The Effectiveness of E-Learning Experience in Two Emerging Universities in Saudi Arabia from Instructor and Learner Perspectives

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Statement of Originality

This work has not been previously submitted for a degree or diploma in any university. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made in the thesis itself.

Bader Ali ALOJAIMAN

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List of Publications

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List of Abbreviations

AGFI	Adjusted goodness-of-fit index
CFI	Comparative fit index
CIC	Computer and Information Center
EFA	Exploratory Factor Analysis
GDP	Gross Domestic Product
GFI	Goodness-of-fit index
GOF	Goodness-of-fit
HEC	Higher Education Council
ICT	Information, Communication, and Technology
IFI	Incremental fit index
IWS	Internet World Stats
KSA	Kingdom of Saudi Arabia
LCMS	Learning Content Management System
LMS	Learning Management System
MCIT	Ministry of Communication and Information Technology
ML	Maximum likelihood
MOHE	Ministry of Higher Education
NCeDL	National Centre for e-Learning and Distance Education
NFI	Normed fit index
NPICT	National Plan for Information and Communications Technology
PC	Personal Computer
RLE	Reality Learning Environments
RMR	Root mean square residual
RMSEA	Root Mean Square Error of Approximation
SAGIA	Saudia Arabian General Investment Authority
SEM	Structural Equation Modelling
SRMR	Standardized root mean square residual
TLI	Tucker-Lewis index
VLEs	Virtual Learning Environments
WBI	Web-Based Instruction
WWWC	World Wide Web Consortium
MOOCs	Massive Open Online Courses

Abstract

Information and Communication Technologies (ICT) are widely used in many parts of the world. ICT has proved to be beneficial in various sectors, including the educational sector, where ICT has become very useful as a tool for facilitating a learner's acquisition of knowledge and improving the learning experience. As it has been proven to play a fundamental role in our education process, the systematic use of ICT is becoming more important in the education sector as e-Learning. The rapidly increasing number of enrolments at two emerging universities in Saudi Arabia has resulted in concern about how to proficiently deliver the best learning experience for learners. In addition, with a shortage of lecturers at these two emerging universities, a strategy must be developed to facilitate the learning requirements of learners. As a result, e-Learning was proposed as a viable solution to this issue.

The aim of this study was to identify the factors that influence the effectiveness of e-Learning at the two emerging universities chosen for this research, as well as to determine the reason for the late adoption of e-Learning at the two emerging universities. As a result, the study developed a structure assessment to evaluate the effectiveness of e-Learning. The study had 5 objectives. The objectives were to discover learners' perceptions concerning their ability to learn autonomously; to gain an understanding of the current practices of e-Learning; to identify challenges related to learner adoption of e-Learning; to identify, improve and adapt strategies to overcome the challenges associated with learner adoption of e-Learning; and to contribute to the body of knowledge in the field of e-Learning and demonstrate that e-Learning can be made widely available at lower costs than traditional teaching methods.

The research questions focused on evaluating the perceptions of learners and instructors concerning the positive and negative aspects of e-Learning; the requirements and barriers/limitations facing e-Learning, as well as suggestions for

improvement; the ability to learn autonomously with e-Learning; and understanding learner interactions with the content, with instructors and among peers.

The two universities chosen for this research were the University of Shaqra and Majmah University. These institutions are amongst the newest universities in Saudi Arabia. Located in rural regions, these universities are currently developing their facilities to cater to the needs of their learners. As these universities are still emerging, the level and quality of available facilities are poor. Moreover, these two emerging universities are seeing exponential learner enrolments, with the rates of enrolment projected to increase. With the large number of entrants, more facilities are required to provide a good learning experience. The literature review presented different models for understanding the effectiveness of e-Learning in higher education. A mixed methods design that combines qualitative and quantitative data collection and analysis was utilized in this study. A series of qualitative semi-structured interviews were conducted to identify and organise observable facts and explore the topic of interest. The questionnaires were designed to support the findings of the qualitative analysis regarding the research questions. The sample included 238 learners and 10 instructors. Descriptive statistical analysis was used to compare learners' responses using mean scores and standard deviations. Factor analysis and a structure equation model (SEM) were carried out to analyse the acquired data.

The findings revealed learners' perspectives concerning the positive and negative aspects of e-Learning and the requirements of and barriers to e-Learning, as well as their suggestions for improving e-Learning. Most of the barriers that were noted included the lack of training programs and financial support, as well as weaknesses of the technical infrastructure. The findings of the SEM showed that learner background has a significant negative relationship with the ability to learn autonomously in e-Learning.

This study concludes with a discussion of the implications, limitations and recommendations of the study. Although the descriptive analysis showed that there was a positive agreement for all of the factors considered by the research, the

findings showed that learner background has a significant negative relationship with the ability to learn autonomously using e-Learning. Future directions of the study are also explored at the conclusion of the study. The objectives of the study were achieved, and as a result, the main aim was also achieved.

CHAPTER ONE

INTRODUCTION

1.1 Introduction

The world has witnessed many developments and changes, led by the revolution in Information and Communication Technology (ICT). This revolution has been characterised by rapid development that continues to influence even the minute details of our lives. Coinciding with this revolution in ICT has been rapid population growth and a surge in knowledge. Indeed, knowledge has increased beyond the capacity of learners to acquire all relevant kinds of information.

These developments result in challenges to education, with increased learner demand and a shortage of instructors among the most critical challenges, especially in higher education. The impact of these circumstances necessitates research into the development of efficient and effective systems that can meet the requirements of communities that are driven to attain tremendous scientific and technological advancements (Amer, 2007).

1.2 Research Background

Learning is about attitude changes, skill development, and the foundations of knowledge. Academic institutions in Saudi Arabia are in tandem with the general feeling among the populace that the heritage of oral communication is greater than that of written communication. There is a lack of information or in some cases an unwillingness among institutions to accept e-Learning. Most institutions still prefer the traditional system of standing in the classroom to teach while the students listen and answer questions.

What such institutions may not understand is that technology has developed to such an extent that, if used proficiently, students achieve increased individualised

attention from the instructor by means of audio-visual channels. Several studies indicate that the performance and retention capability of students who partake in e-Learning can exceed those of students who partake in face-to-face learning conducted in traditional classroom facilities if the system is implemented well (Almegran *et al.*, 2007).

In Saudi Arabia, the official availability of access to internet services began in 1997. Since then, many improvements have been made. There has been an exponential increase in internet usage. By March 2013, Saudi Arabia had 16 million internet users, with a penetration rate of 54% (CICT, 2012). These numbers have since grown, which is a factor attributed to growth in infrastructure and the adaptation of new technology in ICT. Saudi Arabia has fully implemented several e-Programs, such as e-Government, e-Payment, and e-Health.

In Saudi Arabian schools, the use of computers in teaching and learning began in the early 1990s (Oyaid, 2009). In 1996, the Ministry of Education established the Computer and Information Centre (CIC) to develop ICT infrastructure at academic institutions. Currently, the CIC continues to provide different ICT services to academic institutions across Saudi Arabia. The CIC is also working with the Ministry of Education to promote a new education curriculum that incorporates ICT into the learning process of students.

The CIC has also ensured that schools have well-equipped computer laboratories that will enable students to obtain first-hand experience in e-Learning (Oyaid, 2009). Other initiatives of the education ministry that support ICT integration in schools include the 2000 computer project, which covers all schools in Saudi Arabia.

In 2001, the government launched the WATANI Schools' Net project. The project aim was to connect educational institutions through a wide network that covered the entire country. Other ICT initiatives included the 2003/2004 electronic school project, whose purpose was to create a website for all schools in the Kingdom through which they could publish news and student grades.

Many benefits have been achieved due to these technological advancements. With respect to the adaptation of e-Learning in Saudi universities, many scholars have

emphasised the importance of this resource in helping to advance education in the Kingdom. However, stakeholders in the academic sector appear to pay little attention to the challenges and obstacles that face the implementation of e-Learning in tertiary institutions. In line with this observation, this study investigates the obstacles faced during the implementation of e-Learning in educational institutions. The findings of the study can be used by stakeholders to understand these challenges and therefore find ways to overcome them and speed up the implementation of e-Learning in Saudi Arabia.

E-Learning in Saudi Arabia has had its successes and its challenges. In the recent past, the Ministry of Higher Education of Saudi Arabia started the Centre for e-Learning and Distance Education, with the purpose of providing a base for both e-Learning and open or correspondence education for universities in Saudi Arabia (Khan, 2005). The centre helps coordinate the efforts of all institutions, with a vision to adopt learning, as well as facilitating the delivery of e-Learning to students in Saudi Arabia. The centre's long-term plan is to overcome shortages of university staff by providing alternative methods of attaining academic knowledge.

1.3 Statement of the Problem

During the 2013 academic year, 1.2 million students enrolled in Saudi Arabia's 28 universities (MOHE, 2013), with a projection of a rapid increase each year. The rate of enrolments is extraordinary, and the lack of a developed strategy from the emerging universities is alarming and concerning. Without a comprehensive strategy for quality learning, the students are at risk of receiving a poor learning experience, and this change will have a significant impact on the quality of the graduates produced by the emerging universities.

University faculty members have a general feeling that their departments or students are advanced in e-Learning. There is, however, an apparent limitation, which is embedded in the understanding of e-Learning, with reasons that are largely related to structural support. Whereas some institutions have advanced e-Learning support structures, most are curtailed by weak organisational management, resulting in

inequities and variations that may deter the growth of e-Learning (Kauffman, 2015; Khan, 2005; McGill *et al.*, 2014; Mohammadi, 2015).

1.4 Proof It Is a Problem

Currently, capacity problems caused by overcrowding are a great dilemma faced by emerging Saudi Arabian universities. These emerging universities are located in rural/remote regions and are still developing their facilities. Additionally, since these universities are still developing their facilities, the infrastructure is poor. As a result, emerging universities require a comprehensive strategy that can stimulate high quality education without requiring superior or sophisticated technologies (that may otherwise be unfeasible for these emerging universities due to their lack of resources and facilities).

Thus, to respond to this challenge in an expeditious manner, implementing learning through ICT is a possible solution (known as e-Learning). Although e-Learning was introduced and adopted around the globe during the same general era, there has been slow growth and adoption of e-Learning in Saudi Arabian higher education systems. This delay can be attributed to the fact that in the Kingdome of Saudi Arabia, technology is rejected if it is perceived to contradict with cultural beliefs (Alshehri, 2002). In comparison to other developing countries, it can be stated conclusively that Saudi Arabia has been left behind and is delayed in the implementation and adoption of e-Learning in the tertiary education sector (Al-Balawi, 2007).

This study will further investigate the different modes of e-Learning that are applied at universities, colleges, and other tertiary institutions. The problem of lecturer shortages at Saudi Arabian universities is quite similar to that reported in other developing countries (Mazi and Obuamh, 2002). The ability of e-Learning to drastically reduce student dependency on lecturers is a major advantage of this system (Alzamil, 2006).

Through the implementation of e-Learning, the challenge of staff inadequacy can be reduced. The transformation of libraries in most Saudi Arabian public schools into Learning Resource Centres with ICT facilities for teaching and learning resources is

an indication that the country is progressively embracing e-Learning. At institutions of higher education, the Ministry of Higher Education recognises the importance of coordinating and collaborating to support e-Learning. The Ministry is well aware of the shortage of female instructors due to gender segregation at these institutions (MOHE, 2008). This shortage causes the institutions to send students away with only course materials in hand to be studied by students on their own. There is also an increase in the demand for part-time studies to be offered by these institutions.

1.5 Geographic Scope of the Research

The geographic focus of this research is the Kingdom of Saudi Arabia. Saudi Arabia, which is located in southwest Asia, is the largest country in the Gulf Peninsula. The Kingdom of Saudi Arabia (commonly abbreviated to KSA) was established and founded by King Abdulaziz Al-Saud in 1932. Saudi Arabia occupies approximately 1,960,852 million sq. km. (784,233 sq. mi.). Based on the Demographic Survey conducted by the Central Department of Statistics and Information in 2013, the population of Saudi Arabia is 29,994 million, and 32.4% of the population are non-Saudis (GASTAT, 2013) (Kingdom of Saudi Arabia - Central Department of Statistics and Information). Arabic is the official language. Riyadh is the capital and the largest city in Saudi Arabia.

Saudi Arabia is still a developing nation, as it was established less than a century ago. As a result, the country is continuously investing in the development of important infrastructure, such as educational institutions, transport assets (roads and motorways), the construction of important centres, health and wellbeing facilities, and the development of modern technologies.

The scope of this research is in relation to the higher education sector in the KSA. Higher education is crucial for producing highly skilled individuals who will be able to contribute to the ongoing development of the nation. Thus, this study will focus on how the adoption of e-Learning will be able to significantly assist the higher education learning experience in order to maximise the learning experience of learners enrolled at emerging universities in the Kingdom of Saudi Arabia. The two

emerging universities chosen for this research are The University of Shaqra and Majmaah University. These universities were chosen because they were emerging universities in Saudi Arabia and because they were established in the same year, 2009, which indicated their ability to adopt and benefit from e-Learning's latest techniques. The findings obtained in this study may assist these two universities in the integration of e-Learning into their curriculums.

1.6 Motivation of the Study

The introduction of e-Learning systems at universities is becoming more common. Frequently, however, this innovation has not been accompanied by an evaluation of its effectiveness. Indeed, such evaluative studies in the area of e-Learning's effectiveness are rare, especially in the Arab world and in Saudi Arabia in particular. Nevertheless, in view of the increasing trend towards introducing e-Learning at universities, an evaluation of the effectiveness of this type of learning is necessary.

Although several studies on e-Learning adoption have been conducted in developed countries, there is a lack of empirical e-Learning adoption research that focuses on the adoption of such services at emerging universities. In addition, as mentioned previously, a low level of learner adoption of e-Learning services is reported in the literature. This low rate of e-Learning adoption is particularly noticeable at Saudi Arabian emerging universities. Therefore, empirical research in this area can make a significant contribution by shedding light on the important factors that may influence learners' adoption of e-Learning services. Identifying such factors can contribute to increasing the adoption rate of these services by deepening our knowledge about the factors that facilitate or hinder the adoption process. Furthermore, the study's outcomes will provide insightful guidelines for the universities' decision makers to maximise learner utilisation of e-Learning services.

This study was not commissioned by either university investigated in the study or by any of the suppliers of hardware and software who had vested interests in e-Learning. It was instead proposed as an inquiry into learner satisfaction to estimate

the value attached to e-Learning by learners who were actively involved in the program.

In short, the study was conducted as an independent academic inquiry that attempted to fill the gap in this field and as a response to the queries of policy-makers, university officials, learners, and others about the effectiveness of e-Learning.

E-Learning is still in its early stages worldwide, and government interest in e-Learning has increased in Saudi Arabia, which is not far behind many countries in which universities have spent millions of dollars introducing e-Learning. Of particular significance is the introduction of e-Learning at the institutions studied in this research. They were the earliest universities to be established in the country, so they were considered to be role models for all Saudi Arabian universities. Alharbi and Drew (2014) report that one of the first Saudi Arabian universities to connect to the internet was the University of Shaqra, with Majmaah University following quickly. Therefore, this study was a timely evaluation of the effectiveness of the e-Learning experience.

Universities must improve their ICT infrastructure so that they are suited to the current trends in technology. This process will ensure the smooth implementation of e-Learning. In 2007, the Ministry of Higher Education (MOHE) established the National Centre for e-Learning and Distance Education (NCeDL). This centre facilitates e-Learning development at a national level. The centre also conducts research and development projects that attempt to promote next-generation e-Learning at tertiary education institutions in the Kingdom of Saudi Arabia. In terms of management, there is a lack of clear organisational linkages or reporting patterns to enable quick, cohesive coordination and collaboration among different stakeholders involved in the e-Learning process.

Many university staff and learners are unaware of the existence of the NCeDL and its role in promoting e-Learning in the Kingdom of Saudi Arabia. The fact that the body does not have official oversight for the advancement of e-Learning at different universities and in different organisations may explain why there is inadequate awareness of its existence. Providing freedom to various academic institutions to

adopt e-Learning individually may generate opportunities that will be more innovative and independent (Khan, 2005).

The study also highlights the coping mechanisms that faculty members should adopt in order to promote e-Learning at Saudi Arabian academic institutions. Careful consideration was given to the title of this research. The title "Evaluating the effectiveness of the e-Learning experience at some universities in Saudi Arabia from the instructor and learner perspectives" was selected because it indicated the type of research that was intended. The selected title outlined the field of the research and defined the particular demographics of this study.

1.7 Aim of the Research

The main aim of this research was to identify the factors that influence learners' adoption of e-Learning services at the two emerging universities chosen for this research. The study develops and examines an adoption model of e-Learning from the learners' and instructors' perspectives. Moreover, the study explores the relative importance of each factor for learners' adoption of e-Learning services. This research also aimed to provide an overview of the e-Learning practices at emerging universities in Saudi Arabia. The study also intends to determine the reasons for the late adoption of e-Learning techniques in Saudi Arabia. Assembling the features from the literature and state-of-the-art knowledge helped to build the research paradigm.

1.8 Objectives of the Research

The study investigates the key determinants that influence learners' adoption of e-Learning services. The findings of the study can assist emerging universities in understanding the relevant issues involved. To achieve the above goal, the following objectives were formulated:

- To discover learners' perceptions of their ability to learn autonomously through e-Learning, with an exploration of learners' perceptions of their

interactions with the content, with the instructors and with other learners in e-Learning.

- To gain an understanding of current practices in e-Learning, particularly in relation to learners' adoption of e-Learning.
- To identify the challenges to learners' adoption of e-Leaning at two emerging universities in Saudi Arabia.
- To identify, improve and adapt strategies that address the challenges faced during learners' adoption of e-Learning at two emerging universities.
- To contribute to the available body of knowledge about e-Learning processes and to demonstrate that e-Learning can be made widely available in a more effective way and at lower costs in comparison to traditional learning techniques.

Whilst these were the proposed objectives, the purpose of the study as a whole was to identify the factors that influence e-Learning adoption in order to provide resources and a framework for universities that plan to develop or upgrade their e-Learning programs in this way, so that they could perceive the possibilities and make informed choices about their planned innovations.
Both new entrants and existing facilities within this category of learning could utilise the results of this research to optimise their plans and enhance the effectiveness of their e-Learning programs.

1.9 The Research Questions

To achieve the aims and objectives of the research, several research questions were developed. Based on an in-depth analysis, the following research questions were posed.

RQ1: What were the positive and negative aspects of e-Learning according to the instructors' perspectives?

RQ2: What were the instructors' perceptions of the requirements and barriers/limitations of e-Learning and their suggestions for improving e-Learning?

RQ3: What was the extent of the learners' perceptions of their ability to learn autonomously through e-Learning?

RQ4: What was the extent of learners' perceptions of their interactions with the content, with the instructors and with other learners during e-Learning?

1.10 The Research Hypotheses

This study proposed five hypotheses that will be tested and discussed. The discussion and analysis of the research hypotheses will be related back to the aims of the study and the objectives. The following hypotheses were proposed:

H1: There is a direct and positive relationship between learner background, as indicated by age, specialisation, e-Learning experience, and IT skills, and behavioural intentions.

H2: There is a direct and positive relationship between learner background and the ability to learn autonomously using e-Learning.

H3: There is a direct and positive relationship between learner background and learner-content interactions in e-Learning.

H4: There is a direct and positive relationship between learner background and learner-instructor interactions in e-Learning

H5: There is a direct and positive relationship between learner background and learner-learner interactions in e-Learning.

1.11 Structure of the Thesis

The thesis is divided into six chapters. Chapter 1 provides an overview of the research by identifying the topic of interest, stating the problem, defining the aims and objectives of the research, discussing the research questions and hypotheses, providing a justification for the research, and investigating the significance and motivation of the study.

Chapter 2 reviews and presents a discussion of the literature that is relevant to e-Learning theories, applications and concepts to build the theoretical framework for the research. From the review of the literature and the identified gaps in the

literature, a conceptual model is also developed. Based on the identified research gaps, the conceptual model presented in this chapter and the study's theoretical framework provides a basis for answering the research questions. This chapter also reviews the context of Saudi Arabia and topics related to e-Learning. These sections provide an overview of ICT in Saudi Arabia and the higher education sector in Saudi Arabia. This chapter also discusses the motivations for implementing e-Learning at two of the country's emerging universities. Then, an outline is presented concerning the influence and the impact of ICT in education and how to employ e-Learning in education, followed by a chapter summary.

In Chapter 3, the research methodology is presented, in which important issues related to the study's research design, research approach, and analytical procedures are addressed. In particular, the mixed methods approach, which includes qualitative and quantitative analysis methods, is described in the chapter under an umbrella research design to validate and evaluate the established conceptual model. First, the qualitative approach of the proposed research is addressed. The chapter describes the interview method that was used to obtain data from a conveniently selected sample of 10 faculty members, and the interviews' purpose is described. Second, the quantitative method is presented, in which the survey data collected from participating students at emerging universities is subjected to descriptive analyses and the results are presented.

The mixed methods approach and its theoretical foundations are also discussed through many sections to highlight its significant role in the social sciences in general, presenting its strengths and weaknesses and some motivation for choosing this research approach for our study. This chapter also demonstrates the suitability of the mixed methods approach for our research by reflecting its usage in previous related studies.

Chapter 4 presents a discussion of the results of the analysis of the semi-structured interviews as a qualitative method and the questionnaire data analysis in relation to the research questions and hypotheses as a quantitative method. The analysis examines the results, followed by the formulation of answers to the research

questions that were proposed in the study. The hypotheses are also examined to determine whether the results of the study support the proposed hypotheses. An analysis of the responses is conducted. The analysis addresses the effectiveness of e-Learning. The results of the analysis of the respondents' data are discussed to explain how the initial conceptual model and research propositions are supported. This analysis is presented in a wide-ranging and in-depth discussion. The profiles of the survey participants are presented, followed by survey data screening to ensure its suitability for the subsequent multivariate statistical analyses (SEM, CFA, and EFA). This discussion is followed by a presentation of the initial results of the survey obtained from the analyses.

In Chapter 5, conclusions are drawn and presented for every research hypothesis investigated in the study. In particular, a summary of the findings and conclusions is presented with regard to the current literature. The theoretical contributions of the study to current theory are presented, together with the implications of the study with respect to instructor and learner perceptions. The chapter also proposes guidelines and recommendations concerning how governments can implement the study's findings. The study's contribution to the e-Learning literature is identified together with its limitations. Final conclusions are drawn, and recommendations for future work are presented in this chapter.

1.12 Summary

This chapter has provided the foundations and the background of the study. First, this chapter introduced key issues that are relevant to the current research, followed by a statement of the problem, the motivation of the study and the aim of the research. Next, the research objectives, the associated research questions and the research hypotheses were presented and justified in relation to the identified gaps within the study context. Then, the structure of the thesis was outlined.

In the next chapter, a literature review related to e-Learning and the study context in Saudi Arabia is presented.

CHAPTER TWO

LITERATURE REVIEW

E-LEARNING & THE SAUDI ARABIAN CONTEXT

2.1. Introduction

This chapter has two main objectives: subjecting the current literature related to e-Learning in both online and generic environments to a critical review and discussing the differences between various types of e-Learning. Specifically, a critical review of past research related to e-education and e-Learning will be conducted to formulate the study's underpinning theoretical conceptions. The introduction of the chapter marks the beginning of the chapter in Section 2.1. A definition of e-Learning is provided in Section 2.2. Sections 2.4 and 2.5 discuss the dimensions and history of e-Learning. Sections 2.6 and 2.7 present the requirements for e-Learning, as well as how e-Learning is evaluated and perceived and barriers to e-Learning. The chapter also covers the existing research pertaining to e-Learning evaluation. In addition, a summary is presented, along with the identified gaps in the literature and the research questions.

The second objective of this chapter is to explore ICT in the Saudi Arabian context to gain an understanding of e-Learning practices in higher education, specifically at two emerging universities. The chapter also presents the status of and the need for e-Learning in Saudi Arabia.

2.2 Literature Review Procedures

A search of various databases was required to gather the vast literature available related to e-Learning knowledge and the associated technology in general and in the Saudi Arabian e-Learning context. The electronic databases Emerald, Google Scholar, ISI Web of Knowledge, Scopus, Springer Link, Wikipedia, EBSCO host and Science Direct were searched up to 2017.

A number of keywords were used to search the databases, most commonly e-Learning, distance learning, mobile learning, flexible learning, Saudi Arabia e-Learning and e-Learning effectiveness evaluation. Further refined searches were performed to examine areas revealed during the literature review process and issues unveiled in the analysis that required more in-depth discussion and insight. The keywords were combined using Boolean logic and truncation characters. In fact, the avoidance of further confusion when searching the literature for e-Learning can be achieved by using alternative terms, such as E-Learning, Digital Learning, Distance Learning, Mobile Learning and Flexible Learning.

Texts were excluded if they focused on topics other than e-Learning, distance learning, mobile learning, flexible learning and e-Learning effectiveness evaluation. Texts that were not from related conferences, impact factor journals and other fora that did not focus on the domain of e-Learning, distance learning, mobile learning, flexible learning and e-Learning effectiveness evaluation were also excluded. After review of the discovered literature, the number of articles was reduced using the exclusion criteria. The full text of all refined articles was obtained and reviewed, using the same criteria for exclusion.

The researcher excluded non-English publications unless a translated copy was available and acknowledges that many primary resources for some researchers were difficult to obtain. The studies examined were related to e-Learning. The researcher included international studies, which was necessary to illustrate the diversity in e-Learning practices.

2.3 Defining E-Learning

The definition of e-Learning remains inconsistent enough to attract debates among scholars. Such debates tend to take different forms and can be accounted for by the tendencies that researchers exhibit in their quests to fit the definition of e-Learning to their areas of specialisation and interest. For instance, the influence of history implied that e-Learning could be perceived as a non-compulsory presentation of

classical delivery, whereas specialists within ICT digress by according priority to the effects of ICT on pedagogical and educational correlations (Alshehri, 2002).

Meanwhile, technology's impact on pedagogical and education methods introduced a varying emphasis on the dispute. According to Holmes and Gardner (2006), the count of e-Learning definitions may equal that of the academic papers dedicated to the subject itself. Indeed, there is even a social scientist perspective that questions ICT's influence on educational institutions, learning groups, and learners. To address the extensive debates on the definition of e-Learning from an unbiased front, the subsequent subsections address the definitions of e-Learning, whose evolution is traceable to pedagogy, technology and distance learning.

2.3.1 Defining E-Learning: A Pedagogical Evolution

The definitions of e-Learning from pedagogy constituted various types of software and hardware employed in the delivery of e-Learning and the requisite systems for economical yet efficient education (Khan, 2005). Departing from the association of e-Learning with technology, e-Learning-oriented innovation has been said to be an electronic delivery approach of well-structured, mediated, learner-oriented, and learning environments that are interactive for anyone at any given place and any given time through the utilisation of digital technologies and the internet in tandem with the principles of instructional design (Khan, 2005).

Evidently, this definition brings forth the impression that technology should serve traditional pedagogy's purposes. In the same trend, e-Learning has been described by Conole and Oliver (2006) as a terminology whose frequent use aims to present the wider development of research activities related to the employment of technology for education.

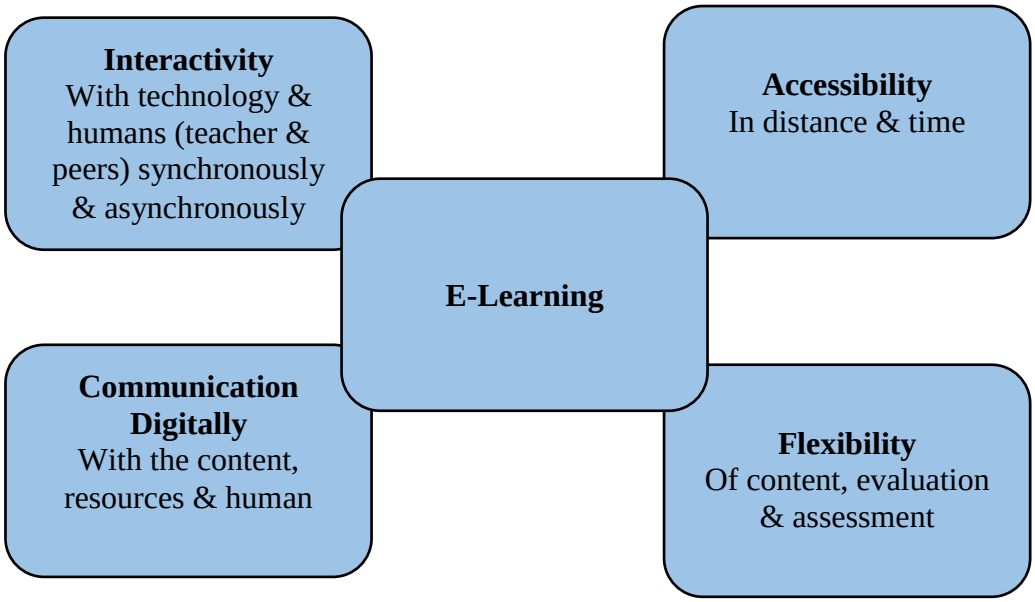
However, it was later found that technology must be harnessed by pedagogy prior to seeing it as a way to deliver education (Khan, 2005). In spite of its flexibility in offering a response to various methods of learning amid time and location restraints, e-Learning enhanced the viability of these priorities to ensure that learners residing anywhere could study. Moreover, e-Learning presented an efficient system with the

capacity to enable learners to interact with others while assisting them to grow and learn positively as needed (Schank, 2000).

Despite the allowance for learners to choose their own time and space, e-Learning was resolutely sited in an educational community through its classification by Almuheisin (2002) as a learning type founded on the utilisation of electronic media for teachers, learners, and the institution of education to communicate. On the other hand, Aldrich (2004) factored in the tripartite links between educational administration, pedagogy, and technology in his definition of e-Learning. According to Aldrich, e-Learning entails an extensive combination of infrastructure, processes, and content that uses networks and computers to enhance and/or scale one or more critical components of learning, which include delivery and management.

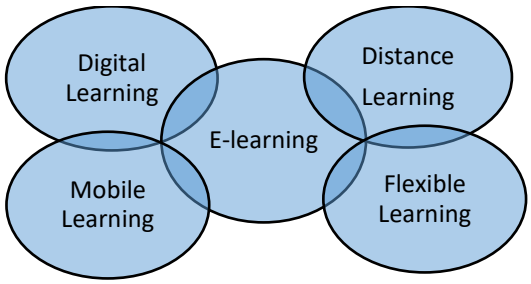
The above section has provided e-Learning definitions with a specific emphasis on three types of definitions: pedagogical definitions, technological definitions, and distance definitions. The section provided an anecdote for all three definitions and highlighted emerging common and applicable characteristics. The important characteristics of e-Learning have been summarized in Figure 2.1.

Figure 2. 1: E-Learning Essential Characteristics



The diagram above highlights the important characteristics of e-Learning, as highlighted in the previous literature. The definitions and the names have experienced changes during the course of the history of e-Learning. Up to the time of this writing, the names that have been used to refer to e-Learning have frequently overlapped, despite the clarity of definitions. Some terms have been combined by some researchers into compound names, such as network-based learning or computer-based learning. There has also been the use of other names, such as virtual learning, smart learning, and digital learning. The overlap of names is made clear in Figure 3.2, which shows that modern e-Learning is interchangeably referred to as distance learning or digital learning. In fact, the avoidance of further confusion when searching the literature for e-Learning can be achieved by using the alternative terms E- Learning, Digital Learning, Distance Learning, Mobile Learning and Flexible Learning.

Figure 2.2: The Ambit of E-Learning



In summary, there is no specific or common definition of e-Learning in the previous literature. Although there have been many attempts to define the concept, these attempts have not been adequate, since the term is quite broad. In fact, e-Learning's definition is dependent on technology, which changes over time. E-Learning's definitions should include its flexibility in relation to time and place, as well as its ability to meet pedagogical requirements. The preceding section has discussed e-Learning's definitions and how the literature uses the term.

2.3.2 E-Learning Definition from a Distance Learning Perspective

Arguably, the aspect of distance learning is embraced in e-Learning, as e-Learning's precursor prior to the emergence of ICT was studying by correspondence (Dirani and Yoon, 2009). Amongst the most popular distance learning definitions is the definition that involves an educational process whereby a considerable fraction of the teaching is undertaken by a person who is situated remotely from the learner, as argued by Perraton (2005). In addition, Perraton (2005) described e-Learning as public education epitomised by flexible self-learning and without the need for learners to physically attend a classical education institution or be subjected to relentless teacher supervision. In light of technological advancements, distance learning involved educational institutions' supervision, whereby multimedia offered mutual interactive communication among the educational process' parties and autonomous learning support at asynchronous or synchronous times within diverse locations (Perraton, 2005). Thus, distance learning became a compromise or mediation between student-centred and teacher-student learning.

The connection between technology and distance learning remained strong enough to warrant the conflation of the two ideas in some definitions. For instance, Alarifi (2003) defined e-Learning as a means of delivering educational content through its exercises, interaction, and explanations, followed up in part or comprehensively in the classroom. Alternatively, this type of learning could be followed up remotely using advanced programs hosted through networks or on computers (Alarifi, 2003). In a similar manner, Alsalem (2004) described systems of learning that were meant

to offer training or learning programs for trainees and learners at any given time and in any given place. This goal is achieved through the interactive use of ICT, such as teleconferencing, intranet, and internet, to ensure the provision of a learning environment that is interactive and has numerous asynchronous and synchronous sources (Alsalem, 2004; Tomsic and Suthers, 2006).

As suggested previously, e-Learning is classifiable as asynchronous and synchronous. In the case of synchronous e-Learning, students can engage in courses in which they meet online with the faculty member via video and/or audio streaming during a prearranged time (Alshwaier *et al.*, 2012). One major limitation associated with synchronous e-Learning is the fact that there is a fixed time for meeting, which in turn contravenes the flexibility characteristic that is normally afforded by e-Learning. On the other hand, students can engage in the activities of learning at their most convenient times in the case of asynchronous learning (El Mansour and Mupinga, 2007). On the downside, this means that most of the time, the faculty member will be unavailable to offer immediate replies (Mirza, 2007).

The outcome of using technology effectively in the delivery of learning was observed definitively by Almosa and Almubarak (2005). Those researchers saw e-Learning as economical with regards to effort and time and as a valuable substitute for classical pedagogy. Holmes and Gardner (2006) associated autonomous learning with ICT by referring to e-Learning simply as "online access to learning resources, anywhere and anytime." Zeitoun (2008) underscored the significance of conveying learning content through computer networks and electronic multimedia to offer learners the probability of actively dealing with the teacher, with the content and with peers. This description holds regardless of whether the learning is synchronous or asynchronous, with the possibility of content completion at a pace, place, and time suitable to the capabilities and circumstances of the learner, according to Zeitoun (2008). Thus, the initial conceptualisation of e-Learning can be said to have come as a substitute that ensured the delivery of education beyond institutional confinements. Later, e-Learning was perceived as a definition of a different pedagogy type. In the

next subsection, the researcher reviews the literature related the definition of e-Learning from a technological perspective.

2.3.3 Defining E-Learning from a Technological Perspective

Researchers appear to concur on the inclusion of knowledge acquisition and use, whose distribution and facilitation occurs fundamentally through electronic means. In addition, the researchers suggest that this learning form currently relies on computers and networks, although this is likely to transform into systems that consist of various channels, such as satellites, mobile phones, and iPads, as they develop and become adapted (Wentling *et al.*, 2000). In fact, e-Learning has been referred to as the use of several web-based technological tools that are either web-enabled or web-distributed for educational purposes (Nichols, 2003).

In spite of the contention that the effectiveness of e-Learning cannot be paralleled by the multitude of technological applications employed in delivering it, a statement by the Department for Education and Skills (DfES, 2008) affirmed that in the event that a person is learning in a manner that utilises ICT, the person is using e-Learning. On the other hand, (Watkins, 2005, p. 17) provided the following description of e-Learning:

"A term covering a wide set of applications and processes, such as web-based learning, computer-based learning, virtual classrooms, and digital collaboration. It includes the delivery of content via internet, intranet/extranet (LAN/WAN), audio and video, satellite broadcast, interactive TV, CD-ROM, and more."

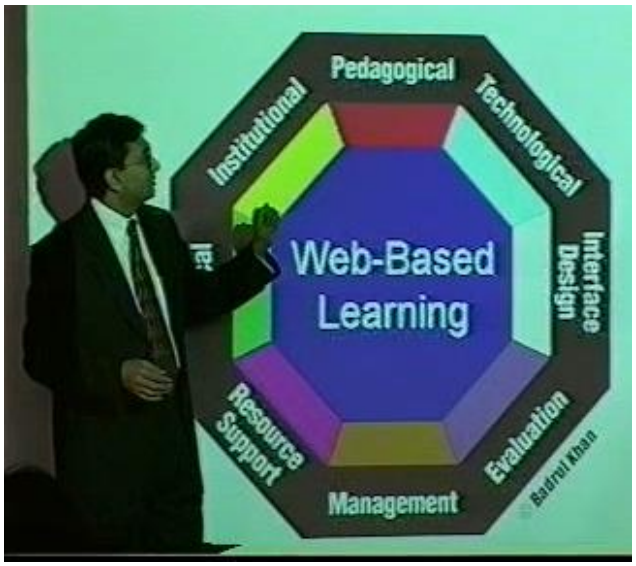
Later, Allan (2008) extended the list reported by Watkins (2005) to include mobile phones, television, email, websites, DVD/CD, telephone, audio graphics, webcam, and videoconferencing as technological means of delivering e-Learning. It is apparent from this review that from a technological perspective, e-Learning integrates a wide range of processes and applications that are both computer- and web-based, providing digital collaboration and virtual classrooms. In addition, e-Learning content is delivered through various modes, such as CD/DVD, video and audio, intranet, internet, and television, among others. Having explored e-Learning's

definition from various perspectives, it is imperative for the sake of this study to infer that e-Learning stems from the concept of distance learning to include pedagogical and educational approaches through technology. The next section presents a review of the literature that is both relevant to this study and related to why Saudi Arabia needs e-Learning.

2.4 E-Learning Dimensions

By reflecting on significant factors that are needed for the creation of effective e-Learning environments, Khan (2005) created a basic e-Learning or web-based learning framework. Khan (2005) considered what would be needed to provide all learners, regardless of their circumstances or cultures, with flexible, widespread, and effective learning environments. To achieve this goal, eight dimensions were proposed by Khan (2005), including the institutional, ethical, resource support, management, evaluation, interface, pedagogical, and technological dimensions. Each dimension was further divided into sub-dimensions that address particular features of the e-Learning setting (Khan, 2005).

Figure 2.3: Dimensions of E-Learning (Khan, 2005)



Below, these dimensions are categorised based on the three strands discussed in the preceding section.

2.4.1 Technological

Issues involved in the infrastructure of the e-Learning environment comprise the technological dimension. This dimension includes software, hardware, and infrastructure planning. The appearance of e-Learning programs constitutes the interface design. This category includes the design of usability tests, navigation, pages and content, and the site. Online support and guidance, such as professional guidance and technical support, constitute resource support. According to Khan (2005), in order to promote the active and interactive importance of the learning environment, resources are required.

2.4.2 Administration

Management was defined as involving learning environment maintenance and information distribution pertinent to its use.

Various administrative issues comprise the institutional dimension, including marketing services and educational development, information technology services, investment returns and budget, and certification and regulations. On one hand, academic affairs, including intellectual property rights, salaries, class sizes, work pressure, educational affairs, and teaching staff support, encompass this dimension. On the other hand, this dimension includes the provision of student services, including creating social support networks, libraries, guiding and assisting students in making financial decisions with regard to premium payments and registration, and providing pre-school services, as well as information on programs and attendance.

2.4.3 Pedagogical

The pedagogical dimension is comprised of learning and teaching. This dimension includes goals and objectives, practice methods and strategies, instructional design and content analysis of programs. Also included are cooperation and modelling, interaction and discussion, narratives, stories and games, such as role-playing, private lessons, training, simulation, and other such activities.

2.4.4. Ethical

The ethical dimension includes cultural and social diversity, teacher diversity, and geographical diversity, as well as acting systems that cover legal matters, such as copyrights and organisational policy.

2.4.5 Evaluation

The evaluation dimension constitutes learner assessments, as well as assessments of the learning environment and instruction.

Concluding the eight dimensions, Khan (2005) emphasised the uniqueness of each e-Learning project, hence the importance of developing questions that are specific to matters regarding each project. A useful way to identify important issues was to consider each dimension from the perspective of the client, be it a staff member, teacher, learner, or any other stakeholder. This approach could enable research to highlight important issues and provide answers to questions that could help develop an effective e-Learning environment. Therefore, an inclusive list of requirements for e-Learning projects would be generated by research studies.

2.5 E-Learning History

Considering that e-Learning is a form of distance learning, its beginnings in different locations can be regarded as having taken place in the early 19th century, a time when the submission of courses was through correspondence (Cavanaugh, 2004). During the early 20th century, Britain informally practiced distance education, but this

practice became formalised in 1971 upon the establishment of the Open University – a development that was later transferred to Australia, Canada, the U.S, and other countries (Abdulaziz, 2008). However, Aloreani (2002) contests this description and states that distance learning began in the 1960s after programmed learning was written by B.F. Skinner.

Regardless of these alternative opinions, the development of distance learning can be attributed to the ICT revolution. According to Kaufman (1989), the history of distance learning has been marked by three generations. In the first generation, there was no direct interaction between the instructor and the learner, and correspondence was used. The second generation was marked by the use of content and multimedia that were specific for distance learning. In the third generation, the internet began to be used, and a two-way learner-instructor interaction and interactions among learners were introduced.

As is evident from the above discussion, intrinsic ICT features are present in the newest of these generations. This change has caused a boost in the number of users and their ability to control their own learning, as well as an increase in dialogue opportunities and thinking skill development. Sawaan (2005) provides a summary of e-Learning evolution and a stepwise analysis of distance learning, starting from the 1950s, when radio, correspondence, audio, video recordings, and open universities were used, in that order, to the 1980s, when computer-based learning methods started complementing traditional education. According to Sawaan (2005), the 1990s was when internet-based learning began after the establishment of Blackboard and WebCT.

According to recent events, the picture can be completed by adding another step, which involves the design of more advanced websites in the 21st century. This change enabled the processes of teaching and learning to be designed, controlled, implemented, managed, and evaluated by users through high-speed bandwidth (DSL). The education system has received investments to expedite this process. Social networks, such as YouTube, blogs, Facebook, My Space, Wikis, and Second Life, have also been used to respond to the interests of learners.

Some of the latest technological devices include Podcasts, iPads, iPods, e-paper, e-books, voice recognition, multi-touch interfaces, and wikis, among others. The concept of e-Learning has gradually changed as a result of these developments with regard to its levels of interaction, presentation, and the multitude of available interactive features. These changes have been commented on extensively by other researchers. According to Almosa and Almubarak (2005), there are four generations that underpin the educational use of ICT, beginning with correspondence, in which the use of post and telephone was common, but interaction was rare. In the second generation, there was video, TV, and radio but low interaction, similar to correspondence. Distance education characterised the third generation, which emphasised electronic communication and the interaction between the teacher and the student. Finally, the fourth generation connotes the present time, in which there is advanced use of the web and its applications. This anecdote about how the current technology supports pedagogy is clearly underscored.

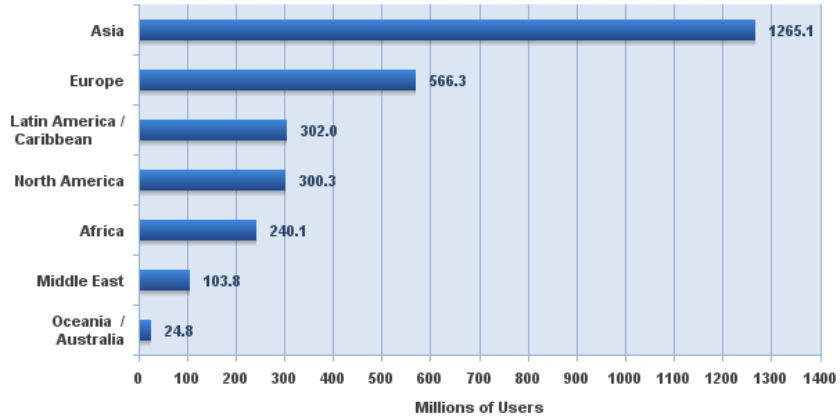
In summary, the controversial historical evolution of e-Learning can be understood from various perspectives: a century ago, the 1950s, the 1960s upon the development of programmed learning, or the 1980s upon the establishment of computer-based learning. In addition to these opinions, it has been indicated that e-Learning really started in the 1990s when the internet was used to facilitate education (Holmes and Gardner, 2006). Similar to the lack of a common and specific e-Learning definition, the history of e-Learning can be considered from many perspectives, including the administrative, social, pedagogical, or technological perspectives. However, the start of the 1990s is regarded as the real time that e-Learning started due to extensive internet usage in education and its capacity to facilitate interaction.

2.5.1 Internet History

This part of the research will demonstrate that the internet is an important tool in the development of the current form of e-Learning because of its ability to disseminate large amounts of information, which is available through its communication tools. It should be noted that prior to the internet, there was lack of interactivity in previous

methods of distance learning. When the internet emerged, it addressed this problem by allowing instructors and learners to interact with the content and among themselves. The first time the internet emerged was in 1969 in the U.S after a network of four large computers was created and placed in different locations, and scientists communicated with each other through them. The system was referred to as ARPANET and was created for the exchange of military files and information. ARPANET expanded to 22 centres in 1971 and further rose to 62 centres in 1973. The year 1974 saw the establishment of other networks for educational and scientific purposes. A gradual expansion of the network was undertaken in 1981, for which at least 200 websites were included. The network experienced division in 1983 to encompass a civilian section and a military section. In 1989, only university professors and specialists were allowed access through the establishment of the National Science Foundation (NSF). The year 1990 saw the establishment of the Worldwide Web. The public was allowed access to the Worldwide Web through the internet in mid-1991. The network was basic and involved the exchange of simple text messages, but it grew rapidly to the present situation, in which the internet is used to exchange complex media, including videos, graphics, text, and audio. The number of users experienced exponential growth, and as of December 2013, Internet World Stats estimated that the internet had reached 2,802,478,934 users (IWS, 2013).

Figure 2.4: Internet Users in the World by Geographic Region (Internet World Stats, 2013)



Source: Internet World Stats – http://www.internetworldstats.com/stats.htm

Having associated the development of the internet with the growth of e-Learning, this research will proceed to examine different types of e-Learning and how the current systems can be applied to education in order to fully understand how e-Learning is conceptualised in this study.

2.6 E-Learning Types

E-Learning can be classified in many ways, including classification based on the extent to which it is applied in education and classification according to interaction timing. In general, there are two fundamental types of e-Learning: internet-based learning and computer-based learning.

Computer-based learning comprises the use of the many types of software and hardware that are used in ICT. Each of the components can be used in either 'computer-managed instruction' or 'computer-assisted learning.' In computer-assisted learning, traditional learning methods are complemented by computers or abandoned altogether in favour of computers, which provide interactive software, either as a class support tool or an out of class self-learning tool, such as software for problem-solving, games, simulation, and drills and practice. When it comes to computer-managed instruction, the storage and retrieval of information is undertaken by computers, which help in the management of education by, for instance, undertaking data processing. Although these types of computer-based learning have been overtaken by developments in ICT, they are still being used in certain situations and for certain reasons.

Further developed from computer-based learning is internet-based learning, which uses content on the internet, extranet, and intranet, and which contains links that directs users to other related information, such as e-mail services and references, which learners can flexibly use regardless of time, place, and the presence or absence of teachers (Alkalifah, 2003; Almosa, 2001). The classification of internet-based learning can be done according to the extent it is used in education, and these classifications include 'totally online mode,' 'mixed or blended mode,' and 'adjunct mode.' The adjunct mode involves the complementation of traditional learning

methods as needed. In the mixed or blended mode, there is an interim connotation where traditional methods are used partially in conjunction with tools such as video conferences and email. The totally online mode connotes conducting learning solely through the internet, and this represents the complete innovation.

The totally online mode can be regarded as either asynchronous or synchronous depending on the optional application of interaction timing. The asynchronous mode allows any user to post a message to any other user through the internet, while the synchronous mode alternates online access between learners or between instructors and learners. The synchronous mode allows learners to conduct chats and discussions among themselves and with their teachers via the internet using various tools, such as videoconferences, chat rooms, and other similar tools. This mode has the advantage of offering immediate feedback. On the other hand, asynchronous modes allow learners to chat among themselves or with their teachers but at varied times using thread discussions, email, and other similar media. This mode has the disadvantage of delayed feedback, although it also has the advantage of convenience and flexibility in the learner's choice of time to study (Almosa and Almubarak, 2005). It is worth noting that both asynchronous and synchronous use may take place in a close surrounding, such as inside a class, or in a faraway place off-campus and may take place with or without the supervision of the instructor.

Despite the varied modes of computer use, the totally online mode and the blended mode were chosen by the two universities participating in this research, which also chose their software and hardware from the many available options. When this study was being conducted, there was still a rapid development in the application of software and computers in education. The application has taken varied forms, including those that involve wireless network use (mobile learning), personal computer use (distance learning), and network use (e-Learning). As a matter of fact, computers and networks are relied upon by various tools to effectively and interactively disseminate education content to the learner, and these tools include Virtual Learning Environments (VLEs), video conferences, intranet, extranet, and internet, as well as multimedia, such as video, animation, audio, graphic, and text.

The implementation possibilities transcend hypermedia, interactive media, and other innovations that were unknown to the researcher at the time the research was conducted (Alkalifah, 2008; Jacobsen, 2002). Flexible Learning is an approach to learning in which the time, place, and pace of learning may be determined by learners (Caladine, 2008). Flexible Learning is also defined as "systems in which students may choose to complete some of their learning on-campus and some of their learning off-campus" (Klobas and Renzi, 2008).

Having discussed what is usually available, the specific components employed by the universities participating in this study were discussed in Chapter One. In the meantime, to add to the preceding discussion of the software and hardware used in e-Learning, the succeeding section will focus on e-Learning management, e-Learning environments, and e-courses.

2.6.1 Massive Open Online Courses (MOOCs)

Massive Open Online Courses (MOOCs) have been the subject of much polarized debate around how they can potentially transform higher education in terms of increasing access. Although MOOCs have been attracting large learner cohorts, concerns have emerged from the early evidence base centring upon issues of quality in learning and teaching provision, and there is clear evidence that impressive headline figures on MOOC enrolments often contrast with extremely low course completion rates, often as a result of unengaging content.

This paper focuses on quality, low retention and the need for engagement, and provides a review and case study of MOOC provision.

The review focus in the current position of MOOCs as a change agent for higher education provision, and the case study consider lessons learnt from an Astronomy MOOC that uses the Open2Study platform. This paper review new engagement strategies that are needed for face-to-face and online learners, explores how course retention can be improved in online provision and considers the need to evaluate measures of quality. While online learning is nothing new, and digital revolutions in

education have been promised before, the MOOC phenomenon has gained considerable traction in recent years. This particular brand of online learning has emerged out of growing access to broadband connectivity, the dominance of mobile and portable technologies and the central role these technologies now play in our lives through social media communities. All of these factors have collectively created an environment that has led to the development and growing profile of MOOCs. However, most of the innovation that is now tied up in the MOOC concept can be traced back much further.

Early online course delivery had already started by 1994 (Hill, 2012) and was followed by the widespread uptake of learning and content management systems, such as Blackboard, WebCT and later Moodle. Most of early virtual learning environments were financially driven for digital contents than pedagogically driven learning tools, however they made online learning easier to deliver, and their scalability and cost reductions, accompany with student monitoring capabilities, made them increasingly popular in the literature, and soon they became invaluable management and performance monitoring tools for universities. Gradually, online learning capabilities and technology-enhanced learning developed, often in the training and professional development area of university activities. In the other hand these tools were often applied in a fairly task-centred manner, emerging as they did out of computer-based instruction and training, which tended to use fairly linear and often text-based approaches to information presentation, punctuated by quizzes and online activities. One of the earliest learning platforms to deviate from the traditional learning management systems was Fathom.com. First launched in 2000, this was an open learning platform led by Columbia University in collaboration with libraries, museums and other universities. While this initiative was based on quality sharable digital content, a number of technical issues, a lack of motivation for pedagogical change, and a dearth of broadband connectivity prevented its wider establishment as a learning tool (e.g., Carson, 2012).

Around the same time, MIT began to evolve the idea of open access learning content. The MIT Open Course Ware programme (www.ocw.mit.edu) arose from MIT

Faculty discussions in 1999 that centred on how the web could be used to support the organisation's mission 'to advance knowledge and educate students.' The outcome was a bold initiative, as Dick K. P. Yue from MIT put it (Freitas *et al.*, 2015).

2.6.2 Mobile Learning

There is not much to connect the delivery of location-based content on mobile telephones with group learning through handheld computers in the classroom, apart from a reliance on portable devices, so the early definition of mobile learning were anchored on the use of mobile technology: "It's e-Learning through mobile computational devices: Palms, Windows CE machines, even your digital cell phone" (Quinn, 2000). The study on technology does not assist in understanding the nature of the learning as well as overlooks the wider context of learning as part of an increasingly mobile lifestyle. Despite the fact that discovering a city during a vacation, a tourist might learn from a travel internet site on a home desktop computer, a phone discussion with a friend who visited the city, an in-flight travel magazine and promotional video, a Google map of the city on a mobile phone, an interactive multimedia program guide in the tourist information office, printed flyers, and handheld audio-guides at tourist places. It is the shared experience that shape mobile learning. In trying to unpack the 'mobile' in mobile learning, one finds:

• Mobility in physical space: people on the move trying to fill up learning into the gaps of daily life or to use those gaps to reflect on what life has taught them. The location may be related to the learning or merely a backdrop.

