration the effects of using e-learning on both gender and academic specialization. The key result from this study was that the attitudes shown by course instructors to the use of Blackboard do have a significant effect on those of their students to its use. The more positive the attitude of the instructor is, the more positive is that of the learner. Students' gender and academic specialization had no effect on students' attitudes to the LMS. These results suggest

that the academics' perspective may affect students' attitudes to Blackboard and their actual use of the LMS. Similar results can be found in a previous study by (Sun, Ray *et al.* 2008). It suggested that instructors' attitudes to e-learning have a significant impact on e-learners' satisfaction. (Mahdizadeh, Biemans *et al.* 2008) also have stated that instructors' attitudes and opinions about web-based learning activities are very effective in shaping those of their learners' attitude to the e-learning environment. They noted that the instructors' perception of e-learning directly affects the whole atmosphere of the e-learning environment.

In this study, a comparative data was gathered from both genders of a cohort of undergraduate students on an English language courses across three academic specializations.

7.2.2. The relationship between learners' use of Blackboard, their performance on a Blackboard course and students' attitudes towards it

As the target of this research was to investigate factors that influence learner attitude and performance on web-enhanced courses, other factors were explored as part of the work undertaken. These are learners' satisfaction and behavioural intentions when using the LMS under investigation.

The second study investigated learners' satisfaction, behavioural intentions and the effectiveness of the Blackboard system. Additionally, the relationship between the learners' use of Blackboard, their performances and attitudes towards it were also scrutinised. Data was collected from undergraduate learners during semester time. The use of this LMS was measured using the numerical data from the tracking system. Learners' satisfaction, behavioural intentions and other factors were measured using a questionnaire. The study also took into account the effects of gender and academic specialization. This study benefited from the integrated tracking data designed into the LMS, which gives accurate information on both the learners' actual use of it, their achievements on a web - enhanced courses and the instructors' attitudes regarding its use. The findings have shown that learners were able to use the Blackboard but not efficiently. In other words, they have faced difficulties in using it effectively because on one hand it is this a very recent technology and on the lack of

training of the educational institution on the other, irrespective of gender or academic specialization. In addition, the results have confirmed that the instructor's attitude towards using Blackboard had a significant impact on learners' actual use. These results support the findings from a study by (Telia 2012), who recommended that the university needs to increase and improve the support services provided to end users.

A study carried out by (Al-Busaidi 2012) stated that instructors' attitudes to LMSs are considered as one of the significant factors affecting learners' actual usage. There were differences between learners' attitudes to the use of Blackboard with respect to gender. Female students were more positive about using the LMS than their male counterparts. Similarly, (Sandersa and Morrison 2011) have found that the attitude of female students on the Web-based learning was found to be significantly more positive than that of males. This finding suggests that the reason lies in the nature of Saudi higher education, where men and women receive instruction in classes separately, for religious and cultural reasons. Naturally this puts further strains on the limited facilities and human resources available and because of this segregation women are often among the strongest supporters of e-Learning, which potentially facilitates not only their access to higher education, but also to lucrative future careers.

Moreover, significant differences were found between students' attitudes regarding the issues of 'time', 'read' 'files' on the Blackboard system, with respect to gender and academic specialization (Scientific, Humanities & Health Sciences). Gender and academic specialization were found to influence learners' way of using the Blackboard system (e.g. time spent exploring a page, posted or read messages and the number of times that learners accessed or saved a file in the content folder). A similar conclusion can be found in previous studies (Liaw and Huang 2011; Sandersa and Morrison 2011;Al-Hadrami 2014). These authors have found that gender played a role in the degree of activity on bulletin boards when using the learning management system.

7.2.3. The relationships among the main success factors in web-enhanced learning

The third and final study was developed and tested as a result of the findings of the first and second studies (reported in Chapters 4 and 5). The aim of the study was to develop a framework for the critical factors affecting the use of the Blackboard LMS by undergraduates by examining what relationships exist within the framework variables. The variables were determined generally from background research in the field, and specifically from the findings of the first two studies carried out as part of this thesis. The study framework had four main dimensions or constructs with thirteen variables that include learner, instructor, the technology and the institution support dimensions. The learner construct consists of three factors, namely, learners' interaction with their classmates, their ability to use the web and their capability to operate Blackboard.

The instructor construct has four factors, namely, instructors' attitude to the use of Blackboard, their technical competence, the way materials are presented on Blackboard and student-instructor interactions. The technology construct had the following factors: usefulness, ease of use, flexibility, and quality. The university support dimension consisted of two factors, namely: end-user training and technical user support. The study has examined the relationship between the framework's four constructs and learners' attitudes to Blackboard, their achievements in the observed course and their use of Blackboard tools. In order to achieve the aim of the study, one course provided to three groups of students from different specializations of both genders was observed. The findings have indicated that learners' attitude to using Blackboard and learners' use of Blackboard were found to have a positive relationship with the four constructs of the framework. learners' achievements were found to have a positive relationship with the learner and instructor constructs. A detailed explanation of the main findings is given below.

7.2.3.1. Attitude

The findings have indicated that learners have not only shown a positive attitude throughout to using the LMS Blackboard for their courses, but have also found it beneficial in all subject areas. What has had mostly a positive significant correlation with learners' attitudes to using Blackboard was the learner dimension. The learner construct consists of three factors: learners' interaction with each other, learners' ability to use the web, and their capability of using Blackboard. The more positive attitudes towards Blackboard are, the more the amount of internet and LMS use is and vice versa. These findings tally with the results of previous research (Hammoud 2010; Al-Busaidi 2012). (Paris 2004) stated that internet use engenders a positive attitude in students. Similarly, (Ando, Takahira *et al.* 2004) concluded that not only students' motivation seems to soar when using the internet daily, but also their interest in learning education and their self- confidence seems to follow suit.

The instructor construct or dimension has indeed had a positively significant correlation with learners' attitudes to the use of Blackboard. This construct which consists of the three factors: technical competence of the instructor, the instructor's way of providing materials on Blackboard and the interaction between learners and instructors proved to be of great significance too. Previous studies are congruent with these findings which indicates that instructor interaction with students is seen as an important factor which has a significant impact on the success of online courses (Swan 2001; Ali and Ahmad 2011).

This study's findings have illustrated that a host of factors are involved. Factors like the provision of material by course leaders on Blackboard and their technical competence, student-instructor interaction and learners' attitudes toward the use of the LMS. (Sun, Ray *et al.* 2008) have found that web-based courses impact on learners' attitudes regarding the use of LMSs and are also affected by instructors' activities and behaviours. They also stated that instructors' attitudes are closely linked to learner satisfaction toward e-Learning activities. This indicates, the negative the attitudes and the lower the enthusiasm of the instructor are, the lower the motivation and the negative satisfaction of the learner are. More interaction of students with each other

and with their instructors tends to increase students satisfaction with Web courses (Kim and Moore 2005; Hammoud 2010).

It was found that the technology dimension has a positive significant correlation with students' attitudes to the use of the Blackboard LMS. As we have previously mentioned this dimension has four variables, namely, learners' perception of the usefulness, ease of use, flexibility, and the quality of the LMS used to support their courses. Similar findings were obtained following a Study carried out by (Hammoud 2010). This positive correlation can only demonstrate that the higher the technology grade, i.e. the more practical and easy to use, the positive the attitude toward using Blackboard is. In a study by (Bangert 2005) it was found that accessing web-based courses at anytime from anywhere, i.e. the flexibility that e-courses offer, was much appreciated by students, which seems to engender a positive attitude to LMS use and by the same token the continuous using of this type of learning. This is congruent with previous studies findings (Chi-Hong and Yuen-Yan 2003; Minton and Willett 2003; Jurczyk, Kushner-Benson *et al.* 2004; Hammoud 2010;Al-Busaidi 2012)

As for the institution support dimension it was found that there was a close and positive significant correlation with students' attitudes to the use of Blackboard. This dimension which has two variables: students' perception of the training and the technical support when using Blackboard, indicated that students who had received good training on the use of the LMS Blackboard and received the technical support needed, tended to have a more positive attitude to using Blackboard as a tool in their learning. These findings are congruent with previous research. (Alkharang and Ghinea 2013; Solomon, Oludayo *et al.* 2013) have indicated that training on the use of LMSs and continuous technical support, do indeed enhance students the awareness of students and consequently could be looked upon as an important facilitator for user attitudes. This result is also supported by the findings of (Hammoud 2010; Al-Busaidi 2012; Parsazadeh, Megat *et al.* 2013;Nisperos 2014).

7.2.3.2. Use of the Blackboard system

Learner dimension: there exists a positively significant correlation between this variable and the students' use of Blackboard. This indicates that the more students use the internet, the more they interact with the LMS Blackboard and the more experienced they become. This makes them use it even more, in contrast with their peers who are not. The interaction with this LMS was found to enhance students' perception of its usefulness and stimulate students use and their satisfaction. In conclusion students who interacted with their peers via Blackboard were found to use it more often than those who didn't. A study carried out by scholars (Chi-Hong and Yuen-Yan 2003) suggest that computer and internet navigation skills do play a significant role in learners' improvement in web-based courses. Furthermore, (Kalifa and Lam 2002) suggested that this variable was one of the most significant factor in the education process.

As for the instructor dimension; this variable was found to correlate significantly and positively with the learners' use of Blackboard. The more enthusiastic and motivated the instructors are the more positive students' attitude is in using Blackboard. This is congruent with (Al-Busaidi 2012; Taha 2014) findings. These scholars have looked at the instructor's attitude and have found it to be a significant motivating factor in students' actual use of the LMS. Instructor's input is a valuable asset if it is well thought and well applied. If courses are well designed by instructors with students needs in mind, adoption of LMSs can be easily administered and their use be accepted and taken up by students. The more competent the instructor is, the more successful the outcome will be. The present study also confirms the findings of previous studies undertaken by (Piccoli, Ahmad *et al.* 2001; Sun, Ray *et al.* 2008;Lee, Hsiao *et al.* 2014). These scholars have stated that well thought out and well- designed online courses must provide a rich environment for online communication, collaboration, and sharing of course materials. Specifically, interactive online interactions in the form of presentation of course materials through multimedia presentations and discussions must be an integral part of any LMS alongside the management of the any learning processes.

Similarly the technology construct was also found to correlate significantly and positively with learners' use of the LMS Blackboard. All those variables related with it such as its usefulness, ease of use, flexibility and quality all do influence the learners' use of it. More precisely, the more the positive feeling and attitude to this LMS is, the more the students will stick with it. Good system quality was found empirically to be positively related to system use and user satisfaction (DeLone and McLean 1992). One can therefore safely assume that flexibility, ease of use and usefulness of the e-learning system do have a significant impact on students' satisfaction with e-learning systems (Roca, Chiu *et al.* 2006; Liaw 2008;Aixia and Wang 2011).

Higher Education institutions, i.e. universities and institutes, support construct was found to correlate closely, significantly and positively with the learners' use of the LMS Blackboard. This is a very clear indication that students' continuous use of this LMS and their satisfaction with it depends greatly on good training and technical user support on one hand and student perception that this technology is not only easy to use, but also useful on the other. By their constant support universities will assure students that using Blackboard is indeed an integral part of their mission statement and indeed their educational culture and that they are totally committed to it and its success and this would surely engender assurance and confidence with students which in the long term would increase their reliability of such systems and e-learning in general. This is consistent with the findings of (Igbaria 1990; Alkharang and Ghinea 2013), who have stated that learners' acceptance, use, and satisfaction with the Blackboard LMS is closely associated with the institutions constant support to end users. They have noticed that this support does indeed significantly improve computer usage. In the e-learning context, knowing that there is support available in form of 'Help desks' or 'Technical department' students and other end users will persevere in using LMSs and by the same token, desk top or laptop computers and various other multimedia devices for their learning, remote or on site, and this can only increase their satisfaction and their acceptance of such LMSs and the technology associated with them (Tabak and Nguyen 2013).

7.2.3.3. Achievement

Students' achievements were found to be closely associated with the learner dimension. Significant positive correction between the two cannot be denied or discarded. This can only indicate that those learners who had more experience and expertise in using the internet and Blackboard would achieve better results and higher scores that those who had not. In addition, learners who liked learner-learner interactions tended to perform much better than those who did not, which may link their achievement to such interactions. This is in agreement with previous research (Picciano 2002; Hammoud 2010), who have found that there is a relationship between learner interaction and learner achievement on a web-based course.

Similarly instructor dimension was found to have a positive significant correlation with the students' achievement. Students' achievements were found to be affected by how instructors and course leaders used the LMS within the web. This confirms and supports the results obtained in (Hammoud 2010) study. Moreover, (Chi-Hong and Yuen-Yan 2003) suggested the way information and instructions were dispatched and posted online played a considerable role and therefore can be looked upon as an important factor affecting students' achievements.

7.2.4. The relationship between learners' use of Blackboard and their achievement

One of the important aspects and facets of this study is the way a tracking system was used to analyze and illustrate the relationship between learners' use of Blackboard and their achievements. This endeavour has led this researcher, like many before him, to safely assume that there definitely is a positive significant relationship between the continuous use of Blackboard and students' grades. The more the use and the greater the expertise are, the better the grades will be. The relationship seems to grow stronger and more positive, the greater the exchange of messages are read or exchanged between students, and this is reflected on their level of achievement and their grades in exams and coursework too. Obviously these correlations do suggest that interactions between students using the discussion board have a positive effect on students' achievements. One can safely conclude from these findings that students

who use the discussion boards more often, do indeed obtain better grades than those peers who do not. This is congruent with (Hammoud 2010) findings. This researcher has found that learners who used Blackboard got slightly better grades than those who did not. These results do also tally with the findings of (Hoskins and Hooff 2005) who stated that interaction and dialogue over the discussion board can affect students' achievement in assessed coursework. In a piece of research carried out by (Sayers, Nicell *et al.* 2004) discovered that using Blackboard did not have a negative effect on written exam performance. These scholars have also noticed that students who have used Blackboard have achieved slightly better results than before using this LMS.

In recent years, LMSs have, by and large, seen a sharp rate of increase in their use, especially in developing countries' HE institutions and other educational establishments. Continuous technological innovations in communications and a drop in the cost of computer hardware and software packages, added to the availability of various competing LMSs on the market and the ever-increasing cost of traditional face-to-face learning, have made it easier for e-learning to grow across the world. Therefore, it is very important to establish an appropriate framework for research to enhance the effectiveness of the LMS systems in use. A host of researchers have looked at the various learning management systems and have identified a number of variables that could sway users towards their adoption. The LMS Blackboard has emerged lately as one of the most accepted and used systems.

7.3. Limitations of the study

Despite the fact that this thesis has mixed qualitative and quantitative methodologies, in the form of questionnaires, interviews and field study, for the sole purpose of real participants direct response and involvement (Coolican 2004).

No relationship linking the technology in the third study reported in chapter 6 and institutional support dimensions to students' achievements was found. As this relationship was said to be significant by the corpora and this present endeavour lacks the necessary comprehensive data to properly gauge the true significance of the relationship in questionnaire, we cannot but admit that it has its limitations despite the

fact that the latter can be overcome by carrying out some interviews with both students and instructors.

Student performance was measured using only one indicator, the student's overall grade awarded at the end of the semester. Using other measures (e.g., added knowledge, skill building, course withdrawals and successful completion of a course) may lead to more powerful results.

The size of the sample used for this research gives rise to questions and therefore to limitations. Had it been a bigger and wider sample, it may have provided a more comprehensive data. In addition because the studies that were undertaken in this research were limited to only a tiny sample of courses, it can never be generalized. Were the research to embrace a greater number of courses across a considerable array of academic subjects and specializations and were it to be carried out over a substantial period of time, it may have benefited from a wider array of results and consequently more comprehensive findings.

As only the LMS Blackboard has been scrutinized as the e-learning tool in this thesis, doubt in generalizing the results into other LMSs would be high in scholarly circles. Nevertheless the present results can be seen or considered as few preliminary forward steps in the diagnosis of LMSs as an alternative approach to teaching and learning in HE institutions, especially in Arab world where HE lacks far behind its world counterparts.

Another limitation of this study is that its scope is confined to one public University in the Western area of Saudi Arabia, a geographical area that is different in its population and some cultural aspects from the other more homogeneous and conservative areas in the country. Therefore, the results may not be generalised to the population of Saudi University students.

My research into the LMS Blackboard can be considered an encouraging step forward in the quest to raise awareness regarding the benefits of such methodologies and technologies in order to try and nudge education officials into looking at ways of rolling out similar systems to the rest of the country.

7.4. Future work

Further research is therefore needed to confirm the findings of this study. Perhaps some sort of cooperation between advanced and developing countries would be of benefits to both. Large and varied samples have to be targeted in order to arrive to some comprehensive outcomes and results that can be generalised.

This research mainly focused on one university in Saudi Arabia Future researchers may consider all state universities by applying the study framework to an increased sample, and including several universities. Additional areas of study could include comparing a variety of majors to investigate if some majors are more likely to accept new technology as part of the LMS system.

7.5. Chapter summary

The last chapter of this PhD research thesis discussed the key results of the research carried out to achieve the aims of the thesis. A thorough discussion of key results was presented. In addition, the contributions of this research were discussed, as well as limitations and future work.

References

Abbad, M., D. Morris, et al. (2009). "Looking under the Bonnet: Factors Affecting Student Adoption of E-Learning Systems in Jordan." International Review of Research in Open and Distance Learning 10(2): 1-25.