• Mobility of technology: portable devices, tools and resources are obtainable to be carried around, and conveniently packed into a single lightweight device. It is also possible to transfer attention across devices, moving from the laptop to any other devises like the mobile phone or notepad.

• Mobility in conceptual space: learning subjects and themes compete for a person's shifting attention. A typical adult undertakes eight major learning projects a year, as well as several learning incidents every day, so attention changes from one conceptual topic to another, driven by personal interest, curiosity or obligation.

• Mobility in social space: learners implement within several social groups, together with encounters in the family, office, or classroom framework.

• Learning dispersed over time: learning is a collective method that encompasses connections and strengthening among a variety of learning experiences, across formal and informal learning contexts.

The foundations for mobile learning were arranged over thirty years ago with the far-sighted Xerox Dynabook project that recommended a "self-contained knowledge manipulator in a movable package the size and shape of a regular notebook," which would permit children to explore, create and share dynamic games and simulations. This project led to the development of personal computing and can be considered a permanent success of research in technology-enhanced learning. Nevertheless, early innovations were desktop-based, and only over the past ten years has mobile learning developed as a set of important projects in schools, workplaces, museums, cities and rural areas around the world. These projects range from providing revision questions to children by mobile phone (BBC Bitesize Mobile1), through small group learning in classrooms using handheld computers, to context-sensitive learning in museums and workplaces. We are in an era of personal and technical mobility, where mobile devices, including phones, MP3 players and PDAs, are carried everywhere. We have the opportunity to design learning differently: linking people in real and virtual worlds, creating learning communities between people on the move, providing expertise on demand, and supporting a lifetime of learning. In order to comprehend how people learn through a mobile, pervasive and lifelong interaction with technology, we need to understand the implications of learning with mobile technology and build an appropriate theory of education for the mobile age (Sharples *et al.*, 2009).

2.7 E-Learning Management

E-Learning management comprises instruction templates that must be filled with the relevant content and uploaded on the internet for use by learners. For instance, alternative developments of similar use include the Learning Content Management

System (LCMS) and the Learning Management System (LMS). Learning management systems (LMS) are software items that are created to manage, present, evaluate, and follow-up on all educational activities on the internet but do not focus on content and can be asynchronous or synchronous. Blackboard and WebCT are examples of such products. Developed from LMS, LCMS allow greater participation of authors in content development, use, and reuse. It is therefore software easing when focusing on content but learning by networks. Even though the preceding definitions are susceptible to easy confusion, an important difference is that LCMS is related to the management of content and indirectly affects the learners, while LMS is associated with the management of learners. Indeed, one cause of confusion is the similarity of their acronyms. However, these systems complement each other despite having different names. LMS is often integrated with LCMS, and these systems are often applied interchangeably and complement each other, particularly if they are created using similar standards (Alkalifah, 2008).

Both of the universities that participated in this study employed all of the available systems and had access to every tool listed below. e-courses are described by Alsalem (2004) as "content designed and dependent on computers and disseminated via the internet, hence enabling them to facilitate learning without being physically present at the campus" (Alsalem, 2004, p. 38). These courses consist of tools that allow learning and interaction between students and their teachers, as well as amongst themselves, and some of these tools are outlined below (Table 2.1).

Table 2.1: Explaining e-Course Functions

Functions	**Description**
Course Homepage	Starting point, like a book's cover, which, through a group of buttons, enables the learner to browse all parts of the course
Course Content	Information, uploaded by the instructor, comprising a selection of multimedia lectures, readings, assignments, simulations, slideshows, links and other technological devices

	presented in various ways
Chat Room	An on-screen space for synchronous chatting amongst participants by means of instant text
Discussion Board	A document or group of documents for asynchronous exchanges between learners and instructors
Announcements Board	A screen, related to the course, for announcements to participants
Calendar	A grid that can be used to determine appointments and all task due dates
External Links	A list of web sites related to the course
Homework Drop Box	A place for learners to attach their assignments for preview and assessment by their instructors
Grade Book	A record of learners' grades and how they are distributed
e-mail Centre	A means of sending private e-mails to instructors or to colleagues
Personal Home Page	A personal introduction for learners and instructors

It must be noted that rapid changes in ICT may cause changes in the tools listed in the table. Educational institutions currently depend on software series, such as WEbCT and Blackboard, which facilitate the creation of online courses by instructors (Alkalifah, 2003; Alsalem, 2004). It is therefore clear that many pedagogical aspects can be disseminated by course planners to a large number of students who are far from the university in terms of both geography and time.

Taking note of the available tools, it has been demonstrated that the e-Learning environment is flexible. The following section describes the technological features of this environment.

2.8 E-Learning Environments

Open, flexible learning environments are different from distributed learning. The former means that learning can take place far from physical boundaries/locations at a

place, pace, and time of the learners' choosing and based on the decisions of the learners, while the latter means that learners, instructors, and content can be in different locations and far from the centre. A unified schedule does not dictate learning venues or times, but traditional methods can be used to facilitate learning in virtual or real classes (Khan, 2005).

Two types of e-Learning environments exist, including the virtual learning environment and the reality learning environment (Livingstone and Kemp, 2006; Piccoli *et al.*, 2001; Zeitoun, 2008). However, an additional environment has been acknowledged by other writers, and this is the personal learning environment. The personal learning environment can be conducted by learners with no supervision and is different from the other two environments, which require participation by a group administration by an institution of education. More differences will be discussed below between a personal learning environment on one hand and a virtual learning environment or reality learning environment on the other hand.

Reality Learning Environments (RLEs) refer to classrooms in which there is a partial equipment of space for e-Learning. For instance, one screen may be in front of the classroom or a few computers may be in the classroom. In Virtual Learning Environments (VLEs), learning takes place online through open systems, which create an environment that resembles real learning but in which learners and instructors meet, interact, and communicate online, both asynchronously and synchronously. A VLE is defined by Conole and Oliver (2006) as "a pool of tools that provide support to learning processes." Examples of these tools are tools for group work submission, tools for assessment, online discussion forums (via chat facilities or bulletin boards), and other tools highlighted above. The design of these VLEs may be carried out on various platforms, such as Moodle and Blackboard. However, in a personal learning environment, learning is managed independently by the learners (Van Harmelen, 2006).

Virtual environments are mostly employed in e-Learning and existed at the universities selected for this study. Learning environments are made by the ICT revolution to be more flexible and suitable for meeting the needs of learner.

Essentially, content contributions can be made by learners through the tools accessible on the internet. Such a possibility first took place when the internet was loaded with educational content developed by either institutions or individuals.

Having explored what encompasses e-Learning, the reasons for its establishment can be analysed from a number of perspectives, including administrative, individual, and global perspectives. Trending globally is the need to make learning free from time and place constraints and to transition to independent learning that is lifelong and based on the needs of the learners. e-Learning is desirable because it is flexible, and this makes it compatible with contemporary social and economic trends and the need to facilitate communication. This type of learning promotes the rights of individuals to access knowledge regardless of distance and to obtain opportunities to learn regardless of age. Thanks to e-Learning, this philosophy is supported by a change of focus to learning rather than teaching and to learner-centred learning rather than teacher-centred learning, hence meeting the requirements of learners to learn according to their own interests, needs, abilities, and paces.

Despite the above arguments that rationalise the use of e-Learning, it must not be assumed that the aims of boosting achievement levels in education and availing opportunities for learning at any place and time are assumed before the investigation. The section below delves into the relevant literature to elaborate on these and other outcomes of e-Learning.

2.9 Positive Aspects of e-Learning

The ability to help manage the ongoing knowledge explosion and accommodate the increasing demand for education is considered to be among the most significant benefits of e-Learning. According to Shtat (2004), the enjoyable, interactive, and motivational learning environment that is provided by e-Learning is achieved through many sources, which makes it easy to update content, learn, retain knowledge and address the needs of individuals. The importance of e-Learning as outlined in the literature is discussed below.

E-Learning is beneficial because it makes up for academic staff shortages, promotes communication and the relationships that make learning possible, supports various administrative functions, such as evaluation, classroom management, and registration, helps a generation to cope with developments in ICT and helps them stay updated on the latest developments, and makes it possible for many students to be taught without the limitation of place and time and while enabling them to engage in debate and dialogue. Other benefits include that the ideas that e-Learning encourages independent learning, enables instant and rapid result assessments and error corrections, avails knowledge from many sources, cares for differences among individuals, supports parental participation, makes it easy to access the teacher even during non-working hours, encourages learners to interact, exchange, and respect others' opinions, allows quick access to information by learners, enables rapid updating of information, does not require service personnel to be physically present, makes content available throughout, supports the learning style of each learner, reduces administrative work, makes time use optimal, provides many ways to conduct learner assessments and evaluations, and is easily accessible (Almosa, 2001; Alsalem, 2004; Amer, 2007; Codone, 2001; Urdan and Weggen, 2000).

According to Rabah (2005), e-Learning makes it possible to rapidly achieve goals with minimum effort. Learners and instructors can be inspired by this possibility to achieve and keep pace with developments as they acquire experience offered by many professionals in varied fields. e-Learning's impact on educational ethics is undeniable due to the unbiased nature of e-Learning environments, which provide equal access to knowledge, irrespective of the ages, locations, races, languages, or ethnic origins of the users (Khan, 2005). In addition, e-Learning environments encourage self-reliance in learners since instructors are not the only knowledge source. Instead, instructors play a guidance and advisory role (Alsalem, 2004). Curriculum development problems are easily addressed through ready access to rapidly changing knowledge courtesy of e-Learning. Through e-Learning, society is prepared to engage in global communication and conversation with others (Zeitoun, 2008).

In summary, it is suggested by researchers that the potential usefulness of e-Learning surpasses that of traditional learning but only when it is applied and used appropriately. However, there are also some doubts associated with these benefits, including the need for proper technology and a quiet place to use the program at any time or in any place and the need for sufficient bandwidth to use multimedia, which can be more easily and inexpensively provided in a classroom setting than outside the classroom. Additionally, the capacity to meet the learning styles of individuals relies on how the program is designed; it is sometimes costly and overwhelming to update the program. As is the case with paper information, many elements comprise e-Learning, including program content and the number of users, and maintaining novelty might be more difficult and expensive in comparison to classroom-based programs (Higgins, 2008).

After outlining the e-Learning benefits reported in the literature and after highlighting the corresponding doubts raised by (Higgins, 2008), the following section discusses the negative aspects of e-Learning, as identified by other researchers.

2.10 Negative Aspects of E-Learning

Research indicates that e-Learning has some negative attributes despite the many benefits that have led to its popularity. It is easier to apply e-Learning to the social sciences than to scientific disciplines, such as pharmacy and medical science, for which the development of practical skills is required. Additionally, e-Learning focuses more on cognitive learning at the expense of affective and physical learning; does not encourage the use of all the senses in learning (only hearing and sight); undermines the sociability of individuals due to the lack of physical communication; is dependent on good infrastructure, technical support, efficiency, and quality of design; is expensive to establish and maintain; and undermines the role of institutions in socialisation and the roles of teachers as educational process directors. In addition, e-Learning may seem to be an uninteresting employment avenue due to the massive recruitment of ICT experts in many other sectors; since it meets the needs of multiple

ICT companies whose aim is to make profits, there is a risk of copyright violation (plagiarism or piracy) propagated by the simplicity of copy and paste and the lack of selection skills. It is also at risk of heavy congestion and use, which might cause unexpected financial and time costs (Alarifi, 2003; Almosa, 2002; Alsalem, 2004; Alshehri, 2002; Amer, 2007; Collins *et al.*, 1997; Lewis and Orton, 2000; Michel, 1996; Passey *et al.*, 1997; Wegner *et al.*, 1999). Despite the above shortcomings of e-Learning, e-Learning has many positive features that promote its use and the search for strategies to minimise its shortcomings.

2.11 E-Learning Barriers

Many benefits of e-Learning that contribute to its popularity among educators and many of the shortcomings outlined above are directly caused by technology and its applications. However, there are also financial and administrative hindrances to e-Learning implementation, as identified by two researchers. These barriers are discussed below.

These barriers include indecision about how to provide learners with appropriate incentives, unclear standards for regulating e-Learning, the fact that decisions are made by technicians at the expense of educators without consideration of learners' interests, the vulnerability of content privacy and confidentiality to hacking, the lack of filters for advertisements and unwanted sites and the inability to set communication boundaries, the inability of learners to efficiently respond to the new learning environment, and the constant need to train and provide support to administrators and learners. Other constraints include the availability of old regulations that undermine the e-Learning philosophy and intense competition globally in terms of distributing high-quality content (Almosa, 2002; Zeitoun, 2008).

To show the influence of the barriers outlined above, a study conducted by Michel (1996) observed that although the internet was applied more rapidly in the private sector, its application in the education sector tends to move at a slower pace than expected. Language is a barrier since most content on the internet is presented in English, and this disadvantages people who use other languages. In addition, low

levels of accuracy are demonstrated by many search engines. There is a lot of suspicion about internet use, and this is evident in suspicious websites that call for caution. According to Alsalem (2004), e-Learning is plagued by high fees, connection problems, and a weak infrastructure. Additionally, Alsalem points out that there is unfamiliarity among educators when it comes to navigating and using sites and that there is a lack of conviction among faculty members about using e-Learning. Unawareness about the advantages of e-Learning at all levels and a lack of familiarity with the needed requirements hinder e-Learning progress. Educators are apprehensive about losing their traditional roles, and the quality of e-Learning is considered to be lower than that of traditional education by the community. Some countries do not recognise e-Learning certificates, and this requires learners to be very self-motivated and strong willed.

It is now clear that some barriers hinder the application of e-Learning and may have contributed to its limited growth. In the section below, some of the approaches that can be used to overcome these barriers are discussed.

2.12 E-Learning Requirements

The significance of e-Learning is undeniable, as it is not only used to transfer content to electronic format from paper but is also a process that affects many aspects of life. Specific elements are needed for e-Learning to achieve its objectives, and the most important factor is making the electronic content interactive. Suitable activities should be incorporated into e-Learning to make the learning environment varied, and these activities include the development of learning portals that are interactive and that contain LCMS and LMS standards; the development of human resources that target executives, instructors, and learners; the development of interactive digital content; the provision of human and financial resources; planning for e-Learning; the transformation of management; and private sector involvement in building e-Learning foundations and cutting e-Learning costs (Alfeleh, 2004; Alshehri, 2002; Amer, 2007).

Having considered these issues, the following section discusses the impact of e-Learning.

2.12.1 ICT Impact in Education

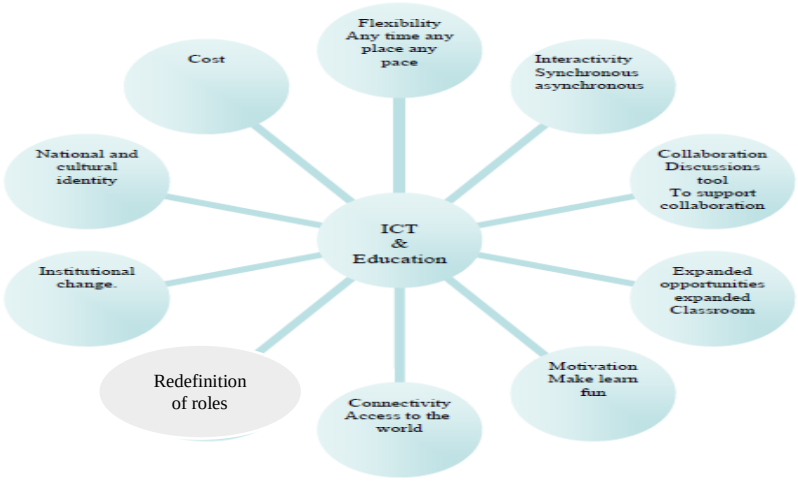
Widespread use of the internet coupled with accessibility to personal computers has led to fundamental changes in the concept of education (Zhang and Nunamaker, 2003). Due to the ICT revolution and the associated radical shifts and changes, communities regard ICT in education as an urgent necessity rather than a luxury. In this era of the information age, traditional methods are becoming increasingly difficult to use. According to Schofield et al. (1997), the ICT revolution's real impact will be seen ahead of us and not behind us. According to Almosa (2002), institutions must face these challenges by embracing ICT and addressing its shortcomings. If ICT is designed to meet the needs of learners in terms of providing learning at their own paces, styles, places, and times and personalised for different uses at various levels, then it can be used to improve education. Additionally, Almosa (2002) predicts a future in which there will be blurred borders between work, education, and recreational activities. He recommends that it is important for educational institutions to be abreast with these changes by reimagining their content, programs, plans, and objectives without threatening their cultural and national identities. The extensive effects of ICT in education have also been recognised by Abdulaziz (2008). Through an analysis of what changes are required in traditional roles undertaken by the most important education stakeholders, he outlines this innovation's impact. The role of learners will transform from passive to active. They will become autonomous learners who can retrieve information, interpret and evaluate content, and be interactive. The role of the instructors will change from teaching to mentoring. The roles of the teachers will remain significant since e-Learning does not just involve surfing the internet but doing so under guidance and in particular ways. This distinction is where the teacher's role will be important.

In debate outside Saudi Arabia, there is a question of whether the pedagogic method or the media has the largest impact on ICT use in education (Clark, 1983; Kozma,

1994). Regardless, the impact of ICT on all aspects of education is evident. The network's main impact is not just the increased application of educational software, obtaining information easily, nor accessing it easily, but its capacity to promote the social creation of new knowledge and its development through global participation. As such, quality is the focus of ICT. This concept supports the goal of modern education, which emphasises the importance of preparing learners to learn continuously and providing learners with the required strategies and capabilities to cope with substantial quantities of information. These are the typical education characteristics in the information era. ICT also supports the creation of an environment that supports the development of critical thinking skills that continue into lifelong self-directed learning and an environment in which effective independent learning is paramount to the success of every learner (Garrison, 2011). According to Wellington (2004), ICT's role in education includes modelling, problem solving, sorting, classifying, promoting group work, exploring data, finding patterns, researching, and questioning.

Noted by Holmes and Gardner (2006) is the capacity of e-Learning to evaluate learners while learning and at the same time develop their educational experiences through cultural diversity, globalisation, and interaction that is suitable for community education, as well as the elimination of place and time boundaries. Despite all of these factors, e-Learning's most important attribute in education is that it is an interactive type of learning that is learner-centred. The characteristics of e-Learning, as outlined in the literature, are shown in Figure 2.5 below.

Figure 2.5: Overview of the Important Aspects of the Impact of ICT on Education



(Developed from (Abdulaziz, 2008; Almosa, 2002; Garrison, 2011; Holmes and Gardner, 2006; Wellington, 2004)

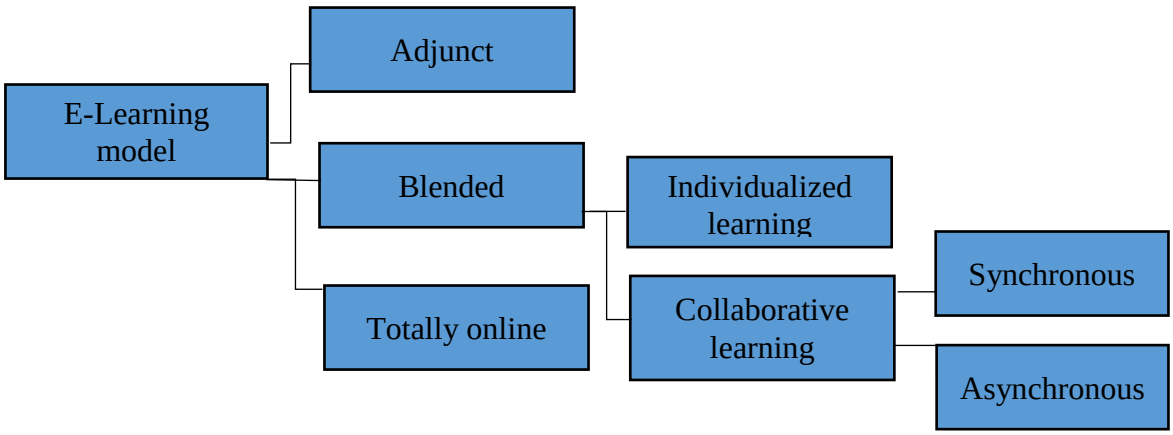
The most important aspects of the impact of ICT on education, as outlined in the literature and as discussed in the previous section, are summarised in the above diagram. Whereas four items in the diagram may be regarded as challenges to education delivery, the other six items may be regarded as having a positive impact on the quality and administration of learning. The implications of some of these aspects will be considered in the following sections.

2.12.2. Employing e-Learning in Education

Similar to the fact that types of e-Learning vary, there are also different types of models (three) for how e-Learning is used in education. One of these models is the ‘adjunct’ model, a model that involves e-Learning as a complement to the traditional classroom and provides the learner with relative independence. Another model is ‘blended e-Learning,’ in which learning is conducted by using e-Learning and traditional learning methods equally in the classroom. The last is the ‘online’ model, in which learning is carried out completely over the internet (i.e., complete e-Learning, without a classroom or a traditional setting, in which learner autonomy is fully guaranteed). Collaborative and individual learning are subdivisions of this model, with the latter being further sub-divided into asynchronous and synchronous

learning (Zeitoun, 2008). The three models of how e-Learning is applied in education are shown in Figure 2.6.

Figure 2.6: The Three Models of E-Learning Application in Education



Having provided an overview of how the three models of e-Learning are applied in education, this innovative delivery together with the relevant procedures and practices in relation to education will be discussed in the sections below.

2.12.3. Interaction and Communication in e-Learning

Interactive learning is a feature of e-Learning that allows the student to engage in interactions with content, other students, and the instructor either asynchronously via group news or email or synchronously via shared whiteboards, chat rooms, or video conferences. Additional features that provide interactivity are discussion forums and discussion threads. e-Learning's main feature is that it can be regarded as electronic interactions between the student and the content, the student and other students, and the student and the teacher (Allan, 2008; Phillips, 2004).

Communication is basic to the process of learning and is defined as the exchange of ideas and information. According to Zeitoun (1998), communication is an interaction process between two or more than two parties about a specific message (opinion, concept, or notion) that involves the use of a channel to carry the message between the receiver and the sender (p. 23). This interaction, which can be conducted verbally or non-verbally, can be conducted through various channels, such as computer networks, software, and hardware. ICT enables the electronic transfer of experiences

(affective, psychomotor, and cognitive) between two or more parties. Universally, communication elements comprise the receiver and the sender, feedback, and a channel, with the expected response being a role reversal. Interaction is the key to learning in an established relationship between communication and learning. Traditionally possible in a face-to-face scenario, chat rooms, video conferences, and other tools now make interaction possible electronically.

According to Garrison (2011), all learning forms take place through interactions between learners, instructors, and content. Whereas this triangle's two corners are human, with the other being non-human, they are all important for e-Learning. Six types of interaction were suggested by the two authors, but the three most significant types include learner-content, learner-learner, and learner-instructor interactions. This study's research design encompasses these three interaction types, which will be elaborated in the paragraph below.

As observed, interactions in learning may involve interactions of the learner with colleagues, interactions of the learner with the teacher, or interactions of the learner with the content. The interaction of learners with content, which is supported through laboratories, e-libraries, and web links, is a central focus of e-Learning. New avenues, such as mini virtual environments, were opened by ICT to offer suitable and immediate content to address the needs of learners. To promote learner-instructor interaction through both indirect and direct communication, several tools were developed simultaneously. Although a face-to-face pedagogy also has similar interactions, e-Learning's learner-learner interactions were different from those of traditional learning, in which individual learning was supported (Almosa, 2002). Due to the unavailability of learning materials in the past, there was a persistence of individual learning until the importance of interactions between learners was emphasised by constructivists. Group learning was therefore favoured, and it was demonstrated that group learning positively impacted the social skills of learners and allowed them to finish tasks that were important for the development of knowledgeable learning communities. Direct human interaction was replaced by interactive environments amidst no misunderstanding or confusion as was

anticipated. Two types of interaction were identified by Bates (2005), including 'isolated and individual' interaction, in which learners, for instance, interact with content, and 'social and mutual' interaction, which involves interactions between two or more learners. Bates (2005) stressed that both interaction types were essential to learning. e-Learning tools were designed to promote quality interactive activities. The construction of links between learners and instructors was undertaken, whether those links were developed in an asynchronous or synchronous manner or for individuals or groups. In contrast to the past, when content was static and simply awaited use by learners, today's content is flexible and dynamic and can be changed by learners according to their needs. An essential part of the learning process is the interactions between the instructors, learners, and content. According to Garrison (1998), this interaction took place in three steps: learners interacted among themselves, followed by interaction with other available resources (nonhuman or human) and interaction with information they had obtained. The nature and type of interaction was also suggested by Garrison (1998) to have several other options. The interaction could have multiple appearances, such as threaded discussions, and could be two-way, such as a discussion between a learner and an instructor, or one-way, such as surfing the internet. Paying due attention to each form of interactivity was found to be important when using ICT (Garrison, 2011).

The preceding discussion has shown how technology has disseminated education to transcend place and time boundaries to reach a large number of people at lower individual and institutional costs. Through this process, learners have been given control. The succeeding section explains how autonomy in e-Learning is supported by flexibility and interactivity.

2.12.4 Autonomous Learning

In this section, it is argued that while the most important goal of effective pedagogy is autonomy, there are also two other essential components, which include interactivity and flexibility. Flexibility connotes that the learner has the freedom to choose when and where to learn, and this freedom starts at the beginning of learning

and extends until the end. The activities of the learner are practical actions during the conduction of autonomous learning and the process of personalization (Abdulaziz, 2008). The conduction of learning outside university walls and the idea of continuous learning are supported by e-Learning. As such, it is apparent that e-Learning and self-learning are interconnected, with each component being important to the other. Therefore, flexible learning borders on autonomy.

Active participation of the learner with the content is what underlines interactivity. This ability allows the learner to practice and autonomously decide what they need. To put it differently, interactivity focuses on the needs of the learner and considers the ability of the learner and the pace to meet their objectives, hence enabling the attainment of proficiency levels (Almosa and Almubarak, 2005). Therefore, the role of the instructor in this type of learning is undertaking learner training so that they can search and act as their own observers, guides, and directors. The absorption and application of existing technology coupled with education reformulation to focus on learners has been shown by research to be affected by ICT. Self-learning is the only avenue through which such use can be attained because of individual differences in interaction with technology. e-Learning has greatly supported the design of learning to meet the needs of each learner and the reinforcement of individualised learning (Alsalem, 2004).

Undeniably, education's primary goal is to ensure that the individual experiences growth in all areas of personal development. This goal connotes that the individual should learn based on his or her own needs and experiences. As such, each learner should be treated individually and be offered opportunities to attain maximum achievement with less effort and in less time. Autonomous learning is therefore an important component of an optimal educational opportunity. According to Drew and Bingham (2001), autonomous learning encompasses perceiving learners as people who are able and should be allowed to be autonomous (i.e., be allowed to make their own learning decisions). Thus, autonomous learning connotes learning independently without constant supervision and instructor assistance (Fazey and Fazey, 2001).

The preceding discussion demonstrates that interactivity and flexibility are important components of autonomous learning. This concept, coupled with the outlined e-Learning history and its applications, show that e-Learning provides educational institutions with an opportunity to meet the needs of learners anywhere, at any pace, and at any time. The current study examines the effectiveness of these procedures at two universities. After explaining that autonomous learning is interactive and flexible, the succeeding section will discuss the meaning of the term effectiveness.

2.12.5 E-Learning Effectiveness

The most important issue in any project is considered to be the evaluation of its effectiveness. Effectiveness is regarded by Oatley and Nundy (1996) as a general term that encompasses such concepts as values, attitude, mood, and emotion. Effectiveness connotes the realisation of goals/objectives. According to Reeves and Hedberg (2003), "effectiveness is applied when finding out whether short-term or immediate goals have been achieved by the interactive learning system after its establishment." This meaning is adopted in this research study. Effectiveness enables various questions to be posed, including "Does e-Learning offer the easy accessibility and use that are needed to enable learner interactions with fellow learners, instructors, and content?" and "Does e-Learning meet its objectives of usability, interactivity, and flexibility?" In the present study, the effectiveness of e-Learning is evaluated by building an understanding of the perspectives of learners about their capacity to learn autonomously at any pace, anytime and anywhere. Ultimately, e-Learning's feasibility may be indicated by this view in the long run.

In summary, e-Learning can be regarded as effective and successful if the learner can learn autonomously anywhere, at any pace, and at any time and at the same time positively interact with fellow learners, the instructor, and the content. After making this clear, it is now important to examine what constitutes an evaluation.

2.13 E-Learning Evaluation

According to Patton (2008), evaluation "refers to systematic information gathering regarding the program characteristics, activities, and outcomes for use by individuals to make decisions, improve effectiveness, and reduce uncertainties about the activities of the program." Such information was applied by Morrison (1993) "to particular issues that required judgement about the course of action to take." Evaluation may connote the assessment of the perceptions of learners and instructors concerning the usability of a course (Phillips, 2002). According to Shneiderman (1992), evaluation may further denote the extent to which learners learn rapidly with few mistakes while also achieving retention and satisfaction. Evaluation is regarded by Mertens (2014) "as an applied process of inquiry that is used to gather and synthesise information that leads to drawing of conclusions regarding the significance, value, merit, state of affairs, or quality of a program, person, product, plan, proposal, or policy." Evaluation is also defined by Hadley and Mitchell (1995) "as applied research conducted to arrive to appropriate decisions concerning one or many service programs."

Evaluating the effectiveness of e-Learning at universities is important in the identification of e-Learning realities and the promotion of strengths and the strengthening of weaknesses, hence contributing to the attraction of investments and efforts for achieving the objectives of e-Learning. According to Leung (2003), when the effectiveness of e-Learning is evaluated, it builds confidence before adopting the approach on a large scale. Development must arise from the results of the evaluation (Reeves and Hedberg, 2003).

The reason for e-Learning evaluation, as Reeves and Hedberg (2003) "note, is to support the primary aim of evaluating gathered information to inform everyday decision-making." Therefore, evaluation is a way of developing, improving, and judging educational programs. In fact, the evaluation of e-Learning is informed by many factors, which are similar to those that underlie the evaluation of any other activity. For instance, evaluation is designed to satisfy learner curiosity, settle

worries, and provide a clear picture to leaders, developers, designers, and experts about the educational software's effectiveness and quality (Sawaan, 2005). Additionally, evaluation is designed to support activities that underlie strategy development and decision-making. The following purposes for conducting e-Learning evaluations were identified by Dempster (2008): 1) to justify e-Learning investment; 2) to determine the academic quality of teaching and the quality of practice; and 3) to improve and develop individual participants' and packages' performance. Stufflebeam (2001) widened these pragmatic goals to encompass future planning by developing and judging the importance of the programs, as well as improving policies, and by providing information for decision-making. According to Shobeli (1984), evaluation's ethical objectives were to determine program feasibility, rationalise the time, money, and effort channelled to e-Learning, and to establish the effect of the programs. Additionally, Shobeli (1984) observed that the aim of evaluation was to gather data that informed decision-making regarding whether to continue or discontinue with the development of different software packages. This ability of evaluation to justify investments in e-Learning was supported by Horton (2001). From a general point of view, the overarching aim of evaluating e-Learning effectiveness is to determine whether the objectives of e-Learning are met within the short term or immediate context following its implementation (Horton, 2001, p. 173). There are many types of evaluation. Evaluation can be grouped into four types according to the stages of implementation of a program, with each stage signifying a specific type (Shobeli, 1984). Initial evaluation is the first stage and is undertaken before a program is implemented. This type of evaluation serves to provide background information before the start of implementation. Formative evaluation is the second stage, which is carried out several times during the course of program implementation in order to improve and develop the program. Summative evaluation is the third stage, which is undertaken after program completion and aims to assist in decision-making regarding program continuity. Follow-up evaluation comprises the fourth stage and is undertaken to determine the program's long-term effects and appropriateness in the face of new developments.

Evaluation can therefore be undertaken in several stages during the course of e-Learning implementation to boost its effectiveness and development through on-going evaluation. As such, the most useful evaluation for e-Learning in this study appeared to be summative evaluation. Massive debate exists regarding the appropriate means of evaluating projects, particularly concerning whether evaluations should be summative or formative. A lot of controversy exists in the field of evaluation concerning whether to use surveys of experimental studies or qualitative or quantitative methods. As noted by Mandinach (2005), similar to e-Learning implementation, "its evaluation will undoubtedly be challenging and even problematic in some cases but will remain potentially informative and effective." Since there is some controversy about which model is best, it is essential to comprehend the weaknesses of each model to arrive at a valid result that is formative (Conole and Oliver, 2006).

Indeed, formative evaluation does not have universal standards, but the standards outlined below consider general factors, such as effectiveness, usability, and functionality. The assessment of all of these factors can be achieved using various questions, such as "Is the program used by students and does it facilitate learning?" and "Does the product do the work it was designed to do?" (Reeves and Hedberg, 2003). Providing an overview of the available models, (Payne, 1994) sub-divided the existing models of evaluation into four categories based on their functions. The models he described include fourth-generation constructivist or evaluation models, Patton's qualitative models, experimental models, and multiple methods evaluation models.

The current study used a focus group interview and a questionnaire. The framework used in this study has some similarities to Levy's framework, particularly regarding the application of characteristics of e-Learning and similar dimensions. Conversely, different from Levy's framework, which uses value and satisfaction, this study uses four main dimensions, in addition to many sub-characteristics that were adopted from the literature to assess e-Learning effectiveness.

Thirty-eight characteristics are adopted by this research, as suggested by the relevant literature and as uniquely developed by this study. These characteristics were subjected to validation via an analysis of the responses of learners and instructors. The characteristics were not only suitable for the participating universities but also for Saudi Arabia, where the research was conducted.

To evaluate the effectiveness of e-Learning through the perceptions of instructors and learners, the most essential characteristics focus on interactivity and flexibility, which are examined through four dimensions: learner-content interactions, learner-learner interactions, learner-instructor interactions, and autonomy. Sixteen characteristics are used exclusively in this study's classifications. These characteristics are used together with another 22 characteristics from the relevant literature. As a result, the categorization of the total number of 30 items seems logical if undertaken with regard to the four dimensions used in this research, with autonomy as a new category introduced in this study. In contrast to previous studies that have used different ratings for every item applied previously, a five-point Likert scale is used in the present study. This approach will help the study measure interactivity and flexibility comprehensively. Details are provided in the tables below.

Table 2. 2: Dimension 1. Ability to Learn Autonomously in E-Learning

No.	Characteristics	Example Sources
1	Personalised learning	
2	Learning anytime, anywhere	Piccoli et al., 2001; Alferaihi, 2003; Levy, 2006; Alaugab, 2007
3	Learning at own pace	Sawaan, 2005
4	Presentation is suited to own learning style	Webster & Hackley,1997; Piccoli et al., 2001
5	Enabling reviews at any time	
6	Presenting immediate feedback	
7	Able to self-asses	
8	Suitable technical support	Webster &Hackley, 1997; Levy, 2006

Table 2. 3: Dimension 2. Learner - Content Interactions in E-Learning

No.	Characteristics	Example Sources
9	Easing the process of learning	Sawaan, 2005
10	Encouragement to learn more	
11	Increasing capacity	
12	Increasing motivation	Sawaan, 2005; Alaugab, 2007
13	Increasing productivity	
14	Helping to manage time and self-discipline	Alarfaj, 2001; Piccoli et al., 2001
15	Encouraging increasing the duration of learning time	
16	Preferring tasks and tests through e-Learning tools	Piccoli et al. 2001; Levy, 2006

Table 2. 4: Dimension 3. Learner - Instructor Interactions in E-Learning

No.	Characteristics	Example Sources
17	Preferring communicating compared to face-to-face	
18	Increasing communication with instructors	Webster and Hackley, 1997; Alferaihi, 2003; Levy, 2006
19	Building productive relationships with instructors	Webster and Hackley, 1997; Piccoli et al., 2001; Alferaihi, 2003
20	Easing discussion with instructors	Alferaihi, 2003
21	Encouraging discussion with instructors	Sawaan, 2005
22	Enjoying contacting instructors	
23	Receiving more attention from instructors	Sawaan, 2005

Table 2. 5: Dimension 4. Learner - Learner Interactions in E-Learning

No.	Characteristics	Example Sources
24	Preferring communication compared to face-to-face	
25	Increasing communication with other learners	Webster & Hackley, 1997; Alarfaj, 2001; Levy, 2006
26	Building productive relationships with other learners	Webster & Hackley, 1997; Piccoli et al., 2001
27	Easing discussion with other learners	
28	Encouraging participation in discussion with other learners	Sawaan, 2005
29	Enjoying contacting other learners	
30	Increasing cooperation with other learners	Sawaan, 2005

In conclusion, e-Learning's main advantage is that it can be used anywhere, anytime, and at any pace (Holmes and Gardner, 2006; Zeitoun, 2008). Interactivity is another of e-Learning's major distinguishing features, as information is exchanged in two or many ways to support collaboration (Allan, 2008). The categorisation of e-Learning

should therefore be done in terms of the various interactions between the parties involved: learner-content, learner-learner, and learner-instructor (Phillips, 2004). Moreover, interaction and networks are the major distinguishing features between computer-based learning and e-Learning (Cross, 2004).

These differences are important to the present study, which uses two key concepts from the relevant literature: interactivity and flexibility. The distinction between e-Learning and traditional delivery is summarised by both of these concepts. The term flexibility is newly selected and connotes learning at any pace, anywhere, and any time, as well as freedom in choosing learning styles, the constant availability of reviews and instant feedback, the ability to self-assess and the availability of the technical support that is needed to maintain these features. Flexibility connotes an appropriate environment in which learners can learn autonomously.

The concept was expanded to include the above attributes as a measure of updating the framework in tune with recent developments in technological features, learning theory, and formative experiences of e-Learning in educational settings. Facilitated by technology, it is noted that interactivity is a concept that has greatly contributed to education (Allan, 2008; Cross, 2004; Phillips, 2004). As used in this study, interactivity encompasses an array of interactions that are accessible by e-learners, with its importance acknowledged by other authors endorsed in the study. This study also made comparisons between face-to-face contact and e-contact and investigated enjoyment and ease of communication.

From the foregoing discussion, it is evident that autonomy is an overarching third concept that arises from the two key concepts of interactivity and flexibility. If learner flexibility is enabled in terms of pace, place, and time and with regard to feedback, response to reviews and self-assessment while providing technical support, then in essence, autonomy is being practiced by the learners. Additionally, there is a capacity for change in the practice of autonomous learning that is not possible in traditional learning if it is underlined by many interactions between learners and instructors, content, and other learners and if learning is modified according to these

interactions. For these reasons, interactivity and flexibility are regarded as two sides of the autonomy coin.

2.13.1 Aspects Covered through the E-Learning Evaluation

In this section, e-Learning's applications, systems, tools, infrastructure, negative features, and positive features in comparison with other systems are considered, as well as how the negative and positive aspects impact stakeholder support, the assessment of learner achievement levels before and after application, and constraining factors. Also considered are the institutional impacts of e-Learning; the impact on the community – behaviourally, intellectually, and socially; and the impact on administrative process improvement with regard to effort and time savings.

According to Khan (2005), e-Learning's evaluation dimensions include learner, teaching, and learning environment evaluations, with an emphasis on outputs, processes, individuals, and input. Although the ICT field was dominated by important questions, such as its impact socially, pedagogically, and vocationally (Wellington, 2005), it was e-Learning's quality that commanded close consideration. According to Dempster (2008), evaluation should encompass how ICT is applied, needed skills, effectiveness, feasibility, and resources and materials required. One or all of the following factors can be included in evaluations of e-Learning effectiveness: output, processes, and input.

The significance of content evaluation has been recognised by Hall and Hall (2004) under the following headlines: instructor evaluation (competence and attitude), storing, interactivity and enthusiasm, assessment, methods, motivation, leadership, interaction, and design. The two authors also called for the evaluation of learners in terms of the performance objectives of knowledge, competence, and skills and the evaluation of the implementation process involving instructor and learner roles, their capacity to use the programs, and the barriers and constraints they experience. As shown in the previous discussion of the three inclusive concepts, these varied concerns must be condensed and assimilated to allow the rigorous progression of e-

Learning evaluations to address the changing conditions created by developing technology and its use in specific settings.

Although they reflect societal principles and those of the local cultural base, these procedures and practices are reflexively combined by the learner to indicate satisfaction levels, which are expressed as the perceptions of the e-Learning experience. Researchers are tasked with the responsibility of classifying these responses based on the goals of the e-Learning program (positive views) or based on evident shortfalls (negative perceptions). The section below will elaborate on this process.

2.14 Learning Perceptions

Peoples' perceptions determine their actions. An individual's full experience, as opposed to parts of that experience, shapes the individual's perceptions (Drucker, 2011; Moustakas, 1994). Each perception contributes to many layers of experience and knowledge through a connection of images and feelings by bringing into the present past qualities and meanings (Moustakas, 1994, p. 53). In the present study, perceptions involve conscious learner and instructor understanding and opinions about learning, according to their knowledge and experience with regard to previous knowledge and experience.

Perceptions are not purely interpretive or objective in this viewpoint. Perceptions are important in providing individuals with the background knowledge that is needed to guide action and interpretation. In an attempt to comprehend the world around them, individuals consciously give meaning to various encounters. They consciously make an attempt to give meaning to encountered events, and this process is determined by their perception of the event. Consequently, perception can be identified with the human consciousness and mind (Merleau-Ponty, 1962; Moustakas, 1994).

There is an assumption that when the learner and the instructor make a positive evaluation of the teaching or courses they have experienced, perceptions about the quality of learning are reflected. In addition, a further assumption is that other types of learning outcomes, such as achievement, are related to such perceptions of quality.

The validity of learner and instructor evaluations and perceptions about teaching programs is underlined by this assumption.

Many studies have examined the degree to which variations in achievement outcomes, such as test scores or final grades, relate to ratings of perceptions of teaching by learners and instructors. The studies' meta-analyses found a significant if not modest correlation of approximately 0.5 between the overall ratings of courses or teachers and summative assessments (Cohen, 1981, 1986; Feldman, 1989). Other ratings, such as those of perceptions of interactions between the student and the teacher, usually correlate more significantly with final scores or grades.

In fact, one study found that student perceptions of learning in a course had a stronger correlation with student instruction ratings than pre-test and post-test score differences (O'Connell and Dickinson, 1993). Similarly, it was reported in two other studies (Cashin and Downey, 1992; Ryan and Harrison, 1995) that there was a strong correlation between learner and instructor perceptions and overall ratings of teaching effectiveness.

It is also advantageous to use learners' and instructors' perceptions of learning as a tool for evaluation as opposed to grades and test scores, since the latter are only designed for use in courses that employ a common final assessment. In contrast, it is possible to include many courses in the study of the perceptions of learning by learners and instructors, and this promotes comparability of the results. Evidence also suggests "that teachers' self-concept is influenced by student perceptions" (Penny and Coe, 2004, p. 242).

In the present study, the perceptions of the learners and instructors concerning e-Learning represent their beliefs and views about their e-Learning experience while recognising the involved complexity, as discussed in this section. Student perceptions of learning, and specifically e-Learning, only form a single way of understanding learning and its general effectiveness. They are nonetheless important in general learning evaluations, and for this research, Saudi Arabia's expanding e-Learning environment.

Behavioural studies regard perception as an important accessory since it determines a person's view on a given topic. Measures of perception can be undertaken in either verbal or statistical forms to bring to light responses that may not typically be elaborated in a classifiable format. When a tested means of response recording is employed, it promotes analysis and comparison since it provides results that can be interpreted numerically for easy evaluation. Learner perceptions connote their opinions regarding their experiences of learning, and this process can provide insights that are required to describe the effectiveness of learning (Alomari, 2002; Sawaan, 2005).

Examination scores are used by some relevant studies to conduct e-Learning evaluations, but they have been found offer an incomplete picture since the measure they use is limited to knowledge production, as opposed to the processes through which they are attained (Koon and Murray, 1995). A study undertaken by O'Connell and Dickinson (1993) found that more information was provided about the responses of learners to the procedures through which knowledge was attained when learner perceptions were used as opposed to exam scores. Additionally, by correlating teaching effectiveness with the perceptions of learners and instructors concerning their learning experience, the effectiveness of teaching could be rated (Cashin and Downey, 1992; Cashin and Downey, 1999; Ryan and Harrison, 1995).

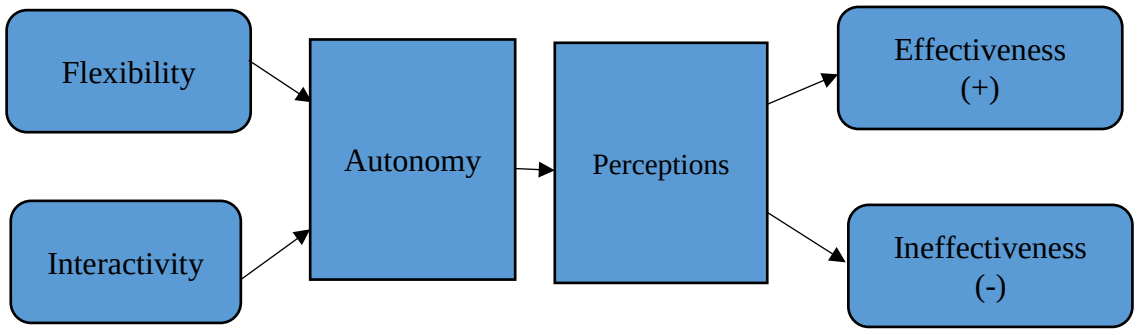
Indeed, perception has a complex definition that overlaps with other concepts. Its meaning and concept is multiple. It has been explained by some researchers that the term encapsulates an individual's full depiction of reality (Lindsay and Norman, 1977). Perception is defined by (Hamlyn, 1957, p. 6) "as organism-environment interaction." Longman's Dictionary (2004) defines perception as the way something is understood by an individual and what the individual believes it is like.

In the present study, perception connotes the opinion of the learner with regard to the e-Learning experience. To infiltrate the multiplicity and complexity of the process of e-Learning, perception is used as a tool. However, there are no fixed standards for e-Learning evaluation, since it is difficult to control all of its components – a number of which may need long-term and experimental future observation. Additionally,

since perception involves many important decisions, it can be more significant than reality. In addition, learners are the main stakeholders in learning, and they remain the most essential component in the educational process. This concept is specifically demonstrated when learners are using and applying ICT and the freedom that each individual is given to study at her own place, time, and pace. The opinion of each learner is thus important and is likely the best method for evaluating e-Learning effectiveness (O'Malley and McCraw, 1999). As stated by (Reeves and Hedberg, 2003, p. 145), "the experience of usability of e-Learning by instructors and learners is a significant indicator of its quality."

In conclusion, although there are many evaluation models and tools, a study can develop a suitable model from the preceding variety of precedents with critical new elements being added. The main issue associated with evaluating e-Learning effectiveness is related to the precedents outlined above. The research must recreate a model to fit novel circumstances so that standard methods can be used to undertake the evaluation of a changing reality in diverse educational settings. For this goal to be achieved, autonomy as a concept is considered as the expected result of the capacity of e-Learning to provide interactive and flexible learning. In the end, the evaluation must determine whether e-Learning has achieved its objectives and whether it can be maintained by the current hardware, software, and budget and in the current location, among other factors. E-Learning can be regarded as successfully achieving its objectives if the learner can learn autonomously anywhere, at any pace, and at any time and can positively interact with other learners, content, and instructors (*see* Figure 2.7).

Figure 2.7: Evaluating the Effectiveness of E-Learning



2.15 Research Related to the Evaluation of E-Learning

Many approaches and angles can be used discuss ICT in education, which remains one of the most important and critical educational issues in recent years. ICT in education can be viewed as an investment, from the perspectives of technology, administration, teaching, and learning, or based on its impacts, economically, socially, and politically. In addition, there is more than one aspect that can be studied from each perspective. Moreover, e-Learning has an exclusive element that cannot be found in other contemporary inventions, and this element is continuous novelty – the idea that new innovations occur all the time. It is expected that this will continue in the future since new innovations are applied and added to e-Learning after very short intervals. Indeed, e-Learning technology was not invented at once but was gradually developed through the addition of new features or through complete reinventions that were not just improvements, such as those in plane or car technology, but complete changes that could later alter the invention and offer new opportunities and features.

The main aim of this study is to evaluate e-Learning effectiveness using the perceptions of instructors and learners as the most authoritative indicators of e-Learning effectiveness. In general, there are many research studies on e-Learning that were conducted in different countries and languages, but to our knowledge, few studies have been conducted related to the theme of this study.

Indeed, the researcher considered a number of studies but excluded those that were grouped into the following categories: 1) studies conducted by investors and businesspeople that focused on the economic investment or income from e-Learning application as opposed to educational return; 2) studies the were undertaken at the pre-university education level; 3) studies that were designed to develop opinions for e-Learning programs or aimed to develop evaluation models; 4) studies that were applied in a particular situation and with a specific software or focused on a specific area, such as the industrial sector, health sector, vocational training, or private sector, 5) studies that evaluated a given educational program from a developer or designer;

and 6) studies that even in a small way relate to the current study (e.g., a research study whose results covered issues such as positive features, negative features, or motivation).

Based on these criteria, there remained other past studies that were relevant to the present theme. A number of countries have undertaken these studies, including Kenya, Iran, Malaysia, Jordan, China, Hong Kong, Saudi Arabia, Sweden, Australia, France, the United Kingdom, and the United States. These studies have been summarised below, and each study's title and important results relevant to the current study have been highlighted.

In fact, there are several ways in which these studies can be classified based on their language, place of origin, topic, date, and methodology. The studies were classified by the researcher according to their dates, starting with the newest to the oldest, and based on success and effectiveness or trends and perception. In the following section, the place and name of each study are shown, together with the main results, sample size, location, date, and title. The subsequent section will focus on a discussion comparing each of these studies' methods in relation to those used in the present study.

2.15.1 Research that Evaluated E-Learning's Effectiveness and Success

The effectiveness of e-Learning was the focus of these studies, as indicated in the table below (Table 2.6). In three of the studies, learners controlled their learning and were more independent e-learners. To achieve a positive result, two studies called for the need for technical support. Previous ICT skills and e-Learning experience were some of the important variables that were found to correlate with a positive e-Learning attitude. Uncertainty correlated with the extent of satisfaction of learners with interactive e-Learning features. It was found by two studies that effectiveness was comparable, regardless of whether learning was undertaken through e-Learning or through traditional methods.

A contribution to the understanding of the effectiveness of e-Learning was made by these studies through the use of attitudes, perceptions and scores to create a positive

response amongst e-learners. A number of variables affected this response, including previous ICT skills, previous e-Learning exposure, and age. Some of these variables were used in the current study, with its focus on effectiveness benefitting from a consideration of the weaknesses and strengths of their methods of research together with an appraisal of the available theoretical models and frameworks. In summary, although past research regarding e-Learning effectiveness opened the inquiry and provided some precedents, the current research aims to rigorously address the issue.

Table 2.6 : Summary of the Literature Related to E-Learning Effectiveness

No	Name and Place	Sample	Title and Main Findings
1	Williams (2006) (USA)	10 previous studies reviewed	A historical examination of the apparent distance learning effectiveness in higher education. Beneficial for self-directed and highly motivated learners but at a high cost.
2	Omwenga & Rodrigues (2006) (Kenya)	2 groups	Towards a framework for education evaluation: asynchronous and synchronous. Supports independent learning; practicable; political factors essential.
3	Drillon et al. (2005) (France)	97 students' perceptions	An exploratory study evaluating an e-Learning system's effectiveness. Half of learners content with control of own learning and independence; few motivation changes; request for interactive features.
4	Leung (2003) (Hong Kong)	38 e-learners, 45 traditional	Evaluation of e-Learning effectiveness; an experimental study. Same effectiveness of delivery found.
5	Chan et al. (2003) (Hong Kong)	113 students	A framework for evaluating the effectiveness of e-Learning courses. Ease of accessibility and user friendly; organised and effective learning though communication functions less effectively compared to content functions; provided flexible autonomous

			learning.
6	Piccoli et al. (2001) (USA)	146 experimental	Online virtual learning environments: framework for research and initial assessment of basic IT skills training effectiveness. The two methods had no significant differences. More skills in ICT but more satisfaction reported by traditional learners than by e-learners.
7	Whittington (2000) (Scotland)	200 learners, staff & visitors	Evaluating the use of a virtual university for three years. The deficits and strengths of web-based instruction; attained goals. Easy to use and beneficial; downloading problems; technical support needed but project generally accepted.
8	Volery & Lord (2000) (Australia)	47 students	Critical factors affecting success in online education. Internet a beneficial tool due to its ease of navigation and use; good interactive features and quality design; the way students are perceived by instructors; efficient use; technological interaction; and past ICT experience by students.

2.15.2 Research that Examined Perceptions and Trends

In a number of research studies, many terms are used to determine the positions of learners concerning e-Learning. These terms may include perceptions, attitudes and opinions. Attitudes can be defined as a predisposition to respond to a stimulus (something in a person's environment, such as an event, thing, place, or another person) in a positive or negative way. For example, when researcher speak of a positive job attitude (or job satisfaction) researcher mean that the people involved tend to have pleasant internal feelings when they think about their jobs. Attitudes

have three basic components: cognitive, affective, and behavioural. An attitude's cognitive component includes beliefs and knowledge about and evaluations of the stimulus. The affective component refers to our feelings, the emotional part of the attitude. Finally, an attitude's behavioural component is the inclination to behave in a certain way as a response to one's feelings and cognitions. Perception refers to the process by which individuals receive, organize, and interpret information from their environment. In terms of making effective decisions, managers must first obtain information from their organizations (peers, subordinates, their managers) and environments (such as customers, suppliers, and other critical stakeholders) and then accurately interpret those data through the perception process. Many discussions of managerial decision making suggest that it should be a conscious, rational, and systematic process, with a number of precise steps (including defining and diagnosing the problem, specifying decision objectives, developing and appraising alternative solutions, and then choosing and implementing the best course of action) (Bowditch *et al.*, 2008). As nouns, the difference between opinion and attitude is that opinion is a belief that a person has formed about a topic or issue, while attitude is the position of the body or way of carrying oneself, the posture. As verbs, the difference between opinion and attitude is that opinion is (archaic) to have or express as an opinion while attitude is to assume or to place in a particular position or orientation, to pose. As nouns, the difference between attitude and perception is that attitude is the position of the body or way of carrying oneself (posture), while perception is the organization, identification, and interpretation of sensory information. As a verb, attitude is to assume or to place in a particular position or orientation, to pose (wikidiff, 2017). These concepts were found to be applied to e-Learning by some studies, with a related study using student achievement as its key criterion. The table below (Table 2.7) presents these studies.

A positive e-Learning attitude was reported by five studies. Another study noted some small differences that correlated with the economic and geographical circumstances of the learners. Also noted in the literature were important variables, such as the subject of specialisation. Slight gender differences were also evident,

although one study noted a stronger male learner response than female learner response and another study found a positive response among female learners. However, there were common perceptions about the significance of technological maintenance and efficiency, with a significant variable being skilled ICT use.

Satisfaction was expressed by learners with regard to their internet use and their effortless communication in e-Learning. A study undertaken by Alzamil (2006) found that more barriers were perceived by students who were not undertaking full-time study. However, under experimental conditions, the group subjected to e-Learning expressed more positive experiences than the control group. The above two sections have outlined research relevant to the field of e-Learning. A summary of their main findings, samples, and locations has been outlined and their significance to the current study highlighted. Nevertheless, the methodological limitations and constraints of such studies must be given important consideration. As such, the sampling and methods of the studies will be discussed in more detail in the following section in order to further explore how these studies relate to the current study.

Table 2. 7: Summary of the Literature Related to Perceptions and Trends

No	Name and Place	Sample	Title and Main Findings
1	Yaghoubi et al. (2008) (Iran)	110 learners' perceptions	Perceptions of virtual students concerning e-Learning in Iran. Different responses but positive attitude to efficiency of e-Learning, use of technology and internet access.
2	Alaugab (2007) (Saudi Arabia)	310 students and faculty	Advantages, hindrances, and attitudes towards online learning in higher education among female students and faculty in Saudi Arabia. Faculty less positive than students; internet and ICT experience correlated with positive perceptions of online learning; benefits more than barriers.
3	Alzamil (2006) (Saudi Arabia)	265 students	Perceptions of students towards e-Learning at Arab Open University and GOTEVOT. Mastery of technology use assisted learners with e-Learning interaction; interaction affected by computer specialisation and age as opposed to different course levels; more barriers perceived by non-full-time students.

4	Sawaan (2005) (Jordan)	805 students' attitudes	Hashemite University students' attitudes towards e-Learning and the impact of a few chosen variables on these attitudes. Positive attitudes found, but science and arts students and experienced ICT users showed significant differences but not with regard to past web-based courses.
5	Alhelih (2004) (Jordan)	60 divided into experimental and control	Comparison of e-Learning effects on achievement between an instructional technology course and a conventional course. E-Learning achieved better scores.
6	Alferaihi (2003) (Saudi Arabia)	326 students' perceptions	King Saud University undergraduate students' perceptions towards using online courses. Slight positivity in student perceptions that correlated to some extent with economic situation or geographical location variables; weak social links; some negatives.
7	Vonderwell (2003) (USA)	22 students' documents	Examining asynchronous communication: a case study of students' perceptions and experiences while in an online course. Discussion boards and emails reviewed and analysed and interviews conducted. Asynchronous communication was easy and deep.
8	Hong et al. (2003) (Malaysia)	88 students' attitudes	Attitudes of students towards internet use for learning. Positive with regard to internet use. No differences between males and females or those who achieved low or high scores. However, students in technological sciences and engineering rated e-Learning more highly than human development students.
9	Keller & Cernerud (2002) (Sweden)	150 students' perceptions	Perceptions of students towards e-Learning in university learning. Shows how universities implement e-Learning. More focused on perceptions than personal variables. Valued immediate feedback. Off-campus studies preferred by experienced students.
10	Li & Kirkup (2002) (China & UK)	220 China, 245 UK	Is the internet developing or transforming gender and culture? Neither country has differences in the ICT use rate between the sexes; Internet learning preferred by both cultures, although more positivity among males than females. Chinese students had fewer gender differences than UK students.
11	Alarfaj (2001) (Saudi Arabia)	450 students' perceptions	Saudi Arabian college students' perceptions towards distance online instruction. E-Learning's pros and cons. Overall positive perceptions but doubts about use on all

			subjects and doubts about technical problems. Wasted time, isolation, and costs reported. Perceptions positively affected by internet possession at home.
12	Sanders & Morrison-Shetlar (2001) (USA)	200 students	Attitudes of students in an introductory biology course towards web-enhanced instruction. Positive attitudes towards web-based instruction. It enabled them to cooperate and interact with their colleagues. More favourable attitudes among females than males.
13	Duggan et al. (2001) (USA)	188 students	Measuring attitudes of students toward internet use for educational purposes. There was a correlation between preferential attitudes to the use of the internet for educational purposes and frequency of peer group information exchange and identification of good educational sites.
14	Scott et al. (1999) (USA)	14 experimental, 17 control	Internet-based instructional effects on student learning. No differences observed between the two groups' test scores. However, more positive feelings about the experience among the experimental group.

2.15.3 Comments on the Methods used in Related Research

A review of past studies indicates a clear consensus on the importance of ICT in higher educational institutions. However, finding the best way to evaluate its effectiveness is problematic. The section below examines the methodologies of the studies outlined above and provides some comments about how they are related to the present study.

Many methodological approaches, including experimental approaches (Alhelih, 2004; Leung, 2003; Piccoli *et al.*, 2001; Wegner *et al.*, 1999) and descriptive approaches (Alferaihi, 2003; Alzamil, 2006; Hong *et al.*, 2003; Sawaan, 2005; Vonderwell, 2003; Yaghoubi *et al.*, 2008), have been used by past studies to attain their objectives. The study performed by Williams (2006) is an example of the historical analytical approach, while(Li and Kirkup, 2002) is an example of the comparative approach. Chan et al. (2003) used a case study approach, while Omwenga and Rodrigues (2009 used a variety of tools, such as document analysis,

interviews, and questionnaires. Past studies were also applied to sample participants in various studies, who included primarily students, although some staff, faculty, and visitors were also included (Drillon *et al.*, 2005; Whittington, 2000).

The current study focuses on instructors and learners. The present study is compared to features of previous studies by focusing primarily on internet and computer (including software) use in higher education. However, this study uses a different methodology to gather data. Although a descriptive approach is used, mixed methods are employed. This approach is different from past studies that used a variety of historical, experimental, or comparative approaches. The present study introduced four dimensions, which were examined through a focus group interview and a questionnaire to address some omissions which may have appeared in past studies.

Tick boxes were used to account for some variables, and these were constructed using ideas from past studies. However, we included the possible influence of the specialty of the respondent (science, art) on internet use by the individual and to avoid the conflation observed in some studies, the individual's computer and internet use (Alarfaj, 2001).

In the above review, the differences between accredited and non-accredited online courses were overlooked by some studies, the latter being available to adults and visitors who might have been incorporated in the studies. In contrast, undergraduate learners in relevant courses are the focus of the current study. However, some studies focused on specific colleges, and this affected the generalisability of their results.

When it comes to sampling, two issues were evident in some studies: 1) non-random sampling, which failed to ensure that the total population was represented; and 2) a small sample and small size of the rating scale, which led to difficulties in accurately representing all aspects of perception (Drillon *et al.*, 2005; Hong *et al.*, 2003; Leung, 2003; Volery and Lord, 2000). These issues represent a major setback not only in this study but also in most social science research, making the avoidance of bias difficult.

Also problematic is the risk of researcher interference with data collection, particularly during the conduction of interviews and data analysis. Indeed, the

generalisation of results is made difficult when there is a lack of rigour, particularly in experimental studies, because it makes it difficult to manage all the variations between the experimental and control groups. Some parameters, such as the awareness, experience, and tools of the instructor and the curriculum, cannot be subjected to experimental-control set up. Therefore, there is a general lack of validity in some experimental studies.

Besides the problem of non-representative samples, learners were examined by some studies in non-representative courses that had too much variation in their designs and features for any reliable comparison to be made between courses (Sanders and Morrison-Shetlar, 2001). Some studies were affected by the evolving nature of e-Learning, in which new developments lead to new features. Thus, non-representative types of e-Learning were targeted by some studies, and examples include adjunct learning and early distance learning.

Although the term 'e-Learning' is present in the titles of such studies, the software to which they refer is very different, and new current e-Learning features make the results of such studies (Duggan *et al.*, 2001; Sanders and Morrison-Shetlar, 2001; Wegner *et al.*, 1999; Whittington, 2000) difficult to generalise. Similarly, it is impossible to shield this study's relevance from the effects of changing technology.

Generally, although past studies focussed on many e-Learning aspects, they failed to define the term "e-Learning effectiveness" with regard to the aspects of interactivity and flexibility, which are crucial to the success of e-Learning projects. In contrast, the aim of the present study is to conduct an evaluation of the ability of the e-learner to learn autonomously and the instructor's ability to provide proper support. The term ability is defined as the quality or state of being able; the capacity to do; the capacity of doing something; or having the necessary power (wikidiff, 2017). These definitions make this study different from past studies, since no study was found that evaluated the ability of students to engage in autonomous learning through e-Learning while considering flexibility and the interactivity between learners and content, other learners, and instructors.

The current study perceives interactivity and flexibility as exclusive features of e-Learning that are not present in traditional learning and as joint indicators of e-Learning's effectiveness. Some variables are also considered by the study that might affect the engagement of the learner with e-Learning.

This study may provide guidance for future research in this area. There are no up-to-date systematic studies that evaluate e-Learning effectiveness at emerging universities, making the present study novel and significant. This study will assist in opening e-Learning effectiveness to further research. However, it must be noted that the generalisability of such studies is cumbersome for one main reason. Unlike in Saudi Arabia, studied e-Learning developments took place at single universities that did not have any unifying regional or national guidelines.

The present study is significantly different because it is undertaken in a context in which economic and cultural conditions promote a unified approach to the provision of innovative education, which is designed to address many different demographic and social characteristics. Supported by a background of extensive commercial interest in ICT development and the widespread use of technology in entertainment, the Kingdom of Saudi Arabia has relatively recently demonstrated academic and governmental interest in the sector.

This dynamically rationalised the study, since current debate is focused on e-Learning's feasibility and effectiveness. Doubts about e-Learning's educational effectiveness prompt questions about the value of allocating large budgets to e-Learning. It is the hope of this study to help provide answers concerning the effectiveness of e-Learning.

The preceding discussion about the research site, as well as the measures employed in related research to implement related projects, contributed to refining the problem addressed by this research.

2.16 Literature Gap and Research Questions

E-Learning demonstrates the quality of a country's technical communications, interactions, and information, as well as the ability of ICT to be exploited by its

government, industries, and citizens for their own benefit. Ibrahim et al (2007) noted that traditional learning is increasingly becoming the preferred option for many students, who are increasingly withdrawing from distance education.

Various factors can explain the hesitance of many students to register for e-Learning and their frequent withdrawal from e-Learning courses. Although there is no ultimate justification for this trend, cultural differences among students have been shown to strongly influence the enthusiasm of students and their ability to contribute in e-Learning courses. Compared to western students, who possess a learning style that is more individualistic and depends on analytical analyses, students from non-western backgrounds possess a learning style that is more collective and applies holistic analyses (Al-Harthi, 2005).

The researcher has reviewed the literature related to the definition of e-Learning and established that there is no consensus on its definition. As such, a review of the definitions of distance learning, technological, and pedagogical learning perspectives was conducted, revealing that there was significant interdependence among the three approaches. For the purpose of the present study, e-Learning was inferred by the researcher to stem from the distance learning concept while considering educational and pedagogical features through technology. In addition, the literature rationalising Saudi's need for e-Learning was reviewed, which covered e-Learning's general benefits and Saudi-specific benefits.

The study also reviewed the current situation related to e-Learning in Saudi Arabia, and various initiatives, such as GOTEVT and NCeDL, were highlighted. Additionally, the literature concerning the Jusur LMS was reviewed, as was the literature related to the motivations and concerns of stakeholders in e-Learning, including employers, technology providers, content developers, educational institutions, instructors, and students.

A variety of variables have been recognized by Seels and Richey (1994) as affecting the general deployment process, the degree of user independence, and the problems associated with instructional technology use. Conversely, three major factors, including context, innovation, and innovator, have been noted by Zhao et al.(2002) to

affect successful technology utilisation for learning and teaching (Asiri *et al.*, 2012). Instructors are the innovators, technology is the innovation, and context refers to infrastructural accessibility, with the learning environment having a common support. However, the successful implementation and application of technology in higher education cannot be sufficiently and adequately guaranteed by simply providing a learning environment rich in technology (Albirini, 2006). Technology approval by the instructor undoubtedly plays a major role in determining how to best apply a learning management system (LMS) in higher education.

When a system is completely approved by the instructors, it can lead to increased usage, and the students would be encouraged to use LMS in their learning. In an educational context, this observation connotes that although various technological programs can be undertaken by the government through relevant ministries, their successful uptake will largely rely on the teachers who apply the technology in their teaching (Mahmud, 2006).

The introduction of e-Learning systems has been sought by many universities. There are case-to-case variations in the rationale that underpins such innovations. These variations include the need to be up-to-date, the need to fill lecturer shortages, the need to meet the needs of rising student numbers, and the imitation of others, among numerous other factors that cannot be stated. However, no evaluation of the effectiveness of e-Learning has been undertaken to accompany this innovation. In fact, such evaluations in e-Learning studies are few and rare, particularly in Arab countries, such as Saudi Arabia.

However, considering the rising trend of e-Learning introduction in universities, it is necessary to evaluate the effectiveness of this kind of learning. It must be noted that this study was not started by either of the participating universities or by any of the software and hardware suppliers who have vested interests in e-Learning but was instead designed to inquire about learner satisfaction and estimate the importance learners attach to e-Learning as they actively use it. The evaluation of e-Learning effectiveness through perceptions of current learners and instructors was therefore the goal of this study. In summary, the study was designed to conduct an independent

academic inquiry, to help fill this field's knowledge gap and to respond to queries about e-Learning effectiveness from parents, learners, university officials, and policy decision-makers.

Worldwide, the development of e-Learning is still in its early stages, and in Saudi Arabia, government interests in the program have risen. The country is not far behind other countries where millions have been spent by universities to introduce the program. The title of this study was given careful consideration. The title "The effectiveness of the e-Learning experience at two emerging universities in Saudi Arabia from the learner and instructor perspectives" was chosen since it suggested the intended type of research. The selected title defined the study's demographics in addition to the field of research. Including the term perceptions indicated the main focus of the employed approach.

2.17 Study Context: Saudi Arabia E-Learning: Current state and future perspectives

Educational communities continue to be viable for growth in the midst of global market competition and still benefit from the ICT revolution by employing ICT to respond to the modern pressures accordingly, new ways of teaching and learning, the most important of which is e-Learning, have started to emerge globally.

E-Learning has turn out to be a reality that is impossible to disregard, especially for workers in the educational sector. Such workers need to know about its concerns, related concepts, skills, tools, and so forth to drive this growth forward. It also seems sensible to expect that researchers will rate the computer as the greatest invention in human history in terms of facilitating global communication. New ICT terminology now dominates the world, including e-commerce, e-government, and e-Learning. The widespread use of ICT has led to new communication channels and accessible information, while the internet has changed our learning methods (Ryder and Wilson, 1996).

Certainly, the revolutionary thrust of ICT is derived from the alliance of two types of swiftly developing technology: personal computer (PC) technology, which makes

small, affordable computers, including devices such as iPads and smart phones, and directly wired and wireless networks, which provide exchanges between devices, whether nearby or afar (Alfahad and Almosa, 2002). Thus, the internet offers new and interesting opportunities for learning (Alsalem, 2004), supported by the delivery and use of multimedia elements through new kinds of connected devices.

The theory and application of ICT attracts systematic methods through inter-related theories in technology, psychology, and education to develop its bases, principles, and applications for higher education. Accordingly, universities can be now be open, virtual, and electronic by using the internet and can consider the internet as the main tool for communication with learners (Hamdi, 2003), principally by providing an interactive environment between learners and educational material (Alkateeb, 2003). Thus, e-Learning is not only a technological issue but also a philosophical one. How ICT can serve teaching and learning is a substantial and timely issue. E-Learning was rated the fastest growing industry in the field of educational resource production. Urdan and Weggen (2000) said it was expected that the market would increase fourfold each year. Since then, attention to e-Learning has increased globally.

The international community meets these challenges by preparing its citizens for a technological period, and reforms based on ICT attract political and financial support. The production of materials and software for e-Learning in education and training by schools and universities now increases daily. The internet is acceptable in workplaces for both learning and training, justifying the hypothesis that e-Learning is a key part of the future of learning. This tendency is evidenced in Saudi Arabia, one of the countries that adopted the internet for university and college use in the 1990s (Alhajeri, 2005).

The use of ICT has expanded, reached its peak in the publication of the National Plan for ICT in 2006, which cited the fourth goal of improving the use of ICT in education and training at all educational levels (Ministry of Communications and Information Technology (MOCIT, 2009). Therefore, Saudi Arabian universities have responded and accelerated the use of e-Learning by developing their infrastructure for its

application. Significantly for this study, the earliest improvements were made at King Saud University and Imam Muhammad Bin Saud University.

It is vital to understand that learning is about attitudinal change, skills development, and foundations of knowledge. Concept learning, which Hunt, Marin, and Stone (1966) describe succinctly as "[the] capacity to develop classification rules from experience" has long been a principal area of machine learning research. Supervised concept learning systems are supplied with information about several entities whose class membership is known and produce from this information a characterization of each class. One of the most important dimensions along which to distinguish concept learning systems is the complexity of the input and output languages that they employ. At one extreme are learning systems that use a propositional attribute-value language to describe entities and classification rules. The simplicity of this formalism allows such systems to deal with large volumes of data and hence to exploit statistical properties of collections of examples and counterexamples of a concept. At the other end of the spectrum, logical inference systems accept descriptions of complex, structured entities and generate classification rules expressed in first-order logic. These systems typically have access to background knowledge pertinent to the domain and require fewer entity descriptions (Quinlan, 1990).

The view in academic institutions in Saudi Arabia is in tandem with the general feeling among the populace that the heritage of oral communication is greater than that of written communication. There is a lack of information or, in some cases, an unwillingness by institutions to accept e-Learning. Most institutions still prefer the traditional system of having instructors standing in the classroom to teach while the students listen and answer questions. What such institutions may not understand is that technology has developed to such an extent that, if carried out well, students obtain more individualised attention from the instructor with the aid of audio-visual channels. Several studies indicate that the performance and retention capability of students who partake in e-Learning have the possibility to exceed those of students involved in face-to-face learning conducted in brick and mortar facilities if the system is well embraced (Almegran *et al.*, 2007).

However, e-Learning is still in its early stages of use worldwide, particularly in the Kingdom of Saudi Arabia, where some of the difficulties and challenges of implementing e-Learning are still being addressed. This study will evaluate the effectiveness of the e-Learning experience at these universities from the learners' and instructors' perspectives, examining strengths, weaknesses, problems, and difficulties faced, and seek solutions from the learners' and instructors' viewpoints to guarantee competence and effectiveness.

2.17.1 Information and Communications Technology

In the recent past, Saudi Arabia experienced the widespread uptake and implementation of ICT, and many activities and skills were introduced and developed that also stimulated other sectors. The ICT sector of Saudi Arabia is estimated by experts as of the year 2014 to be valued at 191 billion riyals (equivalent to $57 billion), and this makes the sector second to oil in terms of revenue. For instance, the large number of mobile phone users, which hit 50 million users in 2014, may be regarded as an indicator that Saudi Arabia is transitioning to an information society.

The year 1992 was the first time the internet was introduced in Saudi Arabia after medical and educational institutions were allowed to access it. This change was followed by a 1997 ministerial decree that officially opened the country to the internet, but it was not until 1999 that the public was allowed to access the internet (MOCIT, 2014).

The country with the world's fastest developing internet market is regarded as Saudi Arabia. In the year 2000, there were only 200,000 internet users, but this number rose exponentially to 16.5 million internet users by the year 2013, marking 55% population coverage (CITC, 2013). The National Plan for Information and Communications Technology (NPICT) is the most recent and significant future plan for ICT in Saudi Arabia. It is one of the most significant national projects for the achievement of a locally created ICT industry. To achieve a similar goal, Saudi Arabia has also conducted other projects, including the introduction of e-Learning, e-

government, and e-health ICT solutions in the government sector. The private sector has also adopted e-commerce. The ICT industry is regulated by Riyadh's City of Information and Communications Technology, which plans to invest $4.3 billion (14.2 billion riyals) to make Saudi Arabia a home for the information industry (MOCIT, 2013). These efforts indicate that Saudi Arabia's ICT development is not only well supported financially by the government but also strategically planned and implemented. An environment of informed background and national planning therefore underpins this study, which is expected to contribute to a growing debate about the effectiveness of e-Learning.

2.17.2 Higher Education in Saudi Arabia

Founded in 1975, the Ministry of Higher Education has various functions, including public and private institutions of higher education management and planning, as well as the implementation and monitoring of higher education policies for local and international Saudi students. Higher education policy was created in a manner similar to general education, in which the principles of Islam were enshrined. The policy included various recommendations, such as the creation of an opportune environment in which bright Saudi students could undertake higher studies in scientific fields to contribute positively to the field of scientific research, as well as global advancement in the scientific, literature, and innovation fields, by identifying suitable solutions to trending challenges in advanced technology. Another policy recommendation was to widen access to knowledge and information among many citizens by translating valuable science and arts knowledge into Arabic. For those graduates already at work, the policy advocated for their training.

Umm Al-Qura University, which is located in Makkah, is the first Saudi Arabian university, which was established in 1949, after which other universities were also founded, which totalled eight in 1998. In 2004/05, the number of universities grew by six, after which four more were founded in 2006 and one and four others were established in 2007 and 2009, respectively. Officially released statistical figures indicate that Saudi Arabia has a robust and vibrant higher education sector that

consists of 25 public and eight private universities, as well as more than 50 community colleges. The universities enjoy independent administrative and academic organisation, though they are all linked to the Ministry of Higher Education. The total number of students who are enrolled in Saudi universities is estimated to be approximately 602,652, with staff comprising 23,632 lecturers and 23,325 faculty members, according to the Ministry of Higher Education. The majority of Saudi universities have websites, although further technology differs among institutions.

Table 2. 8: Public Saudi Universities

No	University	Founded	City	Website
1	Umm Al-Qura University	1949	Makkah	www.uqu.edu.sa
2	King Saud University	1957	Riyadh	www.ksu.edu.sa
3	Islamic University	1961	Madinah	www.iu.edu.sa
4	King Fahd University of Petroleum and Minerals	1963	Dhahran	www.kfupm.edu.sa
5	King Abdulaziz University	1967	Jeddah	www.kau.edu.sa
6	Al-Imam Mohammad Ibn Saud Islamic University	1974	Riyadh	www.imamu.edu.sa
7	King Faisal University	1975	Al Ahsa	www.kfu.edu.sa
8	King Khalid University	1999	Abha	www.kku.edu.sa
9	Taibah University	2003	Madinah	www.iu.edu.sa
10	Taif University	2003	Taif	www.tu.edu.sa
11	Qassim University	2004	Qassim	www.qu.edu.sa
12	University of Ha'il	2005	Ha'il	www.uoh.edu.sa
13	Jazan University	2005	Jazan	www.jasanu.edu.sa
14	Al Jouf University	2005	Al Jouf	www.ju.edu.sa
15	King Saud bin Abdulaziz University for Health Sciences	2005	Riyadh	www.ksauhs.edu.sa
16	Al Baha University	2006	Al Baha	www.bu.edu.sa
17	University of Tabuk	2006	Tabuk	www.ut.edu.sa
18	Najran University	2006	Najran	www.nu.edu.sa
19	Northern Borders University	2007	Arar	www.nbu.edu.sa

20	Princess Nora bint Abdulrahman University	2007	Riyadh	www.pnu.edu.sa
21	University of Dammam	2009	Dammam	www.ud.edu.sa
22	Salman Bin Abdulaziz University	2009	Al Kharj	www.sau.edu.sa/en
23	Shagra University	2009	Shaqra	www.su.edu.sa
24	Almajmaah University	2009	Almajmaah	www.mu.edu.sa/en
25	Saudi Electronic University	2011	Riyadh	www.seu.edu.sa

Saudi students studying outside of the country are distributed across 30 different countries and receive sponsorship from the ministry as they pursue their studies in different much-needed science disciplines. Saudi Arabia has approximately 150,000 students studying out of the country, ranking fourth among countries with the highest number of students studying abroad. In addition to paying the role of a sponsor, the ministry is in charge of coordinating and supervising scientific research and presides over scientific centres and research institutes, as well as scientific conferences and seminars. Some universities in Saudi Arabia have been featured in the world universities' ranking at the advanced level, and this is quite an achievement (MOHE, 2013).

Early ICT was thus incorporated in many Saudi Arabian universities, with learners enrolling in both local and international universities. As such, students can use the internet to gain information regarding each other's studies. Additionally, students can communicate with each other at their own convenience without being limited by place and time. However, cultural norms that bar female and male students from intermingling create some sensitivity related to the communication of students of both sexes over the internet. Women's learning provisions are provided for as indicated below.

Compared with education for male students, education for female students began later. The opening of many girls' schools took place in 1959, with higher education institutions for females opening much later in 1969 upon the founding of the first female college to address the growing need for female teachers. An outstanding feature of the Saudi education system is the segregation of females and males, where women study separately from elementary to the university level. This segregation is

enshrined in Saudi educational policy in items 9 and 153-156, where the right of females to learn decently and with dignity in accordance with Islamic teachings and to find good careers and be successful mothers is highlighted. The Saudi government was committed to providing the needed resources to allow all women access to all forms of education but with strict segregation at all education levels, with the exception of kindergartens and nurseries (Alhageel, 1996).

In Saudi Arabia, the administration of all levels of higher education, including governmental, is assisted by ICT. The Higher Education Council (HEC) is the top authority in charge of higher education, and its mandate is the coordination and supervision of higher education institutions (with the exception of military education). The common regulations for running universities are ensured by this board. The supervision of universities is conducted by the Ministry of Education, which also carries out coordination functions among the universities with regard to curriculum, student enrolment, and research to prevent overlap and duplication. The ministry's council is a body that is in charge of higher education in terms of development of policies, meeting Saudi higher education strategic goals, and identifying appropriate interventions to the challenges and problems faced by the universities. The Council of Higher Education comprises the Deans of all universities, who also convene the boards of their own universities. These boards are comprised of the Council of Higher Education's Secretary General or a representative, the vice presidents of the universities, and the university secretaries. The functions of the university dean include the administration of financial and academic matters, the supervision of the university system and regulatory implementation, as dictated by the Higher Education Council's decisions, and representation of the university both at home and outside the Ministry of Higher Education (MOHE, 2009). ICT facilitates and enables the implementation of the universities' administrative procedures at every level, enabling people to communicate across distances at different access times and also ensuring gender inclusion, the use of interactive features of ICT, such as webcams, in conferences, consultations, negotiations, and the implementation of learning content and

organisation. The core objectives of all the higher education officials outlined here is to find appropriate interventions to address the problems that face higher education.

Recent statistics indicate that there are a number of challenges facing the Saudi higher education sector, including the incapacity of higher education institutions to meet the growing demand for education caused by an increase in the number of students across age groups, which puts a strain on institutions' resources, the imbalance between the number of students who graduate in practical and theoretical disciplines, and the failure to meet the national programs' requirements and needs. Other challenges include the strain on higher education financing that is caused by free education, which is a result of government sponsorship at all levels, including making regular payments to all university students to support them, and wastage of students' and teachers' potential (Algurney, 1999).

A clear role might be played by e-Learning to help Saudi Arabia address such challenges. E-Learning may help higher education institutions broaden their capacity to enrol more students, enhancing their opportunities and achieving greater inclusion. The expanded capacity of the institutions might help them meet the anticipated higher number of students who apply for higher education. e-Learning might also help cut the rising costs of higher education and at the same time improve its value. However, the biggest dilemma is the lack of clarity and agreement about the pros and cons of e-Learning, as well as its effectiveness.

2.17.3 Field of Study Implementation

This section illustrates in detail the two universities where the study was carried out. Because the time, finances, and human resources available for the research did not allow a comprehensive survey of all universities, the researcher chose Shaqra and Majmaah Universities. These universities were chosen because they were the two most recent emerging universities in Saudi Arabia.

A) The University of Shaqra

The University of Shaqra is one of the newest Saudi universities, which was created by the decision of the High Royal in 2009. The establishment of the University of Shaqra was formed from the keenness of the Government of the Kingdom and in the field of education in general and university education in particular.

The number of students for 2013 academic year at the bachelor degree level was 18,500, and the number of faculty members during the same year was 1,229. At the time of this writing, the university seeks with other universities during the Ninth Development Plan to achieve the general objectives, which are represented in the preparation and development of national human resources, the provision of qualified personnel trained to meet the requirements of development and the needs of the labour market, and to enrich the movement of scientific research and the development of graduate studies to meet the community's issues and development needs. The university is seeking to expand to accept high school students as far as possible, and the application of different types of education. It will open even more than one Science College during the Ninth Plan to meet the need for the development of the eligible national forces. The university currently has 24 colleges distributed over several provinces and centres west of the city of Riyadh, namely, Shaqra, Harimlae, Kowaiyia, Duwadimi, Sager, Dharme, Afif, Almzahmi, and Thadq and Almahmal. These colleges were grouped under 10 deanships; one of them is the Deanship of Information Technology and e-Learning (Ministry of Higher Education (MOHE, 2013).

The goal of the deanship is to be a leader in using ICT to conduct e-Learning to develop and diversify methods of learning and teaching and to be at the forefront in disseminating knowledge through the most modern information and communication technologies. The deanship strives to help staff and students improve teaching and learning quality standards by investing in e-Learning that gives learners the power and convenience of choosing the time and place to learn and helps faculty members to facilitate the dissemination of educational content through ICT. The university's

deanship is comprised of three departments, which include the Deanship Agency, the Technological Affairs Agency, and the Financial and Administrative Agency. Additionally, there are also two other departments of Learning and Technology Systems and Administrative Affairs, in addition to a few units and centres.

At King Saud University, the E-Learning and Distance Learning Deanship is involved in carrying out the following functions: creation of the university's e-Learning strategic plans; creation of a suitable environment for the promotion of e-Learning applications; coordination of the use of e-Learning and distance learning into programs run by different departments at the university; providing faculty members with technical and human support in ICT use and e-course and content development; overseeing e-Learning and distance learning systems in collaboration with pertinent authorities; and reinforcing the adoption and uptake of pertinent e-Learning programs both inside and outside the university.

The Deanship has a strategic plan to achieve its objectives and vision through the development of electronic form courses, the provision of an enabling atmosphere for communication between students and faculty, the provision of technical support and counsel for creating educational websites for faculty and enhancing faculty technical skills that are needed to develop electronic form courses, training faculty, and creating an environment in which faculty can evaluate students and monitor results, as well as effectively interact with the university's Learning Management System (LMS). Other strategies include rewarding faculty who show excellence in the use of e-Learning and creating user guides to develop an e-Learning culture and improve student and faculty skills (University, 2013).

B) The University of Majmaah

The University of Majmaah is one of the newest Saudi universities, which was created by the decision of the High Royal in 2009. The number of students for the 2013 academic year at the bachelor's degree level was 12,148, and the number of faculty members during the same year was 498. These will serve the university over a large geographical area that covers several counties and cities and will involve the

abandonment of the spread of education completed this year, to complement the university education system and achieve the goal of the Ministry of Higher Education and the expansion of university education to include all parts of the Kingdom. This university will help to absorb the growing numbers of high school graduates, create social stability for the sons and daughters of the region and help mitigate pressure on universities in large cities, in addition to helping improve the mobility of scientific and cultural staff. The university will contribute to the community. Community members are widely involved in several areas of social awareness and education and training, with the possibility of upgrading functional and organisational performance with government agencies and enterprises through the provision of advanced courses and consulting specialties available at the university. Through scientific research, the programs and studies that are compatible with this vision of the future of the university are designed to achieve its noble mission and reach its goals. The university currently has 13 colleges distributed across several provinces and centres west of the city of Riyadh, namely, Majmaah, HotatSudair, Al-Zulfi, Alghat, and Rumaah. These colleges were grouped under 11 deanships; one of them is the Deanship of e-Learning and Distance Learning (MOHE, 2013).

The deanship seeks to realise the vision of the university to be a distinguished leader in the provision of distance learning and e-Learning and the application of technology to teaching and learning. The deanship intends to use the principles of professional, scientific, vocational, and technical practice to offer an integrated model of e-Learning applications and an environment of distance learning and interactive e-Learning.

Upgrading the university’s educational operations is also part of the deanship’s aspiration, in addition to the provision and facilitation of faculty members’ and students’ teaching and learning operations through direct and indirect contacts based on the internet, communication techniques, and other emerging technologies. The deanship also intends to avail to student's digital educational materials without the

constraints of place and time, since electronic education is a must in dealing with technological advancement. To make the university a leader in e-Learning use, the deanship developed some objectives, including: 1) converting curriculum content into digital content and putting that content into interactive electronic formats; 2) the administration and creation of the university's distance learning and e-Learning operations; 3) using modern technological equipment to continuously train students and staff; 4) effectively applying a quantitative quality guarantee in education based on internationally recognised standards; 5) coordinating with different players in e-Learning and distance learning who operate internal and external to the Kingdom of Saudi Arabia to harmonise field efforts and exchange expertise; and 6) working to attract expert personnel in the fields of e-Learning and information technology and provide the needed technological equipment and capability support (University, 2013).

2.17.4 The Status of and the Need for E-Learning in Saudi Arabia

First, it is important to recognise that e-Learning and e-Learning facilities are frequently being adopted at higher education institutions in Saudi Arabia. Asiri et al. (2012) contend that this trend can be described as a phenomenon that is attributable to the consistent increase in the Saudi student population at higher institutions. For example, there were 905,892 students from the 25 universities in Saudi Arabia in the 2011 academic year, according to the Ministry of Higher Education (MOHE, 2011). Presently, Saudi Arabian universities and colleges are encountering challenges that stem from overcrowding (Asiri *et al.*, 2012). In response to this surging demand, from a general perspective, using ICT is being viewed as the most valid solution for counteracting this problem. On the other hand, the pressing urge for the adoption of e-Learning and computer technology in higher education in turn implies that faculty members in Saudi Arabia must incorporate ICT into their classrooms, in addition to using ICT resources as a component of their teaching processes (Al-Khalifa, 2010; Asiri *et al.*, 2012).

On the shortcoming, universities in Saudi Arabia are similar to universities in other developing countries, in the sense that they experience faculty member shortages, particularly in the medial and applied specialisations (Mazi and Obuamh, 2002). One of the most important benefits of e-Learning is that it assists in reducing dependency on the teaching staff at the local level, according to Alzamil (2006). Thus, the issue of staff shortages can be reduced significantly through the utilisation of e-Learning. This is because the internet makes it possible to design interactive course materials that can then be delivered via a network to students who are taking the course (Clark and Mayer, 2011).

The system of education in Saudi Arabia reflects the characterisation of every domain of public life in Saudi Arabia on the basis of the absolute separation of staff and students in terms of gender (Asiri *et al.*, 2012). Therefore, educational establishments have had to offer separate staff and buildings for their female and male students. Consequently, this restriction poses a major impediment to accommodation and available resources. To this effect, Alaugab (2007) asserts that the count of female instructors compared to that of their male counterparts is significantly lower at every academic level in Saudi Arabia. To this end, it is essential to encourage the introduction of e-Learning tools for the provision of e-courses for female Saudi students in several faculties. This is because such an arrangement would require a lower female instructor number, according to (Asiri *et al.*, 2012).

Al-Balawi (2007) emphasised that using information technology in Web-Based Instruction (WBI), distance learning, or e-Learning could be a way to deal with the challenging circumstances in countries that offer their citizens access to technology. In addition, faculty's role in higher education throughout the world is shifting in response to the fast technological revolution (Al-Balawi, 2007; Alshwaier *et al.*, 2012). Addressing WBI, Al-Balawi (2007) concluded that the general attitudes of faculty towards WBI were apparently positive. In fact, he proceeded to state that faculty believe that online courses reflect Saudi Arabia's future in higher education. In addition, faculty also believe that WBI has the capability to enhance learning

among students, motivate students to take extra interest in learning, and be an excellent teaching tool for counteracting and compensating for gender segregation in the higher education system (Al-Balawi, 2007). Additionally, the introduction of WBI as a form of e-Learning in the system of higher education has the potential to pose a challenge for faculty, according to (Al-Balawi, 2007).

According to Mirza (2007), e-Learning represents an excellent substitute for numerous students in Saudi Arabia who have an interest in obtaining a higher education from international universities that have a reputation but are unable to travel overseas due to financial, employment, or family obligations. Moreover, e-Learning in the industrialised world has registered impressive success, since it affords students flexibility and convenience associated with cost, time, and study pace (Mirza, 2007). While there are abundant other reasons why Saudi Arabia needs e-Learning, the factors reviewed here are the most significant. In addition, the problems that e-Learning could resolve, as specified here, are longstanding and impenetrable without e-Learning. In the next section, researcher suggest reviewing the literature related to the current e-Learning situation in Saudi Arabia.

Saudi Arabia has long been accredited for the witnessed progress in higher education and e-Learning. In fact, the development and expansion in the higher education sector in the years 2004 to 2009 can be traced to the policy of opening a university quarterly, five colleges monthly, awards of 800 monthly scholarships to students studying abroad, and the expansion of higher education from the original 15 to 86 districts (Al-Malik, 2009). In spite of such moves and credit for speed on the spread of e-Learning in Saudi Arabia by some researchers, such as Al-Shehri (2010), there remains a delay in the process of e-Learning uptake at Saudi Arabian universities. Nonetheless, a number of initiatives have been proposed to introduce e-Learning to the Kingdom's universities and the country at large. Such initiatives include sessions on e-Learning orientation and campaigns on the issue involving long and short courses for participants exhibiting interest (Al-Shehri, 2010). In addition, e-Learning units have been established at educational institutions and universities in particular. Amongst the most significant initiatives was the founding of the National Centre for

eLearning and the introduction of localised e-Learning programs, whose intention is national e-Learning certification (Al-Shehri, 2010).

Acting as stakeholders, it is essential for these organisations to come together for the purpose of formulating a common vision for the entire country's e-Learning vision. Hypothetically, this vision should have the sole objective of offering a sense of direction with the current realities through the interpretation and prediction of opportunities and risks in the near and far futures (Al-Shehri, 2010; Al-Shehri *et al.*, 1993).

In addition, a common vision shared by all of the stakeholder's points to a clear direction and common purpose for the future. As a result, Saudi Arabia's e-Learning strategic planning should consider every organisation's current realities, their opportunities and risks, as well as goals attainable within a specified period of time. Generally, developing this vision is reliant on the identification of the e-learners who constitute the consumer base for this program. Therefore, the next section reviews the literature concerning a Saudi government e-Learning initiative.

2.17.5 The National Information and Communications Technology Plan

Outlining an ambitious future for all of the country's organisational bodies and departments, the Saudi government expressed the necessity to shift to an information society in which government bodies will shape their own content and take part in developing that content. The transformation of the Saudi economy into a digital economy courtesy of the implementation of ICT will help boost its productivity. By building an ICT industry that covers all parts of the country, ICT can become one of Saudi Arabia's major revenue sources. In 2006, an inaugural Five-Year Plan for Saudi ICT was passed, and it intends to improve the efficiency and productivity of all sectors; electronically disseminate social, healthcare, and commercial government services; promote teleworking through optimal ICT use; and fairly regulate the ICT sector. Other goals of the plan include building a strong local and international ICT sector by researching, innovating, and conducting development at all levels; attracting investors for the best ICT infrastructural development and user

affordability; engaging in national and international cooperation to generate a major revenue source; and optimally using ICT at all levels of training and education.

These intentions will be achieved gradually with guidance from three specific objectives stipulated in the five-year plan, which are as follows: 1) to enable all Saudis to use ICT effectively and ensure optimal ICT use in demonstrating Islamic civilisation, in the Arabic language, and in service of the national identity; 2) to provide both males and females with training in all ICT disciplines in preparation for national jobs; and 3) to harness international expertise.

This research forms part of this overall plan. The research study consists of the researcher and the respondents, who play different roles in e-Learning development. After the publication of the five-year plan, its implementation began in earnest, with all stakeholders (scientific, administrative, industrial, media, and cultural) taking part. While this was happening, the National e-Learning Centre was being built by the Ministry of Higher Education (Ministry of Communications and Information Technology (MOCIT, 2013).

2.17.6 National Centre for E-Learning and Distance Learning (NCeDL)

After the passage of the five-year national plan, which advocated for the uptake of e-Learning and its applications in higher education, the National e-Learning Centre was created by the Ministry of Higher Education. The development of an integrated education system that is underpinned by modern ICT technology in the e-Learning field became the mission and vision of the established National Centre for E-Learning and Distance Learning. Based on the government's mission and the Islamic principles of fairness and tolerance, the Centre's mission and vision supported the process of education at all stages of higher education and in all segments and categories, with no place or time limitations. To serve this mission, a new Saudi virtual university will be created, whose function will be to disseminate knowledge and science. The centre will fulfil an important step of using its resources to: 1) provide support to higher education institutions in their educational processes; and 2) ensure educational continuity through optimal ICT use, including communication

and interaction promotion among learners to enable them to achieve their educational goals. These goals mirror the National Centre for E-Learning and Distance Learning's goals, which include the deployment of high-quality applications of e-Learning in higher education, the provision of assistance to higher education institutions to expand their capacity through the use of distance learning and e-Learning, the propagation of technology and e-Learning culture awareness (hence assisting to build an information society), assistance with evaluating e-Learning and distance learning programs and projects, the provision of support to research targeting e-Learning and distance learning, the development of quality standards to guide the creation and distribution of digital learning materials, the provision of technical advice in e-Learning areas, the creation of education software and help with its distribution in both the private and public sectors to enhance the educational process, the promotion of e-Learning and distance learning innovations at higher education institutions, organising workshops, conferences, and meetings, which contribute to e-Learning and distance learning development, and collaborating with international agencies, bodies, and organisations in all e-Learning and distance learning fields.

In considering the above, the National Centre of E-Learning and Distance Learning collaborated with universities that received sponsorship from the Ministry of Education to implement the initiative. A number of interventions have been undertaken by the centre to address immediate needs in e-Learning and distance learning, with a view toward achieving its objectives. The centre has not only helped universities implement modern e-Learning applications, such as LCMS and LMS, but has also helped disseminate skills and knowledge, as well as experience in e-Learning (NCeDL, 2013).

Figure 2.8: National Centre for E-Learning and Distance Learning

Accordingly, although the challenge of globalisation and global competition is met in several ways in many countries, Saudi Arabia's ethical stance is clearly defined. Whilst globalisation has led to a movement to add to the curriculum of higher education, Saudi Arabia preserves governmental direction of the required changes. Nonetheless, because of cooperation and competition in the global market, Saudis' educational results must be measurable and verifiable. The challenge of promoting education to meet the needs and requirements of society combines with the challenge of the information revolution to prevent a widening gap between nations. Internally, the challenge of the demand for higher education coincides with Saudi Arabia's unprecedented digital and scientific revolution.

The critical need is to actively seek to apply technology in all areas and transform the community into a knowledge-based society and economy. Certainly, the application of technology in most government and private sectors faces no resistance or reservations. In Saudi Arabia, the technological benefits are very clear, as are the economic and social benefits. Although there is widespread acceptance of information technology and e-Learning in these areas, their application in education is facing debate and disagreement concerning feasibility and effectiveness, the advantages and disadvantages, the requirements and the adjustments, culturally, economically, ethically and socially, legally, and politically, with attendant consequences to health and well-being. These factors are important understanding the effectiveness of e-Learning and its practicality in all respects in order make

informed decisions that are backed by systematic proof, to clarify controversial considerations.

2.17.7 Universities' E-Learning Prior to and After the NCeDL

During the early days, there were distinct differences among universities in terms of ICT infrastructure and networks and how the technology was used in management and academic endeavours and in libraries and laboratories. However, this situation has changed, as there is now a lot of similarity among universities. The year 1992 was when the internet was introduced in Saudi universities, and from that year until 2006, the internet was used in various ways by university faculty, including use as WebCT for virtual synchronous classes to support teaching. To use this type of media, the universities developed their capacity by, for instance, distributing ICT to faculty members' offices, providing internet services in computer laboratories and the library, and creating an enabling environment in libraries and laboratories so that students could benefit from internet services.

However, this early usage was still inadequate and did not lead to formal e-Learning application. The official adoption of e-Learning was undertaken by the universities in 2006 following the passage of the national ICT plan and the formation of the National e-Learning Centre (Algarni, 2007; Alhajeri, 2005).

Around the time when the National Centre for E-Learning and Distance Learning was established, relevant software for e-Learning was made available to universities. Even though the software is not considered or described by many researchers when conducting e-Learning examinations and evaluations, it plays an important role in comprehending, discussing, and interpreting results. It is therefore essential to describe the software's capabilities. The recommendations are also supported by such information. Undeniably, e-Learning relies on the quality of both hardware and software. On the other hand, rapid ICT changes make the results of software studies obsolete, and this might hinder the generalisation of the results to other software generations, as new programs are developed.

Students' e-Learning perceptions are shaped by the software used during the evaluation. Therefore, understanding the nature of this software, as well as the relevant hardware, is very important. However, students' perceptions are not generalisable to all e-Learning systems due to the changing interfaces in hardware,

software, and content during e-Learning application. The rapid change of the interface causes the results of e-Learning studies to be unstable and makes it difficult to compare a given set of results with another. Therefore, every research study about e-Learning is unique, even when the research questions are similar. At the time this study was conducted, both universities were using the Jusur and Tadurs e-Learning software, which can be classified as learning management systems (LMS). The universities use the systems to electronically store their educational content, as well as manage, present, and publish that content.

The software is used by the universities to carry out various functions relating to the provision of courses and their management through the internet. These functions include the management of educational content, construction, registration, and admissions, the provision of virtual class tools that have the ability to email and follow-up on the performance of learners, run discussion forums, set and collect homework, and set and run exams. In summary, these systems conduct full management of e-Learning processes in every aspect.

With regard to the preceding review of the contextual background of this study in the Kingdom of Saudi Arabia, there are differences between Saudi Arabia and other nations. The most significant of these differences is demonstrated in the degree of interest in e-Learning, its start, and the cultures and economies of the countries. In Saudi Arabia, it was expected that e-Learning would address the constraints that affect education by, for instance, enabling those who work to continue with higher education studies or overcoming social, economic, and geographical limitations, particularly challenges that may have made young students cut short their education to earn a livelihood or hindered them from enrolling in universities in the first place.

Although the opening of Saudi universities led to an increase in opportunities, it did not address the challenge of acceptance or the enrolment of all the applicants. Universities still do not have the capacity to address the fundamental problem of admitting all the students who apply to be enrolled in their programs, and this problem is made worse by the ever-increasing number of applicants. Additionally, newly established universities might need many years before they are able to meet this demand. Moreover, some institutions have regulatory prohibitions that tend to side-line some student groups.

Access to the two software programs and their assessment to determine their characteristics and capabilities was made possible by the researcher’s access to

relevant usernames and passwords as both a lecturer and a learner. Although there are different names for the two software packages used by the two universities, their characteristics and capabilities were found to be nearly the same. As such, the researcher tabulated the software as the same. Based on the user guides and the researcher assessment of the software, their similarities in terms of specifications, characteristics, and capabilities are listed below (Table 2.9).

Table 2. 9: Functions and Specifications of the Jusur & Tadaurs Software

Functions and Specifications	Explanation
Admission and Registration	Manages registration, acceptance, and schedules at each level, facilitates course changes and re-registration and other administration, moves information between the systems.
Content	Builds and stores content in any form - e.g., learning objectives, questions, exercises, comments, exams, and activities – and a discussion forum allows searching, marking, and commenting to students.
Assignments	Loads assignments setting, scheduling, receiving and feedback via e-mail or homepage, allows individual variation and optional questions, self-assessment and security.
Exams	All the features of the above, question banks to import, export and arrange questions, giving time/duration of exams, automatic and immediate checks.
Follow-up to Performance	Reports open to instructor and student, with results, details of attendance, learning input, especially in discussion forums or synchronous and asynchronous lectures and other activities.
Discussion Forums	Control by either staff or learners to interact between participants as groups or individuals (e.g., chat rooms, to do reviews by any cue to all levels with varied posts, to make recreational sub-groups).
E-mail	Allows e-mails and attachments between selected participants or groups, research and review of all email addresses for instructors and enrolled students.
Folders/Files	Tools for managing files and folders, to create, upload and download, save and share with instructor and/or other learners and instructors can send what they want to these files.
Calendar/ Announcements	Hijri and Gregorian calendars to help lecturers and learners to organize their own schedules, appointments, courses, exam dates and other activities, as well as bulletin boards to post ads
Virtual Classroom	Lectures by audio and video, virtual classrooms for comments on electronic boards, monitoring attendance, posts to give permission to learner requests on microphone or text and on-line assistance.

Specifications	A customised Arabic system for synchronous and asynchronous learning, supporting English, compatible with Windows 2000 or UNIX virgin, uses internet and intranet, compatible with the standards of 1.3 and 1.2 SCORM and AICC and IMS.

To conclude, it is noteworthy that as of this writing, an ICT revolution is being experienced in Saudi Arabia and is having implications for all aspects of life, including education. The effectiveness of e-Learning is still disputed and a point of debate worldwide, despite a general consensus about its importance. Like other countries, Saudi Arabia is also having such a debate.

2.18 Summary

This chapter first provided a critical and comprehensive review of the literature pertaining to relevant concepts of e-Learning from various theoretical perspectives. The literature review showed that e-Learning initiatives have been launched all around the world. The increasing adoption of e-Learning solutions is motivated by the promising benefits and advantages that can come from e-earning implementation. Examples of these advantages are improving higher education services; increasing users' and organisations' time, effort and costs; and assessing educational policy objectives by promoting the productivity gains inherent in ICT. In this study, e-Learning is perceived as a multi-dimensional concept that must be closely investigated in order to apply it properly to higher education. However, involvement in e-Learning requires knowledge of the process and knowledge of the cultural context. Numerous studies have identified some of the obstacles associated with e-Learning.

Second, this chapter provides a summary of ICT, higher education and the status of and need for e-Learning in Saudi Arabia, with a description of the main indicators. Although Saudi Arabia has been making comprehensive reforms to higher education, the education system related to e-Learning is not sufficient, especially at emerging universities.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The nature of this study was considered to be suitable for the application of social science research methods. Overall, the study adopted a sequential mixed methods research design, combining quantitative and qualitative research approaches (Brannen, 2005). This approach incorporated semi-structured interviews and an online survey to collect data.

This research used data that measured the range of learners' perceptions of their abilities to learn autonomously through e-Learning; their subjective ratings of their interactions with content, instructors, and other learners during e-Learning; their summations of e-Learning's positive and negative features; and their perceptions of the barriers to e-Learning, as well as its requirements and areas for possible improvement. Specifically, following a review of the extant literature, a series of qualitative semi-structured interviews were conducted to identify and organise observable facts and explore the topic of interest. Next, a quantitative (online survey) approach was used to collect quantitative data.

The main purpose of the quantitative analysis (model assessment) phase was to assess and refine the developed conceptual model through a quantitative research approach that utilised a questionnaire survey targeting learners. The questionnaire was developed based on operationally defined constructs and was pilot tested using the Q-methodology approach. The questionnaire analysis was conducted using data obtained from learners who had experience with e-Learning. The analysis procedures began by employing descriptive statistics to ensure that the data set was appropriate for multivariate statistical techniques. Following this stage, measurement scale analysis employing Cronbach's alpha item was performed. e-Learning activities can and should have a set of clearly recognised and pertinent performance indicators to help evaluate the educational process, since these activities depend so much on the pleasure of the learners (Vlada *et al.*, 2009). Thus, an exploratory method is used to

assist in providing background information about the research objective and to explore patterns and ideas that are tested later (Burns and Bush, 2003). The qualitative method of data collection uses the convergent interviewing technique for situations that require in-depth information about a particular phenomenon of interest and for situations in which theory is deficient and lacks well-defined constructs for all variables or issues of interest (Weaven, 2004).

The reliability and validity of the measurement scale were assessed using factor analysis. Structural Equation Modelling (SEM) was conducted sequentially to initially evaluate and uncover statistically significant relationships between the model constructs. Based on these results, the model was further refined by removing non-significant links and reassessed to produce the final model. Multiple regression analysis was further employed to investigate the strength of the relationships between the constructs. Additionally, as revealed from the SEM, a moderated regression analysis was performed to test the moderating effects of technology on the association between the socio-cultural climate and the organizational climate for innovation.

This chapter presents an overview of the study design, which was formulated to answer these four questions. The chapter also aims to continue by discussing various issues related to the research design of this inquiry to test the hypotheses of the research. There are several factors that influence students' adoption of e-Learning. The research design must take into account the different demands of collecting, analysing and interpreting data under these circumstances. Following a general discussion of the possible research methodologies, this chapter justifies the decision to adopt a mixed methods approach for the study, which includes the collection and analysis of both qualitative and quantitative data. The chapter explains in detail the research hypotheses and data collection methods used in this study, which include the survey technique and a case study. With regard to the survey, the questionnaire design and procedures are described in five stages, including the concept and the operationalization of constructs, the measurement scale, the preparation of the draft instrument, the translation of the questionnaire, and the face validity test and pre-test for the instrument.