Abouchedid, K. and G. Eid (2004). "E-learning challenges in the Arab World: Evaluations from a case study profile. Quality in Education." 12(1): 15-27.

AbuSneineh, W. and M. Zairi (2010). "An Evaluation Framework for E-Learning Effectiveness in the Arab World." Elsevier Ltd: 521-535.

Agboola, A. (2013). "A Study of Sociodemographics Effects on E-Learning Adoption among Lecturers." International Journal of Emerging Technology and Advanced Engineering 3(4).

Ahmed, H. (2010). "Hybrid E-Learning Acceptance Model: Learner Perceptions." Decision Sciences Journal of Innovative Education 8(2): 313-346.

Aixia, D. and D. Wang (2011). "Factors Influencing Learner Attitudes Toward E-learning and Development of E-learning Environment Based on the Integrated E-learning Platform." International Journal of e-Education, e-Business, e-Management and e-Learning 1.

Akour, H. (2009). "Determinants of mobile learning acceptance: an empirical investigation in higher education." Submitted to the Faculty of the Graduate College of Oklahoma State University.

AL- Ammary, J. and S. Hamad (2008). "Factors Influencing the Adoption of E-learning at UOB." Proceeding of the Second International Conference and Exhibition for Zain E-learning Center, Manama, Bahrain, 28-30 April.

AL- Fadhli, S. (2008). "Students' Perceptions of E-learning in Arab Society: Kuwait University as a case study." http:// www.wwwords.co.uk/ELEA.

AL- Fadhli, S. (2008). "Students' Perceptions of E-learning in Arab Society: Kuwait University as a case study. E-Learning." http:// www.wwwords.co.uk/ELEA.

Al-Busaidi, K. (2009). "The Impact of Learning Management System Characteristics and User Characteristics on the Acceptance of E-Learning." International Journal of Global Management Studies 1: 75–91.

Al-Busaidi, K. (2012). "Learners' Perspective on Critical Factors to LMS Success in Blended Learning: An Empirical Investigation." Communications of the Association for Information Systems 30(2): 11-34.

Al-Busaidi, K. and H. Al-Shihi (2010). "Instructors' Acceptance of Learning Management Systems: A Theoretical Framework." Communications of the IBIMA.

AL-Fadhli, S. (2011). "Factors Influencing the Acceptance of Distance-Learning: A Case Study of Arab Open University in Kuwait." International Journal of instructional Media 38(2): 147-158.

Al-fahad, F. (2009). "Students' attitudes and perceptions towards the effectiveness of mobile learning in King Saud University, Saudi Arabia." The Turkish Online Journal of Educational Technology 8(2).

Al-Hadrami, A. (2012). "Factors that affect learners' performance in web-based courses: the case of the accounting courses at the Hashemite University." CURVE is the Institutional Repository for Coventry University.

Al-Hadrami, A. (2014). "The impact of demographic variables on accounting students' performance in blended learning." International Journal of Research in IT & Management 4(4).

Al-Harbi, K. (2010). "Investigating Factors Influencing the Adoption of E-learning: Saudi Students Perspective." PhD thesis, (Thesis Submitted for the Degree of Doctor of Philosophy at the University of Leicester), University of Leicester, School of Education.

Al-Harbi, K. (2011). "e-Learning in the Saudi tertiary education: Potential and challenges." King Saud University Applied Computing and Informatics 9,31-46.

Al-Homod, S. and M. Shafi (2013). "Success Factors of E-learning Projects: A Technical Perspective." The Turkish Online Journal of Educational Technology 12(2).

Al-Shafi, S. and V. Weerakkody (2010). "Factors affecting e-government adoption in the state of qatar."

Al-Shboul, M. (2013). "The Level of E-Learning Integration at the University of Jordan: Challenges and Opportunities." Canadian Center of Science and Education 6(1913-9039).

Alaugab, A. (2007). "Benefits, Barriers, and Attitudes of Saudi Faculty and Students Toward Online Learning in Higher Education." Unpublished doctoral dissertation, University of Kansas.

Alavi, M. (1994). "Computer-Mediated Collaborative Learning: An Empirical Evaluation." MIS Quarterly 18: 159-174.

Alexander, s., J. McKenzie, et al. (1998). "An evaluation of information technology projects for university learning."

ALhomod, S. and M. Shafi (2013). "Success factors of e-learning projects: a technical perspective." TOJET: The Turkish Online Journal of Educational Technology 12(2): 247-253.

Ali, A. and I. Ahmad (2011). "Key factors for determining students' satisfaction in distance learning courses: A study of AllamaIqbal Open University." Contemporary Educational Technology 4(4): 118-134.

Alias, N. and A. Zainuddin (2005). "Innovation for Better Teaching and Learning: Adopting the Learning Management System." Malaysian Online Journal of Instructional Technology 2(2): 27-40.

Alkhalaf, S., S. Drewa, et al. (2012). "E-Learning system on higher education institutions in KSA: attitudes and perceptions of faculty members." Procedia - Social and Behavioral Sciences 47- 1199 – 1205.

Alkharang, M. and G. Ghinea (2013). "E-learning in Higher Educational Institutions in Kuwait: Experiences and Challenges." (IJACSA) International Journal of Advanced Computer Science and Applications 4(4): 1-6.

Alkhunaizan, A. and S. Love (2013). "What drives mobile commerce? An empirical evaluation of the revised UTAUT model." International Journal of Management and Marketing Academy 2(1): 82-99.

Allen, E. and J. Seaman (2014). "Grade change: Tracking online education in the United States." Babson Survey Research Group and Quahog Research Group http://www.onlinelearningsurvey.com/reports/gradechange.pdf.

Alobiedat, A. and R. Saraierh (2010). "The Student's Attitude toward Use Platform as Learning Resources at University of Granada." Review of European Studies E-ISSN 1918-7181.

Alobiedat, A. and R. Saraierh (2010). "The Student's Attitude toward Use Platform as Learning Resources at University of Granada." Review of European Studies 2.

Alshaher, A. (2013). "The mckinsey 7s model framework for e-learning system readiness assessment." International Journal of Advances in Engineering & Technology ©IJAET 6(5): 1948-1966.

Altun, A., y. Gulbahar, et al. (2008). "Use of a Content Management System For Blended Learning: Perceptions of Pre-Service Teacher." Turkish Online Journal of Distance Education 9(4).

Alwraikat, M. (2012). "Graduate Students' Attitudes Towards the Use of Electronic-Portfolios in the College of Educational Sciences at the University of Jordan." International Journal of Humanities and Social Science 2.

Alzamil, Z. (2006). "Students' Perception Towards the E-Learning at The GOTEVOT and the Arab Open University in Riyadh." Journal of King Saud University: Educational Sciences and Islamic Studies 18(2): 655-698.

Ando, R., M. Takahira, et al. (2004). "Effects of the Internet Use on Elementary School Students of Attitude toward Learning." World Conference on Educational Multimedia, Hypermedia and Telecommunications 1: 979-984.

Arbaugh, J. (2000). "Virtual Classroom Characteristics and Student Satisfaction with Internet-Based MBA Courses." Journal of Management Education 24: 32-54.

Arbaugh, J. (2002). "Managing the on-line classroom: A study of technological and behavioral characteristics of web-based MBA courses." The Journal of High Technology Management Research 13: 203-223.

Ashong, C. and N. Commander (2012). "Ethnicity, Gender, and Perceptions of Online Learning in Higher Education." MERLOT Journal of Online Learning and Teaching 8(2): 98-110.

Asiri, M., R. Mahmud, et al. (2012). "Factors Influencing the Use of Learning Management System in Saudi Arabian Higher Education: A Theoretical Framework." Canadian Center of Science and Education 2(2): 125-137.

Astleitner, H. and R. Steinberg (2005). "Are there gender differences in web-based learning? An integrated model and related effect sizes." AACE Journal 13: 47-63.

Bacsich, P., T. Bastiaens, et al. (2009). "Reviewing the virtual campus phenomenon: The rise of large-scale e-Learning initiatives worldwide." http://revica.europace.org/Re.ViCa%20Online%20Handbook.pdf.

Bame, S., N. Petersen, et al. (1993). "Variation in hemodialysis patient compliance according to demographic characteristics." Social Science & Medicine, 37(8), 1035-1043.

Bangert, A. (2005). "The seven principles of effective teaching: a framework for designing, delivering, and evaluating an internet-based assessment course for nurse educators." Nurse Educator 30: 221-225.

Becher, T. and P. Trowler (2001). "Academic Tribes and Territories." (2nd Ed.), Oxford: Oxford University Press.

Bolliger, D. and O. Wasilik (2009). "Factors influencing faculty satisfaction with online teaching and learning in higher education." Distance Education 30(1): 103–116.

Boser, R., J. Palmer, et al. (1998). "Student's attitudes toward technology in selected technology education programs." Journal of Technology Education, 10(1), 4-19.

Braun, V. and V. Clarke (2006). "Using thematic analysis in psychology." Qualitative Research in Psychology, 3 (2). pp. 77-101. ISSN 1478-0887.

Breakwell, G., S. Hammond, et al. (1995). "Research methods in Psychology." London.

Breen, R. and R. Lindsay (2002). "Different disciplines require different motivations for student success." Research in Higher Education 43: 693-725.

Brett, P. and J. Nagra (2005). "An investigation into students' use of a computer-based social learning space: lessons for facilitating collaborative approaches to learning." British Journal of Educational Technology 36: 281-292.

Bryman, A. and D. Cramer (2005). "Quantitative data analysis with SPSS 12 and 13, Routledge."

Bush, F., J. Squire, et al. (2008). "An Investigation Of The Effect Of Network Latency On Pedagogic Efficacy: A Comparison Of Disciplines." Contemporary Issues In Education Research 1.

Bussakorn, Praweenya, et al. (2012). "Critical Success Factors for Online Distance Learning in Higher Education: A Review of the Literature." Published Online in SciRes (http://www.SciRP.org/journal/ce) 3: 61-66.

Cakir, H. (2013). "Use of blogs in pre-service teacher education to improve student engagement." Computers & Education: 244-252.

Carbone, E. (1998). "Teaching large classes tools and strategies." USA.

Chang, C. (2008). "Faculty Perceptions and Utilization of a Learning Management System in Higher Education." Unpublished doctoral dissertation, Ohio University, USA.

Chang, Y., C. Chen, et al. (2011). "Investigating students' perceived satisfaction, behavioral intention, and effectiveness of English learning using augmented reality." the Central Taiwan University of Science and Technology 978-1-61284-350-6/11 IEEE.

Chen, F., C. Liao, et al. (2009). "Adults Education Students' Perspective on Critical Success Factors of e-Learning." Available at: doi.ieeecomputersociety.org/10.1109/ETT.2009.85.

Chen, H. and J. Huang (2012). "Exploring learner attitudes toward web-based recommendation learn-ing service system for interdisciplinary applications." Educational Technology & Society 15(2): 89-100.

Cheng, C. and J. Yen (1998). "Virtual Learning Environment (VLE): A Web-Based Collaborative Learning System." International Conference on System Sciences, January, 6-9, 1998, Hawaii. IEEE: 480-491.

Cheng, Y. (2011). "Antecedents and Consequences of E-Learning Acceptance." Information Systems Journal, 18(5), 529-557 21: 269–299.

Chi-Hong and Yuen-Yan (2003). "Mobile Learning : A New Paradigm in Electronic Learning Faculty of Education , The Chinese University of Hong Kong , Yuen-Yan CHAN The Chinese University of Hong Kong , 2 : Mobile learning framework." Learning.

Chokri, B. (2012). "Factors Influencing the Adoption of the E-Learning Technology in Teaching and Learning by Students of a University Class." European Scientific Journal 8(28): 165-190.

Chung, C., L. Pasquini, et al. (2013). "Web-based learning management system considerations for higher education." Learning and Performance Quarterly 1(4): 24-37.

Chyung, S. (2007). "Age and gender differences in online behavior, self-efficacy and academic performance." Quarterly Review of Distance Education 8: 213-222.

Clark, R. and R. Mayer (2008). "E-learning and the Science of Instruction: Proven Cuidelines for Consumers and Designers of Multimedia Learning." San Francisco: Pfeiffer An Imprint of Wiley.

Coates, H. (2007). "A model of online and general campus-based student engagement." Assessment & Evaluation in Higher Education 32(2), 121-141.

Coldwell, J., A. Craig, et al. (2008). "Online students: Relationships between participation, demographics and academic performance." The Electronic Journal of e-Learning 6(1): 19-30.

Coolican, H. (1994). "Research Methods and Statistics in Psychology." 3rd ed. London.

Coolican, H. (2004). "Research Methods and Statistics in Psychology." 4th ed. London, Hodder & Stoughton.

Cooper, J. (2006). "The digital divide: The special case of gender." Journal of Computer Assisted Learning 22: 320-334.

Creswell, J. (2003). "Research design, qualitative, quantitative and mixed methods approaches." 2nd ed. London.

Cruz, A. (2010). "Key success factors for eLearning implementation resulting from proper planning." http://www.shiftelearning.com/key-success-factors-for-elearning-imp.

Dabaj, F. (2009). "The role of gender and age on students' perceptions towards online education Case study: Sakarya University, vocational high school." The Turkish Online Journal of Educational Technology, 8(2),120-123.

Daniel Strickera, b., D. Weibela, et al. (2011). "Efficient learning using a virtual learning environment in a university class." Computers & Education 56(2): 495-504.

Davis, F. (1993). "User acceptance of information technology: system characteristics, user perceptions and behavioral impacts." International Journal of Man-Machine Studies 38: 475-487.

Davis, F. (1986). "A technology acceptance model for empirically testing new end-user information systems:Theory and results." Unpublished Doctoral dissertation, Massachusetts Institute of Technology.

Davis, F. (1989). "Perceived usefulness, perceived ease of use, and user acceptance of information technology." MIS Quarterly 319-340.

DeLone and McLean (1992). " Information Systems Success: The Quest for the Dependent Variable." Information Systems Research, 3, 1 60-90.

DeLone and McLean (2003). "The Delone and Mclean Model of Information Systems Success: A Ten-Year Update." Journal of Management Information Systems (19:4), pp 9-30.

Dillon, C. and C. Guawardena (1995). "A framework for the evaluation of telecommunications-based distance education." 17th Congress of the International Council for Distance Education, Open University, Milton Keynes.

Dix, A., J. Finlay, et al. (2003). "(2003) Human-Computer Interaction." 3rd ed., Prentice Hall.

Dwivedi, Y. and B. Lal (2007). "Socio-economic determinants of broadband adoption." Industrial Management & Data Systems 107: 654-671.

Erdogan, y., s. Bayram, et al. (2011). "Factors that influence academic achievement and attitudes in web based education." International Journal of Instruction 1(1).

Ettinger, A., V. Holton, et al. (2006). "E-learner Experiences: What is The Future of E-learning." Journal of Commercial and Commercial Training, 38 (4), pp.208–212.

Frederickson, N., P. Reed, et al. (2005). "Evaluating web-supported learning versus lecture-based teaching: Quantitative and qualitative perspectives." Higher Education 50: 645–664.

Friedrich, H. and A. Hron (2010). "Factors Influencing Pupils' Acceptance of an E-Learning System for Secondary Schools." Journal Educational Computing Research 42: 63-78.

Frimpon, M. (2012). "A Re-Structuring of the Critical Success Factors for E-Learning Deployment." American International Journal of Contemporary Research 2(3): 115-123.

Garrison, D. and T. Anderson (2003). "E-Learning in the 21st Century: A Framework for Research and Practice." http://dx.doi.org/10.4324/9780203166093.

Gasaymeh, A. (2009). "A study of faculty attitudes toward internet-based distance education: A survey of two Jordanian public universities." PhD Thesis, the College of Education, Ohio University, Ohio, USA.

George, D. and P. Mallery (2003). "SPSS for Windows step by step: A simple guide and reference." 4th ed. Boston: Allyn & Bacon.

Gil, H. (2008). "The challenge of the transition from online delivery to online teaching and learning." Society for Information Technology and Teacher Education International: 2589-2594.

Goi, C. and P. Ng (2009). "E-learning in Malaysia: Success Factors in Implementing E-learning." http://www.isetl.org/ijtlhe/articleView.cfm?id=357.

González-Gómez, F., J. Guardiola, et al. (2012). "Gender differences in e-learning satisfaction." Computers & Education 58(1): 283-290.

Green, K. (2013). "Campus computing, 2013, the national survey of computing and information technology in U.S. higher education." http://www.campuscomputing.net/sites/www.campuscomputing.net/files/CampusComputing2013.pdf.

Hair, J., B. Black, et al. (1998). "Multivariate data analysis." 7th ed, Englewood Cliffs: Prentice Hall.

Hammoud, L. (2010). "Factors affecting students' attitude and performance when using a web-enhanced learning environment." Department of Information Systems and Computing, Brunel University.

Hammoud, L., S. Love, et al. (2008). "Evaluating WebCT Use in Relation to Students' Attitudes and Performance." International Journal of Information and Communication Technology Education 4(2).

Heywood, J. (2000). "Assessment in Higher Education." Jessica Kingsley Publishers.

Hill, P. (2014). "New LMS market data: Edutechnica provides one-year update." http://mfeldstein.com/new-lms-market-data-edutechnica-one-year-update/.