Next, the validation of the developed scales via a pilot study is discussed. Finally, the data-gathering procedures for the main study and semi-structured interviews are presented.

For more than a century, the advocates of quantitative and qualitative research paradigms have engaged in enthusiastic dispute. From these debates, purists have emerged on both sides. Quantitative purists articulate assumptions that are consistent with what is commonly called a positivist philosophy. That is, quantitative purists believe that social observations should be treated as entities in much the same way that physical scientists treat physical phenomena. More, such purists compete that the observer is separate from the entities that are subject to observation. Quantitative purists maintain that social science inquiry should be objective. That is, time- and context-free generalizations are desired and possible, and the actual causes of social scientific outcomes can be determined reliably and validly. According to this school of thought, educational researchers should remove their biases, remain emotionally detached and uninvolved with the objects of study, and test or empirically justify their stated theories. These researchers have traditionally called for rhetorical neutrality, involving a formal Educational Researcher, a writing style using the impersonal passive voice and technical terminology, in which establishing and describing social laws is the main focus. Qualitative purists (also called constructivists and interpretivists) reject what they call positivism. They argue for the superiority of constructivism, idealism, relativism, humanism, hermeneutics, and, sometimes, postmodernism. These purists compete that multiple-constructed realities abound, that time- and context-free generalizations are neither desirable nor possible, that research is value-bound, that it is impossible to distinguish fully causes and effects, that logic flows from specific to general (e.g., explanations are generated inductively from the data), and that knower and known cannot be separated because the subjective knower is the only source of reality. Qualitative purists are likewise characterized by a dislike of a detached and passive style of writing, preferring, instead, detailed, rich, and thick (empathic) description, written directly and somewhat informally. Both sets of purists view their models as the model for research, and, implicitly if not explicitly, they promoter the incompatibility thesis, which posits that qualitative and quantitative research paradigms, including their associated methods, cannot and should not be mixed. The quantitative versus qualitative debate has been so divisive that some graduate students who graduate from educational institutions with an aspiration to gain employment in the world of academia or research are left with the impression that they have to pledge allegiance to one school of thought or the other. Guba (a leading qualitative purist) clearly

represented the purist position when he contended that "accommodation between paradigms is impossible ... we are led to vastly diverse, disparate, and totally antithetical ends (Guba, 1990). A disturbing feature of the model wars has been the relentless focus on the differences between the two orientations. Indeed, the two dominant research models have lead to two research cultures, "one professing the superiority of 'deep, rich observational data' and the other the virtues of 'hard, generalizable' . . . data" (Johnson and Onwuegbuzie, 2004).

3.1.1 Goal of Mixed Methods

The goal of mixed methods research is not to replace either of these approaches but rather to draw from the strengths and minimize the weaknesses of both approaches in a single research study and across studies. If you imagine a continuum with qualitative research anchored at one pole and quantitative research anchored at the other, mixed methods research covers the large set of points in the middle area. If one prefers to think categorically, mixed methods research sits in a new third chair, with qualitative research sitting on the left side and quantitative research sitting on the right side. Mixed methods research offers great promise for practicing researchers who would like to see methodologists describe and improve techniques that are closer to what researchers really use in practice. Mixed methods research as the third research model can also help bridge the split between quantitative and qualitative research. Methodological work on the mixed methods research model can be seen in several recent books (Creswell *et al.*, 2003; Johnson and Onwuegbuzie, 2004). Much work remains to be undertaken in the area of mixed methods research regarding its philosophical positions, designs, data analysis, validity strategies, mixing and integration actions, and rationales, among other things. Researcher will attempt to clarify the most vital issues in the remainder of this article.

3.1.2 Commonalities among the Traditional Paradigms

Even though there are many significant paradigmatic differences between qualitative and quantitative research (which have been often written about in the Educational Researcher and other places), there are some similarities between the several approaches that are sometimes overlooked. For example, both quantitative and qualitative researchers use empirical observations to address research questions. Sechrest and Sidani (1995) point out that both methodologies "describe their data,

construct explanatory arguments from their data, and speculate about why the outcomes they observed happened as they did." Moreover, both sets of researchers incorporate safeguards into their inquiries to minimize confirmation bias and other sources of invalidity (or lack of trustworthiness) that have the probable to exist in every research study. Irrespective of paradigmatic orientation, all research in the social sciences represents an attempt to provide warranted assertions about human beings (or specific groups of human beings) and the environments in which they live and evolve. In the social and behavioural sciences, this goal of understanding leads to the examination of many different phenomena, including holistic phenomena, such as intentions, experiences, attitudes, and culture, as well as more reductive phenomena, such as macromolecules, nerve cells, micro-level homunculi, and biochemical computational systems. There is room in ontology for mental and social reality, as well as the more micro and more clearly material reality. Although certain methodologies tend to be associated with one particular research tradition, Dzurec and Abraham (1993) suggest that "the objectives, scope, and nature of inquiry are consistent across methods and across paradigms." Researcher contend that researchers and research methodologists need to be asking when each research approach is most helpful and when and how they should be mixed or combined in their research studies. Researcher contend that epistemological and methodological pluralism should be promoted in educational research so that researchers are informed about the epistemological and methodological possibilities and, eventually, so that researcher is able to conduct more effective research. Today's research world is becoming increasingly interdisciplinary, complex, and dynamic; as a result, many researchers need to complement one method with another, and all researchers need a solid understanding of the multiple methods that are used by other scholars to facilitate communication, to promote collaboration, and to provide superior research. Taking a non-purist, compatibilist or mixed position allows researchers to mix and match design components that offer the best chance of answering their specific research questions. While many research procedures or methods have typically been linked to certain paradigms, this linkage between research paradigm and research method is neither sacrosanct nor necessary. For example, qualitative researchers should be free to use quantitative methods, and quantitative researchers should be free to use qualitative methods. In addition, research in a content domain that is dominated by one method can often be better informed by the use of multiple

methods (e.g., to give a read on methods-induced bias, for corroboration, for complementarity, for expansion; (Greene *et al.*, 1989). Researcher contend that epistemological and paradigmatic ecumenicalism is within reach in the research paradigm of mixed methods research.

3.1.3 Philosophical Issues and Debates

As noted by Onwuegbuzie and Teddlie (2003), some individuals who engage in the qualitative versus quantitative paradigm debate seem to confuse the logic of justification with research methods. That is, there is a tendency among some researchers to treat epistemology and method as being synonymous. This is far from being the case because the logic of justification (an important aspect of epistemology) does not dictate what specific data collection and data analysis methods researchers must use. There is rarely entailment from epistemology to methodology. For example, differences in epistemological beliefs (such as a difference in beliefs about the appropriate logic of justification) should not stop a qualitative researcher from utilizing data collection methods that are more typically associated with quantitative research, and vice versa. A number of interesting myths appear to be held by some purists. For example, on the "positivist" side of the fence, the barriers that quantitative educational researchers have built arise from a narrow definition of the concept of "science." As noted by Onwuegbuzie (2002), modern day "positivists" claim that science involves confirmation and falsification, and that these methods and procedures are to be carried out objectively. Though, they neglect the fact that many human (i.e., subjective) decisions are made throughout the research process and that researchers are members of various social groups. A few examples of subjectivism and intersubjectivism in quantitative research include deciding what to study (i.e., what are the important problems?), developing instruments that are believed to measure what the researcher views as being the target construct, choosing the specific tests and items for measurement, making score interpretations, selecting alpha levels (e.g., .05), drawing conclusions and interpretations based on the collected data, deciding what elements of the data to emphasize or publish, and deciding what findings are practically important. Clearly, the conduct of fully objective and value-free research is a myth, even though the regulatory ideal of objectivity can be a useful one. Qualitative researchers are also not immune from constructive criticism. Some qualitative purists (e.g., Guba, 1990) openly admit that

they adopt an unqualified or strong relativism, which is logically self-refuting and (in its strong form) hinders the development and use of systematic standards for judging research quality (when it comes to research quality, it is not the case that anyone's opinion about quality is just as good as the next person's, because some people have no training or expertise or even interest in research). Researcher suspect that most researchers are soft relativists (e.g., respecting the opinions and views of different people and different groups). When dealing with human research, soft relativism simply refers to a respect and interest in understanding and depicting individual and social group differences (i.e., their different perspectives) and a respect for democratic approaches to group opinion and value selection. Again, nevertheless, a strong relativism or strong constructivism runs into problems. For example, it is not a matter of opinion (or individual reality) that one should or can drive on the left-hand side of the road in Great Britain; if one chooses to drive on the right side, he or she will likely have a head-on collision at some point and end up in the hospital intensive care unit or worse (this is a case where subjective and objective realities directly meet and clash). The strong ontological relativistic or constructivist claim in qualitative research that multiple, contradictory, but equally valid accounts of the same phenomenon are multiple realities also poses some potential problems. Generally speaking, subjective states (i.e., created and experienced realities) that vary from person to person and that are sometimes called "realities" should probably be called (for the purposes of clarity and greater precision) multiple perspectives, opinions or beliefs (depending on the specific phenomenon being described) rather than multiple realities. If a qualitative researcher insists on using the word reality for subjective states, then for clarity, researcher would recommend that the word subjective be placed in front of the word reality (i.e., as in subjective reality or in many cases intersubjective reality) to direct the reader to the focus of the statement. Researcher agree with qualitative researchers that value stances are often wanted in research; nonetheless, it also is important that research is more than simply one researcher's highly idiosyncratic opinions written into a report. Fortunately, many strategies are recognized and regularly used in qualitative research (such as member checking, triangulation, negative case sampling, pattern matching, and external audits) to help overcome this potential problem and produce high-quality and rigorous qualitative research. Finally, qualitative researchers sometimes do not pay due attention to providing an adequate rationale for interpretations of their data, and

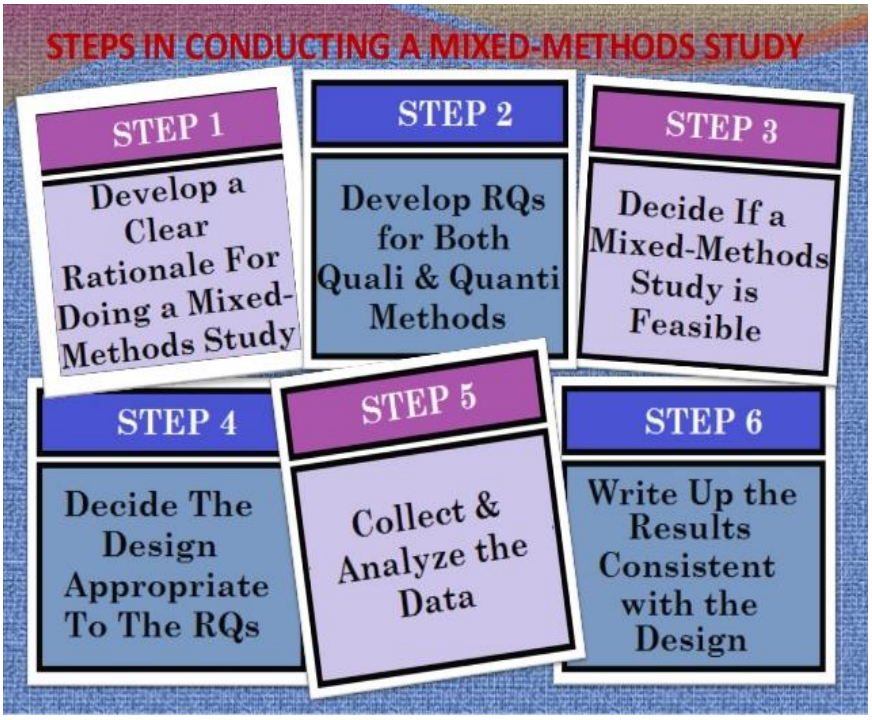
qualitative methods of analysis too "often remain private and unavailable for public inspection." Without public inspection and adequate standards, how is one to decide whether what is claimed is trustworthy or defensible? Fortunately, many (or most?) qualitative researchers and quantitative researchers (i.e., postpositivists) have now reached a basic agreement on several major points of earlier philosophical disagreement. Basic agreement has been reached on each of the following issues: (a) the relativity of the "light of reason" (i.e., what appears reasonable can vary across persons); (b) theory-laden perception or the theory-ladenness of facts (i.e., what we notice and observe is affected by our background knowledge, theories, and experiences; in short, observation is not a perfect and direct window into "reality"); (c) under determination of theory by evidence (i.e., it is possible for more than one theory to fit a single set of empirical data); (d) the Duhem Quine thesis or the idea of auxiliary assumptions (i.e., a hypothesis cannot be fully tested in isolation because to make the test we also must make various assumptions; the hypothesis is embedded in a holistic network of beliefs, and alternative explanations will continue to exist); (e) the problem of induction (i.e., the recognition that we only obtain probabilistic evidence, not final proof, in empirical research; in short, we agree that the future may not resemble the past); (f) the social nature of the research enterprise (i.e., researchers are embedded in communities, and they clearly have and are affected by their attitudes, values, and beliefs); and (g) the value of inquiry (this is similar to the last point but specifically points out that human beings can never be completely value-free, and that values affect what we choose to investigate, what we see, and how we interpret what we see) (Johnson and Onwuegbuzie, 2004).

3.1.4 Differences and Similarities between the Qualitative and Quantitative

Ragin (2014) stated that the quantitative method is the form of research that measures variables according to quantifiable manners. Moreover, the authors suggested that data collection through the utilization of questionnaires is developed to ensure the validity and reliability of the instrument used. In addition, the data are later processed quantitatively to deliver statistical outcomes, which can be generalized to the entire population with a valid degree of confidence. Additionally, quantitative methods are principally focused on the fragmentation of results, and their validity depends on the accuracy and rigor of numerical inferences (Matthews and Ross, 2014). Moreover, quantitative research is often considered to be the more

accurate form of research due to its statistical nature and the ease of verification, since findings are presented in a statistical format. Qualitative methods were developed to research topics that are more emotional in nature. The qualitative methodology was developed for the social sciences, which makes it more tailored for the emotional nature of social sciences. As the name insinuates, the mixed methodology is a mixture of the quantitative and qualitative methods. The distinction in a mixed methodology study is deciding if the study will be more quantitative with qualitative methods to deepen or clarify a topic or if the study will be more qualitative with quantitative methods to give the study a firmer statistical base.

Figure 3.1: Mixed Method Steps



3.2 Research Methodology

In recent years, the mixed methods approach has attracted attention from academics in the fields of education, sociology, health and nursing. This research concerns instructors' and students' perspectives related to the effectiveness of the e-Learning experience at some emerging universities in Saudi Arabia. Mixed methods research is a logical sequence and research process that is used to formulate a method and

guidelines for obtaining knowledge and solving the research problem. The mixed methods approach has emerged in recent years as a research approach that is popular in many disciplines and countries (Creswell, 2011). The essential principle of mixed methods research is that the blending of qualitative and quantitative methods provides a clear understanding of the research questions and achieves the objectives of the research, which is expressed through the questions and verified answers. This study has chosen to combine interview and questionnaire data collection to understand and interpret the results.

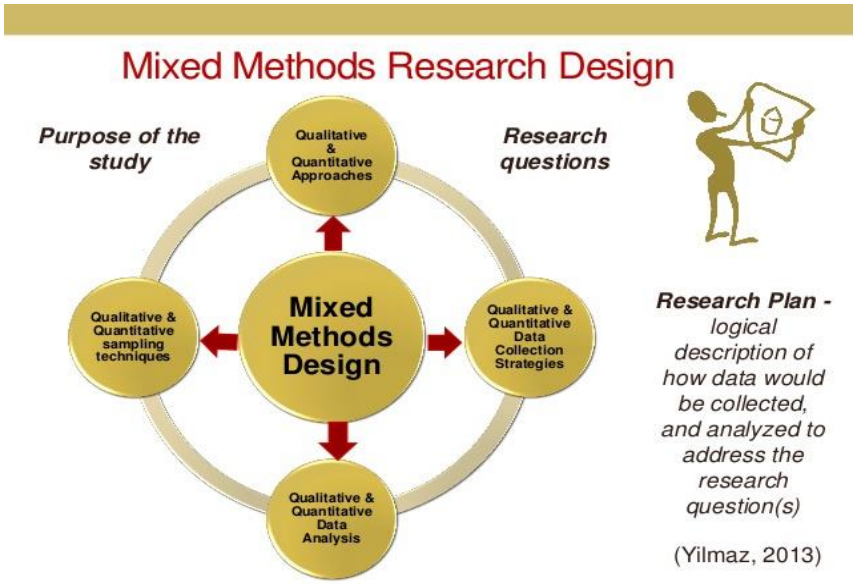
A mixed methods approach that combined qualitative and quantitative data and analysis was employed in this study, as this study included interviews and questionnaires data. This study used mixed methods to complete qualitative and quantitative approaches and to obtain detailed information related to the research question. In this study, a mixed methodological approach was adopted to allow for the initial generation of rich data in relation to the effectiveness of e-Learning. This approach created a research theory based on the literature and then continued through the process of a deductive approach, which includes generating hypotheses, collecting data, and confirming or rejecting hypotheses. To provide a complete picture of the theoretical research, this study examined the most important research terms related to e-Learning adoption and Saudi Arabian universities. Drawing from the literature, the aim of this chapter was to answer the following question: *Is the current situation associated with the Saudi e-Learning program effective according to the current context of Saudi university students?* This was an essential element in determining the relevant factors for adoption in the next chapter. This chapter addressed the following question: *What is a suitable model for describing and determining the effective path for e-Learning at emerging universities in Saudi Arabia?* The empirical study for this research answered research questions to propose and validate a research model for e-Learning adoption at Shaqra and Almajmaa Universities. The following sections describe the data collection process for this study, discuss and elaborate the findings and the process used to confirm or reject the hypotheses. The process of collecting data is an important stage in the deductive approach, which was adopted in this research. Many techniques are used to collect data, which are part of the research method (Bryman, 2015). A research method is defined as ‘a strategy of inquiry which moves from the underlying

philosophical assumptions to research design and data collection' (Myers and Avison, 2002, p. 7).

This study was designed with every ethical consideration in mind (See Appendix G). This study was approved by the Flinders University Social and Behavioral Research Committee (approval notice 6279) on the 6th of November, 2013. The researcher would like to especially thank the administration of the Shaqra and Almajmaah Universities in Saudi Arabia for their cooperation, continued support and welcome to collect data for this study. The protection of the research subject is of utmost importance and guides the construction of the setting and the procedures by which the data were collected. The first ethical consideration in this study is the anonymity of the participant (See Appendix K). The numbering system utilized between the questionnaire and the interview, as described above, and the minimal use of names throughout the data collection process adds to the anonymity of the project and protects the participants and the researcher from any possible ethical pitfalls that may occur. The second consideration is that the names of the supervisors discussed were not given, and the names of the participants were not asked or noted for this study beyond the term Adult.

The Informed Consent Form prevented traceability and enforced the nature of anonymity during this study. Furthermore, the more anonymity a participant feels they have during the collection process, the more open they will be in giving honest and complete answers during the interview. Another level of protection for the participants is that there were no instances in which subjects were asked to refer to the companies where the work experience being discussed was performed. This study is designed to preserve the anonymity of the participants and the secrecy of their identities so that they will feel open about their experiences. This study benefitted from the total of these experiences when put together.

Figure 3.2: Mixed Methods Research Design



3.2.1 Advantages and Disadvantages of Quantitative Methods

The strengths and weaknesses of quantitative methods are as follows.

3.2.1.1 Strengths

Quantitative methods have the following strengths:

-This method can be used to evaluate and verify the constructed theoretical frameworks and how the process may occur.

-The testing of research questions or hypotheses that are developed before the actual process of data collection.

-The analysis and evaluation of the gathered data is less time-consuming in quantitative methodologies.

-The collection of data and the compilation of information is comparatively quicker in quantitative methods than in qualitative designs.

3.2.1.2 Weaknesses

Quantitative methods have the following weaknesses:

-The categories assigned by the researcher that have been used during the study may not be applicable to the participants' understanding.

-The theoretical perspectives may not be completely understood by the respondents of the study.

-Since the theoretical basis and conceptual frameworks are chiefly focused, the researcher may miss a focus on the actual and real occurrences in the world.

-The inferences deduced in the end may be too vague or abstract in nature to be implemented for specific situations, contexts, and/or individuals.

The quantitative method is useful to this study in having strengths, such as rapid data collection, less time-consuming data analysis, and validity standards that are naturally built into the method.

3.2.2 Advantages and Disadvantages of Qualitative Methods

This method allows for even more design of the research to emerge during the data collection process. The strengths and weaknesses are presented below.

3.2.2.1 Strengths

Qualitative methods have the following strengths:

-The responses of individuals are solely a representation of their own personal beliefs and views according to their fundamental understanding.

-This study design is crucial for studying a fixed number of participants in depth.

-This study method is also essential for understanding complex phenomena.

-Lastly, the results are collected in a naturalistic environment in qualitative research.

3.2.2.2 Weaknesses

Qualitative methods have the following weaknesses:

-In a qualitative study, it is challenging to make predictions for numerical outcomes.

-It is difficult to determine the testing hypotheses and theoretical frameworks.

-The data are so descriptive that it requires a lot of time to disintegrate the information collected.

-The responses of the participants can be biased and unclear due to their personal experiences or expectations.

The strengths of qualitative research make this method useful for describing complex phenomena and for using the data based on the participants' own meaning. The weaknesses of this approach make quantitative predictions and hypotheses difficult to formulate from theories. In addition, data analysis is more time consuming. These factors would make a solely qualitative method incomplete.

3.2.3 Aligning Mixed Methods and Research

This study concerns instructors' and students' perspectives concerning the effectiveness of the e-Learning experience at some emerging universities in Saudi Arabia. Mixed methods research is a logical sequence through the process of research to formulate a method and guidelines for obtaining knowledge and solving the research problem. The mixed methods approach has emerged in recent years as a research approach that is popular in many disciplines and countries (Creswell, 2011). The essential principle of mixed methods research is that the blending of qualitative and quantitative methods provides a clear understanding of the research questions and achieves the objectives of the research, which are expressed through the questions and verified answers. This study has chosen to combine interview and questionnaire data collection in order to understand and interpret the results.

A mixed methods approach that combines qualitative and quantitative data and analysis was employed in this study, as this study included interview and questionnaire data. This study used mixed methods to include both qualitative and quantitative approaches and to obtain rich information related to the research questions. In this study, a mixed methodological approach was adopted to allow for the initial generation of rich data in relation to the effectiveness of e-Learning. This approach created the research theory from the literature and then continued through the process of a deductive approach, which includes generating hypotheses, collecting data, and confirming or rejecting hypotheses. To provide a complete picture of the theoretical research, this study examined the most important research terms related to e-Learning adoption and Saudi Arabian universities. Drawing from the literature, the aim of this chapter was as follows: *Is the current situation*

associated with the Saudi e-Learning program effective according to the current context of Saudi university students? This was an essential element in determining the relevant factors for adoption in the next chapter. This chapter addressed: *What is a suitable model for describing and determining the effective path for e-Learning at emerging universities in Saudi Arabia?* The empirical study for this research answered research questions to propose and validate a research model for e-Learning adoption at Shaqra and Almajmaa Universities. The following sections describe the data collection process used for this study and discuss and elaborate the findings and the process used to confirm or reject the hypotheses. The process of collecting data is an important stage in the deductive approach, which was adopted in this research. Many techniques are used to collect data, which are part of the research method (Bryman, 2015). A research method is defined as 'a strategy of inquiry which moves from the underlying philosophical assumptions to research design and data collection' (Myers and Avison, 2002, p. 7).

This study adopted mixed research methodology using both quantitative (questionnaire) and qualitative (interview) data collection methods. As mentioned previously, the survey instruments collected the perceptions of students at emerging universities in Saudi Arabia concerning e-Learning, and this chapter sought to analyse the perceptions of faculty members at emerging universities in Saudi Arabia concerning e-Learning. Both interview questions (qualitative data) (see Appendix D) and survey forms (quantitative data) were used (see Appendix E). The primary data were collected via qualitative interviews and open-ended questions from faculty members at emerging universities in Saudi Arabia. This study obtained approval letters from Shaqra and Majmaah Universities to conduct the data collection (See Appendix G). To carry out a more accurate investigation, researcher decided to conduct interviews with faculty members from emerging universities in Saudi Arabia to achieve a deeper understanding regarding the effectiveness of e-Learning in Saudi Arabia and the factors that hamper its development and improvement. This study used notes taken during the interviews to examine and correct any unclear data finding from the audio recordings.

Moreover, to assess the validity of the data before moving to the qualitative analysis of these interviews, the obtained interviews, including comments, were sent to all interviewees for review and corrections. Thus, researcher obtained a high level of accuracy for the answers.

3.3 Research Data Collection

The study adopted a mixed research method using both quantitative (questionnaire) and qualitative (interviews) data collection methods. As mentioned previously, the survey instruments were used to collect the perceptions of students at emerging universities in Saudi Arabia. Students were targeted from faculties exploring e-Learning, with 710 students identified. In addition, perceptions of members from these faculties were also collected. Both interview questions (qualitative data) (see Appendix D) and survey forms (quantitative data) were used (see Appendix E). The primary data was collected via qualitative interviews (10) and open-ended questions with each faculty member at emerging universities in Saudi Arabia. This study obtained approval letters from Shaqra and Majmaah Universities to conduct the data collection (See Appendix G). Researcher aimed to achieve a deeper understanding regarding the effectiveness of e-Learning in Saudi Arabia and the factors that hamper its development and improvement. This study used notes taken during the interviews to examine and correct any unclear data findings from the audio recordings.

Moreover, to assess the validity of data before moving to the qualitative analysis of these interviews, the obtained interviews, including comments, were sent to all interviewees for review and corrections; thus, researcher obtained a high level of accuracy for the answers.

The implication of case study research, which is the in-depth study of one or more instances of a given phenomenon, reflects the perspectives of the respondents involved in the study process. According to Merriam (2014), this process allows the researcher to explore a bounded system over time. Moreover, the use of a case study in a research project applies explicit, in-depth data collection processes by utilizing multiple sources. The use of a constructive approach in a case study guides a researcher to acknowledge that there are sometimes multiple and conflicting realities that are the product of human intellects and their social interactions (Mitchell and Jolley, 2012). From this view point, it appears that reality is based on the individuals who are participating in the research. As a result, the researcher understands that although there may not be a consensus among the individuals participating in the study, the interpretations of these multiple realities can be very valuable in determining the meaning of the social environment (Creswell, 2012). In similar terms, in a case study, the researcher becomes a part of the study, and his views and

values can become part of the interpretation of what is being studied. The researcher employs both etic and emic perspectives in the research findings.

3.3.1 Population, Sampling and Data Sources

Parahoo (2006, p. 258) defines a population as "the total number of units from which data can potentially be collected". The population in this study was students studying in the two emerging universities in Saudi Arabia. These students were asked to complete the questionnaires. In addition, 10 instructors were to be interviewed.

In quantitative research, the size of the sample should be calculated at the design stage (Gerrish and Lacey, 2010). According to Polit & Beck (2010) quantitative researchers should select the largest sample possible so that it is representative of the target population. For this reason, a sample size of 354 students was proposed for the study. According to Parahoo (2014), the study sample can lose subjects through non-participation. The result is the achieved sample. The lower the data collection response rate, the less representative the data becomes. Researchers need to explain low response rates since it may cause bias in the data collected. As Parahoo (2014) recommends, the response rate will be compared with the norm in similar studies to ensure an acceptable sample size (Parahoo, 2014). Figure 3.3 presents a relationship between sample size and total population.

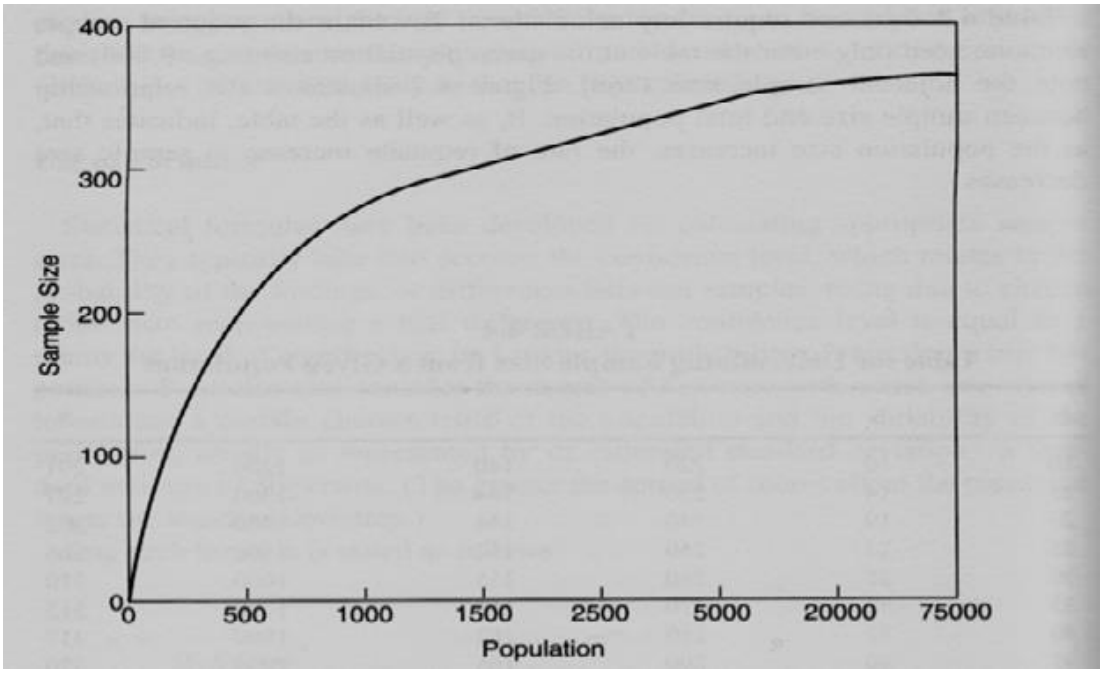


Figure 3. 3: Relationship Between Sample Size and Total Population (adapted from (Krejcie and Morgan, 1970))

The target population for this study was university students in the Kingdom of Saudi Arabia. The accessible population was the students and faculty members of two universities, a total of 710 students. Approximately half (354) of these students were sent the questionnaire. Data from 238 students was received, representing the sample population, which is illustrated in the values that appear in the Table 3.1.

Table 3. 1: Number of students and sample size

Universities	**Total Number of Students**	**% of Total Number**	**%**
1	403	135	33.5
2	307	103	33.6
Total	**710**	**238**	**33.5**

The data in this study were collected from two sources. The base data were collected from the interview and survey (see Chapter 4). To prepare the data for statistical analysis, this study also revised all survey questionnaires and excluded incomplete questionnaires. The sample chosen for this study displayed some of the variables that were found to be significant in the related literature. This section clarifies the presence of those variables. The variables applied to this sample were selected with reference to the literature (Alarfaj, 2001; Alaugab, 2007; Alferaihi, 2003; Alzamil, 2006; Sawaan, 2005) and based on what appeared during the pilot study and what appeared in the Higher Education Statistics, particularly for these two universities (Shaqra and Almajmaa).

With respect to specialization, Arts and Science were considered to be key divisions because they are the original specializations in Saudi higher education, and other specializations fall under that division, yielding a two-part categorization of students that is used for many statistical and administrative purposes. With respect to age, three groups were selected between the lower and higher limits for undergraduate students in Saudi Arabia, where students finish high school at the age of 19 years and may continue at university until they are 26 years of age. This period was divided to include in each category approximately 3 years of student university life. Regarding previous e-Learning, there were only two possible answers, yes or no, and it was beyond the scope of this study to query the number or intensity of

previous courses. The learners in this study were asked to self-assess their ICT skills, so a well-known skill classification was applied, with beginner, intermediate, and skilled levels.

To carry out a more accurate investigation, ten interviews were conducted with faculty members from the two emerging universities in Saudi Arabia as a qualitative method. The study also used a quantitative method (Survey). The study followed the stratified multistage sampling. The sampling frame was divided into subsections comprising relatively homogenous groups with respect to one or more characteristics and a random sample from each stratum was made (Collins et al., 2007). The study sample was n=354, representing the number of questionnaires distributed to participants. The total number of received questionnaires was 238. The number of received samples, compared with the accessible population, is acceptable (See Figure 3.3 and Table 3.1).

3.4 Research Model

Following the introduction and discussion of models, theories and the major objective of this thesis, the problem of a low level of adoption of e-Learning is addressed by conducting empirical field research to solve this problem. This section synthesises and proposes the research model for this study. This empirical research sheds light on the factors that explain the influence of student background on e-Learning at Saudi universities. e-Learning is measured by student behavioural intention to use e-Learning facilities within the research model (see Figure 3.2). The factors that explained e-Learning at the universities are described below.

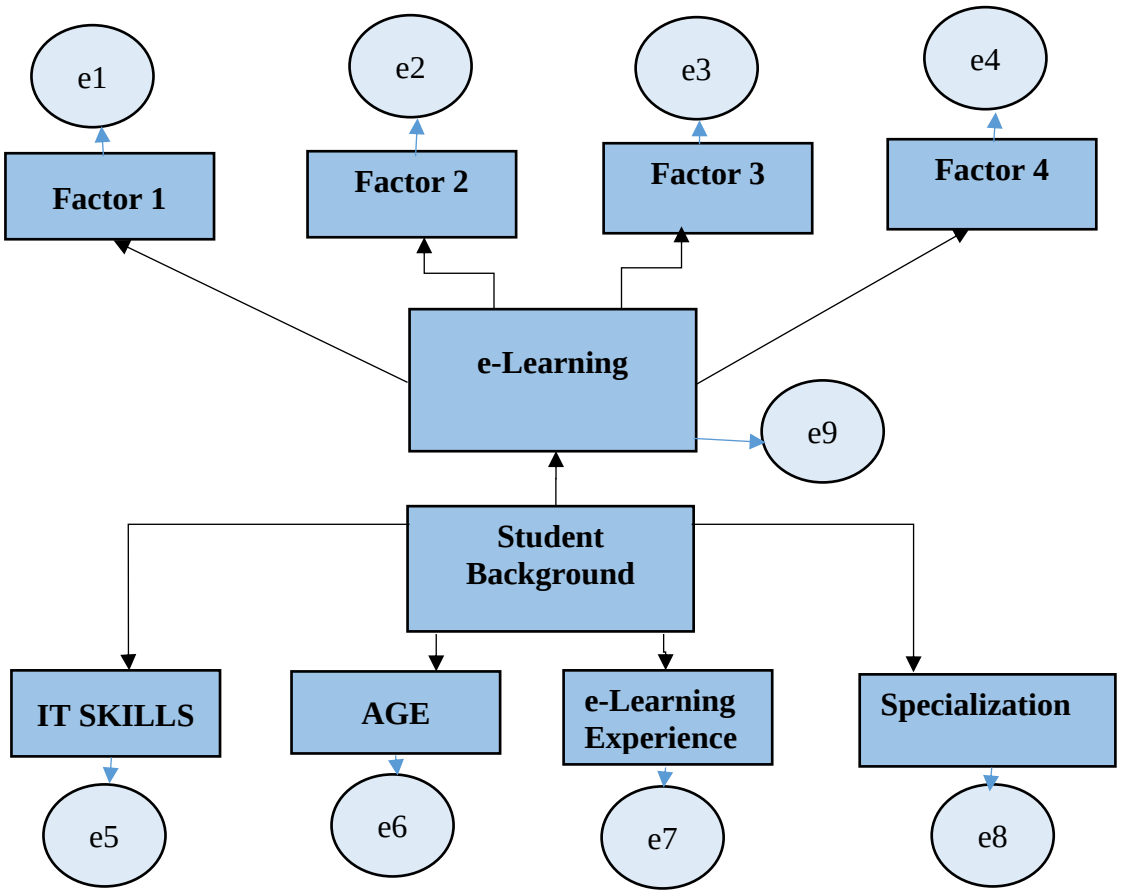
Factor 1: The Ability to Learn Autonomously in e-Learning;

Factor 2: Learner-Content Interactions in e-Learning;

Factor 3: Learner-Instructor Interactions in e-Learning; and

Factor 4: Learner-Learner Interactions in e-Learning.

Figure 3.4: Research Model



3.5 Research Design

Figure 3.5 illustrates the overall research design. Figure 3.6 illustrates the nature of the research as an exploratory research design.

Figure 3.5: Research Design (Adopted from (Vugts *et al.*, 2016))

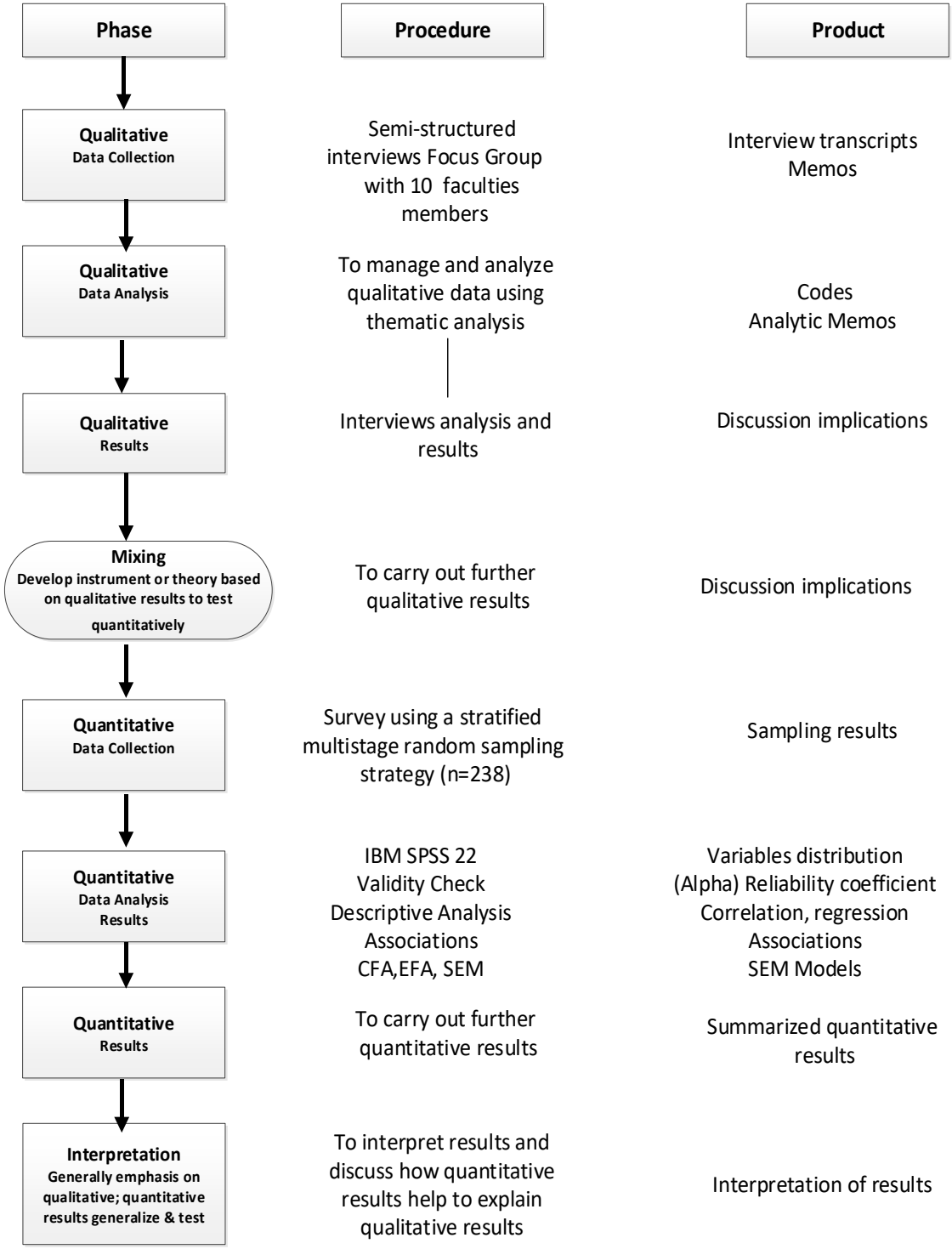
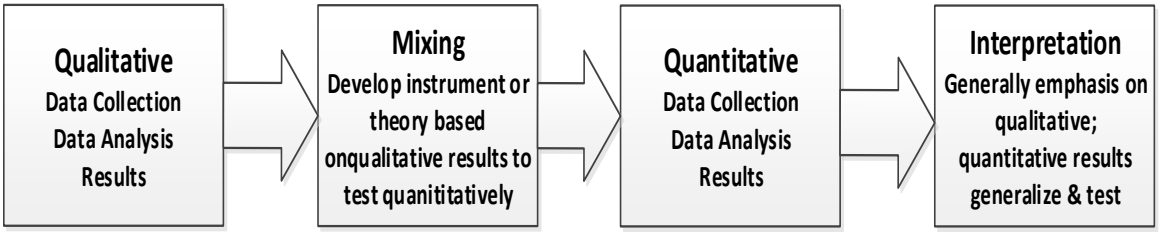


Figure 3. 6: Exploratory Research Design



3.6 Quantitative Methodology Procedures:

The survey is planned to begin by integrating the researcher-designed pilot study-tested survey. The survey collects quantifiable and qualifiable information that consists of two kinds of closed-ended and open-ended questions. The survey span is 5 hours and is designed to achieve quantitative data collection before qualitative semi-structured interviews. The survey is easily understandable, presented in Arabic, and distributed to all respondents at their assigned desks. The survey is not detailed but a tick mark questionnaire in which respondents can choose their answers easily from options provided at the end of each question.

3.6.1 Survey Instrument

Hagan (2014) demonstrated that selecting the study instrument is crucial for the validity of inferences and also depends on the methods used in the research. In the present study, after discussion and considering various options for data collection tools, survey questionnaires and semi-structured interviews were selected as suitable tools for gathering information for this research project. The survey instrument is categorized into sections and sub-sections related to the abilities of e-learners in Saudi Arabia and their interactions with the e-Learning instruments. After the survey instruments, a semi-structured interview survey was also conducted, in which the respondents were asked open-ended questions. Furthermore, after analysing the questions, the third and fourth sub-questions address the positive aspects, negative aspects, and barriers to e-Learning and collect suggestions for the development of e-Learning strategies and an implementation plan. Unfortunately, there were potential threats to the internal validity of the research design. The researcher wanted to ensure that the observed outcome was the result of the independent variable and not some extraneous variable. One-way internal validity was controlled by ensuring that the

sample population included individuals who were a part of the entire exploratory factor analysis (EFA) and literacy integration for at least one year. These individuals were exposed to the in-service trainings offered by the lead teachers. In this instance, the researcher included individuals who had been in the environment long enough to be exposed to professional learning communities and literacy strategies. Consequently, the researcher was able to determine that the results are based on the teachers' exposure to the two reform efforts and not caused by a lack of experience.

3.6.2 Questionnaire Design and Procedures

The questionnaire is the tool used to gather the most suitable information used by researchers in mixed methodological studies. The questionnaire aims to list the relevant questions that address a certain part of the study or may encompass the whole study in order to provide certain information about a topic to a researcher who needs to address a specific problem (AL-Qahtani and Al-Gahtani, 2014). Hachicha and Ghorbel (2012) emphasised that questionnaires are a form of written expression that are related to the possible opinions and perceptions of the respondents, with blank spaces for suitable answers. Moreover, the questionnaires are of many types: closed-ended, open-ended, closed- and open-ended and photo questionnaires. Further, each type of questionnaire can be utilized in a specific situation and to achieve particular goals (Kozlowski *et al.,* 2013). In the present study, the researcher has used a closed-questionnaire, which contains questions that must be answered by the respondent through a five-point Likert Scale. The Likert Scale was used in this study because it is easily available to the research process, which is limited by the unavailability of funds, time issues and travelling restrictions to address the distribution, collection, compilation, and follow-up procedures. Furthermore, the survey questionnaires have the tendency to be distributed and answered quickly by a wide audience. This quality of the survey questionnaire makes it an ideal choice for the quantitative study due to its lower costs (Wahyuni, 2012). Moreover, the Likert Scale is frequently used in quantitative methodologies and allows respondents to choose from 5 options. The design of the Likert scale allows the participants to quickly and easily select their options and minimizes the extent of guesswork by standardizing the range of responses within the instrument (Holmes and Oppenheim, 2001; Mettetal, 2012)). Quantitative questionnaires also have the ability to provide

suitable time for the participants to think about their responses and can thus improve their accuracy. It is expected that there is a chance for greater validity with quantitative survey questionnaires. Further, the questionnaires provide for the standardisation and harmonisation of the data and help in reporting, compilation, and tabulation and in making inferences, which are often precise and sure. The procedure is widely accepted as a well-organized approach in terms of time, effort and finances (Holmes and Oppenheim, 2001; Mettetal, 2012).

3.6.3 Preparing the Draft Instrument

In administering the quantitative questionnaire, the researcher conducted completion sessions and chose two assistants to keep the participants organized. While preparing the draft instrument, the questionnaires were arranged in such a manner that they were assigned a random number to ensure the anonymity of the respondents. The draft instrument is aligned with a series of questionnaires that determines the in-depth analysis of the e-Learning attributes of the participants. The specific instructions for performing the sequential steps in data collection and interviews and the closed-ended and open-ended questionnaires were designed. The close-ended questionnaires are presented on a Likert scale that asks the respondents to tick the options they think are best in the tick box provided on the right side of each questionnaire. On the other hand, the open-ended questions ask the participants to discuss their ideas and views about e-Learning.

3.6.4 The Translation of the Questionnaire

The process of translating the complexities of the study instrument is vital for the validity of a questionnaire used for data collection. Haidar, Kassak, Masrouha, Ibrahim, and Mhaidli (2015) demonstrated that there are various cultural and linguistic limitations, including the technical ability of the researcher, and selecting the best possible data collection tool rests on the language and grammar issues of questionnaire. In this study, both the interviews and questionnaires were translated into the Arabic language (See Appendix F) because all of the respondents were Arabic, and the researcher found it feasible to translate the instrument into a language that could be easily understood by the respondents (See Appendix C). This process requires a prolonged sequence of steps for translating the complexities of the

study tool. In the initial stages, the supervisor consulted to obtain three different versions of the questionnaire and achieve an instrument that can optimally answer the research question. The easy understanding of the respondents will help them to answer questions in the best possible manner.

Table 3. 2: Calculations Used for Participant Collection during the Pilot Study

Total Quantitative Participants for Full Study	354
Total Qualitative Participants for Full Study	10
3% to be utilized for Pilot Study	
Total Quantitative Participants for Pilot Study	12
Total Qualitative Participants for Pilot Study	3

The present study addresses the mixed methodology approach, the issues related to the construct validity of the survey and the internal validity of the inferences, as well as transferability, credibility, confirmability, and dependability, which affect the consistency of the qualitative portion of the study. Moreover, the relative use of construct validity, in addition to internal and external validations, allows the extraction of precise definitions for supporting and motivating audiences to adopt or implement e-Learning technology (Yin, 2011). On the other hand, the requirement for instrument content validity is based on the real use of the instrument for what it is intended to measure. However, Olea and Pflueger (2013) emphasised that the relative concept of credibility is an analogous term for quantitative studies and other quality issues.

3.6.5 Survey Data Screening

Survey data needs to be screened to ensure suitability for subsequent multivariate statistical analyses such as Structural Equation Modeling (SEM), Contributaroy Factor Analysis (CFA) and Exploratory Factor Analysis (EFA). The next sections present brief details on each method.

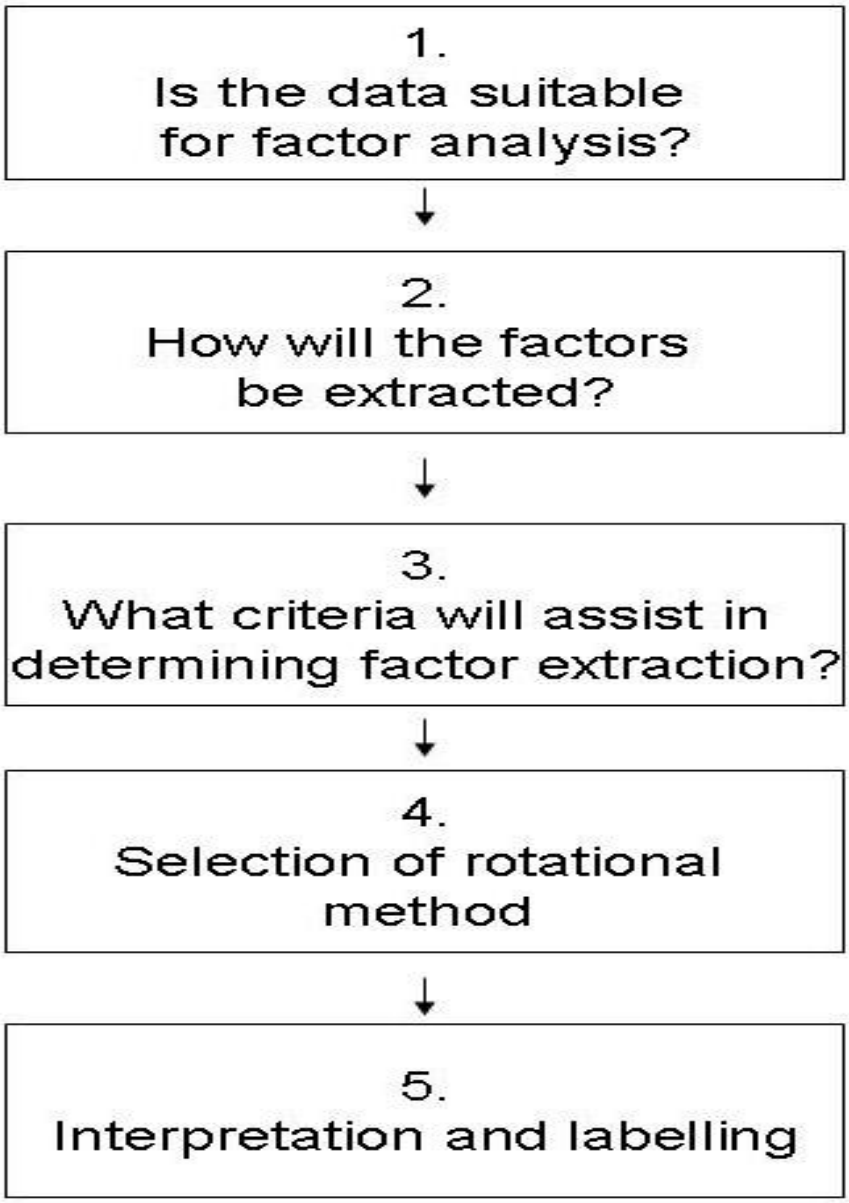
3.6.5.1 Factor Analysis

Historically, factor analysis was used mainly in the fields of psychology and education. Nevertheless, its use within the health science sector has become much more common over the past two decades (Williams et al., 2010).

Exploratory Factor Analysis (EFA) is a widely used and applied statistical technique in the social sciences. In recent published studies, EFA has been used for a range of applications including development of an instrument for the evaluation of school principals, assessing the motivation of Puerto Rican high school students, and determining what types of services should be offered to college students (Costello and Osborne, 2005).

It is occasionally said that the central idea in factor analysis is that the relationships between a large number of observed variables are the direct result of a smaller number of latent variables. There are two major classes of factor analysis: Exploratory Factor Analysis (EFA), and Confirmatory Factor Analysis (CFA). Broadly speaking EFA is heuristic. In EFA, the investigator has no expectations of the number or nature of the variables and, as the title suggests, is exploratory in nature. That is, it allows the researcher to explore the main dimensions to generate a theory, or model, from a relatively large set of latent constructs often represented by a set of items. Whereas, in CFA the researcher tests a proposed theory (CFA is a form of structural equation modelling), or model, and, in contrast to EFA, has assumptions and expectations based on priori theory regarding the number of factors, and which factor theories or models best fit. The objectives of EFA includes: reducing the number of variables, examining the structure or relationship between variables, detection and assessment of unidimensionality of a theoretical construct, evaluating the construct validity of a scale, test, or instrument, development of parsimonious (simple) analysis and interpretation, addressing multicollinearity (two or more variables that are correlated), developing theoretical constructs, and proving/disproving proposed theories (Williams et al., 2010) (See Figure 3.7).

Figure 3. 7: The 5-step Exploratory Factor Analysis Protocol



The reliability of the EFA survey instrument is established using Cronbach's coefficient alpha. These reliability coefficients indicate that the internal consistency for this self-reported instrument is adequate and the reliability is sufficiently established. Following is the representation of the instrument validity criteria.

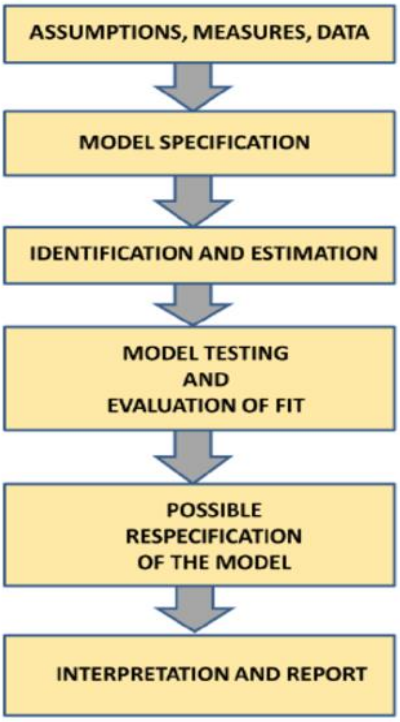
3.6.5.2 Structural Equation Model (SEM)

Structural Equation Modelling (SEM) is mostly used in the social sciences as a comprehensive statistical approach to test hypotheses of causal relationships between observed and latent variables (Hoyle, 1995). SEM is also used to test hypotheses concerning patterns of directional and non-directional relationships between a set of observed (measured) and unobserved (latent) variables (Hair et al., 2006). SEM aims to understand and explain the patterns of correlation and variance between variables in the model.

SEM has generally been used in empirical studies due to the interpretability of potential relationships between variables.
SEM was used in this study to explain potential relationships between the test items for each factor and among the independent variables (e.g., Student Background) and the dependent variable (i.e., e-Learning). SEM was selected for data analysis because

- SEM offered a systematic mechanism for validating relationships among constructs and indicators and to test relationships between constructs in a single model (Hair et al., 2006; Hoyle, 1995).
- SEM offers powerful and rigorous statistical techniques to deal with complex models (Ullman, 2006). In SEM, relationships among constructs and indicators are validated using confirmatory factor analysis (CFA), which is also known as a measurement model, and relationships between constructs are tested using the structural model (Hoyle, 1995; Ullman, 2006).

Figure 3. 8: The basic steps of SEM modelling process (Kovačić et al., 2015)



3.6.6 Reliability, Internal Homogeneity and Correlations among Dimensions

The internal reliability of the questionnaire was confirmed using the alpha scale, with a value of 0.847, which is considered to be very high (Table 3.3). Thus, the correlations across factors were reliable, and the results are presented below.

Table 3. 3: Reliability analysis scale "ALPHA" coefficient of each factor

Factors	**ALPHA coefficient**
The ability to learn autonomously through e-Learning	0.868
Learner-content interactions in e-Learning	0.867
Learner-instructor interactions in e-Learning	0.901
Learner-learner interactions in e-Learning	0.943
All dimensions	0.847

The internal consistency of the questionnaire was confirmed using the Pearson scale. The correlation was found to be strong, confirming internal homogeneity; the results are shown in the following table (Table 3.4).

Table 3. 4: Pearson correlation of each item associated with each factor

No	Factor 1: The Ability to Learn Autonomously in e-Learning	Pearson Correlation
1	In e-Learning, my learning is personalized	0.723**
2	In e-Learning, I can learn anytime, anywhere	0.641**
3	In e-Learning, I can learn at my own pace	0.667**
4	e-Learning is suitable for my learning style	0.730**
3	e-Learning enables me to review previous material any time	0.712**
6	e-Learning presents immediate feedback	0.738**
7	In e-Learning, I am able to self-evaluate	0.779**
8	e-Learning provides suitable technical support	0.774**
	Factor 2: Learner-Content Interactions in e-Learning	
9	e-Learning eases the process of learning	0.673**
10	e-Learning encourages me to learn more	0.738**
11	e-Learning increases my capacity to learn	0.720**
12	e-Learning increases my motivation to learn	0.744**
13	e-Learning increases my productivity	0.790**
14	e-Learning helped me to manage my time and self-discipline	0.730**
15	My specific learning time in e-Learning was spent fully in learning	0.702**
16	I prefer to do the tasks and tests through e-Learning tools	0.689**
	Factor 3: Learner-Instructor Interactions in e-Learning	
17	I prefer communication with the instructor by e-Learning compared to face-to-face	0.769**
18	E-Learning has increased communication with the instructor	0.833**
19	I built a productive relationship with the instructor via e-Learning	0.870**
20	e-Learning eased discussion with my instructor	0.872**
21	e-Learning encouraged me to discuss the learning material with my instructor	0.839**
22	I enjoyed contacting my instructor via e-Learning	0.883**
23	In e-Learning, I received more attention from my instructor	0.819**
	Factor 4: Learner-Learner Interactions in e-Learning	
24	I prefer to communicate with my classmates by e-Learning compared to face-to-face	0.779**

25	e-Learning has increased my communication with other learners	0.876**
26	I built a productive relationship with other learners via e-Learning	0.876**
27	e-Learning eased discussion with my classmates	0.896**
28	E-Learning encouraged me to participate in discussion with my classmates	0.873**
29	I enjoyed contacting my classmates via e-Learning	0.891**
30	E-Learning has increased cooperation among learners	0.863**

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

To determine the correlation of the dimensions with the scale, the Pearson correlation test was used. The results are shown in the following table.

Table 3. 5: Correlations of the factors with the Pearson scale

Factors	**Pearson correlation**
Factor 1: The Ability to Learn Autonomously in e-Learning	0.763**
Factor 2: Learner-Content Interactions in e-Learning	0.818**
Factor 3: Learner-Instructor Interactions in e-Learning	0.879**
Factor 4: Learner-Learner Interactions in e-Learning	0.860**

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

As shown in Tables 3.4 and 3.5, there is a statistically significant correlation at the 0.01 level. The results suggest that the significant items represent the factors that are internally homogeneous. Further, all the correlations are statistically significant at a level of 0.01. This inference signified that the presence of a strong and positive affiliation between the scale and the factors indicates that the values of the other entity are likely to change in relation to an increase or decrease in the relative term. In fact, validity and reliability are concepts that focus on the effectiveness of the survey, its factors and its items, asking the question: *Is it appropriate and suitable to use this as a measure?* If the inferences and relations are in strong and positive, the survey is valid and fit for use in measurement (ALQahtani and Al-Gahtani, 2014). Reliability and validity are both essential and are very closely related; when high scores are achieved in both scales, the data are a highly reliable reflection of what has been accessed from the information collected. In this study, as shown in the above three tables, the questionnaire is reliable and valid.

Table 3. 6: Factors Assessing the Reliability and Validity of Exploratory Factor Analysis (EFA)

NO.	FACTORS	COEFFICIENT
1	Performance Self-Efficacy	.76
2	Motivation to Transfer Learning	.59
3	Transfer Effort-Performance Expectations	.64
4	Performance Outcomes Expectations	.73
5	Feedback/Performance Coaching	.87
6	Supervisor/Manager Support	.86
7	Supervisor/Manager Sanctions	.69
8	Peer Support	.72
9	Resistance/Openness to Change	.75
10	Personal Outcomes-Positive	.72
11	Personal Outcomes-Negative	.85
12	Opportunity to Use Learning	.75
13	Personal Capacity for Transfer	.87
14	Perceived Content Validity	.75
15	Transfer Design	.73
16	Learner Readiness	.74

3.7 Qualitative Methodology Procedures

The four criteria of transferability, credibility, confirmability, and dependability must be combined to define the reliability of a qualitative inquiry. Furthermore, the data collection technique is used to ensure that the transferability of any research process is enhanced by the correct and comprehensive descriptions of the participants and the context in which the data are collected and investigated. Moreover, the mixed methodology approach and the validity of the survey instrument strengthen the study and augment the possibility of drawing internally valid or trustworthy conclusions and inferences.

3.7.1 Qualitative Data Collection

The qualitative and quantitative data collections were conducted simultaneously; however, the face-to-face semi-structured interviews were conducted in sequential stages. After the interviewing process was conducted, the audio recordings of the interviews were translated into written transcripts (See Appendixes F & I) and divided into fragments for investigating meaning and generating themes. The transcripts include handwritten notations about non-verbal communication. Moreover, the interviews were coded to determine the underlying themes, based on the interview protocol. After transcription, the interviews were coded to determine underlying themes based on the questions that were established as part of the interview protocol. Initial interview coding included the transfer of raw transcript data compiled from recorded interviews into Microsoft Excel 2010 from Microsoft Word 2010. As described by Fraenkel et al. (2012), the framework is delineated into seven steps.

It is essential for the researcher to read through the transcribed narratives in order to acquire a feeling for their ideas in an effort to understand them fully. During this stage, bracketing of presuppositions by the researcher can be added to the transcript.

Later, the researcher must extract significant statements from the narrative, identifying key words and sentences related to the phenomenon under study.

The researcher then attempts to formulate units of meaning for the significant statements that relate to the phenomenon under study.

After repeating these steps for all interviews, the researcher selects and clusters recurrent meaningful themes; at this point, the researcher may also return to the interviewees to check interpretations.

The researcher attempts to integrate the resulting themes into a rich description of the phenomenon under study. In reducing these themes to an essential structural description, the researcher should be able to offer an account of the thoughts, judgments, and recollections that underlie the experience of the phenomenon, giving meaning to it (Gass, 2013). The researcher may return to the participants for clarification or to perform crosschecking of the interpretation; this step verifies that the description of the phenomenon is accurate, and adjustments can be made as required. This process would therefore involve four levels of coding: (a) Personal Log Coding, (b) Response to Question Coding, (c) Identification of Important

Statements Coding, and (d) Identification of Relevant Themes. These themes, which are used to prepare a description of the experiences of teachers in their attempts to use Web-based training for the acquisition of technology skills, shed light on the lived experiences of this group of individuals, since their experiences are crucial to understanding the phenomenon.

Moreover, it is imperative that an interview can be relatively unstructured; it is often helpful to have an interview protocol to guide the flow of the conversation (Denzin, 2012). For this study, the researcher utilized a semi-structured interview format, which combines the unstructured, conversational interview format with the formality of the structured interview format. The researcher created a specified set of questions that were intended to generate the kind of information being sought, but the participants were encouraged to discuss additional topics that moved beyond the interview protocol.

3.7.2 Qualitative Data Reduction

Due to the magnitude of the studies, there is a need to collect as much significant data as possible from the selected faculty members at emerging universities in Saudi Arabia in order to obtain a deeper understanding of the positive and negative aspects of e-Learning, the barriers facing e-Learning, e-Learning's requirements, and suggestions to improve e-Learning at these universities. Before reducing the data, the study conducted the interviews in the Arabic language; they were transcribed in Arabic and then translated professionally into English. The researchers listened to the full interview before typing the transcript to give the researcher a better understanding of the data (Creswell, 2006). Data reduction is the first stage of qualitative data analysis. The purpose of reducing the data is to summarize the interviews to help the researcher in data coding and display.

3.7.3 Qualitative Data Display

This section attempts to outline the classification of the interview data collected within each transcript by their questions. These questions formed section titles, generating data from ten interviews on every question that should be grouped. The purpose of this process is to link the answer to a particular question in an interview, which allows researchers to examine efforts through the interview data regarding any

issue and to highlight the differences. The qualitative data were analysed using content analysis to help identify and summarise important themes that emerged. The results were coded manually and grouped into themes according to the research questions. The coding matrix was developed from transcripts of interviews with ten faculty members representing a range of experiences. Themes and categories were produced and linked to the primary and secondary research questions (see Figure 4.1).

The main questions were collected through the interview questions and concentrated primarily on investigating the positives and negatives of e-Learning from faculty members' perspectives, the obstacles facing faculty members at a number of emerging Saudi universities and the requirements for improving e-Learning.

The interview data analysis for the main research questions proceeded as follows:

Question 1: Themes responding to research question 1. Two themes emerged from the analysis of the interviews, which will be described in this section.

-The faculty members' perceptions of the positive aspects of e-Learning

-The faculty members' perceptions of the negative aspects of e-Learning

Question 2: Themes responding to research question 2. Two themes emerged from the analysis of the interviews, which will be described in this section.

-Barriers facing e-Learning

-Requirements and learners' suggestions for improving e-Learning

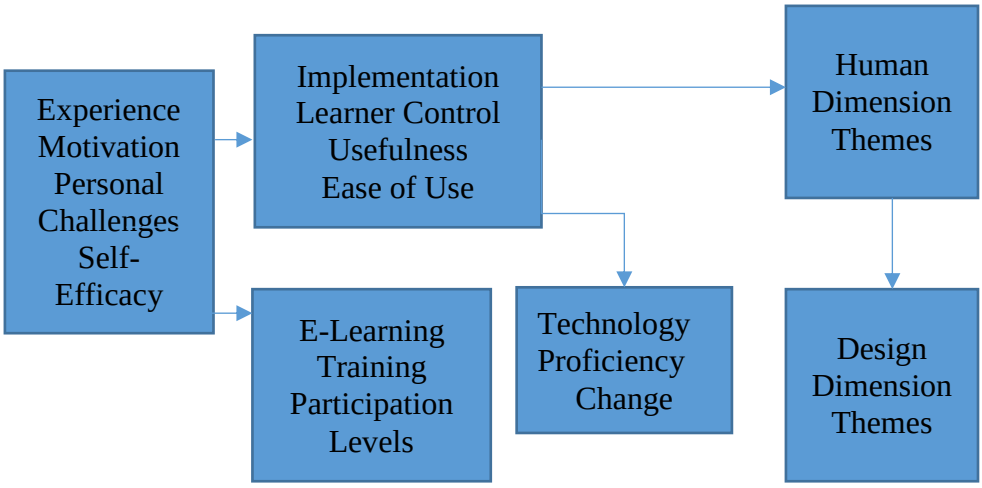
In addition, thirteen secondary questions were related to faculty members' perceptions concerning e-Learning at emerging universities in Saudi Arabia. In concert with the aims of the study, the data collected from the interviews was analysed in an attempt to respond to the following research questions.

RQ1: What were the positive and negative aspects of e-Learning according to the instructors' perceptions?

RQ2: What were the instructors' perceptions of the requirements and barriers facing e-Learning and their suggestions for improving e-Learning?

The analysis of the qualitative data (interviews) explained the two main questions and thirteen secondary questions and directly addressed the two research questions above.

Figure 3.9: Elements and themes that influence the choice of qualitative research interview



3.7.4 The Measurement Scale

The semi-structured interview questionnaire was created to guide the research inquiry for this study. The three-fold purpose and the research questions were taken into consideration during the development of the interview questions. In addition to the overall purpose and research questions, the researcher developed the interview questions. This allowed the researcher to include critical elements of all three frameworks associated with this study. As a result, the researcher feels that the developed questions, along with the information obtained from the two rubrics, allowed the researcher to probe the participants' responses in an attempt to satisfy the intentions of this study. The questions for the semi-structured interviews were constructed with principal instructions and a small sample size for the qualitative study, as the researcher believed that the respondents critically understood the overall scope of the research protocol.

3.7.5 Pilot Study

Since the written and approved quantitative questionnaire has already been tested for validity, this pilot study was utilized to test the validity of the qualitative portion of the study. The pilot study was also used to obtain a better sense of time allotment for the interview. Maxwell (2012) reported that a pilot study helps to reveal some of the inevitable problems of converting your design into reality. Moreover, Creswell (2012) demonstrated that conducting a pilot study is vital for detecting weaknesses in design and instrumentation. The importance of a pilot study is not a new concept.

3.7.6 Interviews

The use of semi-structured interviews has been employed in qualitative inquiries to assess personal, derogatory and subjective ideas, perceptions and views. Each interview encompassed questions that were developed by the researcher and designed to probe more deeply into the opinions of the respondents (Kratochwill, 2013). Moreover, the feelings of the respondents about the practices of the e-Learning integration process help the researcher to access the information through interviews (See Appendix H), revealing how the participants interpret the concept of e-Learning and how their concepts influence their subjective behaviours (Denzin, 2012). The interview followed an interview guide approach, as described by Robson (2011), who explains that the use of interviews as a means of evaluating causal inferences is a vital form of formulation and data integration (Bechhofer and Paterson, 2012). Moreover, the emergent questions can lead to probing the respondents to extract in-depth personal perceptions and helps in assessing the objective opinions of the respondents. The interviews were recorded digitally with participant consent, and the files were transferred to a computer and transcribed through the use of an installed media player and word processing software (See Appendix F).

Table 3.7 presents the overall relationship between the research questions, methods, techniques and tools used to collect and analyse the data.

Table 3. 7: Mapping Research Questions & Hypotheses with Methods, Techniques and Tools

RQs & Hypotheses	Related Method	Data Collection Technique/ Tools	Data Analysis Technique/Tools
RQ1: What were the positive and negative aspects of e-Learning according to the instructors' perspectives?	Qual.	Semi-Structured Interviews	Descriptive Analysis & Coding
RQ2: What were the instructors' perceptions of the requirements and barriers/limitations of e-Learning and their suggestions for improving e-Learning?	Qual.	Semi-Structured Interviews	Descriptive Analysis & Coding
RQ3: What was the extent of the learners' perceptions of their ability to learn autonomously through e-Learning?	Quan.	Survey (Questionnaire)	Descriptive Statistics & Inferential Statistics (Normality Tests, Scale Reliability, Anova and T.test)
RQ4: What was the extent of learners' perceptions of their interactions with the content, with the instructors and with other learners during e-Learning?	Quan.	Survey (Questionnaire)	Descriptive Statistics & Inferential Statistics (Normality Tests, Scale Reliability, Anova and T.test)
H1: There is a direct and positive relationship between learner background, as indicated by age, specialisation, e-Learning experience, and IT skills, and behavioural intentions	Quan.	Survey (Questionnaire)	SEM Models, CFA and EFA
H2: There is a direct and positive relationship between learner background and the ability to learn autonomously using e-Learning.	Quan.	Survey (Questionnaire)	SEM Models, CFA and EFA
H3: There is a direct and positive relationship between learner background and learner-content interactions in e-Learning.	Quan.	Survey (Questionnaire)	SEM Models, CFA and EFA
H4: There is a direct and positive relationship between learner background and learner-instructor interactions in e-Learning	Quan.	Survey (Questionnaire)	SEM Models, CFA and EFA
H5: There is a direct and positive relationship between learner background and learner-learner interactions in e-Learning	Quan.	Survey (Questionnaire)	SEM Models, CFA and EFA

3.8 Summary

The summary of the chapter signified that both types of research methodologies, quantitative and qualitative, were included in this research analysis. The chosen methodologies, instruments, data collection techniques, and data analyses are important for assessing the data collected and help to generate inferences in light of the stated research questions and hypotheses. Further, the questionnaire was distributed to participants in person, and face-to-face semi-structured interviews were administered. The instrument provided quantitative data that were analysed using appropriate statistical procedures and SPSS. The interview protocol provides the qualitative data to be assessed using thematic analysis and coding techniques. The methodologies and procedures used in this study were used to add possible new dimensions to our understanding of e-Learning utilization among students in Saudi Arabia. This technology assimilation process is explored methodically, and the resulting information appears to aid in appreciating the 'how, when, why, and why not' aspects of the decision to integrate technology into teaching and e-Learning integration.

The mixed methods approach can be seen as offering a third paradigm for social research through the way that it combines quantitative and qualitative methodologies based on pragmatism and a practice-driven need to mix methods. As such, this approach is framed by a variety of practical issues and demands (rather than being guided by some over-arching philosophy). Almost inevitably, this means that the manner in which the elements of quantitative and qualitative methodologies are combined is liable to be fragmented and inconsistent. This outcome is exactly what has been observed, with researchers using mixed methods research for a variety of purposes and combining the quantitative and qualitative elements in differing ways (Denscombe, 2008).

The nature of the mixed methods approach, its suitability for educational research and its use in related previous studies (Creswell, 2011; Denscombe, 2008; Johnson and Onwuegbuzie, 2004) suggested that the mixed methods approach could also fit well with our study on e-Learning because this kind of research is considered to be social research.

CHAPTER FOUR

DISCUSSION, ANALYSIS AND RESULTS

4.1. Introduction

This chapter has two main objectives: 1) discussion, analysis and results of the qualitative data, and 2) discussion, analysis and results of the quantitative data.

The qualitative data represents the results of the analysis of the semi-structured interviews. This data addresses Research Questions 1 and 2, which cover faculty members' perceptions of e-Learning's positive and negative aspects and the faculty members' perceptions of barriers to e-Learning, as well as e-Learning's requirements and suggestions for improving e-Learning. The first interview question sought to address the perceptions of faculty members at emerging universities in Saudi Arabia concerning e-Learning. This included whether the faculty members had an overall perception of e-Learning that was positive or negative. The second interview question sought to explore faculty members' perceptions regarding barriers to e-Learning, its requirements, and faculty suggestions for improving e-Learning. Additional secondary questions were also included (see Appendix D). This study employed an approach that involved semi-structured interviewing, in which the researcher asked questions about certain issues (Bryman and Bell, 2015). The purpose of conducting these interviews was to complement the findings of the questionnaire survey.

The quantitative data represents analysis of the questionnaire survey, addressing Research Questions 3 and 4 and the hypothesis in relation to the integrating findings of the quantitative analyses and the literature. The research questions proposed in this study are revisited in this chapter.

This section has many parts. Part one is focused on the ability to learn autonomously in an e-Learning environment. Part two is focused on the learners' interactions with the online content, their instructors and other learners in e-Learning.

Then the analysis of the hypothesis tests are investigated to determine whether the findings support or contradict the hypotheses.

Section 4.2 presents the qualitative data discussion, analysis and results. Section 4.3 presents the quantitative data discussion, analysis and results. Section 4.4 covers the hypotheses testing. Section 4.5 is a summary.

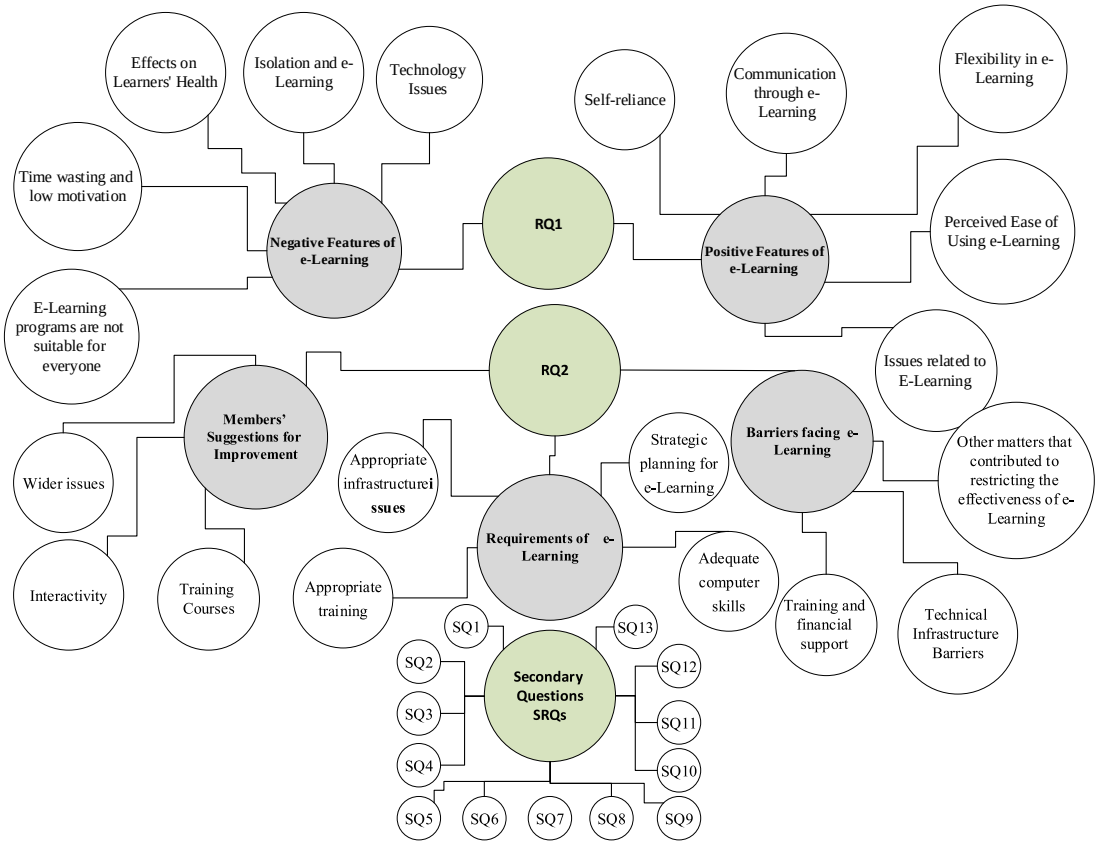
4.2 Qualitative Data Discussion, Analysis and Results

Semi-structured interviews have been used in qualitative inquiries to assess personal, derogatory and subjective ideas, perceptions and views. Each interview encompassed questions that were developed by the researcher and designed to probe more deeply into the opinions of the respondents (Kratochwill, 2013). Moreover, the feelings of the respondents about the practices associated with the e-Learning integration process help the researcher to access the information through interviews (See Appendix H), which reveal how the participants interpret the concept of e-Learning and how their concepts influence their subjective behaviours (Denzin, 2012). The interview followed an interview guide approach, as described by Robson (2011), who explains that the use of interviews as a means of evaluating causal inferences is a vital form of formulation and data integration (Bechhofer and Paterson, 2012). Moreover, emergent questions can probe the respondents to extract in-depth personal perceptions and help in assessing the objective opinions of the respondents.

The objectives of the interviews were chiefly to validate the research results and the research proposal from a practical point of view. Moreover, the researcher wanted to get feedback on interrelated work and additional input to support conduct of the research. The key criteria that guided the interviewees' selection were: 1) experience with the research field; 2) the positions or activities in the organizations where research was conducted; and, 3) knowledge about the operations, processes and management of e-Learning. Prior to each interview, a summary of the research and relevant information was given to the respondents. The interviews were recorded digitally, with participant consent, and the files were transferred to a computer and transcribed using an installed media player and word processing software (see Appendix F). Validation was done by respondents checking the transcripts of the interviews for inconsistencies and judging whether or not the transcripts were a truthful account of the interview. Figure 4.1 shows the themes and categories

representing interview codes linked to research primary and secondary questions. Each theme and category is discussed in detail in the next sections.

Figure 4. 1 Themes and Categories (Interviews Codes)



4.2.1 Discussion of the positive and negative features of e-Learning according to the learners' and instructors' perceptions

This section includes the interviewees' responses to RQ1: *What were the positive and negative aspects of e-Learning according to the instructors' perceptions*?

In the interviews, the instructors were asked to explain their perceptions of the positive and negative aspects of e-Learning. All faculty members at emerging universities (10) who participated in the interviews gave positive and negative feedback about the number (3) of research questions. The first main question in the interview asked about the positives and negatives of e-Learning according to the perceptions of faculty members at emerging universities in Saudi Arabia. There were two points that can be discussed in this section related to faculty members' perceptions of e-Learning. The researcher explained each point separately for the first question and invited comments before moving on to another question. Each

point related to the first question produced both agreements and differences among the faculty members.

4.2.1.1 Discussion of the positive features of e-Learning according to the faculty members

There are various positive features of e-Learning. There are at least two entities involved in an e-Learning system: the students and the instructors. Such a system has the capacity to help manage the explosion of information. Some studies revealed that e-Learning is easy to use and enables learners to obtain information quickly. This study began by displaying the positives of e-Learning from the faculty members' perspectives. The majority of faculty members think that e-Learning contributes positively to their learning experience and provides knowledge from multiple sources. The transcripts indicated that the positive features of e-Learning that were mentioned by faculty members were diverse. The most important pros can be summarized under these items: ability to learn autonomously in e-Learning, learner-content interactions in e-Learning, learner-instructor interactions in e-Learning and learner-learner interactions in e-Learning.

The findings of the qualitative analysis confirmed the findings of the literature review in Chapter 2 related to the positive aspects of the e-Learning. The responses of the faculty members to the first main question related to the positive aspects of e-Learning stated similar objectives, along with the ability to offer e-Learning. The positive features are similar to the results found in the literature review, where learners have access to learning that carries through with a specific process, regardless of the place. There was a consensus among faculty members about some positive features of e-Learning, such as self-reliance, perceived ease of use, communication through e-Learning, the impact of e-Learning on communication and other issues related to e-Learning.

A) Self-reliance

This study notes the role of e-Learning in enhancing self-reliance. Self-reliance is the preference to deal with education issues without any help. Self-reliance was generally observed among the answers of faculty members. Most of the faculty

members mentioned positive aspects of e-Learning in the interviews. Faculty members brought up the topic of independence and self-reliance and the impact of e-Learning on educational effectiveness when they were asked to think about the possible advantages and disadvantages of e-Learning. The ability of e-Learning to enhance autonomous study was discussed. Interviewee 1 (IN1) stated:

Barriers in the geographical and temporal dimensions are eliminated, and educational programs and materials are no longer restricted to one region, but instead exceed geographical boundaries and become available to everyone at all times.

Interviewee (IN2) explained independence through e-Learning and reported that e-Learning is "an effective way to improve the students' level, where the student is able to re-read the information from multiple sources.'' The same interviewee continued, stating that e-Learning promotes "access to information at any time and from anywhere." Another interviewee confirmed this view and said that e-Learning provides "the possibility of teaching and learning at any time and any place in Saudi Arabia."

Similarly, Interviewee (IN6) asserted:

As for the positives of e-Learning, the educational materials are stored electronically, and students can return to them at any time. The student and faculty can also access files from anywhere using any device.

In addition, e-Learning allowed the respondents to satisfy their needs and meet their requirements. One interviewee reported that "the students can select the materials that suit and fulfil their needs and demands."

From the faculty members' perspective, e-Learning reduced the amount of time needed and offered the use of multimedia to perform several tasks for both students and lecturers at universities. One of the interviewees (IN9) pointed out:

The use of multimedia (voice - image - text - colour, etc.) in the education process, which helps the learner to interact with the content, provides many possibilities and refines intellectual skills.

B) Perceived Ease of Using e-Learning

The development of internet skills through e-Learning systems is an important positive aspect to improve knowledge. E-Learning techniques also offer time and media, give learners control over content, and allow learners to meet their learning needs and goals. In the same context, e-Learning offers digital libraries and several types of software. In this line, interviewee (IN1) stated that "e-Learning provides

more than one source of information and delivery in more than one different way." The same interviewee continued: "It provides an opportunity to provide materials to students with different mentalities, races and ages and make them available on a global basis."

Interviewee (IN3) confirmed this viewpoint and said:

The advantages of e-Learning are multiple but related to the quality of performance, because what they offer technically today is a number of tools, and skilful teachers can take advantage of them if they have the ability to employ. Another positive of e-Learning is that it is easy to convey the information to the learner due to the possibility of sending information in various formats (audio video clips, text, and illustrations).

In this context, Interviewee (IN6) said:

As well as in terms of organizing files, which will help the professor and the student access all of their files easily. In e-Learning, it is also easy to refer to article files from the tasks and lectures in the case of a lost device.

Regarding the ease of using e-Learning, interviewee (IN7) confirmed that e-Learning provides "the ease of learning anytime and anywhere." e-Learning has diverse and multiple sources of information that can help researchers and students. Another interviewee said: "e-Learning provides easy and rapid access to information and rapid delivery of information to the learner".

C) Communication through e-Learning

The majority of the interviewees agreed that the e-Learning environment improved lecturer-student interactions, as described above. In the twenty-first century, the Internet has led to significant changes in several aspects of our lives. This advanced technology has become an important tool for communication and information and contributed unique benefits to both lecturers and students. Most faculty members were in agreement about the benefits of e-Learning. e-Learning allows virtual communication among instructors and students through e-mail, discussion forums, chats, audio/videoconference and instant messaging. E-Learning plays a positive role in national and international interactions and communication between lecturers and students. Interviewee (IN1) explained this view by saying that e-Learning "opens the field of direct and indirect communication between students and professors outside of working hours and classrooms."

By using e-Learning, the problem of staff shortages can be reduced because the internet allows the design of interactive course materials, which are then delivered over the network to the attending students. Interviewee (IN9) confirmed this statement and emphasised this feature of e-Learning:

The possibility of compensating for the lack of academic and teaching staff at universities and expanding the learning environment and its resources and potential.

One important positive role related to online education continues to expand: a student's opportunities will continue to grow. Some comments from the same interviewee (IN9) include the assertion that e-Learning can "expand the geographical area of educational institutions, reach remote areas and provide learning opportunities for more students." Interviewee (IN4) confirmed that view and said the e-Learning can "facilitate the learning process for residents outside the borders of the university so that learning does not require the presence of the student."

Other faculty members also talked about the importance of communication in e-Learning. Interviewee (IN5) emphasised the "multiplicity of means used to communicate the information and ease in communicating the information." Moreover, interviewee (IN8) reported that "the use of online sources of information eases communication between the student and faculty members."

D) Flexibility in e-Learning

All interviewees agreed on the importance of flexibility in e-Learning as one of the main factors that affects their intention to use e-Learning services. Many faculty members mentioned the flexibility of time and location that e-Learning offers to the learners and instructors. e-Learning offers a flexible environment for training and learning using the Internet. Compared to traditional education, e-Learning provides an effective learning style that is similar to or better than traditional methods. Interviewee (IN1) revealed that e-Learning "provides scientific content in heterogeneous forms to fit many students."

e-Learning generates a new environment for both instructors and students, in which rich content can be deployed easily, quickly and cheaply. Interviewee (IN3) reported that the flexibility of e-Learning can "facilitate discussions and the exchange of ideas." Interviewee (IN4) confirmed this idea and said that e-Learning promotes "the provision of material and human resources for universities in terms of the halls and the Holy."

Recently, faculty members and researchers have realized the importance of learning styles. Lecturers have noted that some students prefer certain methods of learning more than others. Learning styles play a significant role in helping instructors plan the learning environment. In the same line, interviewee (IN7) said: “It takes into account the differences in learning styles of the students.”

Regarding educational quality, e-Learning has contributed to improving quality, particularly in higher education. Interviewee (IN9) explained that e-Learning “improves educational quality through the availability of different and modern ways to deliver knowledge.” The same interviewee continued by emphasising “the convenience and flexibility offered by e-Learning in terms of enabling the learner to choose the right time to learn, as well as choose the place you want.”

E) Issues related to E-Learning

With e-Learning, many new benefits appeared, such as cost and equal opportunities, in comparison with traditional learning. Some of interviewees mentioned these benefits. Regarding the cost of e-Learning, one faculty member said that the “material costs of e-Learning are lower than those of traditional learning.”

Some faculty members believed that e-Learning provides equal opportunities for motivating students in discussion. One faculty member said, “Learners have equal opportunities to respond and motivate participation among shy students. However, taking into account the characteristics of learners (modern technology generation).” e-Learning makes learning interactive and fun through the use of multimedia or more recently developed methods. This feature was noted by a faculty member, who said that "it is more exciting."

4.2.1.2 Summary of faculty members’ perceptions of the positive features of e-Learning

In conclusion, the faculty members talked about the important positive features of e-Learning at emerging universities in Saudi Arabia. They appreciated e-Learning in its existing state and for its future potential. They indicated that they valued the development of independence/self-reliance through e-Learning. e-Learning offers various resources for learning in convenient learning styles. Faculty members commented on the ease of e-Learning and the development of communication skills

through e-Learning. The faculty members also talked about flexibility in e-Learning and other issues related to e-Learning.

4.2.1.3 Analysis of the Positive Features of e-Learning

Most of the instructors agreed that e-Learning is important for modern education, indicating its role in enhancing the efficiency of learning, as well as improving the quality of education. These findings were consistent with the results reported in the literature. Several studies have asserted the positive aspects of e-Learning at higher educational institutions (Nichols, 2003; Whittington, 2000; Yaghoubi *et al.*, 2008)

The findings from the learners indicated diverse responses concerning the positive aspects of e-Learning. The consensus among the instructors about the important positive features that e-Learning needed to demonstrate included self-reliance, ease of usability, the impact on communication and flexibility in studying via e-Learning.

The positive aspects of e-Learning in education that were obtained from the analysis of the interview responses include the following points.

E-Learning enhances self-reliance: “An effective way to improve the students' level, where the student is able to re-read the information from multiple sources.”

E-Learning demonstrates ease of use, as access to a large amount of information was available at any time: “e-Learning is easy and facilitates access to information and accelerates the delivery of information to the learner.”

E-Learning exemplifies the ability to retain good communication as a result of the capabilities of the internet connection. The internet has become an important tool for information and communication, and as a result, the internet has allowed seamless communication between academics and students: “Multiplicity of means used to communicate the information and ease in communicating the information.”

E-Learning offers great flexibility of time and place for the learners and the instructors: “Facilitate discussions and the exchange of ideas.”

This study highlighted the importance of self-reliance in explaining the use of e-Learning at higher education institutions. Self-reliance is a feature of successful education. Self-reliance is a preference that learners are able to continue their education without any immediate help. This self-reliance can be achieved through e-Learning, which will further aim to satisfy the learning needs of an individual learner

rather than the requirements of the instructors or the educational institution (Klein and Ware, 2003).

Regarding the perceived ease of using e-Learning, the findings show that the participants believe that the e-Learning method is better than learning through the traditional teaching method. This could be because online study requires less effort than traditional face-to-face encounters. However, the learners' experience will play a significant role in enhancing the perceived ease of use of e-Learning. This finding is consistent with the findings in the literature, such as those reported by Galy et al (2011), who found that the perceived ease of use of e-Learning has a positive effect on learners' performance.

Another positive aspect of e-Learning was communication. By using an e-Learning method, the chance that learners and instructors will pay attention to the material is increased. Moreover, ICT allows educational institutions to expand and apply global learning via the use of sophisticated networking. However, some universities are not in favour of global learning via networking due to the lack of technical infrastructure and fast internet speeds. This finding is confirmed by Jung (2002), who found that global education success depends primarily on a strong technical infrastructure.

4.2.1.4 Discussion of the negative features of e-Learning according to faculty members

Despite all the positive aspects of e-Learning, one cannot deny that there are some negative effects of e-Learning. Some courses require practical skills that cannot be learned via online education. The researcher started by talking about the meanings of the term negative, which included the problems that the learners face with e-Learning or the problems that they thought occurred because of e-Learning, which could be considered dangerous side effects. There was a consensus among faculty members about some negative features of e-Learning, such as isolation.

A) Isolation and e-Learning

Although e-Learning provides independence, ease, communication and flexibility, the learners may feel a sense of isolation. This is because learning online occurs without any participation. In other words, e-Learning may give the instructor and the student a feeling of loneliness. Regarding this matter, interviewee (IN1) said: "Some

types of e-Learning lack interaction and lead to isolation." In this regard, interviewee (IN10) stated:

Along with weakening the social skills needed for learning, the weakness of direct communication between teachers and learners and sitting in front of devices for long periods can lead to boredom.

B) Effects on Learners' Health

Several studies indicate that sitting for long periods of time in front of the computer may be harmful to the learner's health. Using a computer involves exposure to electromagnetic radiation and causes harm to eyesight. Interviewee (IN5) made these comments: "Some health problems may be developed due to improper use of technology." Interviewee (IN8) also confirmed that health factors are one of the important negative aspects of e-Learning: "Some health aspects, especially due to the use of the computer for long periods."

C) E-Learning programs are not suitable for everyone

Despite these main benefits, some studies have revealed that e-Learning programs are not appropriate for everyone. One of the complexities of e-Learning is that it is often not suitable for everyone (requires computer skills). In addition, information is given in one way, which may be unsuitable for some people, as described by one of the interviewees: "Some scientific courses, such as mathematics, are appropriate for this type of education."

D) Technology Issues

The interviewees highlighted technology issues associated with the e-Learning environment at emerging universities. With heavily used e-Learning programs, there are potential risks. Universities would need to ensure that all instructors and students have a device that is able to support the training. Thus, all requirements must be set out at the beginning. Because e-Learning is run on computers, it is important that the instructors and students have the appropriate technical equipment, as well as a good understanding of how to use the equipment. On the other hand, a lack of suitable training in the use of e-Learning is a limitation. One of the participants noted that the disadvantages of e-Learning include ICT facilities, as follows:

The factors include technical issues, such as: the efficiency of communication networks, the availability of hardware and software and the extent of the ability to design and produce educational content seamlessly.

E) Time wasting and low motivation

With rapidly developing technology, if the instructors and students do not have experience with the current technology, valuable time is often wasted on technical problems. One participant commented that “students may get lost or confused without clear instructions and guidelines.” Another participant mentioned that they had “lost some time to learn computer tools to help with teaching.”

Another important challenge noted by the participants was related to the low motivation associated with e-Learning. Learners with low motivation may tend to fall behind when using eLearning. Another opinion confirmed that “students with low motivation may fall behind.”

4.2.1.5 Summary of faculty members’ perceptions of the negative features of e-Learning

A number of negative aspects of e-Learning were raised from the perspective of the faculty members in the interview questions. These negative features included a concern that the loss of face-to-face interaction could lead to fears about social isolation. e-Learning is one of the important causes of harm to the learner's health. Another negative effect is that some e-Learning programs are not suitable for everyone. In addition, technology problems could be a main issue for instructors and students. Most significantly, some faculty members mentioned time wasting and low motivation as negative elements of e-Learning at emerging universities.

4.2.1.6 Analysis of the Negative Features of e-Learning

The analysis of the interviews indicated that the negatives of e-Learning are diverse. The negative aspects of e-Learning in education were as follows: a lack of social relationships, effects on learners' health, e-Learning programs are not suitable for everyone, technology issues, time wasting, and low motivation.

The lack of direct social interaction could occur as a result of the learners placing themselves in isolation. Distance learning requires the learners to have relatively strong motivation and individual management skills with regard to their time management to alleviate this influence. e-Learning might have a negative influence on the learner's health. In other words, although a learner might have obtained valuable information, sitting for long periods in front of a computer may be harmful to a learner's health (Akkoyunlu and Soylu, 2006; Klein and Ware, 2003).

e-Learning may also be unsuitable for some individuals, since e-Learning requires strong computer skills. Some learners may not have adequate experience with computers, which may result in wasting valuable time trying to understand how to use the computer, which may further lead to lack of interaction or interest. Therefore, e-Learning requires developed computer skills and good time management skills in order to reduce such effects.

Furthermore, the findings of the interview analysis also showed that time wasting may arise, with learners surfing social networking options and viewing new programs related to technological innovation, etc. Moreover, the need to replace or develop hardware and software may result in further time wasting for learners.

4.2.2 Discussion of the barriers facing e-Learning, the requirements of e-Learning and suggestions for improving e-Learning

This section includes the interviewees' responses to RQ2: *What were the instructors' perceptions of the requirements and barriers facing e-Learning and their suggestions for improving e-Learning?*

The first main question related to the positive and negative aspects of e-Learning from the perspective of faculty members at emerging universities in Saudi Arabia was introduced and discussed. In this section, there were three points that can be discussed in a second question, which includes the barriers facing e-Learning, the requirements for e-Learning and the participants' suggestions for improving e-Learning. The researcher explained each point separately and invited comments before moving on to another point. Each point of the second main question produced both agreements and disagreements among faculty members.

4.2.2.1 Barriers facing e-Learning

The faculty members began to explain barriers that restrict the effectiveness of e-Learning. The barriers can be classified as training and financial support, technical infrastructure barriers and other matters that contributed to restricting the effectiveness of e-Learning. The faculty members' observations are described separately as they occurred but with some attempt to group comments on similar topics together whenever the circularity of the discussion reverted to an earlier theme.

A) Training and financial support

The majority of the instructors talked about the appropriate training and financial support for e-Learning as the major issue at emerging universities in Saudi Araba. Training and support problems came high in the list of barriers at emerging universities in Saudi Arabia and were mentioned by 7 out of 10 participants. Training and financial support limitations were seen as significant barriers to starting e-Learning at higher educational institutions. Some advanced techniques take far too long for the user to access and use and are also very expensive. That was apparent at emerging universities that did not have financial support and appropriate training programs to support the e-Learning system.

Interviewees (IN1) and (IN3) stated that training enhanced instructor-student interactions. According to Interviewee (IN1), the "lack of training or teaching the use of modern e-Learning systems among staff members or encouraging them" was a problem. The same interviewee continued with a discussion of the "lack of financial support for the needs of e-Learning."

Interviewee (IN3) concurred:

The main obstacle is the lack of qualification among students and there is a need to train them in e-Learning skills. Content Management Learning Software, unified the students towards using it, but their personal experience did not encourage them to move to the program smoothly, because they felt alienated because they used to send their assignments by e-mail or a professor's site. With the Content Management Software, this issue is much better, but still some students preferred not to move to a new program. Again, the transition between the sites and the collection of scientific material required more training.

Some interviewees indicated that the insufficiency of qualified students and instructors for using modern educational technologies is the most important barrier that restricts the effectiveness of e-Learning at higher education institutions. It is expected that training programs will improve the effectiveness of e-learning and that providing the appropriate training and support for educators and learners will increase the benefits of e-Learning.

Interviewee (IN5) confirmed this idea and highlighted "the need for training programs that are necessary to acquire the knowledge of using technology in a proper way." Another barrier mentioned by the majority of instructors is the level of knowledge of the faculty members and students concerning computer skills. There

are many instructors and students whose level of knowledge is not sufficient or who have no interest in computer skills. Interviewee (IN6) explained this view and said, "In addition, some faculty members are not able to use these electronic systems, as well as some of the students."

Further, interviewees (IN2), (IN7) and (IN9) acknowledged that technical skills are one of the important factors that affect the effectiveness of e-Learning. Interviewee (IN2) said that "some faculty members and students do not have the minimum technical skills." Interviewee (IN7) confirmed this view and said: "E-Learning uses the computer as a platform for learning, so the lack of computer literacy could be one of the obstacles to the success of this kind of learning." Similarly, interviewee (IN9) asserted that "technical literacy in society and the low academic level of the students" are important issues.

The majority of instructors found it very important to provide the appropriate training and financial support for instructors and students to enhance the effectiveness e-Learning because instructors and learners do not always understand how to use the required technology.

B) Technical Infrastructure Barriers

In responding to the barriers that may face instructors who use e-Learning systems at emerging universities in Saudi Arabia, the instructors revealed the lack of infrastructure and internet speed limitations as significant barriers. The technological infrastructure at emerging universities in Saudi Arabia is not currently at the same level observed in developed countries. Although computer laboratories are accessible for instructors and students at the majority of Saudi Arabian higher education institutions, the lack sufficient network facilities and Internet access are problems for both instructors and students at emerging Saudi universities. On the other hand, the existing infrastructural barriers to e-Learning based on the views of instructors and students are mentioned. Interviewee (IN2) addressed this issue, saying that "the lack of good infrastructure at educational institutions" is a problem.

In addition, emerging universities in Saudi Arabia suffer from limited resources and unsatisfactory tools, such as electronic libraries. The technological limitations of e-Learning were related to computer hardware and software. These restrictions pose a barrier to academic staff enhancing the effectiveness of e-Learning. Thus, emerging universities in Saudi Arabia must further develop their educational systems and

interact with e-Learning. Interviewee (IN2) highlighted “the lack of Internet availability in all parts of the educational institution, and in some students' homes.”

Interviewees (IN8) and (IN9) mentioned that there were some technology issues, such as Internet services that are slow and inadequate, and that it was difficult to keep up with developments in the information revolution. In addition, internet speed is still not satisfactory for effectively supporting e-Learning activities. Interviewee (IN8) indicated that “Internet speed problems” are important. According to Interviewee (IN9), “Emerging universities ignored the evolution in technology.” The same interviewee continued: “The extent of the students in response to the new style and their interaction with it.”

C) Other matters that contributed to restricting the effectiveness of e-Learning

Some respondents mentioned that the one of important barriers is concerns about privacy or confidential information during e-Learning. Regarding this point, Interviewee (IN9) said that “protecting the confidentiality and privacy of content is one of the main obstacles to e-Learning.” Interviewee (IN8) added that some information is already on the site and said, “Based on the Internet as a source of information, there is a lot of incorrect information.”

In addition, cost was another problem that restricted the efficiency of e-Learning at emerging universities and was seen as a significant barrier. Interviewee (IN5) said that the “high costs of required equipment” were a problem. Interviewee (IN1) expanded on the idea of initial funding for running costs: “Concern for the least expensive systems compared with the most efficient and effective.”

Lastly, a lack of efficient design and a lack of awareness and internet skills constrain most faculty members and students from using e-Learning technologies at emerging universities. Regarding the design and production of learning materials, instructors’ and students’ unawareness of the importance of using e-Learning were considered as the one of important obstacles that might face instructors and students. Interviewee (IN4) said:

Electronic systems lack the factor design, and there was no awareness of the students of the importance of using e-Learning systems. Faculty members also do not pay attention to the use of these electronic systems.

4.2.2.2 Analysis of the barriers facing e-Learning

The findings showed that a number of barriers face learners in e-Learning. The participants in this study reported that a lack of training and financial support, technical infrastructure barriers and other factors contributed to restricting the effectiveness of e-Learning. These barriers and issues will be further discussed below.

First, training and financial support were noted by most of the faculty members. The lack of training could be due to the fact that emerging universities suffer from a lack of technical services, a lack of ICT training and inconspicuous ICT strategic policies, as well as weaknesses in training courses. In addition, the participants mentioned a lack of financial support at emerging universities. This observation indicated that there was a lack of funding to support the establishment of high-quality technical services at these universities. In the same vein, there remains a lack of funding and a weakness of ICT training programs at emerging universities in Saudi Arabia.

Second, technical infrastructure barriers were also raised as an important barrier. The problems included: "the lack of good infrastructure in educational institutions… the lack of Internet availability in all parts of the educational institution, and in some students' homes… Internet speed problems...Emerging universities ignored the evolution in technology.*"* Thus, there are some technical barriers at emerging universities, which might be due to the lack of information communication technology (ICT) accessibility. According to the interview and questionnaire analysis, instructors and learners mentioned the lack of access to ICT resources at emerging universities in Saudi Arabia. The barriers related to the technical infrastructure included the lack of internet access, design flaws and the lack of basic technology.

Third, privacy or confidential information during e-Learning was mentioned as a problem by faculty members and as a problem that faced both students and instructors. One interviewee said that "protecting the confidentiality and privacy of content is one of the main obstacles to e-Learning." Therefore, the e-Learning approach faces cyber security risks, such as threats and attacks. This could be because some universities hastily adopt e-Learning methods without strategic planning. Another participant stated that "based on the Internet as a source of information, there is a lot of incorrect information."

Finally, a good design and strategic deployment of e-Learning will improve the effectiveness of e-Learning and help students to understand the e-Learning process. The findings showed that there is a lack of good design, a lack of awareness and a lack of internet skills at emerging universities. These problems were mentioned by faculty members, who said that "electronic systems lack the factor design, and there was no awareness from the students in regard to the importance of the use of e-Learning systems. Faculty members also do not pay attention to the use of these electronic systems." The design and deployment of the e-Learning process at emerging universities are inadequate. This could be due to the fact that websites may have failed to clearly present information using e-Learning. These findings were consistent with previous results (Alwani and Soomro, 2010; Bingimlas, 2009; Lewis and Orton, 2000).

4.2.2.3 Discussion of Requirements

The interviewees highlighted the main requirements for e-Learning. The requirements are tools that are necessary and significant to help instructors and students in using the e-Learning system. Some respondents talked about the important requirements for the implementation of e-Learning, especially at emerging universities in Saudi Arabia.

A good and appropriate infrastructure for e-Learning development is considered to be one of the significant requirements for e-Learning implementation at higher education institutions, particularly emerging universities. Interviewee (IN2) addressed this issue by saying that universities should "provide good infrastructure." In addition, interviewees pointed out that some faculty members and students were not motivated to use e-Learning. The same interviewee said: "Motivation must be high for the teacher and the learner." Interviewee (IN5) confirmed this point and said that "the provision of various technological methods in order to avoid boredom while learning" is important.

Furthermore, respondents mentioned that some faculty members and students do not have computer skills. Such individuals might need training programs to help them use e-Learning. According to Interviewee (IN2), "the creation of the teachers,

students, and holding training courses for them" is important. Interviewee (IN5) agreed with Interviewee (IN2) and said that "the provision of educational courses that aim to acquire knowledge about using technology in a proper way" is necessary.

The last theme in the interviews discussed the requirements for e-Learning that may be important for the implementation of e-Learning at emerging universities in Saudi Arabia. Strategic planning is a significant factor in building effective e-Learning systems. Regarding the planning issue, Interviewee (IN2) asserted that universities must "develop a plan to adopt educational change according to one of the known patterns of change." Another interviewee confirmed this view and said that "the provision of various technological methods in order to avoid boredom while learning" is important.

4.2.2.4 Analysis of the requirements

The findings obtained from the interview data revealed several requirements for e-Learning, including appropriate infrastructure, appropriate training, adequate computer skills and strategic planning for e-Learning. An appropriate infrastructure was a main requirement according to the participants, who reported the following observations: "Provide a good infrastructure… Motivation is high when the teacher and the learner are able to interact sufficiently. The provision of various technological methods in order to avoid boredom while learning."

Poor technical infrastructure between faculties, as well as between emerging universities, is an important challenge facing instructors and learners. This observation might indicate that the technical infrastructure at emerging universities in Saudi Arabia suffers from some of the same problems experienced at other emerging universities.

Appropriate training programs are another issue that requires attention. According to participants, "the creation of the instructors, learners, and holding appropriate training courses for them" is essential. This observation indicates that unsuitable training programs fail to involve learners and instructors in using ICT for learning. A lack of computer skills was also noted by the participants, which is a significant component that influences the learners' acceptance of e-Learning systems. This concept was also related to the lack of technical support at emerging universities.

Strategic planning at emerging universities was also discussed. Strategic planning at higher educational institutions is essential to offer services that are high in quality and low in cost. According to participants, universities must "develop a plan to adopt educational change according to one of the known patterns of change" and ensure "the provision of various technological methods in order to avoid boredom while learning." This may be because the vision and strategic planning for e-Learning at emerging universities have not included explicit institutional visions and goals. Strategic planning, training programs and courses, knowledge of the internet, quality confirmation in higher education and financial matters are factors that contribute to the creation of appropriate strategies for e-Learning (El-Sherbini and Azer, 2008).

In summary, an appropriate infrastructure, appropriate and effective training programs, computer skills and strategic planning were the requirements for e-Learning from the learners' perspective. These findings were consistent with the findings reported by Amer (2007), Al-Shehri (2010), Al-Asmari and Khan (2014) and Yamani (2014).

4.2.2.5 Discussion of Faculty Members' Suggestions for Improvement

Most faculty members presented some proposals that might help in developing e-Learning by reducing the negative aspects and focusing on the positive aspects, as well as achieving all requirements for e-Learning and overcoming all obstacles. In this section, faculty members had some suggestions that might help to improve the performance of e-Learning at emerging universities in Saudi Arabia.