Hisham, N., P. Campton, et al. (2004). "A tale of two cities: A study on the satisfaction of asynchronous e-learning system in two Australian universities." Proceedings of the 21st ASCILITE conference, December 5-8, 2004, Perth, Western Australia, pp. 395-402.

Hong, K. (2002). "Relationships between students' and instructional variables with satisfaction and learning from a Web-based course." The Internet and Higher Education 5: 267-281.

Hong, K., K. Lai, et al. (2003). "Students' Satisfaction and Perceived Learning with a Web-based Course." Educational Technology & Society 6(1): 116-124.

Hoskins, S. and J. Hooff (2005). "Motivation and ability: which students use online learning and what influence does it have on their achievement." British Journal of Educational Technology, 36, 2, p177-192.

Hussain, I. (2007). "A study of student's attitude towards virtual education in Pakistan." Turkish Journal of Distance Learning 8(2): 69-79.

Igbaria, M. (1990). "End-user computing effectiveness: A structural equation model." Omega 18: 637-652.

Igbaria, M. (1993). "User acceptance of microcomputer technology: An empirical test." Omega 21: 73-90.

Igbaria, M., N. Zinatelli, et al. (1997). "Personal Computing Acceptance Factors in Small Firms: A Structural Equation Model." MIS Quarterly 21: 279–305.

Islam, A., A. Rahim, et al. (2011). "Effect of Demographic Factors on E-Learning Effectiveness in A Higher Learning Institution in Malaysia." International Education Studies 4(1): 112-121.

Jafar, Y., M. Iraj, et al. (2008). "Virtual students' perceptions of e-learning in Iran." The Turkish Online Journal of Educational Technology 1303-6521(3).

Jan, A. and V. Contreras (2011). "Technology acceptance model for the use of information technology in universities." Computers in Human Behavior 27: 845–851.

Jan, T., P. Lu, et al. (2012). "The adoption of e-learning: an institutional theory perspective." The Turkish Online Journal of Educational Technology 11(3).

Johnson, G. (2005). "Student alienation, academic achievement, and WebCT use." Educational technology and Society 8: 179-189.

Johnson, R. (2011). "Gender differences in e-learning: Communication, social presence, and learning outcomes." Journal of Organizational and End User Computing 23(1): 79-94.

Johnson, R. (2012). "Community college first-year business student online course motivation." (Doctoral dissertation). Kansas State University.

Jones, G. and B. Jones (2005). "A comparison of teacher and student attitudes concerning use and effectiveness of web-based course management software." Educational Technology & Society 8(2): 125-135.

Junco, R., G. Heiberger, et al. (2011). "The effect of Twitter on college student engagement and grades." Journal of Computer Assisted Learning 27(2): 1365-2729.

Jurczyk, J., S. Benson, et al. (2004). "Measuring student perceptions in web-based courses: A standards-based approach." Online Journal of Distance Learning Administration http://www.westga.edu/~distance/ojdla/winter74/jurczyk74.htm.

Jurczyk, J., S. Kushner-Benson, et al. (2004). "Measuring student perceptions in web-based courses: A standards-based approach." Online Journal of Distance Learning Administration 7.

Kalifa, M. and R. Lam (2002). "Web-Based learning: Effects on learning process and outcomes." IEEE Transaction on Education(4): 350-356.

Kamarulzaman, Y., A. Madun, et al. (2011). "Attitude towards E-learning Among Students: Evidence from A Malaysian Public University." British Journal of Arts and Social Sciences 3(2).

Keller, C. (2009). "User Acceptance of Virtual Learning Environments: A Case Study from Three Northern European Universities." Communications of the Association for Information Systems 25: 465–486.

Kemp, B. and C. Jones (2007). "Academic Use of Digital Resources: Disciplinary Differences and the Issue of Progression revisited." Educational Technology & Society 10: 52-60.

Khan, B. (2005). "Learning features in an open, flexible, and distributed environment." http://www.editlib.org/files/paper_5987.pdf?fuseaction=Readerjsp?id=5163id.

Kim, K. and J. Moore (2005). "Web–based learning: Factors affecting students‟ satisfaction and learning experience." 10,11.

Klobas, J. and T. McGill (2010). "The role of involvement in learning management system success." Journal of Computer High Education 22: 112-134.

Lee, M. (2010). "Explaining and Predicting Users' Continuance Intention Toward E-Learning: An Extension of the Expectation–Confirmation Model." Computers & Education 54: 506–516.

Lee, Y., C. Hsiao, et al. (2014). "An empirical examination of individual and system characteristics on enhancing e-learning acceptance." Australasian Journal of Educational Technology 30(5).

Lee, Y. (2008). "The Role of Perceived Resources in Online Learning Adoption." Computers & Education 50: 1423–1438.

Lei, X., C. Pahl, et al. (2003). "An Evaluation Technique for Content Interaction in Web-based Teaching and Learning Environments." IEEE International Conference on Advanced Learning Technologies: 294- 295.

Liaw, S. and H. Huang (2011). "A study of investigating learners attitudes toward e-learning." International Conference on Distance Learning and Education 12.

Liaw, S. (2008). "Investigating Students' Perceived Satisfaction, Behavioral Intention, and Effectiveness of ELearning: A Case Study of the Blackboard System." Computers & Education 51: 864–873.

Liaw, S. and H. Huang (2007). "Developing a Collaborative e-learning System Based on Users' Perceptions." Lecture Notes inbnComputer Science, 4402, 751–759.

Liaw, S. and H. Huang (2013). "Perceived satisfaction, perceived usefulness and interactive learning environments as predictors to self-regulation in e-learning environments." Computers & Education 60(1): 14-24.

Likert, R. (1932). "A technique for the measurement of attitudes, Archives of Psychology." Quoted in: Coolican, H. (2004) Research Methods and Statistics in Psychology. 4th ed. London.

Limayem, M. and C. Cheung (2011). "Predicting the Continued Use of Internet-Based Learning Technologies: The Role of Habit." Behaviour & Information Technology 30: 91–99.

Lin, K., N. Chen, et al. (2011). "Understanding E-Learning Continuance Intention: A Negative Critical Incidents Perspective." Behaviour & Information Technology 30: 77–89.

Lin, Y., G. Lin, et al. (2008). "Building a social and motivational framework for understanding satisfaction in online learning." Journal of Educational Computing Research 389(1): 1-27.

Lopez. and Manson. (1997). "A study of individual computer self-efficacy and perceived usefulness of the empowered desktop information system." Journal of Interdisciplinary Studies 10.

Lowerison, G., J. Sclater, et al. (2006). "Student perceived effectiveness of computer technology use in post-secondary classrooms." Computers & Education 47: 465-489.

Mahdizadeh, H., H. Biemans, et al. (2008). "Determining factors of the use of e-learning environments by university teachers." Computers & Education. 51(1), 142-154.

Malik, M. (2010). "Factors Effecting Learner's Satisfaction Towards E-Learning: A Conceptual Framework." International Journal of Sustainable Development 2(3): 77-82.

Martin-Blas, T. and A. Serrano-Fernandez (2009). "The role of new technologies in the learning process: Moodle as a teaching tool in Physics." Computers & Education, 52, pp.35-44.

Masoumi, D. (2006). "Critical factors for effective E-learning." [Online] accessed at: http://www.e-quality-eu.org/pdf/seminar/e-Quality_WS3_DMasoumi.pdf.

Masrom, M. (2007). "Technology Acceptance Model and E-learning." Proceedings of the 12th International Conference on Education 21-24 May 2007.

Masrom, M., R. Rahiman, et al. (2008). "Critical success in e-learning: An examination of technological and institutional support factors." International Journal of Cyber Society and Education, 1(2), 131›142.

Masrom, M., O. Zainon, et al. (2008). "E-learning critical success factors: institutional and technological aspects." E-Learning Issues in Malaysian Higher Education: 49-63.

Mazi, A. and A. Obuamh (2002). "The reality of the quantitative growth of the faculty members in Saudi universities and its future in King Saud University: case study. Frrom King Saud University, Faculty of Education." http://colleges.ksu.edu.sa/Arabic20Colleges/CollegeOfEducation/Pages/COE_Conferences_Faculty_Development.aspx.

Mazman, S. (2011). "Gender differences in using social networks." The Turkish Online Journal of Educational Technology, 10(2), 133-139.

Mazza, R. and V. Dimitrova (2004). "Visualising Student Tracking Data to Support Instructors in Web-Based Distance Education." 9th IEEE Conference on Information Visualisation IV05, London, UK.

Mazza, R. and V. Dimitrova (2004). "Visualising Student Tracking Data to Support Instructors in Web-Based Distance Education." 9th IEEE Conference on Information Visualisation IV05, London, UK, 6-8 July 2005.

Mbarek, R. and F. Zaddem (2013). "The examination of factors affecting e-learning effectiveness." International Journal of Innovation and Applied Studies 2(4).

Minton, T. and L. Willett (2003). "Student Preferences for Academic Structure and Content in a Distance Education Setting." Online Journal of Distance Learning Administration 6(1).

Mishra, S. and S. Panda (2007). "Development and factor analysis of an instrument to measure faculty atti-tude towards e-learning." Asian Journal of Distance Education 5(1): 27-33.

Moore, G. and I. Benbasat (1991). "Development of an instrument to measure the perceptions of adopting an information technology innovation." Information Systems Research 2: 192-222.

Moore, M. (1989). "Three types of interaction." The American Journal of Distance Education 3: 1-6.

Moran, M., M. Hawkes, et al. (2010). "Tablet computer integration in higher education: Applying the unified theory of acceptance and use of technology model to understand supporting factors." Journal of Educational Computer Research, 42, 1, 79-101.

Mosakhani, M. and M. Jamporazmey (2010). "Introduce Critical Success Factors (CSFs) of e-learning for Evaluating E-Learning Implementation Success." Proceeding of the International Conference on Educational and Information Technology (ICEIT 2010).

Mosakhani, M. and M. Jamporazmey (2010). "Introduce Critical Success Factors (CSFs) of elearning for Evaluating e-Learning Implementa-tion Success."

International Coriference on Educational and Informa-tion Technology: 224-228.

Musa, A. and M. Othman (2012). "Critical Success Factors in E-Learning: An Examination of Technology and Students Factors." International Journal of Advances in Engineering and Technology (IJAET) 3(2): 140-148.

Nawaz, A. (2013). "Using e-learning as a tool for‘education for all’ in developing states." International Journal of Science and TechnologyEducational Researcher 4(3): 38-46.

Neuman, R. (2001). "Disciplinary Differences and University Teaching." Studies in Higher Education 26: 135-146.

Ngai, E., J. Poon, et al. (2007). " Empirical Examination of the Adoption of WebCT Using TAM." Computers & Education 48(2): 250- 267.

Nisperos, L. (2014). "Assessing the E-Learning Readiness of Selected Sudanese Universities." Asian Journal of Management Sciences & Education 3(4).

Nunnaly, J. (1978). " Psychometric theory." New York: McGraw-Hill.

Odunaike, S., O. Olugbara, et al. (2013). "E-learning Implementation Critical Success Factors." Proceedings of the International MultiConference of Engineers and Computer Scientists 2013 13 - 15March, 2013, Hong Kong.

Okazaki, S. and L. Santos (2012). "Understanding E-Learning Adoption in Brazil: Major Determinants and Gender Effects." The International Review of Research in Open and Distance Learning (IRRODL) 13(4): 91-106.

Okiki, C. (2011). "Information Communication Technology Support for an E-Learning Environment at the University of Lagos, Nigeria." http://digitalcommons.unl.edu/libphilprac/610.

Omidinia, S., M. Masrom, et al. (2011). "Review of e-learning and ICT infrastructure in develop-ing countries (Case study of Iran)." American Journal of Economics and Business Administration 3(1): 120-125.

Osgood, C., G. Suci, et al. (1957). "The Measurement of Meaning." Quoted in: Coolican, H. (2004) Research Methods and Statistics in Psychology. 4th ed. London.

Owens, J. and L. Price (2010). "Is E-Learning replacing the traditional Lecture?" Education and Training Journal 52(2): 28-139.

Owston, R. (2000). "Evaluating web-based learning environments: Strategies and Insights." CyberPsychology and Behaviour, pp. 79-87.

Oye, N., A. Iahad, et al. (2012). "The impact of e-learning on students performance in tertiary institutions." IRACST – International Journal of Computer Networks and Wireless Communications (IJCNWC) 2.

Paris, P. (2004). "E-Learning: A study on secondary students‟ attitudes towards online web assisted learning." International Education Journal 5: 98-112.

Park, S. (2009). "An Analysis of the Technology Acceptance Model in Understanding University Students' Behavioral Intention to Use e-Learning." Educational Technology & Society, 12 (3), 150–162.

Park, Y. and J. Chen (2007). "Acceptance and adoption of the innovative use of smartphone." Industrial Management and Data Systems 107: 1349-1365.

Parker, K., A. Lenhart, et al. (2011). "The digital revolution and higher education: College presidents, public differ on value of online learning." http://www.pewsocialtrends.org/2011/08/28/the-digital-revolution-and-highereducation/2/.

Parsazadeh, N., N. Megat, et al. (2013). "A review on the success factors of e-learning." Universiti Teknologi Malaysia, Kuala Lumpur, Malaysia: 42-49.

Peltier, J., J. Schibrowsky, et al. (2007). "The interdependence of the factors influencing the perceived quality of the online learning experience: A causal model." Journal of Marketing Education 29(2): 140-153.

Picciano, G. (2002). "Beyond student perceptions issues interaction presence performance online course." Journal for Asynchronous Learning Networks JALN 6: 21-40.

Piccoli, G., R. Ahmad, et al. (2001). "Web-Based Virtual Learning Environments: A Research Framework and a Preliminary Assessment of Effectiveness in Basic IT Skills Training." MIS Quarterly 40: 401-426.

Pituch, K. and Y. Lee (2006). "The Influence of System Characteristics on E-Learning Use." Computers & Education 47: 838–852.

Preece, J., Y. Rogers, et al. (2002). "Interaction Design: Beyond Human-Computer Interaction."

Presley, A. and T. Presley (2009). "Factors influencing student acceptance and use of academic portals." Journal of computing in higher education 21(3): 167-182.

Puri, G. (2012). "Critical success Factors in e-Learning – An empirical study." International Journal of Multidisciplinary 1(2): 149-161.

Raaij, E. and J. Schepers (2008). "The Acceptance and Use of a Virtual Learning Environment in China." Computers & Education 50: 838–852.

Rahamat, R., P. Shah, et al. (2012). "Measuring learners' perceived satisfaction towards e-learning material and environment." WSEAS Transactions on Advances in Engineering Education 3(9): 72-83.

Reisetter, M., L. Lapointe, et al. (2007). "The impact of altered realties: Implications of online delivery for learners' interactions, expectations, and learning skills." International Journal on E-learning 6(1): 55-80.

Riddell, R. (2013). "12 learning management system providers and what they bring to classrooms."http://www.educationdive.com/news/12-learnin gmanagementsystem-providers-and-what-they-bring-to-classrooms/97613/.

Rivera, J., M. McAlister, et al. (2002). "A comparison of student outcomes & satisfaction between traditional & web based course offerings." Journal of Distance Learning Administration 5(2).

Robson, C. (2002). "Real World Research." Oxford: Blackwell Publishing.

Roca, J., C. Chiu, et al. (2006). "Understanding E-Learning Continuous Intention: An Extension of the Technology Acceptance Model." International Journal of Human–Computer Studies 64: 683–696.

Rosenthal, R. and R. Rosnow (1975). "The volunteer subject." New York.

Rovai, A. and J. Baker (2005). "Gender differences in online learning: Sense of community, perceived learning and interpersonal interactions." Quarterly Review of Distance Education 6(1): 31- 44.

Sallum, S. (2008). "Learning Management System Implementation:Building Strategic Change."http://findarticles.com/p/articles/mi_hb5835/is_200801/ai_n32281677/?tag=content;col1.

Salmeron, J. (2009). "Augmented fuzzy cognitive maps for modelling LMS critical success factors." Knowledge-Based Systems 22: 275–278.

Salmon, G. (2000). "Computer Mediated Conferencing for Management Learning at the Open University." Management Learning 31: 491-502.

Salter, G. (2003). "Comparing online and traditional teaching- a different approach." Campus-Wide Information System 20(4): 137-145.

Sandersa, D. and A. Morrison (2011). "Student Attitudes toward Web-Enhanced Instruction in an Introductory Biology Course." Journal of Research on Computing in Education 33(3): 251-262.

Santhanam, R., S. Sasidharan, et al. (2008). "Using self-regulatory learning to enhance e-learning-based information technology training." Information Systems Research 19(1): 26–47.

Sayers, H., M. Nicell, et al. (2004). "Supporting and assessing first year programming: the use of WebCT." Italics eJournal, January 3(1).

Schartz, S. (2014). "The interrelationships of university student characteristics and the Keller Arcs motivation model in a blended digital literacy course." KANSAS STATE UNIVERSITY Manhattan, Kansas.

Selim, H. (2003). "An Empirical Investigation of Student Acceptance of Course Websites." Computers & Education, 40(4), 343-60.

Selim, H. (2005). "E-Learning Critical Success Factors: An Exploratory Investigation of Student Perceptions." Proceedings of Information Resources Management Association International Conference, USA: 340-346.

Selim, H. (2007). "Critical success factor for e-learnnig acceptance: confirmatory factor models." computers & Education: 396-413.