A) Training Courses

Most of the faculty members proposed that emerging universities should provide diversified training courses and seminars that might help instructors and students to obtain benefits using e-Learning. Interviewee (IN6) said:

To avoid these problems, electronic systems must be designed that serve all disciplines, whether literary or scientific, and benefit everyone. We must create university training courses for teachers, as well as students, in order to ensure the use of the system from all sides, for these courses must be continuous throughout the

semester. If we are successful, we must promote the availability of computers in all colleges, literary and scientific, in order to enable students to use e-Learning systems when they have a gap between lecture times.

Other instructors, such as Interviewees (IN7) and (IN9), indicated that training opportunities enhance and develop computer skills and advanced technological skills related to their tasks, and that this proposal was beneficial and effective for students and instructors. For example, Interviewee (IN7) said that: “To overcome this problem, we should conduct some courses and workshops to educate people about the basics of computer skills and literacy.”

Interviewee (IN9) confirmed that “the development of technical skills among faculty members and preparing students to deal with the technical through courses and seminars” are important.

B) Interactivity

A few faculty members mentioned that interactivity is one of the important elements that might provide an effective way to improve the e-Learning system and allow instructors and students to explore content and apply knowledge, as well as simulation and other activities that are required for instructors and students. Regarding this matter, Interviewee (IN1) said:

For the student attending the lecture electronically, the lecture is not only loaded on the device but also allows direct interaction during the time of the lecture.

In same line, Interviewee (IN10) indicated that universities should “guide teachers and urge them to educate and increase education through e-Learning".

C) Wider issues

There are wider issues that might be significant factors in improving e-Learning. Some faculty members mentioned that these issues could enhance the effectiveness of e-Learning, especially at emerging universities in Saudi Arabia.

The accreditation of programs is an important factor in improving the initial educational stage and therefore improving instructor quality in e-Learning. This process improves instructor quality through the continuous improvement of initial teacher education and by increasing the accountability of providers for their delivery of quality teacher education programs based on transparent and rigorous standards. Interviewee (IN5) mentioned “the application of the educational process initially in more advanced university stages.” The same interview continued with another

suggestion: “the application of the educational process initially in the Faculty of Computer Science, and then in other specializations.”

Another instructor mentioned e-Learning quality, which is a significant indicator of e-Learning development. Interviewee (IN8) discussed “the development of high-quality e-Learning systems.” Moreover, the same instructor emphasised the need to develop a clear policy for e-Learning and said that universities should “develop policies and private ‘property rights policies.’”

In addition, some instructors talked about facilities that might support the success of e-Learning systems at emerging universities. For instance, Interviewee (IN10) mentioned “providing facilities for e-Learning in schools.” This proposal was confirmed by Interviewee (IN9), who said that universities should “provide what is necessary to implement this type of educational service.”

4.2.2.6 Analysis of Participants’ Suggestions for Improving e-Learning

The previous section discussed the main requirements that were thought to be fundamental for e-Learning environments at emerging universities in Saudi Arabia. This section focuses on some suggestions made by learners. These suggestions may play a key role in improving the effectiveness of e-Learning at emerging universities. The findings of the study indicate that the majority of the participants identified the following components as supportive in their e-Learning: training courses, interactivity between instructors and learners, and the accreditation of programs and facilities. The suggestion of training courses was mentioned by the participants as a significant issue that might contribute to supporting and improving the e-Learning environment at emerging universities. Some interviewees suggested that universities should provide training courses for both learners and instructors to use the e-Learning system.

This could be due to the lack of computer skills and the low e-Learning course quality at these emerging universities. This finding is consistent with the results reported by Sun et al. (2008). Those authors reported that e-Learning course quality, learners’ computer concerns due to low skills, and negative attitudes toward e-Learning among faculty members are significant features that impact the effectiveness of e-Learning.

This study also found that the participants suggested that good interactions between learners and content, learners and instructors, and learners and other learners are critical aspects that influence the effectiveness of e-Learning. Interactivity in e-Learning enhances learner comfort and satisfaction within e-Learning technologies. A good interaction is an important factor that promotes both learners' and instructors' approval for the use of e-Learning and also improves the effectiveness of e-Learning. This could be because e-Learning is able to support interactive processes between learners and content, between learners and instructors and among learners. This finding is consistent with the results reported by Bolliger and Martindale (2004). In their study, those authors indicated that interactivity is one of the crucial features that may improve the efficiency of e-Learning. Other results from a separate study are similar to this finding, which found evidence supporting that interactive video enhances and improves the effectiveness of e-Learning (Zhang *et al.*, 2006).

In terms of the accreditation of programs and facilities, the participants suggested that the accreditation of programs and facilities at emerging universities can help learners and improve the effectiveness of e-Learning. Universities should provide sufficient equipment and facilities to ensure the management of e-Learning curriculums that are recognized and approved for learners. This study focused on the participants' suggestions concerning helpful components that may improve e-Learning environments. The participants' suggestions in this study are similar to the factors that were identified in the literature. These finding were supported in literature reviews published by Moore & Kearsley (1996), Anderson (2003), and Yukselturk and Yildirim (2008).

The findings of the interviews are supported by the findings of the questionnaires later. They respondents reported: "Currently, Blackboard. Sure, I use the system, yes, yes, I'm able to do so, and yes, in light of the availability of materials and moral support, from my point of view, I can manage to teach without the boundaries of time and place." The findings from the interviews showed that the interviews valued the "convenience and flexibility offered by e-Learning in terms of enabling the learner to choose the right time to learn, as well as choose where you want." The findings of the interviews were confirmed by the findings of the questionnaire later, which referred to the flexibility of time and location that it offers to the learners and instructors (Holmes and Gardner, 2006). This study found that faculty members believed that e-Learning generated a new environment for learners,

as well as instructors, where the additional flexibility allows learning to be accomplished in the shortest time with the least amount of effort. On the other hand, the findings of the interviews demonstrated that independence in learning requires adequate infrastructure and technological maintenance, as well as equipment, higher download speeds and reliable broadband connections. This may also be interpreted due to the fact that the technological infrastructure at emerging universities is not currently at the same level of provision as it is at developed universities in Saudi Arabia. This finding is consistent with the finding reported by Higgins (2008), who asserted that the effectiveness of e-Learning anytime, anywhere, depended on an appropriate technological infrastructure.

4.2.3 The Secondary Questions for Faculty Members

This section includes several secondary questions that helped the researcher to achieve the study objectives. These secondary questions are presented below.

4.2.3.1 The ability to teach through e-Learning anytime, anywhere, and at any place

Some faculty members expressed strong approval of e-Learning, and they said, "Currently, Blackboard. Sure, I use the system, yes, yes, I'm able to do so, and yes, it's possible in light of the availability of material and moral support, from my point of view, I can manage to teach without the boundaries of time and place."

In addition, other instructors indicated approval with conditions. One said, "With the presence of adequate equipment, yes, but limited resources can backfire." Another asserted: "Yes, education is possible using these useful electronic systems, but unfortunately, we do not have an educational system in our university email." This view was confirmed by another instructor, who said, "Yes, if all the elements of e-Learning are provided."

However, another instructor disagreed with this idea and asserted: "No, because the provision of an appropriate technical environment and the classroom equipment required for processing and Internet networks are a prerequisite for implementing e-Learning properly."

4.2.3.2 Expectations of and needs for e-Learning

It was interesting that the majority of faculty members mentioned that to improve the effectiveness of e-Learning, emerging universities should have an appropriate infrastructure. One said, “The needs for e-Learning are the availability of necessary potentials in terms of various methods, as well as the availability of the appropriate internet speed and environment. I expect that students may find it difficult to cope with the situation at the beginning.” Another asserted that “a system and a mechanism to ensure the provision of satisfactory service to the learner and the presence of a stimulating learning environment for the faculty member and the student” are required. Another confirmed this view and mentioned the following requirements: Providing technical equipment and infrastructure appropriate for the beginning of this type of education, providing technical information for responsible content protection, providing a technical support department and keeping up with the continuous technical developments.

Regarding this point, another instructor said that e-Learning programs should “provide appropriate halls and devices.” In addition, some faculty members talked about strategy planning for e-Learning, and one said that "emerging universities need technological equipment, rehabilitation of the students, and a clear strategic plan to unite the goals of the students, the teachers and the administration." Similarly, another instructor asserted that such programs should "provide well-equipped classrooms and provide management with private educational institution learning systems, as well as increase the level of awareness and education about the concept of e-Learning."

4.2.3.3 Comparison between traditional education and e-Learning

The instructors' responses were mixed and varied concerning several factors for comparison between traditional education and e-Learning, such as ease in communicating information, flexibility, traditional culture, digital culture and capability for self-learning. The comments included: “In traditional education, it is difficult to communicate the information most of the time,” and “In e-Learning, there is an ease in communicating the information.” One instructor said, “Traditional learning forces the learners to learn within a time scope, while e-Learning has

flexibility, and the learner can learn according to his own place. E-Learning provides unlimited resources for the learners." Another instructor asserted:

Traditional education is based on traditional culture, which focuses on the production of knowledge, and the teacher is the foundation of the learning process. e-Learning offers a new type of digital culture that is focused on addressing the knowledge and helping students to be the focus of the educational process and not the teacher. In traditional education, all students receive the information in the same place and at the same time. E-Learning is not committed to providing education in the same place or time, but the learner is committed to a particular place or a specific time for the reception of the learning process. Traditional education requires communication with the teacher in advance of the shared study, and some students lose the opportunity to ask questions to the teacher because the class time does not have room for all. While e-Learning provides the freedom to communicate with the teacher at any time and ask questions that he wants, the questions are asked through various means, such as e-mail, chat rooms and others.

Another instructor said, "The cost of the infrastructure for e-Learning is higher than the traditional, and in the traditional learning, the teacher is the basis of the educational process, but in e-Learning, the teacher is the facilitator. In addition, e-Learning is not linked to a particular place or a time, as opposed to the traditional learning, in which all the students receive education in a particular time and place."

4.2.3.4 Faculty members' opinions of e-Learning

The interviewees highlighted opinions of the e-Learning environment at emerging universities. The majority of the instructors asserted the important role of e-Learning, especially the ease of access. Participants such as Interviewees (IN6) and (IN10) mentioned that there was a significant role of e-Learning. Interviewee (IN6) said, "e-Learning is very important in this time where students can learn anywhere and anytime, as well as access files quickly and easily." Interviewee (IN10) stated:

E-Learning plays a significant role as an important and varied method used in the transfer of knowledge to students and contributes to the development of the learner's thinking, making them more dependent on themselves, as well as more active and engaged with others.

In addition, Interviewee (IN3) asserted:

E-Learning is a method and a somewhat new tactic of education, but it is based on the principles of education in general, and the challenge is what ways and methods and criteria must be adapted to the style of e-Learning to improve student learning. Privacy is an issue with this new style, but the goal is always one to develop the skills of learners.

Furthermore, some instructors confirmed the importance of e-Learning and its positive effects on the educational process. One instructor said that e-Learning "will have a positive impact on education if it is applied correctly." Another mentioned that the "e-Learning content is very excellent from my personal previous experience."

4.2.3.5 Dealing with students via e-Learning and face-to-face: Preferred interaction type

In responding to the issues related to dealing with students via e-Learning and face-to-face and which type is preferred for interaction, the answers were mixed. Some instructors prefer e-Learning over face-to-face interaction, such as Interviewee (IN2), who commented that "e-Learning is best because it is an easy way to communicate anytime and anywhere." Similarly, Interviewee (IN7) said:

In e-Learning, I can enrich the educational materials with a variety of resources with different media. It also gives me the time to revise the materials and to alter and modify them in multiple versions. In summary, I prefer e-Learning as a means of contact and interaction with learners.

In addition, this point was confirmed by Interviewees (IN8) and (IN10), with Interviewee (IN8) saying, "I used e-Learning as a student; I prefer e-Learning." According to Interviewee (IN10):

E-Learning is best in order to speed the delivery of information to the learners, in addition to the possibility and ease of updating information and providing easy access to continuous feedback during the learning process.

However, some instructors disagreed with above ideas. According to Interviewee (IN4):

"Face-to-face is best, but I will not refuse e-Learning." Another confirmed this view by saying that the university "did not allow me the e-Learning experience so far."

Another group mentioned that interactions with students should include both methods: e-Learning and traditional. Interviewee (IN6) said:

In this method of training online, multiplicities of means are used to communicate the information, and the students are better entertained when using the online educational process than when using the traditional educational process. The electronic educational system has not been used before, but I used the method of electronic communication with students in terms of providing them with the content of the article, duties and obligations, as well as receiving items from the students. I found this to be a very useful approach for everyone in terms of the speed of access to the content and also to receive assignments from students, as well as informing students about tasks that have been reviewed.

Another interviewee said, "Interactions with students should include both methods, and if e-Learning can be achieved, this is better than traditional education because it will bring together the best qualities of booth methods".

In summary, we note that most instructors prefer e-Learning for dealing with students. However, emerging universities lacked a quality e-Learning infrastructure.

4.2.3.6 Motivates and discourages students from studying online

In responding to the issues, interviewees indicated that it was important to consider whether e-Learning motivates or discourages students at emerging universities from studying online. First, this study presented the most important factors that motivate students to study online. Most faculty members mentioned that the important factors that motivate students to study online were ease of access, flexibility, design and independence. Interviewee (IN5) said "I believe that the ease of using online programs and the improved design all contribute to motivating students to study online." Interviewee (IN6) confirmed that view and asserted that e-Learning "saves time for students to access files from anywhere, as well as deliver files electronically and communicate with the teacher rapidly."

In addition, Interviewee (IN8) reported that e-Learning was "flexible in time." Regarding self-reliance, Interviewee (IN7) said, "I think the ability to learn at their own place and according to their abilities motivates them to go on with e-Learning."

Second, some instructors mentioned significant factors that discourage students from studying online. These factors might be classified as cannot access the Internet, poor design, weakness of the technical infrastructure and lack of awareness. Interviewee (IN5) said, “I believe that the difficulty of using online programs and the poor design all contribute to discouraging students from studying online.” According to Interviewee (IN6):

As you know, the Internet is the only way to gain access to these electronic systems, which is an important factor among faculty members, as well as students. Some students cannot access the Internet either because of a lack of physical ability or because of the high cost or a lack of computer equipment for some students in their homes. In addition, some families prevent their children from using the Internet because of the content on the Internet, which may be unwanted for religious and social reasons. Some students may lack the Internet in their homes, or the Internet may provide a very slow speed, which makes students reluctant to use e-Learning systems. Some provinces in Saudi Arabia also lack high-speed internet.

In addition, Interviewee (IN7) said, “Actually, most students don’t know about e-Learning, and they fear what they don’t know. So, before we promote e-Learning, we should clarify this misunderstanding regarding e-Learning.”

4.2.3.7 Faculty members' motivation

The faculty members were asked: What is the most important factor in motivating faculty members to promote e-Learning? And what is the primary motivation for you to teach an online program? In addition, what is the most important factor in motivating faculty not to teach online? All answers were reported separately according to each point. In the first section, the majority of the instructors talked about the significant factors that motivate faculty members to enhance e-Learning. These factors include the multiplicity of resources, planning and good design and ease of use. Interviewee (IN7) asserted that when using e-Learning, the “multiplicity of electronic resources available to learn makes it easier for the teacher to prepare electronic content commensurate with all the individual differences of the students.” Interviewee (IN6) mentioned the “good design of these systems.”

In addition, Interviewee (IN3) said:

e-Learning can be a burden on the teacher because he needs a new style and tactics, so it is important to motivate with incentives: provide e-Learning through a comprehensive plan at all levels, with the support of senior management and peers and accepting students. One hand does not clap. Development through training courses will help teachers who always work for the benefit of learners. If they were trained and saw examples of successful experiences, they would undoubtedly be stimulated. There may be awards and financial rewards in the beginning, but they should not be the goal itself. The provision of appropriate educational methods is the goal.

Interviewee (IN10) said that it is "easy to update and publish educational content." The instructors raised many points regarding motivating faculty members to enhance e-Learning. Diverse resources, planning and good design and ease of use were found to be important factors that might motivate faculty members to enhance the effectiveness of e-Learning.

The next section explored the primary motivation for faculty members to teach an online program, which can be classified as ease of access, communication and multiplicity of sources. As noted, instructors may prefer e-Learning methods. Interviewee (IN5) addressed this issue, saying that "what motivates me to teach an online program is the ease in communicating the information using various methods." Interviewee (IN9) agreed, saying that e-Learning provides "easy access to a large slice of education." Interviewee (IN7) pointed out that e-Learning promotes "being able to move education outside the boundaries to everyone, anytime and anywhere." Moreover, the participants noted that communication was an important factor that may motivate faculty members to use e-Learning. Interviewee (IN3) said that with e-Learning, instructors experience "access for students equally, multimedia education, communication and the ability to monitor the progress of the learners more easily." Interviewee (IN6) confirmed, saying that e-Learning "saves time and allows access to files from anywhere and anytime, as well as communication with the students at all times and at high speed." Interviewee (IN1) also stated that "Providing scientific content for students all the time and pushing them to use technology, as well as supporting the principle of self-reliance to raise their level of achievement" is a factor.

The third section was concerned with the most important factors in motivating faculty not to teach online. Instructors noted that there were some factors that

restricted the motivation of faculty members to use technology online, such as management support, computer skills, lack of interaction and training and lack of technical infrastructure. Interviewee (IN1) said:

"A lack of administrative support and emphasising the importance of the use of e-Learning, supported by periodic follow-up and accountability for failing. In addition to the complaints of many students that they do not have Internet access at their houses or they are unable to use the learning system flexibly".

Interviewee (IN7) agreed with Interviewee (IN1) and stated: "Training the e-Learning instructors and preparing the educational materials requires some technical and financial resources; this would discourage faculty from adopting e-Learning."

In addition, Interviewee (IN2) asserted that "the teacher or the student not having a minimum of technical skills" is a problem. Regarding obtaining good training, Interviewee (IN5) said that "what motivates faculty to refrain from teaching online is the difficulty of using online programs and the unavailability of the appropriate environment." A lack of interaction with users in e-Learning was considered as another factor that restricts instructors' use of e-Learning. One interviewee stated: "the electronic teaching systems are not suitable for all disciplines. There is also a lack of interaction between faculty members and students when using these systems." Another interviewee cited a "lack of student interest in scientific content."

4.2.3.8 The future of education regarding the methods and mechanisms of e-Learning

The majority of faculty members agreed the importance of e-Learning in the educational process and with the idea that e-Learning has become a strategic issue in universities today and has a significant impact on modern education. Interviewee (IN7) remarked that "education is moving towards distance learning by employing the Web 2.0 applications to assist the learning process." Similarly, Interviewee (IN2) said, "There will be significant progress and a move toward great quality." Interviewee (IN9) asserted, "I believe in a bright future for education, where e-

Learning has strong pros and also disadvantages, but I am confident that these negatives will be bypassed at universities in the near future."

In addition, a number of issues appeared that universities should consider in improving the effectiveness of e-Learning at emerging universities. These issues involve the roles of government and universities in supporting e-Learning. Interviewee (IN10) said:

"A bright and promising future for our education, because of the generous support of our government towards education in general and the adoption of e-Learning in particular".

Interviewee (IN8) agreed with (IN10) and said, "I expect it will be relied upon in the future, provided that there are mechanisms and standards for e-Learning from an official government agency." Interviewee (IN5) also mentioned that "e-Learning has a bright future due to the spread of technology everywhere, but it requires sufficient potentials and the availability of the appropriate environment."

4.2.3.9 Faculty members' opinion of e-Learning content

Opinions from faculty members about content in e-Learning can be important in enhancing the effectiveness of e-Learning. The faculty members mentioned that a reliable and sufficient technology infrastructure and network and e-Learning content were necessary conditions for successful e-Learning. Interviewee (IN10) asserted:

E-Learning is still limited and suffers from some obstacles: leadership, material and human. To overcome these constraints will require working hard to provide the basic requirements for the advancement of e-Learning. It is most important to convince decision makers of the importance of and the need for the adoption of e-Learning and to work hard to develop a management system and follow-up for the e-Learning system to encourage scientific research in the field of e-Learning.

Interviewee (IN10) said, "Currently, I see it still needs a lot of development." Interviewee (IN5) confirmed, "My opinion on e-learning is neutral because of the unavailability of sufficient content as of now." In addition, Interviewee (IN7) said that they "have not used an electronic education system due to the lack of availability at our university." On the other hand, Interviewee (IN1) said:

It requires standardization in the design and construction of electronic content, and we find that some private companies have succeeded in the development of advanced

and appropriate content for scientific materials, which increases the desire of students to learn. When monitored to ensure the achievement of satisfactory higher education and learning outcomes, it can be compared to public universities.

4.2.3.10 Faculty members' experience with e-Learning

In the last section, a few interviewees referred to factors from their experiences that might improve the effectiveness of e-Learning. As Interviewee (IN3) said:

I experimented with my students using the program Blackboard to manage e-Learning content, and we were able to use a number of features. It was a good experience, but the students did not get used to the interface because every teacher was sending them content in a different way. If the content was unified for all interests, the program will expand. Next time, I'll plan carefully. I hope that the experience is through a comprehensive plan for the university.

The instructor noted that emerging universities still suffer from a lack of technology infrastructure and management support. Another interviewee said, "I hope to provide an electronic learning management system at emerging universities and to benefit from all the advantages and enrich the information when it is available at the university."

4.3 Quantitative Data Discussion, Analysis and Results

The aim of this section is to present a descriptive statistical analysis of the collected data for the Saudi university sample. In this section, the results of the quantitative survey are presented. Regarding the findings that resulted from the quantitative data analyses, this part of this section starts by describing the responses and the profile of the respondents, the basic sample descriptive statistics and the characteristics of the respondents.

This section is organized as follows. Section 4.4.1 presents descriptive statistics. Section 4.4.2 describes the test for normality. Section 4.4.3 discusses scale reliability. Section 4.4.4 presents the results obtained using inferential statistics. Section 4.4.5 describes the Structural Equation Model (SEM). Section 4.5 presents a summary.

4.3.1 Descriptive Statistics

Descriptive statistics provide descriptions of the data in a sample in terms of frequency tables, the central tendency mean and median, the dispersion standard deviation and standard error for the mean, and min and max values. The above definition of descriptive statistics includes techniques that could be used to provide a clear picture about the descriptive data analysis for any sample. This study used descriptive statistics to provide basic information about the variables in a sample and to highlight potential relationships between variables. This study presents frequency tables that include percentages and figures. As descriptive statistics is the most commonly used term in the literature, this term will be used in this study.

4.3.2 Demographic Characteristics

In this section, frequencies and percentages are presented to describe participants' characteristics in terms of their specialization, e-Learning experience, age and IT skills. A survey questionnaire was used to gather the characteristics of respondents, including specialization, e-Learning experience, age and IT skills. The characteristics of respondents may be helpful in finding the differences between respondents that could affect policy decisions .Because the specialization variable had been shown as a possibly significant element within the sample size of this study, some analysis of this variable was performed. The descriptive statistics for specialization are presented in Table 4.1 below, and the figure is displayed in Figure 4.2.

A) Specialization

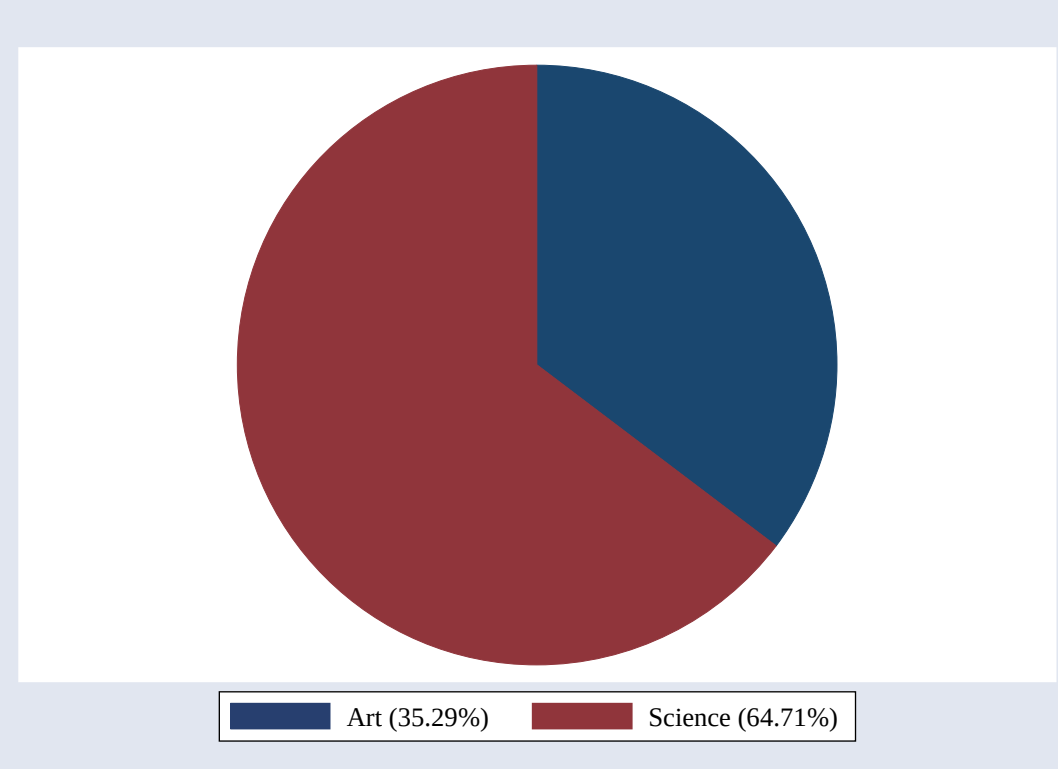
The students were asked to rate their specialization 1 (Art) and 2 (Science) (n = 238). Table 4.1 presents the frequency and percentage for student specialization.

Table 4. 1: Distribution according to specialization

Specialization	**Frequency**	**Percent**	**Cumulative**
Art	84	35.29	35.29
Science	154	64.71	100.00
Total	**238**	**100.00**	

Table 4.1 and Figure 4.2 show that the majority of the respondents were science students (64.71%) and art students (35.29%).

Figure 4. 2: Specialization Distribution



B) Previous e-Learning experience

Frequencies and percentages are provided with regard to students' experiences with e-Learning. The students were asked to describe their previous experience with e-Learning (1 (Yes) and 2 (No)). Table 4.2 presents the frequency and percentage of previous E-Learning experience. Another important variable, which was found in the literature, was previous E-Learning experience. Table 4.2 and Figure 4.3 below show the presence or absence of this variable in the sample used for this study.

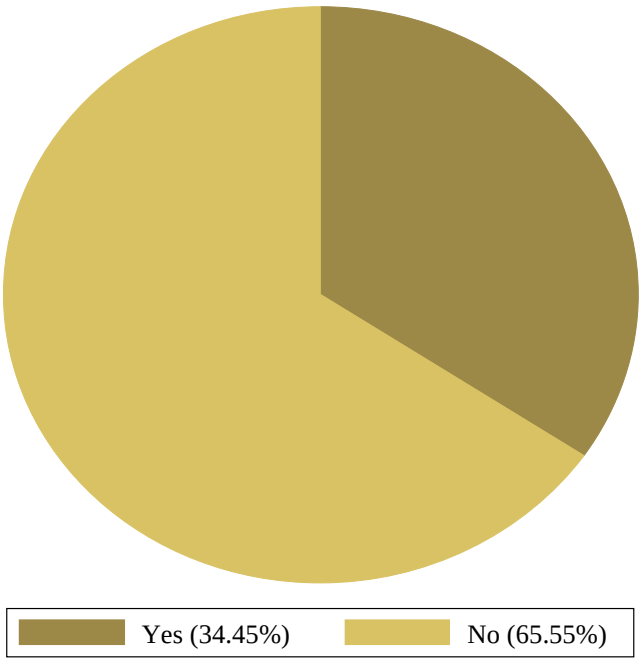
Table 4. 2: Distribution according to previous e-Learning experience

E-Learning experience	**Frequency**	**Percent**	**Cumulative**
Yes	82	34.45	34.35
No	156	65.55	100.00

Total	**238**	**100.00**	

Table 4.2 and Figure 4.3 reveal that the majority of respondents did not have previous experience with e-Learning (65.55%), while 34.45% of respondents had previous experience with e-Learning. A total of 65.55% of respondents reported having no previous experience with e-Learning.

Figure 4. 3: E-Learning Experience Distribution



C) Age

The variable age had been revealed as a possibly significant element within the sample size of this study; an analysis of this variable was performed. The descriptive statistics for age are presented in Table 4.3 below, and the figure is displayed in Figure 4.4.

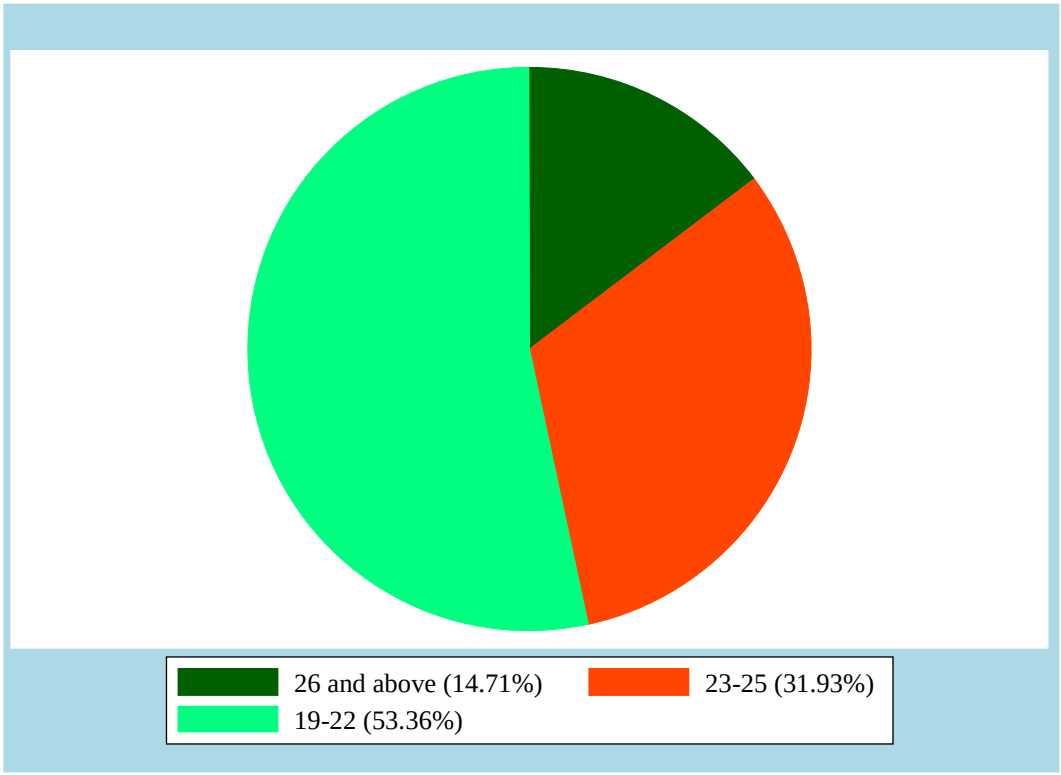
Table 4. 3: Distribution according to Age

Age	**Frequency**	**Percentage**	**Cumulative**
19-22	127	53.36	53.36
23-25	76	31.93	85.29

26 and above	35	14.71	100.00
Total	**238**	**100.00**	

The results of Table 4.3 revealed that the highest percentage (53.36%) of respondents was aged between 19 and 22 years. The second largest group (31.93%) of respondents included those aged between 23 and 25 years old. Figure 4.4 also reveals that the most common age among the sample was 19-22 years, followed by the age group 23-25 years.

Figure 4. 4: Age Distribution



D) IT Skills

IT skills were measured using the following categories: 1 (Beginner), 2 (Intermediate) and 3 (Skilled). Another variable that was found to be important in the

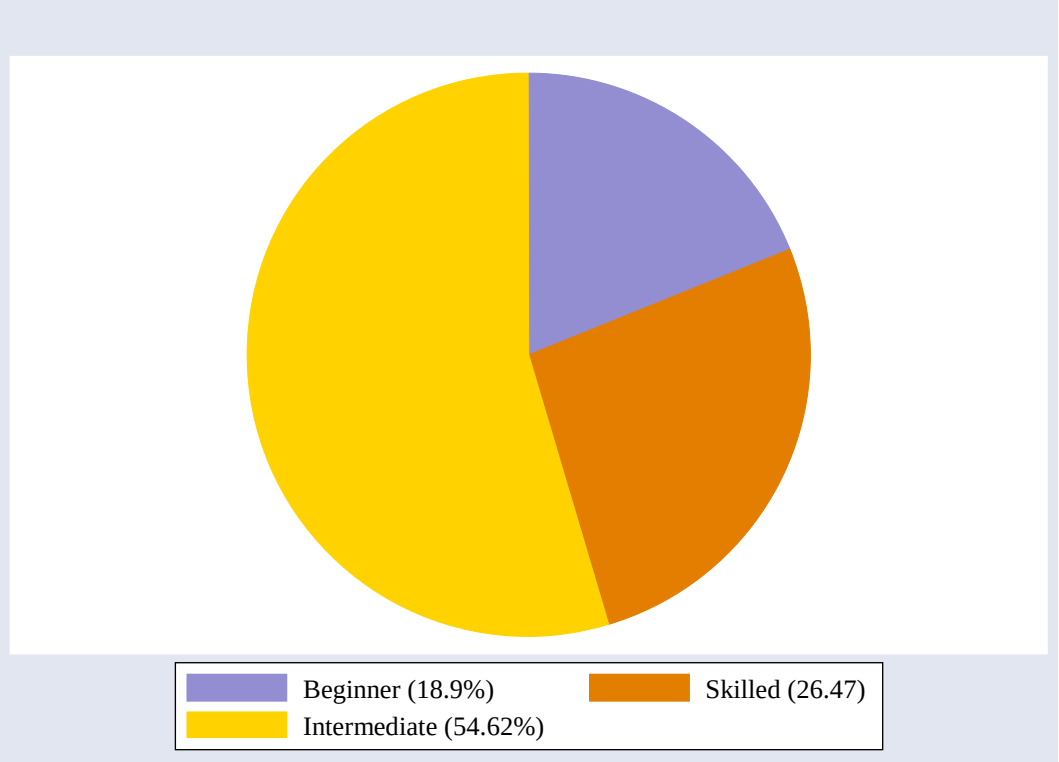
literature review was IT skills. The following table and figure present the distribution within the sample of three levels of IT skills: beginner, intermediate and skilled.

Table 4. 4: Distribution according to IT Skills

IT Skills	Frequency	Percentage	Cumulative
Beginner	45	18.91	18.91
Intermediate	130	54.62	73.53
Skilled	63	26.47	100.00
Total	**238**	**100.00**	

Table 4.4 and Figure 4.5 show that most of the participants in this survey reported their highest level of IT skills as intermediate (54.62%), followed by skilled (26.47%). As shown in Figure 4.5, the majority of the respondents in the survey were intermediate level 54.62% and 18.91% were beginner level. This finding indicates that most students at emerging universities in Saudi Arabia have intermediate level ICT skills.

Figure 4.5: IT Skills Distribution



4.3.3 Descriptive statistics of factors

This section presents descriptive statistics of the survey factors.

4.3.3.1 Learners' Perceptions of their Ability to Learn Autonomously through e-Learning

This section includes interviewee responses to RQ3*: What was the extent of the learners' perceptions of their abilities to learn autonomously through e-Learning?*

Factor 1: The Ability to Learn Autonomously in e-Learning

The items that addressed and measured the ability to learn autonomously in e-Learning included eight questions. This section is mapped against the eight features generated from the Saudi questionnaire data.

In this study, the participants were asked to indicate their level of agreement with eight items that relate to the ability to learn autonomously in e-Learning. The eight items examined the effect of autonomy in learning, which is a main theme of e-Learning research, as described by Almosa and Almubarak (2005), Wentling et al. (2000) and others. The findings indicated that, in general, students agreed that learner's independence is a very important factor in e-Learning.

Other factors that were considered by the participants were flexibility and working at one's own pace. These were considered to be important elements by the students, with their answers tending to agree strongly with these questionnaire items. This finding indicates that the students using e-Learning are able to selectively choose what suits their study habits and needs.

Moreover, e-Learning presents higher education institutions and their learners flexibility of place and time for delivering or receiving information. This flexibility is supported by e-Learning using a wide range of fit-for-purpose technologies, such as chatting, video conferencing, internet, computer, mobile phone learning, televisions, radios and other methods, to enhance teaching and learning activities (Hrastinski, 2008).

From the learners' perspective, e-Learning supports flexible methods for learning anywhere, anytime. The learners identified flexibility of learning as one of the important elements of autonomy. According to Smedley (2010), through the adoption of e-Learning, learners can be much more flexible in time and place to acquire information and enhance self-reliance.

This result is consistent with the results of other studies, such as those performed by Chan, (2003), Drillon et al. (2005), and Omwenga and Rodrigues (2006), which

provide evidence that e-Learning supports autonomy. However, these findings are different from the findings of other studies, such as those performed by Al-Alwani, (2005) and Al-Sadaawi (2007) in Saudi Arabia, which found that learners have limited responsibilities, indicating that learners did not demonstrate the ability to learn autonomously in e-Learning. This finding was also confirmed by Alzamil's study (2006) and Ustunluoghlu (2009), who they showed that learner autonomy in e-Learning is weak. This finding means that the learners need help from instructors.

The second group in this factor consisted of six items. These items were related to the ability to review previous material at any time, independence, self-evaluation, enabling learners to obtain immediate feedback, suitable technical support and learning style. The findings indicate that using e-Learning enabled the review of previous material at any time.

Romeo (2006) argued that assessment is designed to provide learners with feedback. Feedback is an important element in e-Learning, which is absolutely essential for both learners and faculty members. All of these elements were considered as important features in the literature. The highest rated feature was enabling the review of previous material any time, which allowed learners to review their tasks and enabled learners to study online in their own time.

The results from this sample indicated a moderate positive agreement concerning the ability to learn autonomously in e-Learning. Generally, the learners' responses were related to the first factor, which is the ability to learn autonomously in e-Learning. The findings showed that learners are able to learn autonomously anywhere and anytime.

Factor 1, the ability to learn autonomously in e-Learning at the Saudi universities, was constructed using eight questions used in the literature. Descriptive statistics for the questions used to construct the ability to learn autonomously in e-Learning are presented in Table 4.5.

Table 4. 5: Descriptive Statistics for Factor 1: The Ability to Learn Autonomously in e-Learning

N0	Items	N	Mean	Std.	SE (mean)	Median	Sk	Ku
1	In E-Learning, my learning is personalized	238	3.94	1.11	0.07	4.00	-1.02	3.44
2	In E-Learning, I can learn anytime, anywhere	238	4.11	0.97	0.06	4.00	-1.31	4.81
3	In e-Learning, I can learn at my own pace	238	4.02	0.99	0.06	4.00	-1.10	3.91
4	E-Learning is suitable for my learning style	238	3.76	1.09	0.07	4.00	-0.75	2.99
5	E-Learning enables me to review previous material at any time	238	3.99	1.01	0.07	4.00	-0.95	3.58
6	E-Learning presents immediate feedback	238	3.84	1.04	0.07	4.00	-0.80	3.01
7	In E-Learning, I am able to self-evaluate	238	3.85	0.97	0.06	4.00	-0.73	3.31
8	e-Learning provides suitable technical support	238	3.79	1.07	0.07	4.00	-0.69	2.84
	Total		**3.91**	**1.03**				

Table 4.5 presents the descriptive statistics of measured items related to the factor ability to learn autonomously in e-Learning. The mean value of all questions related to the ability to learn autonomously in e-Learning at Saudi universities was 3.91, with a standard deviation of 1.03. This mean that on average, student agreed (level of 3.91) that they had the ability to learn autonomously in e-Learning. The respondents' perceptions of the ability to learn autonomously in e-Learning were measured by eight items using a five-point Likert scale that ranges from 1 to 5. The mean rating of the factor 1 items was between 3.76 and 4.11. The findings show that all items relating to the ability to learn autonomously in e-Learning were highly rated by the respondents, and the overall mean score was greater than the neutral point (3).

4.3.3.2 The Learners' Perceptions of their Interactions with Content, Instructors and Other Learners in e-Learning

This section includes the interviewee responses to RQ4: *What was the extent of learners' perceptions of their interactions with content, instructors and other learners in e-Learning?*

Factor 2: Learner-Content Interactions in e-Learning

Interaction in the e-Learning environment has been viewed as an important feature that impacts the effectiveness of e-Learning. The learner-content relationship is one of these features that may help to improve the effectiveness of e-Learning. These items included eight questions that measured the interactions between learners and online content in the e-Learning environment. This section includes the eight features generated from the questionnaire data.

The findings indicated that, in general, the learners agreed that engagement with the content is a significant factor in improving the effectiveness of the e-Learning environment. Learners gave positive ratings for their perceptions of their interactions with the content in an e-Learning environment. The highest rated item in this factor was the statement that e-Learning facilitates the learning process. Also, e-Learning eases the creation of learning sources. This could be due to the diversification and technological tools in e-Learning content that might help learners to obtain the best opportunities in providing different information and different methods. Although the content in e-Learning requires experience, students with more experience have more interactions with online content than students who have less experience (Moore and Kearsley, 1996). Moreover, the educational system in e-Learning encourages students to interact with courses in e-Learning.

The findings of this study are consistent with the results reported by Kuo, Walker, Schroder, and Belland (2014). This finding is also consistent with the findings reported by Cohen & Nycz (2006), who found that the diversity of knowledge was delivered primarily using e-Learning approaches. This finding is also consistent with the results of Alarfaj (2001), which demonstrated that the capacities of ICT are rapidly increasing support for e-Learning content.

The second highest item in this factor was encouragement. Participants reported that e-Learning encourages learners to learn more, as shown by the rating 'agree'. An important feature of the e-Learning environment was accessibility for students, as

well as more freedom for learners. The findings indicate that the e-Learning environment encourages learners to learn more, simplifies the procedure of learning, and also delivers content through electronic information. This could be due to the fact that e-Learning provides more flexibility in educational methods, and learners perceived enjoyment that played an important role in encouraging learners to use e-Learning. This finding is consistent with the findings reported by Singh, O'Donoghue, and Worton (2005), who concluded that e-Learning does indeed provide more flexibility.

The next highest rated item within the eight factors was that e-Learning increases learners' ability to study and construct productive relationships, which indicated a positive rating for building a productive relationship and increasing learning capabilities. This could be due to the positive relationship between these items. For example, perceived capabilities have a strong effect on the learner's ability to build productive relationships among learners and online content. Some evidence also suggested that e-Learning has lower costs than traditional learning, which could encourage the use of e-Learning as a superior option to traditional learning methods and techniques. Moreover, e-Learning increases the learners' capabilities to use online content and to obtain information from multiple sources using different methods. The consequence of an increase in knowledge would be reflected in building productive relationships among learners and online content. These findings are consistent with results reported by David, Salleh, and Iahad (2012), who concluded that e-Learning is an important method that is a more effective approach to sharing knowledge developed through innovation and also plays a significant role in building productive relationships among learners.

Regarding the increase in motivation, the results suggest that learners prefer to complete tests and tasks through e-Learning, with the ability to manage their time accordingly. The findings indicate that the learners' consent on all these items might affect the learners' interaction with the content. Students preferred enrolment in other courses that had e-Learning as an available option. This could be due to the easy accessibility for learners, where several types of media may help learners to use e-Learning. These findings are in line with results reported by Chanchary & Islam (2011) and Unnisa (2014).

The overall average mean value of all items was 3.79, with a standard deviation of 1.02, indicating that the sample moderately agrees that the respondents have a

positive evaluation of the learner-online content interaction in e-Learning at emerging Saudi universities.

Table 4. 6: Descriptive Statistics for Factor 2: Learner-Content Interactions in e-Learning

No	Items	N	Mean	Std	SE (mean)	Median	Sk	Ku
1	E-Learning eases the process of learning	238	4.13	0.96	0.06	4.00	-1.09	3.97
2	E-Learning encourages me to learn more	238	3.95	0.92	0.06	4.00	-0.98	4.13
3	E-Learning increases my capacity to learn	238	3.81	0.98	0.06	4.00	-0.83	3.66
4	E-Learning increases my motivation to learn	238	3.77	1.02	0.07	4.00	-0.71	3.16
5	e-Learning increases my productivity	238	3.81	1.02	0.06	4.00	-0.61	3.08
6	E-Learning helped me to manage my time and self-discipline	238	3.62	1.07	0.06	4.00	-0.61	2.84
7	My specific learning time in e-Learning was spent fully in learning	238	3.53	1.10	0.07	4.00	-0.35	2.34
8	I prefer to do the tasks and tests through e-Learning tools	238	3.73	1.07	0.06	4.00	-0.65	2.77
	Total		**3.79**	**1.02**				

Learner-Content Interactions in e-Learning was measured by eight items. Table 4.6 reveals the descriptive results for the measured items for Factor 2. The average mean value of all items is 3.79, with a standard deviation of only 1.02, indicating that the sample moderately agrees that they enjoy learner-content interactions in e-Learning at Saudi Universities. The highest and lowest mean ratings of the items were 4.13 and 3.53, respectively.

Factor 3: Learner-Instructor Interactions in e-Learning

This section discusses the learners' responses on the learner-instructor interaction in e-Learning. This factor included seven items, such as the learners' preferred communication with the instructor through e-Learning, increased communication with the instructor, productive relationships, the ease of discussions with the instructor during e-Learning, encouragement, enjoyment and increased attention.

The results showed that the learners' responses generally agreed that a learner's connection with their instructors is a significant factor in improving the effectiveness of e-Learning. Participants' responses were positive concerning the learner-instructor interaction through e-Learning. The highest rated items in this factor were the statements that e-Learning encouraged learners to debate the learning material with their instructors and that learners prefer communication with the instructor through e-Learning. This could be due to the fact that e-Learning implementations encouraged learners to explore additional matters related to their learning. Another reason could be to encourage the sharing of learners' ideas through e-Learning. These findings could be due to e-Learning's features, which enhanced instructor-learner interactions, eased communication with instructors and encouraged learners to explore more knowledge.

This finding is supported by a study performed by Chen, Lin & Kinshuk (2008), which found that the adoption of e-Learning has significant positive effects on learners' performance and learners' interactions with their instructors. This finding is also consistent with a recent study by Kuo et al (2014), who found a significant positive relationship between learner-instructor interactions and satisfaction. However, this finding is inconsistent with the results reported by Alferaihi (2003), who revealed that e-Learning weakens social relationships and increases isolation.

For this study, five items, such as building productive relationships with instructors, students obtaining more attention from their instructors in the e-Learning system, ease of discussion with the instructor through e-Learning, students enjoying a connection with instructors and e-Learning increased communication with their instructor, were noted by both students and instructors as having positive effects on learning.

Table 4. 7: Descriptive statistics for Factor 3: Learner-Instructor Interactions in e-Learning

No	Items	n	mean	Std	SE (mean)	Median	Sk	Ku
1	I prefer communication with the instructor by e-Learning compared to face-to-face	238	3.85	1.26	0.08	4.00	-0.83	2.59
2	E-Learning has increased communication with the instructor	238	3.67	1.10	0.07	4.00	-0.65	2.75
3	I built a productive relationship with the instructor via e-Learning	238	3.80	1.11	0.07	4.00	-0.80	3.00
4	E-Learning eased discussion with my instructor	238	3.75	1.19	0.07	4.00	-0.69	2.50
5	E-Learning encouraged me to discuss the learning material with my instructor	238	3.92	1.18	0.08	4.00	-1.01	3.12
6	I enjoyed contacting my instructor via e-Learning	238	3.74	1.09	0.07	4.00	-0.70	2.92
7	In e-Learning, I received more attention from my instructor	238	3.76	1.16	0.08	4.00	-0.69	2.68
	Total		**3.78**	**1.16**				

Another factor is learner-instructor interactions in e-Learning, which was measured by seven items on a Likert scale (1 to 5) and reflected the respondents' assessment of the learner-instructor interaction in e-Learning. The findings of Table 4.8 revealed that the average mean score of all items was over the neutral point (3), indicating that the respondents were agreeable to the variables. In addition, the mean value for the items ranged between 3.67 and 3.9.

Factor 4: Learner-Learner Interactions in e-Learning

This section discusses the learners' responses regarding the learner-learner interaction in e-Learning. This factor included seven items, such as the learners' preferred communication with classmates through e-Learning, e-Learning has increased communication with other learners, building productive relationships with other learners, ease of discussion with classmates through e-Learning, independence in discussions, more enjoyment connecting with classmates via e-Learning and enhancing collaboration between learners.

This factor explains learner-learner interactions in e-Learning. It can be noted that the highest rating was for the statement that e-Learning increases productive relationships among learners and enhances collaboration between learners. This could be due to the relationship between students through the e-Learning environment allowing learners more freedom to select and discuss their topics as they obtained more knowledge. This also leads to the creation of strong cooperation amongst learners. The findings showed that learners enjoyed having time to connect with other learners and that e-Learning provided incentives for learners to discuss topics and to facilitate discussion among classmates. The findings also showed that the learners prefer communication, with e-Learning increasing communication between learners.

These findings could be due to the characteristics of e-Learning, which play a significant role in the learning environment. For example, e-Learning allows positive communication among learners through several tools, including e-mail, chat, discussion forums and audio/videoconference. These findings were confirmed by Alenezi, Abdulkarim, and Veloo (2010) and Pollara & Kee Broussard (2011).

Table 4. 8: Descriptive Statistics for Factor 4: Learner-Learner Interactions in e-Learning

No	Items	n	mean	Std	SE (mean)	Median	Sk	Ku
1	I prefer to communicate with my classmates by e-Learning compared to face-to-face	238	3.71	1.27	0.08	4.00	-0.74	2.45
2	E-Learning has increased my communication with other learners	238	3.69	1.19	0.07	4.00	-0.84	2.90

3	I built a productive relationship with other learners via e-Learning	238	3.79	1.12	0.07	4.00	-0.81	3.02
4	E-Learning eased discussion with my classmates	238	3.73	1.13	0.07	4.00	-0.70	2.78
5	E-Learning encouraged me to participate in discussion with my classmates	238	3.74	1.12	0.07	4.00	-0.79	3.00
6	I enjoyed contacting my classmates via e-Learning	238	3.76	1.13	0.07	4.00	-0.91	3.18
7	E-Learning has increased cooperation among learners	238	3.78	1.14	0.07	4.00	-0.73	2.80
	Total		**3.74**	**1.15**				

Table 4.8 shows the descriptive statistics for these seven items, which were rated on a Likert scale (1 to 5), and the findings show that the mean score of all items was 3.74, which indicated that participants agreed with the measured variables. In summary, the results of Tables 4.5, 4.6, 4.7 and 4.8 show that the factor ability to learn autonomously in e-Learning has the highest average mean score (3.91) of the four factors, with a standard deviation of 1.03, which indicated that the respondents were not widely dispersed around the mean score.

The next factors are Learner-Content Interactions in e-Learning, which has a mean of 3.79 with a standard deviation of 1.02, and Learner-Instructor Interactions in e-Learning, which has a mean of 3.78 with a standard deviation of 1.16. The last factor is Learner-Learner Interactions in e-Learning, with a mean of 3.74. In addition, the descriptive statistics for all factors revealed that the values for the Skewness and Kurtosis statistics confirmed that no problem was caused by non-normality of the data.

The overall response to the four factors discussed regarding learners' perceptions indicated that learners have positive ratings for the effectiveness of e-Learning. This finding demonstrate that overall, learners had positive views on the value of e-Learning implementation with respect to these four factors. Thus, the

learners' responses indicated that the e-Learning method was suitable for their learning needs and requirements.

4.3.3.3 Testing for Normality

One assumption of analyses of variance is that the data are distributed normally. This can be done by assessing histograms and normal probability plots for both the skewness and kurtosis test. Skewness and kurtosis statistics may be calculated to assess the normality of the distribution of scores. The Skewness and Kurtosis values were close to zero, indicating that the distribution is close to normal (Tabachnick and Fidell, 2007). Data normality for the individual measured items was checked by determining the skewness and kurtosis statistics, which are shown in Table 4.9. Table 4.9 shows the skewness and kurtosis statistics for assessing normality.

Here, an absolute value of skewness scores equal to or less than 3.0 indicates non-normality, as does an absolute value of kurtosis scores equal to or less than 10.0. The skewness and kurtosis statistics were found, which indicated no deviation from data normality. The variables exhibited acceptable levels of normality, within the suggested range, as shown in Table 4.9.

Table 4. 9: Normality Test for all Factors

No	Variables	Skewness	Kurtosis
1	The Ability to Learn Autonomously in e-Learning	-0.855	1.414
2	Learner-Content Interactions in e-Learning	-1.183	2.296
3	Learner-Instructor Interactions in e-Learning	-0.982	0.628
4	Learner-Learner Interactions in e-Learning	-1.022	0.606

4.3.3.4 Scale Reliability

A reliability scale assesses the consistency among measurements that have one latent construct in common (Hair *et al.,* 2006). The interpretation of data to explore the effectiveness of the e-Learning experience at some emerging universities in Saudi Arabia from the instructor and learner perspectives requires an understanding of the

methodology used to design and statistically evaluate the questionnaires. To be useful for research and decisions related to emerging universities, a measure must be reliable, valid, and responsive.

This study applied the Cronbach's alpha values of internal consistency scale reliabilities to confirm the reliability of the scales for each factor and for the total. Table 4.10 presents the Cronbach's alpha results. The table indicates that for the subscales, the Cronbach's alpha values were within the range of acceptable levels (between 0.776 and 0.835), and the overall reliability of the core scale was 0.847. Thus, all Cronbach's alpha values exceeded the standard lower limit (0.70) and were considered to be acceptable (Gefen *et al.*, 2000).