Serhan, D. (2010). "Online learning: Through their eyes." International Journal of Instructional Media 37(1): 19-24.

Siragusa, L. and K. Dixon (2008). "Planned behaviour: Student attitudes towards the use of ICT interactions in higher education." Proceedings ascilite Melbourne 2008.RetrievedMay3,2013,fromhttp://www.swaraunib.com/indra/Sistem%20informasi/TPB/siragusa.pdf

Sivo, S., C. Pan, et al. (2007). "Combined longitudinal effects of attitude and subjective norms on student outcomes in a web-enhanced course: A structural equation modelling approach." British Journal of Educational Technology 38(5): 861-875.

So, H. and T. Brush (2008). "Student perceptions of collaborative learning, social presence and satisfaction in a blended learning environment: Relationships and critical factors." Computers & Education 51(1): 318–336.

Solomon, Oludayo, et al. (2013). "E-learning Implementation Critical Success Factors." Proceedings of the International MultiConference of Engineers and Computer Scientists Vol I.

Soon, K., K. Sook, et al. (2000). "The effects of Internet-based distance learning in nursing." Computers in Nursing 18: 19-25.

Soong, B., H. Chan, et al. (2001). "Critical success factors for on-line course resources." Computers & Education 36: 101-120.

Storey, M., B. Phillips, et al. (2002). "Evaluating the usability of web-based learning tools." Educational Technology & Society 5(3): 91-100.

Sumner, M. and D. Hostetler (1999). "Factors Influencing the Adoption of Technology in Teaching." The Journal of Computer Information Systems 40: 81.

Sun, P., J. Ray, et al. (2008). "What drives a successful e-Learning? An empirical investigation of the critical factors influencing learner satisfaction." Institute of Information and Computer Education, National Kaohsiung Normal University, 116 Ho-Ping First Road, Kaohsiung 802, Taiwan, ROC.

Suri, G. and S. Sharma (2013). "The Impact of Gender on Attitude Towards Computer Technology and ELearning: An Exploratory Study of Punjab University, India." International Journal of Engineering Research 2(2).

Swan, K. (2001). "Virtual Interaction: Design Factors Affecting Student Satisfaction and Perceived Learning in Asynchronous Online Courses." Distance Education 22: 306-311.

Tabak, F. and N. Nguyen (2013). "Technology Acceptance and Performance in Online Learning Environments: Impact of Self-Regulation." MERLOT Journal of Online Learning and Teaching 9(1).

Tagoe, M. (2012). "Students' perceptions on incorporating e-learning into teaching and learning at the University of Ghana." International Journal of Education and Development using Information and Communication Technology (IJEDICT) 8(1): 91-103.

Taha, M. (2013). "Investigating Critical Factors Influencing the Success of E-Learning." Paper presented at PwD Doctoral Symposium Brunel University and Ahlia University, Bahrain, 28- 29, May, 2013.

Taha, M. (2014). "Investigating the Success of E-Learning in Secondary Schools: The Case of the Kingdom of Bahrain." Brunel University.

Tawei, D. and C. Chang (2011). "The effect of academic discipline and gender difference on taiwanese college students' learning styles and strategies in web-based learning environments." TOJET: The Turkish Online Journal of Educational Technology 10(3): 265-272.

Telia, A. (2012). "System-related Factors that Predict Students' Satisfaction with the Blackboard Learning System at the University of Botswana." Library and Information Science 22.

Thompson, R., C. Higgins, et al. (1991). "Personal computing: Toward a conceptual model of utilization." MIS Quarterly 15: 125-143.

Thurmond, V., K. Wambach, et al. (2002). "Evaluation of Student Satisfaction: Determining the Impact of a Web-Based Environment by Controlling for Student Characteristics." American Journal of Distance Education 16: 169.

Thurstone, L. (1931). "The measurement of social attitude. Journal of Abnormal and Social Psychology." Quoted in: Coolican, H. (2004) Research Methods and Statistics in Psychology. 4th ed. London.

Trevino, L. and J. Webster (1992). "Flow in computer-mediated communication." Communication Research 19: 539-573.

Tsai, M. and C. Tsai (2010). "Junior high school students' Internet usage and self-efficacy: A reexamination of the gender gap." Computers & Education 4: 1182-1192.

Venkatesh, V. (1999). "Creation of favourable user perceptions: Exploring the role of intrinsic motivation." MIS Quarterly 23: 239-260.

Venkatesh, V. and F. Davis (2000). "A theoretical extension of the technology acceptance model: Four longitudinal field studies." Management Science, 46(2), 186-204.

Vilela-Malabanan (2014). "Investigating Academics' Voluntary Usage of a Learning Management System." School of Business I.T. and Logistics. RMIT University.

Volery, T. and D. Lord (2000). "Critical success factors in online education." The International Journal of EducationManagement 14(5), 216-223.

Vrana, V., G. Fragidis, et al. (2013). "Analysing academic staff and students' attitudes towards the adoption of e-learning." Retrieved May 5, 2013 from http://asiapacific-odl.oum.edu.my/C70/F275.pdf.

Wan, Z., Y. Fang, et al. (2007). "The Role of Information Technology in Technology-Mediated Learning: A Review of the Past for the Future." Journal of Information Systems Education 40: 183-192.

Wang, M. and R. Shen (2011). "Message design for mobile learning: Learning theories, human cognition and design principles _1214 1..15." British Journal of Educational Technology.

Watters, M. and P. Roberston (2009). "Online delivery of accounting courses: Student perceptions." Academy of Educational Leadership Journal 13(3): 51-57.

Webster, J. and P. Hackley (1997). "Teaching Effectiveness in Technology-Mediated Distance Learning." Academy of Management Journal 40: 1282-1309.

Wellman, G. and H. Marcinkiewicz (2004). "Online learning and time-on-task: impact of proctored vs. un-proctored testing." Journal of Asynchronous Learning Networks 8: 93-104.

Wells, J. (2000). "Effects Of An On-Line Computer-Mediated Communication Course, Prior Computer Experience and Internet Knowledge, and Learning Styles On Students' Internet Attitudes Computer-Mediated Technologies and New Educational Challenges." Journal of Industrial Teacher Education 37(3): 22-53.

Wen, J. and W. Shih (2008). "Exploring the information literacy competence standards for elementary and high school teachers." Computers & Education 50(3): 787-806.

Wong, L. (2013). "Student Engagement with Online Resources and Its Impact on Learning Outcomes." Journal of Information Technology Education 12.

Worrall, M. (2011). "Australian Flexible Learning Framework " 2011 E-learning Benchmarking Survey Website: flexiblelearning.net.au.

Wu, J., R. Tennyson, et al. (2010). "A study of student satisfaction in a blended e-learning system environment." Computers & Education 55(1): 155–164.

Xaymoungkhoun, O., W. Bhuasiri, et al. (2012). "The Critical Success Factors of e-Learning in Developing Countries." Computers & Education 58, 843–855.

Xu, D. and S. Jaggars (2013). "Adaptability to Online Learning: Differences Across Types of Students and Academic Subject Areas." CCRC Community College Research Center.

Yang, F. and C. Tsai (2008). "Investigating university student preferences and beliefs about learning in the web-based context." Comput. Educ 50(4): 1284-1303.

Yukselturk, E. and S. Bulut (2007). "Predictors for Student Success in an Online Course." Educational Technology & Society 10: 71-83.

Zewayed, N., S. Maynard, et al. (2011). "Factors Influencing Students' Acceptance of E-Learning at Secondary Schools." Proceedings of World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education 2011 http://www.editlib.org/p/38840.

Zhu, C. (2012). "Student satisfaction, performance and knowledge construction in online collaborative learning." Educational Technology and Society 15(1): 127-136.

Appendix 1

Students Questionnaire

Dear Student,

This study is designed to investigate students' perceptions towards applying learning management system at Taif University. It forms part of a PhD research program being undertaken at Brunel University, UK. Would you please spend a few minutes to complete this questionnaire to help me?

Further information on my research and the role of the questionnaire is given in the participant information sheet. All questionnaire data will be kept confidential and all responses will be anonymous, that is it will not be possible to link questionnaire answers to individuals.

Many thanks for your support.

Researcher,
Saud Al-Nefaie
E-mail: Saud.Alnefaie@brunel.ac.uk

1. Student ID number:.....
2. What subject are you studying?
3. What is your gender? (Male, Female)
4. What is your age?

Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
1	2	3	4	5

Parameters	Statements	1	2	3	4	5
	1. I do not believe that using e-learning					

Attitude	requires technical ability. 2. I do not believe that using e-learning will help me to obtain good grades. 3. E-learning will help me to achieve the learning outcomes required for my studies. 4. Using e-learning in my studies will help me to learn the subject thoroughly.					
e-learning self-efficacy	5. I would not feel confident using e-leaning. 6. I would feel confident using online learning content. 7. I have the necessary skills for using an e-learning system.					
Perceived usefulness	8. I do not believe e-learning content is informative. 9. E-learning would not increase my academic productivity. 10. E-learning would not make it easier to study course content. 11. The e-learning in my course will in the future help me to get a better job. 12. E-learning will improve my learning performance.					
Behavioural intention	13. I am going to use e-learning content to assist my learning. 14. I am not going to use e-learning as an autonomous learning tool. 15. I am not going to be a heavy user of an e-learning system.					
Interactive learning activities	16. I would like to share my knowledge through e-learning tools. 17. I do not believe e-learning can assist					

	teacher-learner interaction.					
Confidence in using technology	18. Using e-learning in my course will not increase my confidence in using computers and technology. 19. I feel the information technologies used in e-Learning have many useful functions 20. Having e-learning to support face-to-face lectures will improve the quality of the learning.					

21. Using e-learning is only advisable for people with a lot of patience. (please explain your answer)

    .....

    .....

22. How you will be able to be in control of your learning because of using e-learning? (please explain your answer)

    .....

.....

Tank you

Appendix 2

Interview questions: Academic staff

1. Do you have experiences of using e-learning in your teaching? **(If No, please go to second section.)**
2. Would you please tell me about your experience of using e-learning in your teaching? Are you satisfied with it? Why?
3. Was the use of e-learning helpful (for you as teacher and for the students as learners)? Why?
4. Which e-learning tools did you like to use for this module and which ones did you not like to use?
5. If you wanted to change something on the e-learning environment for your module what would it be?
6. Did you have problems/difficulties using the e-learning environment? If so, whom did you ask for help?
7. What do you think might affect the students learning in face-to-face classes that could be supported by e-learning software?
8. Do you think that the availability of e-learning software could help you to provide all necessary learning materials to the students?
9. As all of the module material available online, do you think that the students have the opportunity to pass the exam even if they miss the lectures?

If you have no experience using e-learning in your teaching and e-learning software.

1. Do you think the use of e-learning will be helpful (for you as teacher and for the students as learners)? Why?
2. Would you like to use e-learning with your current students?
3. How many years have you been teaching this course without e-learning software?
4. What do you think might affect students learning in face-to-face classes that cannot be supported by e-learning software?
5. Do you think that the availability of e-learning software could help you to provide all the necessary materials to the students?
6. As all of the module material available online, do you think that the students have the opportunity to pass the exam even if they miss the lectures?
7. Do you think you will achieve the course outcomes by using the e-learning software or do you think it will not affect the learning outcomes of the course?

Appendix 3

Students Questionnaire

Dear Student,

This study is designed to investigate learners' satisfaction, behavioral intentions, and the effectiveness of the Blackboard system at Taif University. It forms part of a PhD research program being undertaken at Brunel University, UK. Would you please spend a few minutes to complete this questionnaire to help me?
Further information on my research and the role of the questionnaire is given in the participant information sheet. All questionnaire data will be kept confidential and all responses will be anonymous, that is it will not be possible to link questionnaire answers to individuals.

Many thanks for your support.

Researcher,
Saud Al-Nefaie
E-mail: Saud.Alnefaie@brunel.ac.uk

1. Student ID number:.....
2. What is your age?
3. What is your gender? (Male, Female)?
4. What subject are you studying?

Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
1	2	3	4	5

constructs	Statements	1	2	3	4	5
Perceived self-efficacy	1. I do not feel confident using the Blackboard system 2. I feel confident operating the Blackboard system functions 3. I feel confident using online the Blackboard system contents.					
Perceived satisfaction	4. I am dissatisfied with using the Blackboard system as a learning assisted tool. 5. I am satisfied with using the Blackboard system functions 6. I am dissatisfied with the Blackboard system contents 7. I am satisfied with multimedia instruction					
Perceived usefulness	8. I believe the Blackboard system contents are informative 9. I believe the Blackboard system is a useful learning tool 10. I do not believe the Blackboard system contents are useful					
Behavioral intention	11. I intend to use the Blackboard system to assist my learning 12. I do not intend to use the Blackboard system content to assist my learning 13. I intend to use the Blackboard system as an autonomous learning tool					
e-learning system quality	14. I am dissatisfied with the Blackboard system functions 15. I am satisfied the Internet speed 16. I am satisfied with the Blackboard system content 17. I am dissatisfied with the Blackboard system interaction					
Interactive learning activities	18. I would like to share my the Blackboard system experience 19. I do not believe the Blackboard system can assist teacher-learner interaction 20. I believe the Blackboard system can assist learner-learner interaction					
E-learning effectiveness	21. I believe the Blackboard system can assist learning efficiency 22. I believe the Blackboard system can assist learning performance 23. I do not believe the Blackboard system can assist learning motivation					
Multimedia instruction	24. I like to use voice media instruction 25. I like to use video media instruction 26. I do not like to use multimedia instruction					

27. Please use the space below to write down any comments you have about your Blackboard system experience that was not covered in this survey.

……
……
……

Tank you

Appendix 4

Academic staff's interview questions

1. Would you please tell me about your current experience of using the Blackboard system learning in your teaching? Are you satisfied with it? Why?

   .....

   .....

2. Is the use of the Blackboard system learning helpful (for you as teacher and for the students as learners)? Why?

   .....

   .....

3. Which the Blackboard system tools did you like to use for this module and which ones did you not like to use?

   .....

   .....

4. If you want to change something on the Blackboard system for your module what would it be?

   .....

   .....

5. What do you think might affect the students learning in face-to-face classes that could be supported by e-learning software?

   .....

   .....

6. As all of the module material available online, do you find that the students have the opportunity to pass the exam even if they miss the lectures?

   .....

   .....

Thank you

Appendix 5

Students Questionnaire

Dear Student,

This study is designed to investigate the factors that affect use of learning management system (Blackboard) by undergraduate students at Taif University. It forms part of a PhD research program being undertaken at Brunel University, UK. Would you please spend a few minutes to complete this questionnaire to help me?
Further information on my research and the role of the questionnaire is given in the participant information sheet. All questionnaire data will be kept confidential and all responses will be anonymous, that is it will not be possible to link questionnaire answers to individuals.

Many thanks for your support.

Researcher,
Saud Al-Nefaie
E-mail: Saud.Alnefaie@brunel.ac.uk

1. Student ID number :.....
2. What is your gender? (Male, Female)?
3. What subject are you studying?

Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
1	2	3	4	5

The dimensions & Items	
Learner dimension	
1.	Using the discussion board made me communicate with my classmates more than I would in a traditional face-to-face course
2.	I was not satisfied with the level of interactivity with classmates in the course
3.	Having access to other students' questions and answers on the communication board helped in answering my questions
4.	Having classmates reply to my discussion topics was helpful
Instructor dimension	
5.	The instructor shows a positive attitude toward the e-learning system
6.	The instructor considers the use of e-learning system is useful
7.	The subject leader was not able to help me to overcome any technical problems when using The Blackboard system
8.	I received comments on assignments or examinations for this course from the subject leader in a timely manner
9.	I did not receive responses to my questions in a timely manner from the subject leader
10.	I was not satisfied with the quality of interaction with the subject leader
11.	The subject leader presented the material in an interesting and helpful manner on The Blackboard system for this subject
12.	I would like to have more interaction with the subject leader through The Blackboard system than I had for this subject
Technology dimension	
13.	It is hard to find the information I am looking for when using The Blackboard system
14.	The Blackboard system allows me to cover the subject content in details
15.	The communication software in The Blackboard system enables me to interact directly with my instructor
16.	The communication software in The Blackboard system enables me to interact directly with classmates in the subject
17.	I find that The Blackboard system is hard to use
18.	I find that The Blackboard system has many useful functions
19.	I am happy that I can access the course materials anytime from anyplace
20.	Having The Blackboard system to support face-to-face lectures improved the quality of the course
University support dimension	
21.	I receive training workshops on how to use e-learning tools
22.	I receive seminars on the use of e-learning tools
23.	I receive brochure on how to use e-learning tools
24.	I am likely to use The Blackboard system if I am provided the instructor led training I need
25.	I am likely to use The Blackboard system if the university provides me complete instruction and practice

26.	I am likely to use The Blackboard system if the university provides good technical support
Students attitude towards the Blackboard system	
27.	I would not recommend using The Blackboard system for other students
28.	find that using The Blackboard system helps me to obtain good grades
29.	I enjoy using The Blackboard system on my course
30.	Using The Blackboard system in this subject increased my ability to pass this subject's coursework assessment
31.	Using The Blackboard system in this subject kept my interest engaged in the subject.
32.	Using The Blackboard system in this subject helped me to learn the subject thoroughly.
33.	Using The Blackboard system cost me time but improved my engagement and commitment to the subject