Table 4. 10: Measurement Model-Pattern Coefficients and Reliability Measures

Variables	**Items**	**Mean**	**Std. Deviation**	**Cronbach's Alpha**
The Ability to Learn Autonomously in e-Learning	8	3.911	0.743	0.835
Learner-Content Interactions in e-Learning	8	3.794	0.753	0.806
Learner-Instructor Interactions in e-Learning	7	3.783	0.976	0.776
Learner-Learner Interactions in e-Learning	7	3.743	0.998	0.797
Total				**0.847**

The factor ability to learn autonomously in e-Learning was created with eight measured items, and the reliability statistics for this factor revealed a Cronbach's alpha value of 0.835 (Table 4.10). The summary item statistics for this factor in Table 4.11 revealed item test correlation values between 0.641 and 0.779, which confirms that participants agreed that they had the ability to learn autonomously in e-Learning.

The table also provides the average inter-item covariance statistics, with values between 0.470 and 0.508, for factor 1. The table also presents the Cronbach's alpha

values for all items relating to factor 1 (between 0.843 and 0.861), indicating that these items are reliable (Field, 2013).

Table 4. 11: Reliability Measures of Items Relating to the Ability to Learn Autonomously

Item	**Obs**	**Item-test correlation**	**Item-rest correlation**	**Average inter-item covariance**	**Alpha**
In e-Learning, my learning is personalized	238	0.723	0.613	0.471	0.852
In e-Learning, I can learn anytime, anywhere	238	0.641	0.529	0.508	0.861
In e-Learning, I can learn at my own pace	238	0.667	0.558	0.499	0.858
e-Learning is suitable for my learning style	238	0.730	0.625	0.470	0.851
e-Learning enables me to review previous material any time	238	0.711	0.61	0.485	0.852
e-Learning presents immediate feedback	238	0.737	0.640	0.474	0.849
In e-Learning, I am able to self-evaluate	238	.779	0.700	0.470	0.843
e-Learning provides suitable technical support	238	0.773	0.683	.459	0.844

Table 4.12 shows the reliability statistics for eight items relating to learner-content interactions in e-Learning. The summary item statistics for factor 2 revealed that the item-test correlation values of the items were between 0.704 and 0.807, which showed that the participants confirmed the learner-content interactions in e-Learning.

The average inter-item correlation statistics for this factor revealed that the Cronbach's alpha values for all items were between 0.874 and 0.888, indicating that these items are reliable.

Table 4. 12: Reliability Measures of Items Relating to Learner-Content Interactions

Item	**Obs**	**Item-test correlation**	**Item-rest correlation**	**Average inter-item covariance**	**Alpha**
e-Learning eases the process of learning	238	0.713	0.624	0.553	0.885
e-Learning encourages me to learn more	238	0.772	0.700	0.541	0.878
e-Learning increases my capacity to learn	238	0.753	0.669	0.538	0.881
e-Learning increases my motivation to learn	238	0.796	0.722	0.521	0.876
e-Learning increases my productivity	238	0.807	0.736	0.517	0.874
e-Learning helped me to manage my time and self-discipline	238	0.787	0.706	0.517	0.877
My specific learning time in e-Learning was spent fully in learning	238	0.738	0.638	0.529	0.884
I prefer to do the tasks and tests through e-Learning tools	238	0.704	0.598	0.543	0.888

Table 4.13 shows the reliability statistics for items relating to learner-instructor interactions in e-Learning. The Cronbach’s alpha reliability scores (between 0.917 and 0.933) are presented for factor 3, which consisted of seven items. Because the Cronbach’s alpha values for this factor are far higher than 0.8, we can assume that it is reliable.

Table 4. 13: Reliability Measures of Items Relating to Learner-Instructor Interactions

Item	Obs	Item-test correlation	Item-rest correlation	Average inter-item covariance	Alpha
I prefer communication with the instructor by e-Learning compared to face to face	238	0.769	0.675	0.909	0.933
e-Learning has increased communication with the instructor	238	0.853	0.798	0.898	0.921
I built a productive relationship with the instructor via e-Learning	238	0.869	0.820	0.888	0.919
e-Learning eased discussion with my instructor	238	0.872	0.819	0.866	0.919
e-Learning encouraged me to discuss the learning material with my instructor	238	0.859	0.801	0.875	0.920
I enjoyed contacting my instructor via e-Learning	238	0.883	0.839	0.885	0.917
In e-Learning, I received more attention from my instructor	238	0.818	0.749	0.901	0.925

Table 4.14 shows the reliability scales for seven items related to learner-learner interactions in e-Learning. The item-test correlation values of the items are between 0.704 and 0.807, which showed that the participants confirmed the learner-learner interaction in e-Learning. The average inter-item correlation statistics for this factor revealed that the Cronbach's alpha values for all items were between 0.874 and 0.888, indicating that these items are reliable.

Table 4. 14: Reliability Measures of Items Relating to Learner-Learner Interactions

Item	**Obs**	**Item-test correlation**	**Item-rest correlation**	**Average inter-item covariance**	**Alpha**
I prefer to communicate with my classmates by e-Learning compared to face-to-face	238	0.779	0.690	0.963	0.946
e-Learning has increased my communication with other learners	238	0.876	0.826	0.926	0.932
I built a productive relationship with other learners via e-Learning	238	0.876	0.829	0.941	0.932
e-Learning eased discussion with my classmates	238	0.896	0.856	0.930	0.930
e-Learning encouraged me to participate in discussion with my classmates	238	0.874	0.828	0.944	0.932
I enjoyed contacting my classmates via e-Learning	238	0.891	0.849	0.932	0.930
e-Learning has increased cooperation among learners	238	0.864	0.813	0.944	0.934

Table 4.15 reveals that the reliability scales of all seven items relating to factor 4 had Cronbach's alpha values between 0.932 and 0.946. The results presented in the table above show that the Cronbach's alpha values for all items were between 0.930 and 0.946, indicating that these items are reliable.

4.3.4 Results Obtained from Inferential Statistics

In this section of the study, the independent sample "t-test" and One-Way Analysis of Variance (ANOVA) were applied to evaluate the potential relationships between the basic variables Specialization, Have you learned by e-Learning before, Age and Information Communication Technology Skills and the following factors: Factor 1, The Ability to Learn Autonomously; Factor 2, Learner-Content Interactions; Factor 3, Learner-Instructor Interactions; and Factor 4, Learner-Learner Interactions. To analyse the effectiveness of e-Learning at the universities under study, an independent sample t-test was used by Coakes and Steed (2001) when different participants responded in different conditions. The independent sample t-test and Levene's test for homogeneity of variance were performed in SPSS by using the Levene test for equality of variances. If the P-value is significant (p-value < .05), the null hypothesis is rejected, and the alternative hypothesis that the variances are unequal is accepted. If the P-value is insignificant (p-value > .05), the null hypothesis that there are no significant differences between the variances of the groups is accepted. The assumption here is that the P-value = 0.05. The results that were analysed from the completed questionnaires are given in the following section.

4.3.4.1 Comparison of the effectiveness of e-Learning as a means of education at Saudi Universities by specialization group

Table 4. 15: Independent samples t-test group statistics

Factors	**Specialization**	**n**	**Mean**	**Std.**	**T statistic**	**Prob Sig.**
Factor 1: The Ability to Learn Autonomously in e-Learning	Art	84	3.97	0.66		
	Science	154	3.87	0.782	1.01	0.314
Factor 2: Learner-Content Interactions in e-Learning	Art	84	2.91	0.64		
	Science	154	3.77	0.80	1.32	0.187

Factor 3: Learner-Instructor Interactions in e-Learning	Art Science	84 154	3.91 3.71	0.90 1.00	1.50	0.135
Factor 4: Learner-Learner Interactions in e-Learning	Art Science	84 154	3.78 3.72	0.90 1.04	0.447	0.656

There were no statistically significant differences in the means of any factors between the two groups. This finding indicates that specialization was not a discriminating variable for these four factors. For these factors, the P-values were between 0.124 and 0.656, which is insignificant (P-value > 0.05), indicating that specialization might had no effect on the responses of learners concerning any of the four factors.

4.3.4.2 Comparison of the effectiveness of e-Learning as a means of education at Saudi Universities by previous e-Learning experience

Table 4. 16: Independent samples t-test group statistics

Factors	**E-Learning experience**	**n**	**Mean**	**Std.**	**T statistic**	**Prob Sig.**
Factor 1: The Ability to Learn Autonomously in e-Learning	Yes No	82 156	4.10 3.81	0.68 0.75	2.88	0.004
Factor 2: Learner-Content Interactions in e-Learning	Yes No	82 156	4.00 3.73	0.60 0.80	2.63	0.009
Factor 3: Learner-Instructor Interactions in e-Learning	Yes No	82 156	3.94 3.70	.91 0.99	1.81	0.071
Factor 4: Learner-Learner Interactions in e-Learning	Yes No	82 156	3.78 3.72	1.02 0.98	0.477	0.634

On the other hand, previous e-Learning experience played a role in the ability to learn autonomously in e-Learning and in learner-content interactions in e-Learning, as significant statistical differences in means were observed between the two groups. No significant differences were observed for factors three and four. Therefore, the existence of statistically significant differences at the P-value < 0.05 level for both factor 1 (ability to learn autonomously through e-Learning) and factor 2 (Learner-Content Interactions in e-Learning) demonstrates that previous e-Learning experiences may have been a positive factor for those who said yes. Therefore,

having learned previously by e-Learning might have influenced the answers to questions related to this factor.

This is the first significant variable to be identified. Therefore, although subject specialization does not affect learners' perceptions of the effectiveness of e-Learning, their previous exposure to e-Learning does have some effect on their perceptions. The next sub-section considers the impact of learner age.

4.3.4.3 Comparison Using One-way ANOVA

The t-test is a special case of one-way ANOVA. ANOVA examines mean differences using the F-statistic, whereas the t-test reports the t statistic. Therefore, the t-test and one-way ANOVA produce the same answer. This section suggests that the t-test and one-way ANOVA present essentially the same thing in different ways. Tables 4.17 and 4.18 show the results of the analysis. ANOVA was used to analyse the characteristics of the respondents in relation to the effectiveness of the e-Learning experience at some emerging universities in Saudi Arabia according to the respondent's age and IT skills.

Table 4. 17: Mean Difference in Factors According to the Variable Age using One-Way ANOVA

Factors	**Age (Years)**	**Mean**	**Std.**	**ANOVA**		**Homogeneity of Variance**	
				F	**Prob Sig.**	**Levene Statistic**	**Prob Sig.**
Factor 1: The Ability to Learn Autonomously in e-Learning	19-22 23-25 26 & above	3.84 4.00 3.94	0.74 0.71 0.79	1.139	0.322	0.111	0.895
Factor 2: Learner-Content Interactions in e-Learning	19-22 23-25 26 & above	3.73 3.92 3.93	0.76 0.70 0.78	2.112	0.123	0.339	0.713
Factor 3: Learner-Instructor Interactions in e-Learning	19-22 23-25 26 & above	3.71 3.89 3.77	0.99 0.95 0.96	0.728	0.484	0.410	0.664
Factor 4: Learner-Learner Interactions in e-Learning	19-22 23-25 26 & above	3.70 3.80 3.73	0.99 0.99 1.01	0.219	0.803	0.085	0.919

For the age variable shown above, the F-value is between 0.219 and 2.112, with a P-value greater than 0.05. This finding indicates that there is no difference in means for these factors between groups. The Levene's test value is between 0.085 and 0.410, with P-values of 0.664 and 0.919. Because the P-value is greater than 0.05, we accept the null hypothesis that there is no difference between the groups and conclude that the population variances for each group are approximately equal. That is, the assumption of homogeneity of variance is met, which confirmed that there was homogeneity of variance for the sample size for all four factors.

Table 4. 18: Testing Mean Difference in Factors according to the Variable IT Skills using One-Way ANOVA

Factors	**ICT Skills**	**Mean**	**Std.**	**ANOVA**		**Homogeneity of Variance**	
				F	**Prob Sig.**	**Levene Statistic**	**Prob Sig.**
Factor 1: The Ability to Learn Autonomously in e-Learning	Beginner Intermediate Skilled	3.69 3.98 3.91	0.749 0.712 0.783	2.529	0.082	1.391	0.251
Factor 2: Learner-Content Interactions in e-Learning	Beginner Intermediate Skilled	3.73 3.77 3.98	0.746 0.751 0.751	1.968	0.142	0.164	0.849
Factor 3: Learner-Instructor Interactions in e-Learning	Beginner Intermediate Skilled	3.79 3.70 3.94	0.885 1.028 0.921	1.300	0.274	0.726	0.485
Factor 4: Learner-Learner Interactions in e-Learning	Beginner Intermediate Skilled	3.69 3.71 3.83	1.078 0.999 0.945	0.350	0.705	0.152	0.859

The results of Table 4.19 reveal that there were no statistically significant differences in the mean scores of the factors according to IT Skills, except for factor 1, for which the results show that there is a significant difference (P-value = 0.10). Thus, it may be implied that ICT Skills did not affect the responses of the study sample at a significant level (P-value < 0.05). The table above shows the Test of Homogeneity of Variance, which was determined by Levene's test to detect differences between the variances, where the null hypothesis assumes no difference between the groups'

variances. In the results shown above, the F-value for Levene's test was between 0.152 and 1.391, with P-values of 0.251 and 0.859. Because the P-value is greater than 0.05, we accepted the null hypothesis and concluded that there is not a significant difference between the three groups' variances.

4.3.5 Structural Equation Model (SEM):

SEM has generally been used in empirical studies due to the interpretability of potential relationships between variables. To test the potential relationships between the dependent and independent variables, this study adopted SEM. This study utilizes SEMs. The first model explains the relationship between student background (Specialization, E-Learning Experience, Age and IT Skills) and Factor 1 (The Ability to Learn Autonomously in e-Learning). The second model investigates the association between student background and Factor 2 (Learner-Content Interactions in e-Learning). The third model was used to explain the effectiveness of the basic background of the students and Factor 3 (Learner-Instructor Interactions in e-Learning). The fourth model shows how the basic background of the students affects the fourth Factor (Learner-Learner Interactions in e-Learning). The final model explains the effects of the basic background of the students on e-Learning (Factor1, Factor2, Factor 3 and Factor 4) at Saudi Universities.

SEM has many advantages, such as the ability to assess theoretically sophisticated models involving complex relationships between observed and latent variables and the ability to address the reliability of measurement instruments by explicitly addressing the issue of measurement error. This approach has the ability to provide a quantitative test of a whole model based on theory or empirical evidence. Therefore, this study adopted an SEM approach to analyse the effectiveness and impact of the basic background of the students on e-Learning. Five models were designed to analyse this issue. SEM was used in this study to explain potential relationships between the test items for each factor and among the independent variables (i.e., Student Background) and the dependent variable (i.e., e-Learning).

The reasons for selecting SEM for data analysis includes: SEM offers a systematic mechanism to validate relationships among constructs and indicators and to test relationships between constructs in a single model (Hair *et al.*, 2006; Hoyle, 1995); and, SEM offers powerful and rigorous statistical techniques to deal with complex models (Ullman, 2006). In SEM, relationships among constructs and

indicators are validated using confirmatory factor analysis (CFA), which is also known as a measurement model, and relationships between constructs are tested using the structural model (Hoyle, 1995; Ullman, 2006).

The primary objective of this study was to investigate the possible relationship between student background and e-Learning at some emerging universities in Saudi Arabia. Many studies mentioned the significant role of student background in e-Learning, e.g., (Boghikian-Whitby and Mortagy, 2008; Paechter *et al.*, 2010; Woolf, 2010). Following the literature review, SEM analysis was applied in this study. Five nested SEM regressions were conducted in this study. The first model is designed to explain whether e-Learning depends on the basic background of the students. The second model was conducted to explain the effectiveness of the basic background of the students on the first factor (Ability to Learn Autonomously in e-Learning). The third model was conducted to explain the effectiveness of the basic background of the students on the second factor (Learner-Content Interactions in e-Learning). The fourth model shows how the basic background of the students affects the third factor (Learner-Instructor Interactions in e-Learning). The last model was conducted to explain the effectiveness of the basic background of the students on the fourth factor (Learner-Learner Interactions in e-Learning).

SEM in the STATA 12 program was used in this study to explain potential relationships between the test items for each factor and among the independent variables (i.e., Student Background) and the dependent variable (i.e., e-Learning). The analysis steps of SEM analysis are model specification, model identification, model estimation, model testing and model modification.

4.3.5.1 Estimation and Model Fit

A) Estimation

Consistent with the literature, this study develops the hypothesised model based on relevant theory and a literature review related to e-Learning. Model identification refers to whether or not the parameters in a model under study can be uniquely estimated. A statistical model provides an efficient way of describing the latent model that underlies a set of observed variables. In addition, the structure of the hypothesized model for the sample size is determined before testing how well the observed variables fit the model. Estimation involves the use of a fitting function to minimize the difference between the observed variable and the model implied

(variance and covariance matrices). There are many estimation functions, such as Maximum likelihood (ML), Asymptotically Distribution-Free and Weighted Least Squares. Maximum Likelihood estimation is widely used in SEM, and this study adopted Maximum Likelihood as an estimation function. SEM assumes that the sample size follows multivariate normal data; thus, the means and covariance matrix comprise all statistics. However, with non-normal data, the means and covariance matrix do not contain all information, and a set of estimations can be used. This study utilized ML estimation to achieve numerical values for the parameters. It is the default for all model fitting, and the ML estimation method is appropriate for non-normally distributed data and small sample sizes.

B) Evaluation of Model Fit

Once the SEM requirements are assessed, the next step is to assess and validate the overall fit for the measurement and structural models. There are several and varied fit measures that are used to verify the degree to which the hypothetical model can fit the data. These fit measures or fit indices are grouped together based on their characteristics and the information they reflect about fit. Hair and Anderson (2010) reported that each category of goodness-of-fit (GOF) measures assesses the model from a different perspective. Many indices have been suggested to assess structural model fit to the observed data. To achieve GFI for the empirical data, both the measurement and the structural model should meet the requirements of the selected metrics. A variety of fit metrics are available to researchers. The fit metrics can be classified into one of three types: absolute fit indices, incremental fit indices and parsimony fit indices (Schumacker & Lomax, 2004). This research used some criteria to interpret the structural equation model regression. Several indices were tested to interpret the overall fit of the model. These indices were the Chi-Square test, the Root Mean Square Error of Approximation (RMSEA), the goodness-of-fit index (GFI), the adjusted goodness-of-fit index (AGFI), the root mean square residual (RMR) and the standardized root mean square residual (SRMR). A value close to 1.0 for the GFI and AGFI fit measures is an indicator of GIF, and a value close to zero for RMSEA and SRMR is an indicator of badness of fit.

Absolute fit indices determine the congruence between a model's fit and the invariance–covariance matrix of the sample data without comparing the model's fit to other models (Kline, 2011). The most common and important index among the absolute fit measures is the Chi-square statistic; Chi-square indicates a good fitting

model when the associated P-value is insignificant (Gefen et al., 2000). The model is considered to have a good fit to observations when the difference between the sample and the estimated covariance matrices is small. However, the literature shows that the sensitivity of the Chi-square statistic varies based on sample size, and researchers have proposed a variety of alternative fit indices to assess model fit (Hair & Anderson, 2010). The data collected in this study include more than 200 cases; therefore, we will dispense with Chi-square when a statistically significant difference is observed, especially when the other indices show a better fit for the model.

Normed Chi-square is typically used as an alternative measure to mitigate the effect of sample size by dividing the chi-square by the degrees of freedom (chi-square/df). A value less than 3.0 is an indicator of better fit, and values less than 5.0 are sometimes permissible (Hair *et al.*, 2010).

Other metrics included in this category are the Root Mean Square Error of Approximation (RMSEA), the goodness-of-fit index (GFI), the adjusted goodness-of-fit index (AGFI), the root mean square residual (RMR) and the standardized root mean square residual (SRMR). A value close to 1.0 for the GFI and AGFI fit measures is an indicator of GIF, and a value close to zero for RMSEA and SRMR is an indicator of badness of fit.

Incremental fit indices, relative fit indices and comparative fit indices measure how much better the fitted model is than some baseline model. Most often, the baseline model used for comparison is the null model or independence model, in which the only model parameters are the variances of the observed variables. This implies that all variables are uncorrelated with the null hypothesis. Incremental fit indices computed by STATA 12 include the normed fit index (NFI), the comparative fit index (CFI), the incremental fit index (IFI) and the Tucker-Lewis index (TLI). In addition, this study employed a stability analysis of simultaneous equation systems.

In the literature, despite the difficulty of decisiveness in the selection of the most effective index, statistical studies provide some guidelines that intersect or are consistent in judging the quality of some of the indices and vary in judging the effectiveness of some of the other indices (Boomsma, 2000; Diamantopoulos & Siguaw, 2000; Hu & Bentler, 1999; Kline, 2011; McDonald & Ho, 2002; Schreiber, Nora, Stage, Barlow, & King, 2006). Given these evaluation studies, some statistical fit indices won the recommendation to be used in assessing and reporting model fit. GIF indices provide different aspects of a model's evaluation. Thus, it is

recommended that multiple indices should be employed to provide insightful and informative characteristics related to the assessed model. Therefore, at least one GIF item should be utilized from each class of fit index because each fit index presents a different angle of the fit of the model.

Table 4. 19: Fit Indices Used to Evaluate Structural Equation Model

Fit Index	**Acceptable Level**
Chi-square	
P-value for the model	> 0.05
CMIN/DF (Normed chi-square/df)	< 3 good; < 5 sometimes permissible
RMSEA (root mean square error of approximation)	< 0.05 good 0.05 to 0.10 moderate > .10 bad
SRMR (Standardized root mean squared residual)	< 0.10
CFI (Comparative fit index)	> 0.95
TLI (Tucker-Lewis index)	> 0.95
CD (Coefficient of determination)	Close to 1

C) Modification Indices

SEM models are modified for two reasons. First, SEM is a confirmatory technique. Second, structural equation models are employed to examine hypotheses developed from theories and to improve model fit. Thus, a modification process is performed to improve model fit analysis (Ullman, 2006).

If the model fit is not adequate, there are common practices to modify the model. The STAT program can compute modification indices for each fixed parameter. The value of the modification index is the minimum amount that the Chi-square statistic is expected to decrease. This process produces some improvement in fit. To obtain the model fit, this study used the STATA software, which included the modification process and was applied to improve the fit of all models.

4.3.5.2 Measurement Model Specification and Structural Equation Model

Analysis

The SEM model can be used to analyse the special features of a measurement model and a structural model (Hoyle, 1995). Most prior studies that have discussed measurement models and structural models have used SEM analysis. Mueller (1993) reported that a structural model consists of two types of variables (endogenous variables and exogenous variables). The endogenous variable is the result, which is the dependent variable and affected by other variables, while the exogenous variable is the independent variable, which impacts other variables. Therefore, this study employed SEM to investigate the relationships between student background (specialization, e-Learning experience, age and IT skills) as independent variables and e-Learning (The Ability to Learn Autonomously in e-Learning, Learner-Content Interactions in e-Learning, Learner-Instructor Interactions in e-Learning and Learner-Learner Interactions in e-Learning) as dependent variables. The overall structural model is depicted in Figure 4.5, and parameter estimates are presented in Table 4.21. This section also presents the effect of student background on the research model, as shown in Figure 4.5. The student background investigated here includes the basic background, in terms of specific variables, such as specialization, previous experience in e-Learning, age and IT skills. The effect of these variables on the relations among the variables in the model is investigated through multi-group analysis and measurement invariance. In addition, Table 4.20 shows the general model fit statistics. There are eight statistics that indicate overall fit.

Table 4. 20: Overall Fit Results for Five Measurement Models

Models	**Chi-sq.**	**P-value**	**CMIN/DF**	**RMSEA**	**CFI**	**TLI**	**SRMR**	**CD**
Model 1	20.258	0.318	1.125	0.023	0.996	0.993	0.042	0.553
Model 2	54.802	0.089	1.304	0.036	0.985	0.976	0.042	0.560
Model 3	54.964	0.104	1.278	0.034	0.988	0.982	0.036	0.546
Model 4	47.678	0.161	1.222	0.031	0.993	0.991	0.033	0.555
Model 5	45.138	0.077	1.367	0.039	0.994	0.988	0.030	0.576

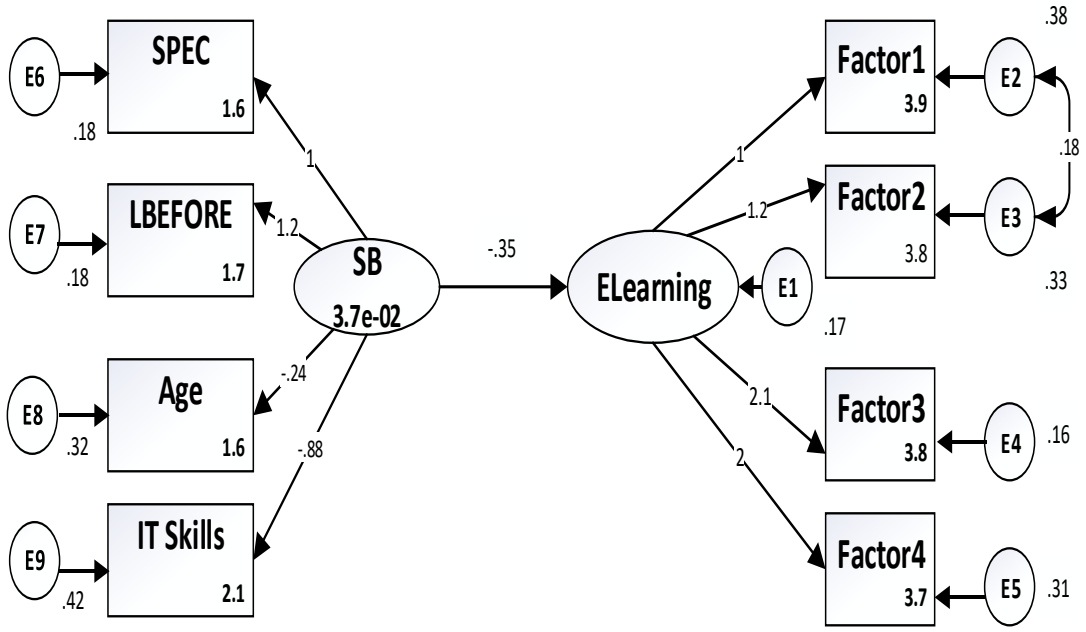
It can be seen in the table above that Model 1, with a total of 30 items and 4 factors, is chosen as the final measurement model. The results of Model 1 show that the Chi-square value is 77.302, with P-value = 0.000, and the results of other indices indicted that the values of CMIN/DF, RMSEA, CFI, TLI, SRMS and CD were not within the

acceptable levels. After modifying these problematic items, which were e.factor1 and e.factor2, we re-ran the model to assess the measurement model fit. After modification, Model 1 exhibited reasonable fit, which met the standard level of good fit. Model 2 included eight items related to Factor1: The Ability to Learn Autonomously in e-Learning. The model was tested after modification for some items, and the obtained results supported a good fit to the data. Moreover, Model 3 also included eight items related to Factor 2: Learner-Content Interactions in e-Learning. The results show that none of the indices were at acceptable levels. After modifying some items, the model was re-run, and we obtained a good fit for all indices. Similarly, Model 4 included seven items related to Learner-Instructor Interactions in e-Learning. The results for this model revealed that all indices had a reasonable fit. Next, Model 5 included seven items related to Factor 4: Learner-Learner Interactions in e-Learning. After the modification process, the results of all indices indicated goodness of fit. Finally, all five models showed excellent fit by most fit statistics and also met the stability analysis.

Model 1:

Another important part of SEM assessment is coefficient parameter estimates. The parameter estimates were used to produce the estimated population covariance matrix for the structural model. Model 1 was defined by 30 measurement items that identified the four latent factors. Figure 4.6 and Table 4.21 show the direction of the relationship between student background and e-Learning.

Figure 4.6: Path model with latent variables for the relationship between Student Background and e-Learning Factors



According to the coefficient of the regression results, student background is not a significant variable for explaining e-learning (z-value = 0.217, p-value = 0.111), but it is significant for explaining IT skills and age (p-value = 0.029 and 0.000, respectively). Moreover, e-learning is significant for explaining the variation in factor 2, factor 3 and factor 4 (p-value = 0.000).

Table 4. 21: Parameter Estimates – Structural Equation Model for All Factors in Model 1

Variables	**Estimate**	**Std.**	**Z-value**	**P-value**
Structural				
e-Learning <- Student Background	-0.346	0.217	-1.59	0.111
Measurement				
Factor 1 <- E-Learning	1.00	--	--	--
Factor 2 <- E-Learning	1.186	0.112	10.59	0.000
Factor 3 <- E-Learning	2.147	0.252	8.50	0.000
Factor 4 <- E-Learning	2.00	0.230	8.71	0.000
Specialization <- Student Background	1.00	--	--	--
E-Learning Experience <- Student Background	1.159	0.327	3.54	0.000
Age <- Student Background	-2.414	0.847	-2.85	0.000
IT skills <- Student Background	-0.880	0.402	-2.19	0.029
Variance				
e.factor1	0.380	0.037		
e.factor2	0.325	0.033		
e.factor3	0.163	0.049		
e.factor4	0.307	0.049		
e.specialization	0.191	0.021		
e.E-Learning experience	0.176	0.023		
e.Age	0.317	0.078		
e.IT-skills	0.419	0.041		
e.E-Learning	0.166	0.038		
Covariance				
e.factor1 e.factor2	0.175	0.028	6.11	0.000
Statistical Indices				
Chi-sq.	20.258			
P-value	0.318			
CMIN/DF	1.125			
RMSEA	0.023			

CFI	0.996			
TLI	0.993			
SRMR	0.042			
CD	0.553			

The results indicated that the Chi-square value was significant (Chi-square = 77.302), with P-value =0.000, indicating that the model predicted relationships that were significantly different from the relationships observed in the sample. Moreover, other indices have many problems related to model fit. Therefore, the study employed a modification process for some variables. After model modification, the results revealed a Chi-square value of 20.258 (P-value > 0.05), indicating that the model predicted relationships that were not significantly different from the relationship observed in the sample. Moreover, the results of other indices confirmed that the model has a good fit.

These indices were inspected in terms of their consistency with each other. The normed chi-square value was 1.125, indicating a reasonable fit. Consistent with this finding, RMSEA = 0.023, indicating a good fit for the model. CFI = 0.996, indicating a reasonably good fit of the model to the sample. TLI = 0.993, which also indicated that the model has a good fit. SRMR = 0.042, indicating a close approximate fit of the model (Kline, 2005). CD =0.553, and because this indicator is similar to R-square, a value close to one indicated a good fit of the model. However, the regression analysis revealed that parameter estimates were not significant, with a Z statistic value of -1.59 and a P-value of 0.111, which is greater than 0.05. The results presented in the table demonstrate that the selected fit indices consistently indicated that the hypothesized structural regression Model 1 fitted the sample well. In addition, the model met the stability analysis of simultaneous equation model.

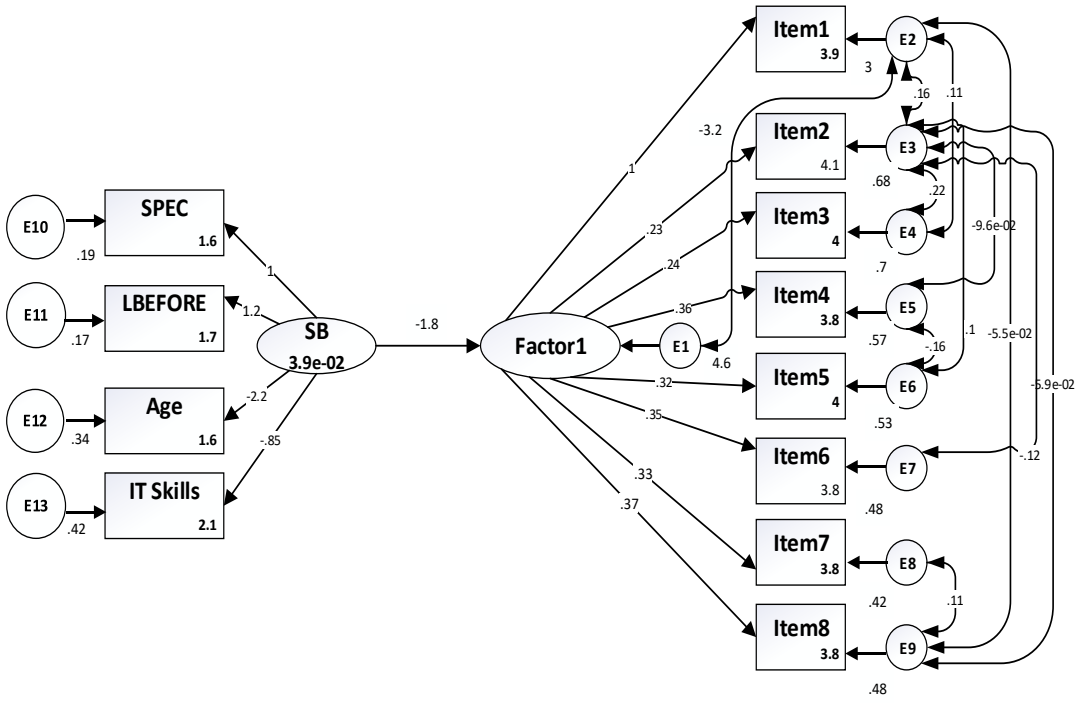
On the other hand, a graphical summary of the SEM model is provided in Figure 4.5, where measurable indicators are presented in boxes and latent variables are presented in ovals. The diagram shows the relationships among variables. It contains five models. The main possible relationship between student background as the latent variable, which included the observed variables (specialization, e-Learning experience, age and IT skills), and e-Learning as the latent variable, which included four factors, is shown.

Model 2:

Model 2 was defined by eight measurement items that identified factor 1. Table 4.22 shows the direction of the relationship between student background and Factor 1: The Ability to Learn Autonomously in e-Learning.

A graphical summary of the SEM model is provided in Figure 4.7, where measurable indicators are presented in boxes and latent variables are presented in ovals. Moreover, the diagram shows the relationships among variables. Model two estimates the relationship between student background, as measured by specialization, e-Learning experience, age and IT skills, and factor 1, which is measured by eight items.

Figure 4. 7: Structural Equation Model - Relationship between Student Background and Factor 1: The Ability to Learn Autonomously in e-Learning



The regression coefficient results in this model indicate that there is a significant relationship between student background and factor 1 (z-value of -2.96 and p-value of 0.003) and that student background is a significant variable for explaining factor 1 negatively. The results also confirmed that student background was a significant

variable for explaining e-learning experience, age and IT skills, with p-values of 0.000, 0.001 and 0.022, respectively.

Table 4. 22: Parameter Estimates – Structural Equation Model for Model (2)

Variables	**Estimate**	**Std.**	**Z-value**	**P-value**
Structural				
Factor1 <- Student Background	-1.826	0.616	-2.96	0.003
Measurement				
Item1 <- Factor1	1.00	--	--	--
Item2 <- Factor1	0.233	0.118	1.97	0.049
Item3 <- Factor1	0.240	0.117	2.05	0.041
Item4 <- Factor1	0.359	0.173	2.07	0.038
Item5 <- Factor1	0.316	0.153	2.06	0.039
Item6 <- Factor1	0.353	0.168	2.09	0.037
Item7 <- Factor1	0.331	0.158	2.10	0.036
Item8 <- Factor1	0.372	0.178	2.09	0.037
Specialization <- Student Background	1.00	--	--	--
E-Learning experience <- Student Background	1.189	0.328	3.62	0.000
Age <- Student Background	-2.206	0.646	-3.41	0.001
IT Skills <- Student Background	-0.846	0.369	-2.29	0.022
Variance				
e.item1	2.953	3.105		
e.item2	0.675	0.078		
e.item3	0.699	0.068		
e.item4	0.571	0.068		
e.item5	0.532	0.059		
e.item6	0.483	0.054		
e.item7	0.421	0.050		
e.item8	0.480	0.061		
e.specialization	0.189	0.021		
e.E-Learning before	0.170	0.023		

e.age	0.342	0.062		
e.IT skills	0.420	0.040		
e.factor1	4.617	4.498		
Covariance				
e.item1				
e.item2	0.163	0.057		
e.item3	0.110	0.051		
e.item8	-0.054	0.043		
e.factor1	-3.241	3.794		
e.item2				
e.item3	0.221	0.056		
e.item4	-0.096	0.051		
e.item5	0.100	0.052		
e.item6	-0.123	0.050		
e.item8	-0.059	0.045		
e.item4				
e.item5	-0.155	0.045		
e.item7				
e.item8	0.108	0.044		
Statistical Indices				
Chi-sq.	54.802			
P-value	0.089			
CMIN/DF	1.304			
RMSEA	0.036			
CFI	0.985			
TLI	0.976			
SRMR	0.042			
CD	0.560			

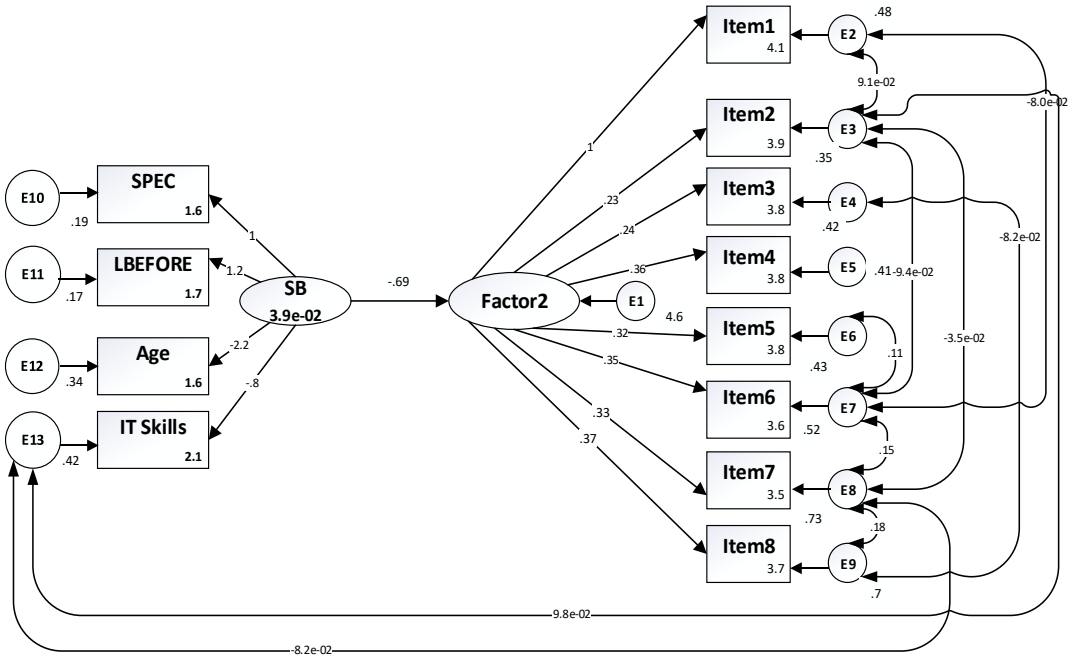
In the first run, the results revealed that the Chi-square value was 155.878, with a P-value < 0.05, indicating that there is a significant difference between the predicted relationship and the relationship observed in the data. Moreover, this study employed other indices. The results also confirmed that the model did not fit. Therefore, a modification process was used for some items.

The SEM results for the relationship between student background and Factor 1: The Ability to Learn Autonomously in e-Learning are presented in Table 4.22. The Chi-square value was 54.802, with a P-value of 0.089, which indicates that the model has a good fit for the sample. In addition, the results of the estimation, which are shown in Figure 4.6, showed that the model has a good fit. Other indices, such as CMIN/DF, RMSEA, CFI, TLI, SRMR and CD, were within acceptable levels. The CMIN/DF value was 1.304, suggesting a good fitting model. Similarly, the RMSEA value was 0.036, suggesting a reasonably good fit of the model to the sample. CFI = 0.985 and TLI = 0.976, suggesting a reasonable fit. SRMR = 0.042 and CD = 0.560, also suggesting a good fit for the model. In addition, the study performed a stability analysis of the model, and the findings supported the model stability analysis.

Model 3:

Model 3 was defined by eight measurement items that identified factor 2. Figure 4.8 and Table 4.23 show the direction of the relationship between student background and Factor 2: Learner-Content Interactions in e-Learning.

Figure 4.8: Structural Equation Model - Relationship between Student Background and Factor 2: Learner-Content Interactions in e-Learning



SEM results for the relationship between student background and Learner-Content Interactions in e-Learning. The Chi-square value was significant (Chi-square = 154.724, P-value =0.000), indicating that the model predicted relationships that were significantly different from the relationships observed in the sample. In addition, other indices have been used, and the reported results did not meet the standard levels.

Table 4. 23: Parameter Estimates – Structural Equation Model for Model (3)

Variables	**Estimate**	**Std.**	**Z-value**	**P-value**
Structural				
Factor2 <- Student Background	-0.689	0.344	-2.00	0.046
Measurement				
Item1 <- Factor2	1.00	--	--	--
Item2 <- Factor2	1.083	0.090	11.92	0.000
Item3 <- Factor2	1.127	0.111	10.12	0.000
Item4 <- Factor2	1.205	0.114	10.54	0.000
Item5 <- Factor2	1.192	0.118	10.10	0.000
Item6 <- Factor2	1.195	0.132	9.02	0.000
Item7 <- Factor2	1.059	0.124	8.49	0.000
Item8 <- Factor2	1.01	0.120	8.35	0.000
Specialization <- Student Background	1.00	--	--	--
E-Learning Experience <- Student Background	1.165	0.329	3.54	0.000
Age <- Student Background	-2.212	0.711	-3.11	0.000
IT Skills <- Student Background	-0.795	0.359	-2.21	0.027
Variance				
e.item1	0.484	0.051		
e.item2	0.345	0.041		
e.item3	0.423	0.046		
e.item4	0.409	0.047		
e.item5	0.434	0.049		

e.item6	0.522	0.062		
e.item7	0.726	0.072		
e.item8	0.701	0.071		
e.specialization	0.188	0.021		
e.E-Learning experience	0.172	0.023		
e.age	0.338	0.069		
e.IT skills	0.422	0.041		
e.factor2	0.405	0.073		
Covariance				
e.item1				
e.item2	0.090	0.034	2.64	0.008
e.item6	-0.080	0.037	-2.16	0.031
e.item2				
e.item3	-0.093	0.033	-2.82	0.005
e.item4	-0.034	0.035	-0.98	0.325
e.IT skills	0.097	0.027	3.61	0.000
e.item3				
e.item8	-0.082	0.039	-2.08	0.037
e.item5				
e.item6	0.112	0.042	2.65	0.008
e.item6				
e.item7	0.150	0.044	3.40	0.001
e.item7				
e.item8	0.177	0.051	3.46	0.001
Statistical Indices				
Chi-sq.	54.964			
P-value	0.104			
CMIN/DF	1.278			
RMSEA	0.034			
CFI	0.988			
TLI	0.982			
SRMR	0.036			
CD	0.546			

Table 4.23 presents the SEM results for the relationship between student background and Learner-Content Interactions in e-Learning. The Chi-square value was significant (Chi-square = 154.724, P-value =0.000), indicating that the model predicted relationships that were significantly different from the relationships observed in the sample. In addition, other indices were used, and the reported results did not meet the standard levels.

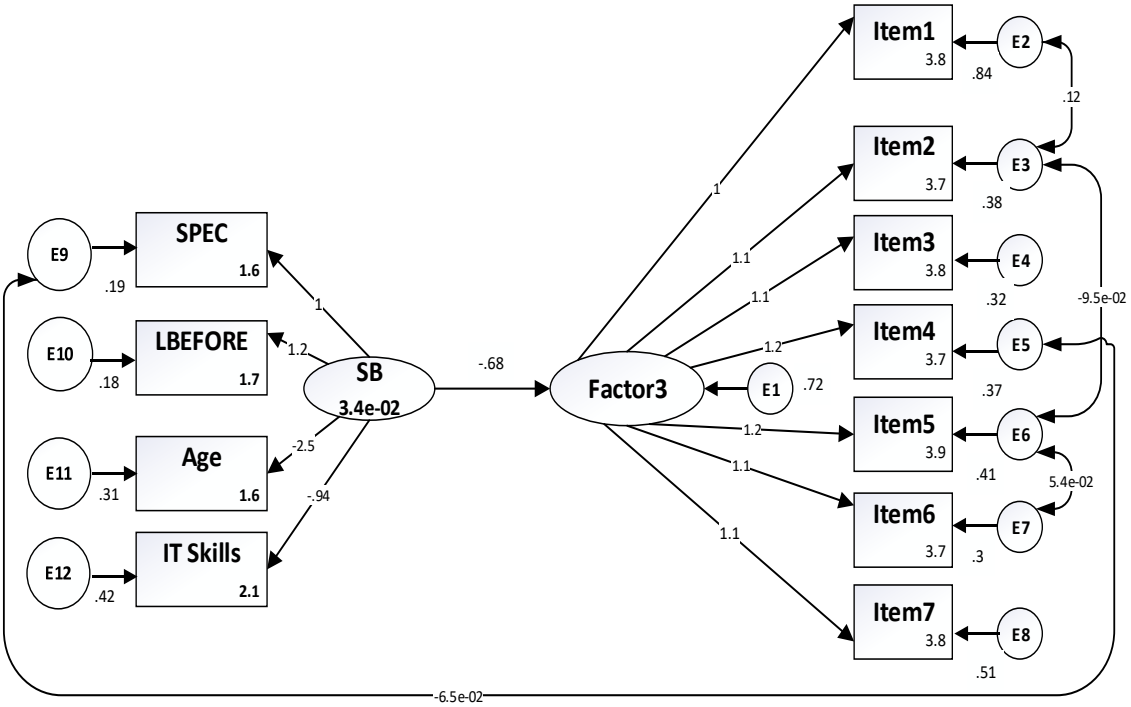
Therefore, the study employed a modification process for some variables. After model modification, the results revealed that the Chi-square value was 54.964 (P-value > 0.05), indicating that the model predicted relationships that were not significantly different from the relationships observed in the sample. In addition, the results of other indices confirmed that the model had a good fit for the data.

The findings mentioned in Table 4.24 demonstrated that the normed chi-square value was 1.278, suggesting a reasonable fit. In addition, the RMSEA value was 0.034, which is less than the standard level of 0.05, and indicated that the model had a good fit for the data. The CFI was 0.988 and the TLI was 0.982, suggesting a reasonably good fit of the model to the data. Finally, the SRMR value was 0.0436, which indicates a close approximate fit of the model, and the CD value was 0.546, indicating that the model had a good fit. In summary, the findings presented in the table demonstrate that the selected fit indices consistently indicated that the hypothesized structural regression Model 3 fitted to the data.

Model 4:

Model 4 was defined by seven measurement items that identified factor 3. Figure 4.9 and Table 4.24 show the direction of the relationship between student background and Factor 3: Learner-Instructor Interactions in e-Learning.

Figure 4. 9: Structural Equation Model - Relationship between Student Background and Factor 3: Learner-Instructor Interactions in e-Learning



It can be seen clearly in the table above that the Chi-square value was 47.678, with a P-value of 0.16. The probability was greater than 0.05, so the results were not significant, indicating an acceptable model fit. Other criteria also indicate that the model met acceptable values.

Table 4. 24: Parameter Estimates – Structural Equation Model for Model (4)

Variables	**Estimate**	**Std.**	**Z-value**	**P-value**
Structural				
Factor3 <- Student Background	-0.678	0.443	-1.53	0.126
Measurement				
Item1 <- Factor3	1.00	--	--	--
Item2 <- Factor3	1.063	0.0815	13.04	0.000
Item3 <- Factor3	1.107	0.092	12.03	0.000

Item4 <- Factor3	1.181	0.097	12.11	0.000
Item5 <- Factor3	1.153	0.098	11.76	0.000
Item6 <- Factor3	1.093	0.090	12.03	0.000
Item7 <- Factor3	1.065	0.095	11.11	0.000
Specialization <- Student Background	1.00	--	--	--
E-Learning Experience <- Student Background	1.176	0.335	3.51	0.000
Age <- Student Background	-2.519	0.893	-2.82	0.000
IT Skills <- Student Background	-0.937	0.413	-2.26	0.000
Variance				
e.item1	0.838	0.082		
e.item2	0.376	0.042		
e.item3	0.316	0.036		
e.item4	0.372	0.042		
e.item5	0.412	0.049		
e.item6	0.304	0.036		
e.item7	0.509	0.052		
e.specialization	0.193	0.021		
e.E-Learning before	0.178	0.023		
e.age	0.313	0.079		
e.IT skills	0.417	0.040		
e.factor3	0.719	0.123		
Covariance				
e.item1				
e.item2	0.119	0.043	2.74	0.006
e.item2				
e.item5	-0.095	0.030	-3.16	0.002
e.item4				
e.specialization	-0.064	0.020	-3.17	0.002
e.item5				
e.item6	0.053	0.033	1.61	0.108
Statistical Indices				

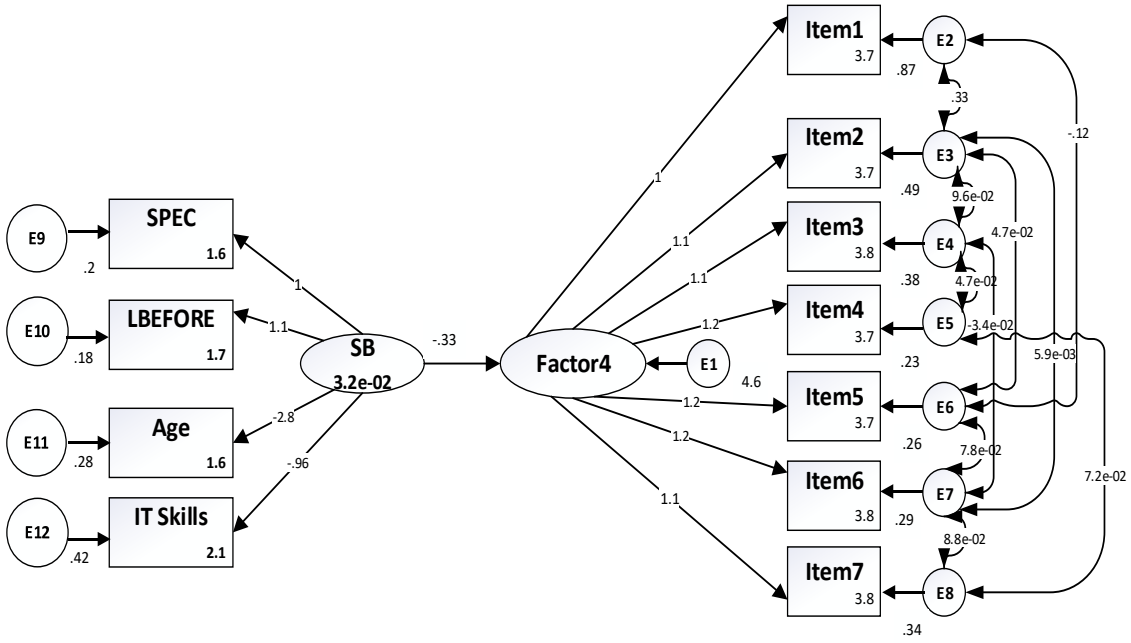
Chi-sq.	47.678			
P-value	0.161			
CMIN/DF	1.222			
RMSEA	0.031			
CFI	0.993			
TLI	0.991			
SRMR	0.033			
CD	0.555			

It can be seen clearly in the table above that the Chi-square value was 47.678, with a P-value of 0.16. Because the probability is greater than 0.05, the results are not significant, indicating an acceptable model fit. Other criteria also indicate that the model met acceptable values. The CMIN/DF was 1.222, indicating a good model fit. In addition, the RMSEA value was 0.031, which met the criteria of 0.05 or less for an acceptable model fit. The 0.031 RMSEA value indicates the amount of unexplained variance in the model estimation. The results obtained for the CFI, TLI, SRMR and CD statistical values met acceptable levels for model fit.

Model 5:

Model 5 was defined by seven measurement items that identified factor 4. Figure 4.10 and Table 4.25 show the direction of the relationship between student background and Factor 4: Learner-Learner Interactions in e-Learning.

Figure 4. 10: Structural Equation Model - Relationship between Student Background and Factor 4: Learner-Learner Interactions in e-Learning



The results presented in the table above showed interesting results in terms of the goodness of model fit. The first indicator is the Chi-square value, which was 45.138 with a P-value of 0.077. After the modification process, the Chi-square value was reduced to improve the model fit.

Table 4. 25: Parameter Estimates – Structural Equation Model for Model (5)

Variables	**Estimate**	**Std.**	**Z-value**	**P-value**
Structural				
Factor4 <- Student Background	-0.330	0.427	-0.77	0.439
Measurement				
Item1 <- Factor4	1.00	--	--	--
Item2 <- Factor4	1.099	0.071	15.47	0.000
Item3 <- Factor4	1.090	0.094	11.59	0.000
Item4 <- Factor4	1.184	0.098	12.04	0.000
Item5 <- Factor4	1.155	0.102	11.24	0.000

Item6 <- Factor4	1.153	0.096	11.91	0.000
Item7 <- Factor4	1.136	0.097	11.63	0.000
Specialization <- Student Background	1.00	--	--	--
E-Learning Experience <- Student Background	1.145	0.325	3.50	0.000
Age <- Student Background	-2.777	1.096	-2.53	0.000
IT Skills <- Student Background	-0.958	0.427	-2.24	0.025
Variance				
e.item1	0.866	0.085		
e.item2	0.491	0.052		
e.item3	0.381	0.044		
e.item4+	0.233	0.041		
e.item5	0.257	0.039		
e.item6	0.289	0.042		
e.item7	0.338	0.043		
e.specialization	0.196	0.022		
e.E-Learning experience	0.183	0.023		
e.age	0.281	0.094		
e.IT skills	0.418	0.040		
e.factor4	0.723	0.127		
Covariance				
e.item1				
e.item2	0.331	0.052	6.30	0.000
e.item5	-0.119	0.036	-3.28	0.001
e.item2				
e.item3	0.095	0.028	3.36	0.001
e.item5	-0.046	0.032	-1.42	0.156
e.item6	0.005	0.027	0.22	0.826
e.item3				
e.item4	0.047	0.034	1.37	0.172
e.item6	-0.033	0.025	-1.33	0.183
e.item4				

e.item7	-0.071	0.029	-2.45	0.024
e.item5 e.item6	0.078	.034	2.26	0.024
e.item6 e.item7	0.087	0.030	2.88	0.004
Statistical Indices				
Chi-sq.	45.138			
P-value	0.077			
CMIN/DF	1.367			
RMSEA	0.039			
CFI	0.994			
TLI	0.988			
SRMR	0.030			
CD	0.576			

The results presented in the table above showed interesting results in terms of the model's goodness of fit. The first indicator is the Chi-square value, which was 45.138 with a P-value of 0.077. After the modification process, the Chi-square value was reduced to improve the model fit. The Chi-square value indicted a good fit for the model. This finding was confirmed by other indices. The CMIN/DF value was 1.367, indicating an acceptable model fit, and the RMSEA value = 0.039, which was less than the criteria of 0.05, indicating that 3.9% of the variance was unexplained. All other indices (CFI, TLI, SRMR and CD) met the criteria. The table above demonstrates that all indices confirmed an acceptable model fit.

4.4 Hypothesis Testing

This research was designed with the objective to investigate the effectiveness of the e-Learning experience at two emerging universities in Saudi Arabia from instructors' and learners' perspectives. This section will examine the results and determine whether the results supported the five research hypotheses proposed for the study.

H1: There is a direct and positive relationship between learner background (age, specialization, e-Learning experience, and IT skills) and behavioural intention to use e-Learning methods.

This study examined whether student background (specialization, age, e-Learning experience, and IT skills) has a direct and positive relationship with behavioural intention to use e-Learning methods. Student background refers to the demographic characteristics that might help to support and enhance the use of e-Learning methods. The findings of the SEM analysis show that the student background variable did not have a significant positive relationship with behavioural intention to use e-Learning applications ($\beta = -0.346$, t-value = -1.59 and P-value > 0.05).

Although many universities in Saudi Arabia have some basic ICT infrastructure and have started using technology (such as Blackboard as a learning management system, video conferencing, network information, web sites, computer labs and internet access), these two emerging universities in Saudi Arabia still relied on traditional learning methods.

This outcome contradicts the findings of Oye, A-Iahad, Madar, and Ab-Rahim (2012), who reported that learners' perceptions have a significant direct influence on their behavioural intention to use e-Learning.

This finding is also inconsistent with the findings of recent study by Lee, Hsia, and Purnomo (2014), who found that IT skills and technology accessibility have a significant effect on behavioural intention to use e-Learning. Based on these results, hypothesis H1 is not supported.

H2: There is a direct and positive relationship between learner background and the ability to learn autonomously in e-Learning.

The findings also demonstrated that student background has no significant positive relationship with the ability to learn autonomously in e-Learning. However, student background has a significant negative relationship with the ability to learn autonomously in e-Learning applications ($\beta = -1.826$, t-value = -2.96 and P-value < 0.05).

This could be due to the fact that students, irrespective of specialization, previous e-Learning experience, age and IT skills, are not willing to learn autonomously in e-Learning methods, and thus these factors will have a significant negative influence on their ability to learn independently. This finding was also confirmed by the interviewees when they said, "I believe that the difficulty of using online programs and the poor design all contribute to discouraging students from studying online." This comment implies that low motivation, poor design, inability to access the internet, a lack of technical infrastructure and a lack of awareness of the importance

of e-Learning discourage learners from learning independently in e-Learning. Another reason could be that the two emerging universities did not present all documents to meet the needs of learners related to their individual study. This finding is consistent with previous findings, such as those reported by Ali et al. (2003), Bates (2007) and Alkhalaf et al. (2011). However, this outcome is inconsistent with the findings of previous studies in the literature that found a positive relationship between student background and the ability to learn independently. Therefore, hypothesis H2 is not supported.

H3: There is a direct and positive relationship between learner background and learner-content interactions in e-Learning.

The findings demonstrated that learner background has a significant negative relationship with learner-content interactions in e-Learning applications ($\beta = -0.689$, t-value = -2.00 and P-value < 0.05). This outcome implies that the online course resources in e-Learning methods are not clear enough to help learners obtain a better understanding of the online content. Thus, student background could negatively influence interactivity with content. In the literature, interactivity played a significant role in improving the effectiveness of e-Learning. In other words, a good interaction might help learners to understand and access the online content.

Moreover, the online courses or content may be too complicated for learners to understand and work with the online content in e-Learning, and poor video quality might have a significant negative effect on interactivity. Another reason could be a lack of learner interactions with the interface.

This finding is consistent with results reported by Sutton (2001), who found that demographic characteristics of individual students have a negative effect on their direct interactions. Similarly, Kuo et al. (2013) found that learner background was not significantly associated with learner-content interactions. However, this finding is inconsistent with the results reported by Wernet, Olliges, and Delicath (2000) and Caruso and Salaway (2007), who revealed that online courses have significant positive effects on the effectiveness of e-Learning. Therefore, hypothesis H3 is not supported.

H4: There is a direct and positive relationship between learner background and learner-instructor interactions in e-Learning.

The findings of this study show the insignificant effect of learner background on learner-instructor interactions in e-Learning applications ($\beta = -0.678$, t-value = -1.53

and P-value > 0.05). As a result, hypothesis H4 on the relationship between learner background and learner-instructor interactions in e-Learning was not supported.

The lack of learner interactions with their instructors may reflect the lack of instructor feedback and other actions related to online courses. The lack of instructor experience and computer skills using e-Learning methods may also impact interactivity with their learners, as well as learners' background. This finding is inconsistent with the results reported by Swan (2001) and Dennen et al (2007), who found that interactions between learners and instructors have a significant positive effect on learners' satisfaction and showed that the instructors' actions, such as feedback, were a significant feature that supported interactivity in e-Learning.

Although several studies in the literature revealed the significant effect of interactivity between learners and instructors on behavioural intention to use e-Learning methods, the results of this study suggest that there is no significant relationship between learner background and learner-instructor interactions.

H5: There is a direct and positive relationship between learner background and learner-learner interactions in e-Learning.

The learner-learner interaction is a significant part of the e-Learning environment. Types of this interaction that can occur include using chat, Skype, learners' comments, the exchange of ideas and email.

To investigate the interactions between learners that were affected by learner background, this study examined the hypothesis that there is a direct and positive relationship between learner background and learner-learner interactions in e-Learning.

The study found that there was an insignificant relationship between learner background and interactions among learners in e-Learning applications ($\beta = -0.330$, t-value = -0.77 and P-value > 0.05). The negative relationship could be due to the fact that learners prefer interactions with other learners through traditional learning. This finding is in line with a study performed by Swan (2002) on online interaction that found that collaborative learning techniques have a negative effect on perceived learning. Therefore, hypothesis H5 is not supported.

The results showed that none of hypotheses are supported. This could be because the learners and instructors at the two emerging universities in Saudi Arabia were still in the early stage of the implementation of e-Learning, and several obstacles and challenges need to be discussed further and resolved in e-Learning implementations.

The model included learner background (specialization, e-Learning experience, age and IT skills) as independent variables and behavioural intention to use e-Learning methods and factors as dependent variables.

4.4.1 Hypothesis Tests Summary

This section provides the findings of the hypothesis tests. When an acceptable model fit is found, the next step is to determine significant parameter estimates according to the t-test. The parameter estimates were significant at the 0.01 level if the t-test value exceeded 2.56 and significant at the 0.05 level if the t-test value exceeded 1.96.

The overall structural model provided, and the parameter estimates are presented in Table 4.26, with hypotheses presented to examine the relationships between the latent factors used in the proposed theoretical model (as described in chapter 3) after classification into two main categories: exogenous and endogenous constructs. The exogenous constructs included age, specialization, e-Learning experience and IT skills, while the endogenous construct was behavioural intention to use e-Learning factors. Goodness of fit indices and other parameter estimates were examined to evaluate the hypothesized structural models. An assessment of the parameter estimates suggested that two of the five hypotheses were significant. However, the negative significant relationships found were inconsistent with our expectations, indicating that these hypotheses were not supported. In addition, as presented in chapter 3, none of our hypotheses were supported.

This study examines whether student background variables have a significant positive relationship with e-Learning at emerging universities in Saudi Arabia from the instructor and learner perspectives. The results presented in Table 4.26 revealed that two of the five hypothesised paths between student background and e-Learning variables were significantly negative. However, these results were inconsistent with our expectations. For instance, the hypothesised path and potential relationship between student background and the ability to learn autonomously in e-Learning was significantly negative (P-value = 0.003). Similarly, the paths and possible relationship between student background and learner-content interactions in e-Learning was significantly negative (P-value = 0.046).

The hypothesized paths and the potential relationships between student background and learner-instructor interactions in e-Learning and between student background and learner-learner interactions in e-Learning had insignificant P-values. Overall, the hypothesis of

this study that there is a direct and significant positive relationship between student background, as indicated by age, specialization, e-Learning experience and IT skills, and factors associated with the behavioural intention to use e-Learning was not statistically significant, and the hypotheses are not supported.

Table 4.26 summarises the results of the hypothesis tests. A version of the t-test was employed, which uses critical ratios from the SEM. Standard errors are shown in the SE column and the t-test column. P-value indicates statistical significance at levels of 0.01 and 0.05. These results are presented in detail below.

Table 4. 26: Summary of Hypothesis Tests (H1-H5)

N0	**Hypotheses**	**Estimate**	**SE**	**t- value**	**P-value**	**Results**
H1	E-Learning <- Student Background	-0.346	0.217	-1.59	0.111	Not supported
H2	Factor1 <- Student Background	-1.826	0.616	-2.96	0.003	Not supported
H3	Factor2 <- Student Background	-0.689	0.344	-2.00	0.046	Not supported
H4	Factor3 <- Student Background	-0.678	0.443	-1.53	0.126	Not supported
H5	Factor4 <- Student Background	-0.330	0.427	-0.77	0.439	Not supported

4.5 Summary

This chapter discussed and analysed our study's qualitative and quantitative data. First, we explained the findings regarding the effectiveness of e-Learning from the perspective of faculty members at emerging universities in Saudi Arabia. The findings of ten interviews conducted with two main questions and thirteen secondary questions addressed the research sub-questions. The first main question asked about the positive and negative features of e-Learning according to the learners' and instructors' perceptions, with each interviewee providing his views on the positive and negative aspects of e-Learning. The second main question addressed faculty members' perceptions about the barriers facing e-Learning and its requirements and suggestions for improving e-Learning. The third part involved secondary questions in the interview that were related to the research questions. All interviewees answered both the main and secondary questions. The findings obtained from the qualitative analysis of the effectiveness of e-Learning at emerging universities in Saudi Arabia revealed that the positive features of e-Learning include self-reliance, ease of access,

communications, flexibility in e-Learning and other related issues. However, faculty members also indicated that there was a negative side of e-Learning that might impact instructors and students, such as isolation, health issues, technology issues, time wasting and low motivation. The findings of the qualitative analysis revealed some factors to consider as the main barriers facing e-Learning, such as training, financial support and technical infrastructure barriers. The interviewees also highlighted the main requirements for e-Learning. Finally, some suggestions that might help in improving the effectiveness of e-Learning were made. The next chapter will discuss the findings.

Second, we presented the results of a quantitative analysis of the research, including data collection and data analysis, as well as descriptive statistics, one-way ANOVA analysis and structural equation modelling (SEM) of the relationship between student background and e-Learning at some emerging universities in Saudi Arabia. The results indicated that the utilized measures were appropriate for SEM analysis and exhibited satisfactory and acceptable reliability. The overall measures of the measurement model were established by exceeding all the threshold values suggested by the literature. The results also showed that all of the factors satisfied the criteria for reliability. In terms of the structural model, the results showed that all of the fitness measures satisfied the recommended threshold values, providing a model with a good fit to the data. This analysis was followed by hypothesis tests, and the results revealed that none of the hypotheses were supported at emerging universities in Saudi Arabia from the instructor and learner perspectives. Regarding the perceived ease of using e-Learning, the findings show that the participants believe that the e-Learning method is better than the traditional learning method. This could be because online learning requires minimal effort. However, learners' experience plays a significant role in e-Learning.

CHAPTER FIVE

CONCLUSION

5.1 Introduction

Chapter Five presented and discussed the research questions and hypotheses of the study with regard to the effectiveness of the e-Learning experience at two emerging universities in Saudi Arabia. This chapter discusses the research in relation to its aims and objectives. The study investigated instructors' and students' perceptions at two emerging universities using interviews and questionnaires.

This chapter concludes the study by addressing the main findings, as well as the implications for practice and the limitations of the study. The research aim and objectives will be revisited, and the findings will be examined in relation to the aim and objectives to determine whether they were achieved. The significance of the findings and the contributions of this study are also discussed, with guidelines for future directions presented at the end of the chapter.

5.2 Summary of the Findings

This research aimed to provide an overview of the e-Learning practices at two emerging universities in Saudi Arabia. To answer the research questions, this study used both interviews and questionnaires. Based on the literature and a preliminary analysis of the qualitative data, a questionnaire was developed to obtain data from students regarding the effectiveness of e-Learning. The most important findings obtained from the qualitative data in relation to the research objectives are provided below.

Objective 1: Discover learners' perceptions of their ability to learn autonomously through e-Learning, with an exploration of the learners' perception of their interactions with content, instructors and other learners in e-Learning.

The interaction in e-Learning programs includes three factors: interaction with the content, interaction with the instructors and interactions with other learners (interactions amongst learners and peers). First, with regard to the interaction with the content, the findings showed that there is low interactivity with the content and

that learners' felt uncomfortable while dealing with e-Learning applications, which led to feeling frustrated with learning using e-Learning applications. Low interaction might weaken the learners' ability to understand and to access online content. The findings suggested that the resources in e-Learning applications are complicated for learners to use. Therefore, the learners have a negative perception of interactivity with content. In relation to interactions with the instructors, the findings from this study showed that student background had an insignificant effect on learner-instructor interactions in e-Learning applications, suggesting that communication with the instructors is a weakness in e-Learning applications. Thus, the first objective of the study was achieved, as the learners' perceptions of their ability to learn autonomously (in e-Learning) and their perceptions of their interactions were determined.

Objective 2: Gain an understanding of current practices in e-Learning, particularly in relation to learners' adoption of e-Learning.

The significant obstacles related to the lack of design included the absence of a comprehensive design for e-Learning programs. The findings also presented a number of requirements, which were predominantly related to improving the technical infrastructure for e-Learning, as well as training and strategic planning for the implementation of e-Learning programs.

An appropriate technical infrastructure must be prepared before deploying e-Learning software. Appropriate training programs are also very important, which should be accessible to instructors, students and administrators. Finally, strategic planning should be undertaken at emerging universities. These findings achieved the second objective, which was to gain an understanding of the current practices related to e-Learning.

Objective 3: Identify the challenges facing learners' adoption of e-Learning at two emerging universities in Saudi Arabia.

The results of the study identified a number of challenges that face e-Learning. The most significant issues were related to training and financial support, technical infrastructure barriers and the privacy or confidentiality of information in e-Learning. Most instructors confirmed that the lack of financial support and appropriate training

could restrict the development of e-Learning at the two emerging universities. The instructors suggested that the lack of technical infrastructure might affect the e-Learning systems at the two emerging universities. Thus, the third objective of the study was achieved, as the challenges that face learners' adoption of e-Learning at emerging universities were discovered.

Objective 4: Identify, improve and adapt strategies that address the challenges to learners' adoption of e-Learning at the two emerging universities.

In addition, the findings revealed some instructors' suggestions for developing e-Learning implementation programs. These suggestions may help to reduce the negative factors associated with e-Learning. Some suggestions that were noted included training courses, interactivity of the learning and accreditation. Appropriate training should be offered to all academic staff, learners and administrators. Providing appropriate training should develop technical computer skills related to e-Learning applications. The findings also showed that good interactions between learners and content, learners and instructors and learners and other learners could support e-Learning. The interactivity in e-Learning should be used to enhance learners' comfort and satisfaction within e-Learning technologies.

Accreditation of programs should be adapted from e-Learning applications in developed nations so that emerging universities in Saudi Arabia can allow their members to benefit from these successful experiences. Moreover, accreditation should be used to enhance instructor quality in e-Learning applications. Thus, the fourth objective was achieved, which was to identify, improve and adapt strategies that address the challenges associated with e-Learning adoption.

Objective 5: Contribute to the available body of knowledge about e-Learning processes and demonstrate that e-Learning can be made widely available in a more effective way and at lower costs in comparison to traditional learning techniques

This study has obtained results that achieved the aims and objectives of the study. The study has made several contributions to the body of knowledge in the field of e-Learning design and implementation strategies. These contributions will be further discussed in the next section. Thus, the study achieved the fifth objective, which was to contribute to the field of e-Learning evaluation and demonstrate that e-Learning can be made widely available.

The hypothesis tests determined that a learner's background has insignificant effects on their ability to use e-Learning effectively. Learners reported that they preferred interactions amongst themselves through traditional learning. Although the overall mean for all factors was "agree," the findings obtained from the structure equation model (SEM) clearly revealed that the effectiveness of e-Learning applications at the two emerging universities remains insufficient.

5.3 The Contributions of the Study

This study made several contributions to the field. The contributions are as follows:

-This study highlighted the effectiveness of e-Learning at emerging universities in Saudi Arabia.

-This study contributed to filling a gap in the literature by evaluating the effectiveness of e-Learning, especially from the perspective of the participants.

-This study developed a new model for the evaluation of e-Learning programs that can be used as a basis for future assessments of the effectiveness of e-Learning and can provide a template for similar studies to contribute to a more comprehensive assessment of e-Learning programs in Saudi Arabia.

-This study provided solutions for administrators and educators regarding concerns about the strengths and weaknesses of e-Learning and can thus assist administrators in decision making with respect to e-Learning deployment.

-This study contributes to an understanding of e-Learning practices from learners' perspectives. It evaluated effectiveness in such a way that its positives, negatives, barriers, requirements and suggestions for e-Learning's development at emerging universities in Saudi Arabia were discussed and analysed.

-The results of this study contributed to the body of knowledge in the area of e-Learning effectiveness by showing that although there are negative aspects of e-Learning at two emerging universities in Saudi Arabia, there are many positive aspects of e-Learning from the perspective of learners at these two emerging universities.

5.4 Significance of the Research

The current study contributed an investigation into the state-of-the-art techniques in e-Learning and the reasons for the delay in the wide adoption of e-Learning methodology in Saudi Arabia. Particular contributions included identifying how computer operating ability, reading habits, time management skills, environment, learning manuals, tools and technology influenced the users of e-Learning systems. The study further investigated the reasons why faculty members of the two emerging Saudi Arabian universities have delayed the acceptance of e-Learning programs. Within this scope, the research determined the differences in the uptake of e-Learning among Saudi Arabian academic institutions and explored the coping mechanisms that the academic institutions must adopt for members to embrace e-Learning as a mode of teaching.

The study used descriptive studies to derive variables in the population without manipulation by tapping into their characteristics in real time. The study is based on an interpretive approach that is subjective in nature. The research is therefore expected to expose the various barriers that are responsible for the slow and delayed adoption of e-Learning at the two emerging Saudi Arabian universities. The research explored the views and opinions of the various players in the university education sector and then sought to advise about the way forward.

According to Al-Shehri (2010), "Saudi Arabia, as the largest market and economy in the Middle East, has of late witnessed huge expansion in higher education and e-Learning." e-Learning models describe the key role of technology in supporting e-Learning. Richards (2002) argues that "a distinction must be made between what may be referred to as an add-on model of e-Learning and a more integrated approach which goes beyond a mere transmission or delivery of content to promote more interactive and effective learning."

5.5 Practical Implications

Based on the results reported in this research, some implications can be drawn about the effectiveness of the e-Learning experience. The government should consider developing e-Learning applications in higher education in the Kingdom. Moreover, the government should work to build and develop the appropriate technological infrastructure to support e-Learning implementation at emerging universities, as well

as higher education institutions in general. In addition, the government should develop regulations and administrative processes that ease the use of the internet at emerging universities to achieve greater integration between all universities through the introduction of new technologies. This change would help learners and instructors gain easy access to e-Learning implementations.

The government should focus on narrowing the digital gap by using and developing information and communication technologies (ICT) at all universities and higher education institutions, as well as creating clear policies related to ICT. The availability of ICT for all members of society will reduce costs and ensure a higher quality of available information. The government should pay attention to developing ICT to move from traditional learning to online learning at all universities. In terms of training, the universities should give significant consideration to developing infrastructure and providing online training for all users of e-Learning. They should give attention to the significance of training programs and supporting ICT skills.

Conferences and courses that explain how to use e-Learning at universities should be designed to explain the philosophy and to allow sufficient time for learners to interact with e-Learning program implementations. Universities must pay attention to their infrastructure by continually updating it (particularly hardware and software upgrades), as well as taking full advantage of all e-Learning features and characteristics.

Furthermore, universities should establish strategic planning and guidelines to help users understand e-Learning applications before proceeding to implementation. They should develop a plan to adopt educational change according to one of the known patterns of change. Universities should also provide sufficient equipment and facilities to ensure the management of e-Learning curriculums for learners. The universities should support empirical studies of e-Learning, as well as encourage cooperation between higher education institutions, private sector stakeholders related to educational programs, and universities in order to improve e-Learning implementations. In addition, the government and universities should increase learners' awareness of e-Learning services and implementation by providing remuneration and rewards through several types of communication media.

This study determined that the effectiveness of an e-Learning environment has four dimensions: the ability to learn autonomously in e-Learning, learner-content interactions in e-Learning, learner-instructor interactions in e-Learning and learner-

learner interactions in e-Learning. However, these factors may not be fully executed at all universities in different countries due to the fact that these factors have been mostly implemented at higher education institutions in developed countries.

5.6 Limitations of the Study

This study had some limitations that were noted. First, the limitation of the context of this study was that it concentrated only on instructors and learners at two emerging universities in Saudi Arabia. Thus, the findings might not be fully generalizable to instructors and students at other universities and higher education institutions.

The second limitation is the small sample size from each university. This was beyond the control of the researcher, since this study focused on instructors and learners at two emerging universities. However, the qualitative sample of 10 respondents (instructors) was sufficient for a qualitative inquiry, and triangulation of the data increased the validity of the findings.

The third limitation is that there is still a lack of agreement among researchers about the evaluation of e-Learning effectiveness, as well as the factors that affect it. This could lead to differing results among studies.

The fourth limitation is that the study was limited to Saqra and Almajmaah Universities, which are only two of the 25 universities that operate in the Kingdom. Additionally, because these two emerging universities are in rural regions, the study may reveal different findings when applied to other provinces.

5.7 Future Work and Directions

First, this study focused on four factors that may affect the effectiveness of e-Learning according to instructors' and learners' perspectives at two emerging universities in Saudi Arabia. However, e-Learning implementations at the Kingdom's emerging universities are still in their early stages.

Further studies are needed at other universities, such as well-established universities in Saudi Arabia. This study included interviews and questionnaires that were completed by instructors and learners. Further studies should be extended to include other staff members, such as academic and administrative staff.

Second, the study relied upon two emerging universities to identify factors that affect the effectiveness of e-Learning implementations. It is better to include more

universities to generate a more diverse set of factors that affect the effectiveness of e-Learning. Further studies may be conducted to compare e-Learning implementations between Saudi universities and other international universities that use e-Learning. A comparative study at the global scale may provide further insight into e-Learning effectiveness, as different users of e-Learning may provide further details regarding the most effective type/implementation of e-Learning. This study focused on emerging universities, so it would be interesting to conduct further studies at schools and colleges and in the service, industry and business sectors to explore learners' perceptions of the effectiveness of e-Learning.

Finally, this study primarily examined the four factors that influence the effectiveness of e-Learning. Further research may include other factors, such as psycho-social potential and physical attributes, that may affect the effectiveness of e-Learning at emerging universities and higher educational institutions.

5.8 Summary

This study achieved its main aim to determine the factors that influence the effectiveness of e-Learning and the reasons for the late adoption of e-Learning techniques at two emerging universities in the Kingdom of Saudi Arabia. There are several limitations of e-Learning that have been thoroughly discussed and analysed in the study, which may have contributed to the late adoption of e-Learning at the two emerging universities. These limitations included the narrow scope of the context (scope limited to only two emerging universities in Saudi Arabia), the small sample size of the investigation and the lack of agreement between researchers regarding the evaluation of e-Learning effectiveness.

The objectives of the research were achieved, as the current practices of e-Learning implementations at two emerging Saudi Arabian universities were determined; the challenges associated with learners' adoption of e-Learning were examined; learners' perceptions of their ability to learn autonomously and their perceptions of their interactions in e-Learning were explored; and strategies that address the challenges of e-Learning implementation were identified and developed.

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APPENDIXES

Appendix A: Supervisor Letter

Dr Robert Goodwin
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School of Computer Science, Engineerin
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Flinders University
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09 September 2013

To whom it may concern,

I am a lecturer at Shaqra University currently undertaking PhD study at Flinders University and the "The Effectiveness of e-Learning Experience in some Emerging Universities in Saudi Arabia from Instructor and Learner Perceptions".

I would like to conduct a survey and interviews at your university for data collection.
In order to obtain ethics approval at Flinders University I need a letter confirming that I can conduct my research at your university.

I have attached a draft of a letter you can send to me granting approval. If you want to see the survey and interview questions I can forward them to you.

Any enquiries you may have concerning this project should be directed to me by post, telephone email at the address above.

Thank you for your attention and assistance.

Yours sincerely,

Bader Alojaiman
bader.alojaiman@flinders.edu.au
[redacted]

Dr Robert Goodwin PhD, BSc(Hons), Dip ED.
[redacted]

inspiring achievement

Appendix B: The Study Cover Letter – English Version

Dr Robert Goodwin
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09 September 2013

To whom it may concern,

This letter is to introduce Mr. Bader Alojaiman who is a PhD candidate student in the School of Computer Science, Engineering and Mathematics at Flinders University in Australia. He will produce his student card, which carries a photograph, as proof of identity.

Bader is undertaking research leading to the production of a thesis on the subject of "The Effectiveness of e-Learning Experience in some Emerging Universities in Saudi Arabia from Instructor and Learner Perceptions"
He would be most grateful if you would volunteer to assist in this project by granting an interview or completing a questionnaire that covers certain aspects of this topic. No more than 25 minutes of your time would be required.

Be assured that any information provided will be treated in the strictest confidence and none of the participants will be individually identifiable in the resulting thesis, report or other publications. You are, of course, entirely free to discontinue your participation at any time or to decline to answer particular questions.

Any enquiries you may have concerning this project should be directed to me by post, telephone or email at the address below.

Thank you for your attention and assistance.

Yours sincerely,

[redacted]

Dr Robert Goodwin PhD, BSc(Hons), Dip ED.

inspiring achievement

Appendix C: The Study Cover Letter – Arabic Version

Dr Robert Goodwin
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09 December 2013

إلى من يهمة الأمر

هذا الخطاب هو تعريف بالسيد/ بدر العجيمان، طالب في تخصص تقنية المعلومات في كلية علوم الحاسب والهندسة والرياضيات في جامعة فلندرز بإستراليا. سوف يقوم بتقديم بطاقة الطالب الخاصة به وهي تحتوي على صورة شخصية له.

بدر يقوم ببحث للوصول إلى نتائج خاصة بأطروحته والتي بعنوان" فعالية تجربة التعليم الإلكتروني في بعض الجامعات الناشئة في المملكة العربية السعودية من من وجهة نظر المُعلم والمتعلم". سوف يكون في غاية الإمتنان لو تفضلتم بالتطوع لمساعدته في هذا المشروع من خلال منحة الفرصة لإجراء مقابلات و إكمال الإستبيان الذي يغطي جوانب معينة من إطروحته. وهذا الأمر لن يتطلب من وقتكم أكثر من ٢٠ دقيقة.

نأكد أنه سيتم التعامل مع أي من هذا المعلومات بسرية تامة وأنه لن يتم الإشارة إلى أي من المشاركين بشكل خاص أثناء الرسالة. وبالطبع يحق للمشارك التوقف عن المشاركة في أي وقت أو عدم الإجابة على أي من الأسئلة.

إذا كان لديكم أي إستفسار بإمكانكم التواصل معنا عن طريق البريد أو الهاتف أو البريد الالكتروني على العناوين الموضحة في الأسفل.

شكراً لكم على حسن إهتمامكم و تعاملكم.

وتفضلوا بقبول فائق احترامي.

د. روبرت قودوين
كلية علوم الحاسب والهندسة والرياضيات
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inspiring achievement

Appendix D: The Faculty Members Questionnaire – English Version

Main questions:

1. What are your perceptions of e-Learning's positives and negatives?

2. What are your perceptions of barriers facing e-Learning and its requirements and your suggestions for the improvement of e-Learning?

Secondary questions:

1. Are you able to teach through e-Learning at anytime, anywhere and at any pace?
2. What are your expectations of and needs for e-Learning?
3. How would you compare traditional and e-Learning?
4. How would you characterize your opinion of e-Learning?
5. Describe your dealings with your studentsvia e-Learning and face to face and which type you prefer for interaction?
6. What do you believe is the most important factor that motivates students to study on-line?
7. What do you believe is the most important factor that discourages students to study on-line?
8. What do you believe is the most important factor in motivating faculty members to promote e-Learning?
9. What is the primary motivation for you to teach an online program?
10. What is the most important factor in motivating faculty not to teach on-line?
11. What do you believe will be the future of education regarding the methods and mechanisms of e-Learning?
12. How would you characterize your opinion of e-Learning content?
13. Are there any other comments that you would like to share regarding your experience with e-Learning?

Appendix E: The Students Questionnaire – English Version

Please mark (√) in the right place:

Background

University	**Specialization**	**Have you learned by e-Learning before?**	**Age**	**Information Communication Technology Skills**
□ Shaqra □ Majmaah	□ Art □ Science	□ No □ Yes	□ 19 – 22 Years □ 23 – 25 Years □ 26 & Above	□ Beginner □ Intermediate □ Skilled

Factor 1: The Ability to Learn Autonomously in e-Learning

	Items	strongly agree (5)	agree (4)	neutral (3)	disagree (2)	strongly disagree (1)
1	In e-Learning my learning is personalized					
2	In e-Learning I can learn anytime, anywhere					
3	In e-Learning I can learn at my own pace					
4	e-Learning is suitable for my learning style					
5	e-Learning enables me to review previous material any time					
6	e-Learning presents immediate feedback					

7	In e-Learning I am able to self-evaluate					
8	e-Learning presents suitable technical support					

Factor 2: Learner- Content- Interaction in e-Learning

	Items	strongly agree (5)	agree (4)	neutral (3)	disagree (2)	strongly disagree (1)
9	e-Learning eases the process of learning					
10	e-Learning encourages me to learn more					
11	e-Learning increases my capacity to learn					
12	e-Learning increases my motivation to learn					
13	e-Learning increases my productivity					
14	e-Learning helped me to manage my time and self discipline					
15	My specific learning time in e-Learning was spent fully in learning					
16	I prefer to do the tasks and tests through e-Learning Tools					

Factor 3: Learner-Instructor- Interaction in e-Learning

	Items	strongly agree (5)	agree (4)	neutral (3)	disagree (2)	strongly disagree (1)
17	I prefer communication with the instructor by e-Learning compared to face to face					
18	E-Learning has increased communication with the instructor					
19	I built a productive relationship with the instructor via e-Learning					
20	e-Learning eased discussion with my instructor					
21	e-Learning encouraged me to discuss the learning material with my instructor					
22	I enjoyed contacting my instructor via e-Learning					
23	In e-Learning I received more attention from my instructor					

Factor 4: Learner-Learner- Interaction in e-Learning

	Items	strongly agree (5)	agree (4)	neutral (3)	disagree (2)	strongly disagree (1)
24	I prefer to communicate with my classmates by e-Learning compared to face to face					
25	e-Learning has increased my communication with other learners					
26	I built a productive relationship with other learners via e-Learning					
27	e-Learning eased discussion with my classmates					
28	E-Learning encouraged me to participate in discussion with my classmates					
29	I enjoyed contacting my classmates via e-Learning					
30	E-Learning has increased cooperation among learners					

Please feel free to add anything that was not mentioned in the Questionnaire.

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Appendix F: The Students and the Faculty Members Questionnaire – Arabic Version

إستبانةالطلاب

يرجى وضع العلامة (٧) في المكان المناسب .

المعلومات الأساسية:

الجامعة التي تدرس بها	التخصص	هل سبق لك أن درست بالتعلم الإلكتروني ؟	العمر	المهارات التقنية
( ) شقراء ( ) المجمعة	( ) نظري ( ) علمي	( ) نعم ( ) لا	□١٩ - ٢٢ □٢٣_٢٥ □٢٦ وأعلى	( ) مبتدئ ( ) متوسط ( ) متمكن

العامل الأول: القدرة على التعلم ذاتياً في التعلم الإلكتروني

م	العبارة	موافق تماماً (٥)	موافق (٤)	محايد (٣)	غير موافق (٢)	غير موافق تماماً (١)
١	في التعلم الإلكتروني تعلمي ذاتياً					
٢	يمكنني التعلم في أي وقت وفي أي مكان من خلال التعلم الإلكتروني					
٣	أستطيع التعلم وفق قدراتي من خلال التعلم الإلكتروني					
٤	يقدم التعلم الإلكتروني ما يناسب طريقة تعلمي					

٥	يتيح التعلم الإلكتروني مراجعة ما سبق دراسته					
٦	يقدم التعلم الإلكتروني ردود فعل فوريه					
٧	يُمكن التعلم الإلكتروني من تقويم الذات					
٨	يقدم التعلم الإلكتروني الدعم الفني المناسب					

العامل الثاني: التفاعل مع المحتوى في التعلم الإلكتروني

م	العبارة	موافق تماماً (٥)	موافق (٤)	محايد (٣)	غير موافق (٢)	غير موافق تماماً (١)
٩	يُسهل التعلم الإلكترونيعملية التعلم					
١٠	يُشجعني التعلم الإلكتروني على مزيد من التعلم					
١١	يزيد التعلم الإلكتروني من إستيعابي					
١٢	يزيد التعلم الإلكتروني من حماسي للتعلم					
١٣	يزيد التعلم الإلكتروني من إنتاجيتي					
١٤	يساعدني التعلم الإلكتروني على الإنظباط وإدارة الوقت					
١٥	وقتي في التعلم الإلكتروني يصرف بكامله في التعلم					
١٦	أفضل أداء المهام والإختبارات من خلال أدوات التعلم الإلكتروني					

العامل الثالث: التفاعل مع الأستاذ في التعلم الإلكتروني

م	العبارة	موافق تماماً (٥)	موافق (٤)	محايد (٣)	غير موافق (٢)	غير موافق تماماً (١)
١٧	أفضل التواصل مع الأستاذ بالتعلم الإلكتروني مقارنة مع وجهاً لوجه					
١٨	يزيد التعلم الإلكتروني التواصل مع الأستاذ					
١٩	أستطيع بناء علاقة منتجة مع الأستاذ عبر التعلم الإلكتروني					
٢٠	يُسهلالتعلم الإلكتروني النقاش مع الأستاذ					
٢١	يُشجع التعلم الإلكتروني على مناقشة الأستاذ					
٢٢	استمتع بالإتصال بالأستاذ عبر التعلم الإلكتروني					
٢٣	أتلقى إهتماماً أكثر من الأستاذ من خلال التعلم الإلكتروني					

العامل الرابع: التفاعل مع الزملاء في التعلم الإلكتروني

م	العبارة	موافق تماماً (٥)	موافق (٤)	محايد (٣)	غير موافق (٢)	غير موافق تماماً (١)
٢٤	أفضل التواصل مع زملائي بالتعلم الإلكتروني مقارنة مع وجهاً لوجه					
٢٥	يزيد التعلم الإلكتروني التواصل مع زملائي					
٢٦	أستطيع بناء علاقة فعالة مع زملائي عبر التعلم الإلكتروني					
٢٧	يُسهلالتعلم الإلكتروني النقاش مع زملائي					
٢٨	يُشجع التعلم الإلكتروني على المشاركة في النقاش مع زملائي					
٢٩	استمتع بالإتصال بزملائي عبر التعلم الإلكتروني					
٣٠	يزيد التعلم الإلكتروني من التعاون بين الطلاب					

رجاء لا تتردد في إضافة أي شئ لم يذكر ويساهم في تطوير هذا البحث

شكراً للوقت المبذول وتقبل تحياتي ،،

إستبانة أعضاء هيئة التدريس

الأسئلة الرئيسية:

١. ماهي إيجابيات وسلبيات التعلم الإلكتروني من وجهة نظرك ؟

٢. ماهي العقبات والمتطلبات والمقترحات لتطوير التعلم الإلكتروني من وجهة نظرك ؟

الأسئلة الثانوية:

١. هل أنت قادر على التعليم من خلال التعلم الإلكتروني في أي زمان وأي مكان وأي سرعة ؟

٢. ماهي إحتياجاتك في التعلم الإلكتروني وماهي توقعاتك ؟

٣. قارن بين التعلم تقليدياً والتعلم إلكترونياً ؟

٤. كيف تصف رأيك في التعليم الإلكتروني؟

٥. صف تعاملك مع الطلبة من خلال التعلم الإلكتروني ووجهاً لوجه . وأي الطريقتين تفضل ؟ ولماذا ؟

٦. ماهو العامل الأهم الذي يحفزالطلاب لدراسة برنامج على شبكة الإنترنت؟

٧. ماهو العامل الأهم الذي لا يُشجع الطلاب لدراسة برنامج على شبكة الإنترنت؟

٨. ماهو العامل الأهم الذي يُحفزأعضاء هيئة التدريس لتعزيزالتعليم الإلكتروني؟

٩. ما هوالدافع الأساسي لك لتدريس برنامج على شبكة الإنترنت؟

١٠. ماهو العامل الأهم في تحفيزأعضاء هيئة التدريس لعدم تدريس برنامج على شبكة الإنترنت؟

١١. ماهو تصورك لمستقبل التعليم الإلكتروني من حيث الأساليب والآليات؟

١٢. كيف تصف رأيك في محتوى التعليم الإلكتروني؟

١٣. هل هناك أي تعليقات أخرى ترغب في إضافتها بخصوص تجربتك مع التعلم الإلكتروني؟

Appendix G: The Ethics Committee Approval

Dear Bader,

The Chair of the Social and Behavioural Research Ethics Committee (SBREC) at Flinders University considered y response to conditional approval out of session and your project has now been granted final ethics approval. You ethics final approval notice can be found below.

FINAL APPROVAL NOTICE

Project No.:	6279
Project Title:	The Effectiveness of e-Learning Experience in some Emerging Universities in Saudi Arabia from Instructor and Learner Perceptions
Principal Researcher:	Mr. Bader Alojaiman
Email:	bader.alojaiman@flinders.edu.au
Address:	School of Computer Science, Engineering and Mathematics

Approval Date:	6 November 2013	Ethics Approval Expiry Date:	15 December 20

The above proposed project has been **approved** on the basis of the information contained in the applicatio attachments and the information subsequently provided.

RESPONSIBILITIES OF RESEARCHERS AND SUPERVISORS

1. **Participant Documentation**
   Please note that it is the responsibility of researchers and supervisors, in the case of student projects, to ens that:
   - all participant documents are checked for spelling, grammatical, numbering and formatting errors. Committee does not accept any responsibility for the above mentioned errors.
   - the Flinders University logo is included on all participant documentation (e.g., letters of Introduc information Sheets, consent forms, debriefing information and questionnaires – with the exceptio purchased research tools) and the current Flinders University letterhead is included in the header of all le of introduction. The Flinders University international logo/letterhead should be used and documentation sh contain international dialling codes for all telephone and fax numbers listed for all research to be condu overseas.
   - the SBREC contact details, listed below, are included in the footer of all letters of introduction and information sheets.

     This research project has been approved by the Flinders University Social and Behavioural Research Et Committee (Project Number 'INSERT PROJECT No. here following approval'). For more information regarding ethical approval of the project the Executive Officer of the Committee can be contacted by telephone on 8201 3116, by fax on 8201 2035 or by email human.researchethics@flinders.edu.au.

2. **Annual Progress / Final Reports**
   In order to comply with the monitoring requirements of the *National Statement on Ethical Conduct in Hu Research (March 2007)* an annual progress report must be submitted each year on the **6 November** (appr anniversary date) for the duration of the ethics approval using the annual / final report pro forma avail from Annual / Final Reports SBREC web page.*Please retain this notice for reference when completing ar progress or final reports.*

Appendix H: Approvals and correspondence Letters to conduct the study from Majmaah and Shaqra Universities

بسم الله الرحمن الرحيم

Kingdom of Saudi Arabia
Ministry of Higher Education
Majmaah University
Deanship of E-learning
& Distance Learning

جامعة المجمعة
Majmaah University

المملكة العربية السعودية
وزارة التعليم العالي
جامعة المجمعة
عمادة التعليم الإلكتروني والتعلم عن بعد

Social and Behavioural Research Ethics Committee
Flinders University
Australia

Re: Confirming the Undertaking of the Field Study for Mr. Bader Alojaiman

To Whom It May Concern,

Based on Mr. Bader Alojaiman is request to collect data for his research "The Effectiveness of e-Learning Experience in some Emerging Universities in Saudi Arabia from Instructor and Learner Perceptions" I'm pleased to inform you on behalf of Majmaah University and the Computer Science School that it is on honour for us to help him in his research and will help him in undertaking his survey and interviews.

Best Regards,

[redacted]

Dean of Electronic Learning and Distance Education Deanship

Mahmaah University

Tel: +966164045350

Email: @mu.edu.sa

الرقم: ---------- التاريخ: / / ١٤٣هـ المشفوعات: ----------

المملكة العربية السعودية - ص.ب : ٦٦ المجمعة : ١١٩٥٢ - هاتف : ٠٦ ٤٣١١٥٢٠ - فاكس : ٠٦ ٤٣٢٢٧٨٥
Kingdom of Saudi Arabia - P.O. Box 66 Almajmaa : 11952 - Tel: 06 4311520 - Fax : 06 4322785
Email: elearning@mu.edu.sa www.mu.edu.sa

بسم الله الرحمن الرحيم

المملكة العربية السعودية
وزارة التعليم العالي
جامعة شقراء
وكالة الجامعة للشؤون التعليمية
(٠٤٥)

جامعة شقراء
Shaqra University

الرقم : 53/70282
التاريخ : 2013/9/16
المشفوعات :

Social and Behavioural Research Ethics Committee
Flinders University
Australia

Re: Confirming the Undertaking of the Field Study for Mr. Bader Alojaiman

To Whom It May Concern,

Based on Mr. Bader Alojaimanis request to collect data for his research "The Effectiveness of e-Learning Experience in some Emerging Universities in Saudi Arabia from Instructor and Learner Perceptions" I'm pleased to inform you on behalf of Shaqra University and the Computer Science School that it is on honour for us to help him in his research and will help him in undertaking his survey and interviews.

Kind Regards,

Vice President for Academic Affairs
[redacted]
Dr. Abdullah Alsubaie

SHAQRA UNIVERSITY
Shaqra Community College

Tel: +96616224481
Fax: +96616224439
Email: asubaie@su.edu.sa

Appendix I: Information Sheets for Participants Interview – English Version

Dr. Robert Goodwin
Senior Lecturer, Information Technology,
School of Computer Science, Engineering,
and Mathematics
Flinders University
GPO Box 2100
Adelaide SA 5001
Tel: 08 8201 3113
Fax: 08 8201 2904
robert.goodwin@flinders.edu.au
http://csem.flinders.edu.au
CRICOS Provider No. 00114A

INFORMATION SHEET

Title: "The Effectiveness of e-Learning Experience in some Emerging Universities in Saudi Arabia from Instructor and Learner Perceptions"

Investigators:
Mr. Bader Alojaiman
School of Computer Science, Engineering and Mathematics
Flinders University, Australia
Ph: +61 8 82017980
Email: bader.alojaiman@flinders.edu.au

Description of the study:
This study is part of the project entitled "The Effectiveness of e-Learning Experience in some Emerging Universities in Saudi Arabia from Instructor and Learner Perceptions". This project will investigate the problems or difficulties which emerging universities face and why e-Learning is not being employed effectively. On the basis of this information, I will develop solutions to improve university e-Learning systems, which will positively affect the output of the university. This project is supported by Flinders University School of Computer Science, Engineering and Mathematics.

Purpose of the study:
It is expected that the outcome of the research will enable to emerging universities in Saudi Arabia to be more confident when adopting e-Learning. It will also help the government in designing policies to promote e-Learning that will have a positive impact on the national education overall. Lastly, this research work will also be useful in providing guidelines for the adoption of e-Learning in emerging universities.

What will I be asked to do?
You are invited to attend a one-on-one interview with a PhD student or a survey who will ask you a few questions the main internal factors in the assessment of e-Learning in emerging universities in Saudi Arabia and what do you think about strong/weak points regarding e-Learning adoption in Saudi Arabia. The interview will take about 20 - 25 minutes and survey will be of 20 - 25 minutes. The interview will be recorded using taking note to help with looking at the results. Once recorded, the interview will be transcribed (retyped-up) and stored as a computer file and then destroyed once the results have been finalised. This is voluntary.

What benefit will I gain from being involved in this study?
The sharing of your experiences will improve the e-Learning adoption in Saudi Arabian emerging universities. We are very keen to identify obstacles and challenges which are as useful as possible to be resolved for e-Learning adoption. The results of the study will help all parties in e-Learning adoption to assess their e-Learning readiness by using the suggested recommendations.

Will I be identifiable by being involved in this study?
We do not need your name and you will be anonymous. Once the interview has been typed-up and saved as a file, the voice file will then be destroyed. Any identifying information will be removed and the typed-up file stored on a password protected computer that only the Investigator (Bader Alojaiman) will have access to. Your comments will not be linked directly to you.

Are there any risks or discomforts if I am involved?
Other group members may be able to identify your contributions even though they will not be directly attributed to you.
The investigator anticipates few risks from your involvement in this study. If you have any concerns regarding anticipated or actual risks or discomforts, please raise them with the investigator.

How do I agree to participate?
Participation is voluntary. You may answer 'no comment' or refuse to answer any questions and you are free to withdraw at any time without effect or consequences. A consent form accompanies this information sheet. If you agree to participate please read and sign the form.

How will I receive feedback?
Outcomes from the project will be summarised and given to you by the investigator if you would like to see them.

Thank you for taking the time to read this information sheet and we hope that you will accept our invitation to be involved.

Appendix J: Information Sheets for Participants Interview – Arabic Version

Dr Robert Goodwin
Senior Lecturer, Information Technology,
School of Computer Science, Engineering
and Mathematics
Flinders University
GPO Box 2100
Adelaide SA 5001
Tel: 08 8201 3113
Fax: 08 8201 2904
robert.goodwin@flinders.edu.au
http://csem.flinders.edu.au
CRICOS Provider No. 00114A

أخي الكريم ،،

السلام عليكم ورحمة الله وبركاته .. وبعد ،،،

يطيب لي دعوتك للمساهمة الفاعلة في بحثي الأكاديمي من خلال المشاركة في المقابلات الشخصية والتي عبارة عن أحد الوسائل الرئيسية لجمع البيانات المطلوبة، و الأداة الرئيسية لإتمام بحثي الذي أقوم حالياً بإعداده كمتطلب أساسي لنيل درجة الدكتوراه في تقنية المعلومات من جامعة فلندرز بولاية جنوب أستراليا الأسترالية.

عنوان البحث: فعالية تجربة التعليم الإلكتروني في بعض الجامعات الناشئة في المملكة العربية السعودية من وجهة نظر المُعلم والمُتعلم .

وصف الدراسة: هذه الدراسة هي جزء من مشروع بعنوان "فاعلية تجربة التعليم الإلكتروني في بعض الجامعات الناشئة في المملكة العربية السعودية من المعلم و المتعلم التصورات " . و هذا المشروع التحقيق في المشاكل والصعوبات التي تواجه الجامعات الناشئة ، ولماذا لا يتم تطبيق التعليم الإلكتروني بطرق ذات فعالية عالية وعلى أساس هذه المعلومات سوف يتم وضع حلول لتحسين نظم التعلم الإلكتروني في الجامعة ، الأمر الذي سيؤثر إيجاباً على مخرجات الجامعة. هذة الدراسة بدعم من قبل كلية هذة الدراسة بدعم من قبل جامعة فلندرز في علوم الحاسب الآلي والهندسة والرياضيات.

الغرض من الدراسة:
معرفة المشاكل والمصاعب التي تواجه الجامعات الناشئة، ولماذا لا يتم تطبيق التعليم الإلكتروني بطرق ذات فعالية عالية ومن المتوقع أن نتائج البحث سوف تمكن من الجامعات الناشئة في المملكة العربية السعودية أن تكون أكثر ثقة عند اعتماد التعليم الإلكتروني . كما سيساعد الحكومة في وضع سياسات لتعزيز التعليم الإلكتروني التي سيكون لها أثر إيجابي على خطة التعليم الوطنية الشاملة .

طريقة المشاركة: بمكنك المشاركة من خلال الموافقة على أن يتم مقابلتك من قبلي كباحث، و المقابلة بشكل عام عبارة عن حديث عام و مفتوح بدون تحديدات مسبقة حول خبرتكم في مجال التعليم الإلكتروني أو المسح وهو عبارة عن بعض الأسئلة حول رأيك بالتعليم الإلكتروني. سوف تستغرق المقابلة حوالي ٢٠ – ٢٥ دقيقة ، وسوف يكون المسح حوالي ٢٠ – ٢٥ دقيقة. سيتم تسجيل المقابلة للمساعدة عند النظر في النتائج وسيتم إتلافها عند الإنتهاء من تدوين النتائج.

الفائدة المتوقعة: مشاركتك في هذه الدراسة ستساعد على تبادل الخبرات الخاصة بك لتحسين منظومة التعليم الإلكتروني في الجامعات الناشئة في المملكة العربية السعودية . ونحن حريصون جداً على تحديد العقبات والتحديات التي هي مفيدة والإمكان أن تساهم في حل لتفعيل التعليم الإلكتروني بشكل أوسع. وستكون نتائج هذه الدراسة مساعدة لجميع الأطراف لتقييم الإستعداد للتعلم الإلكتروني بإستخدام التوصيات المقترحة والوصول إلى فهم أعمق إلى معرفة تلك العقبات والتحديات.

الخصوصية: هوية المشارك ستكون مخفية و ذلك من خلال إعطاء كل مشارك رمز لضمان الخصوصية و لن يكون هناك أي أسم أو بيانات خاصة، كما أن خصوصية المعلومات التي ستقدمها مضمونة و لن يطلع عليها سوى الأشخاص المعنيين بهذا البحث ولن تستخدم هذه المعلومات لأي هدف آخر سوى في هذا البحث و سيتم مسح تسجيل المقابلة مباشرة بعد عند الإنتهاء من تدوين النتائج وإتلاف إستبانة المسح كذلك.

حق رفض المشاركة: مشاركتك في هذه الدراسة تطوعية بشكل كامل.

الموافقة على المشاركة: ردك على هذة الرسالة يعتبر موافقة ضمنية منك على المشاركة في هذة الدراسة.

وأخيرا فإن مشاركتكم في هذه الدراسة محل شكري وتقديري ...

الباحث
بدر بن علي العجيمان

inspiring achievement

Appendix K: Consent for Interview – English Version

CONSENT FORM FOR PARTICIPATION IN RESEARCH
(By Interview)

I ….....being over the age of 18 years hereby consent to participate as requested in the interview for the research project on The Effectiveness of e-Learning Experience in some Emerging Universities in Saudi Arabia from Instructor and Learner Perceptions.

1. I have read the information provided.
2. Details of procedures and any risks have been explained to my satisfaction.
3. I am aware that I should retain a copy of the Information Sheet and Consent Form for future reference.
4. I understand that:
    - I may not directly benefit from taking part in this research.
    - I am free to withdraw from the project at any time and am free to decline to answer particular questions.
    - While the information gained in this study will be published as explained, I will not be identified, and individual information will remain confidential.
    - I may withdraw at any time from the session or the research without disadvantage.
5. I have had the opportunity to discuss taking part in this research with a family member or friend.

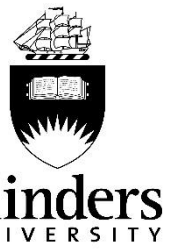
Participant's signature……Date……...

I certify that I have explained the study to the volunteer and consider that she/he understands what is involved and freely consents to participation.

Researcher's name: Bader Alojaiman

Researcher's signature …….. Date …….

Appendix L: Consent for Interview – Arabic Version



إستمارة الموافقة على المشاركة في البحث

(عن طريق المقابلة)

أنا .....

عمري أكبر من ١٨ سنة وأوافق على المشاركة في المقابلة للبحث الذي بعنوانفعالية تجربة التعليم الإلكتروني في بعض الجامعات الناشئة في المملكة العربية السعودية من وجهة نظر المُعلم والمتعلم.

١ -أنني قد قرأت جميع المعلومات المقدمة.

٢ - تم شرح جميع التفاصيل والأخطار الممكنة ولدي إرتياح كامل للمشاركة.

٣ - إنني أدركأنني يجب أنتحتفظ بنسخة منورقةالمعلومات ونموذج الموافقةكمرجع في المستقبل.

٤ - أنا أفهم التالي :

- قد لا استفيد بشكل مباشر من المشاركة في هذا البحث.
- حرية الإنسحاب من المشروع في أي وقت، وحرية رفض الإجابة عن أسئلة معينة.
- في حين سيتم نشر المعلومات المكتسبة فيهذة الدراسة كما هو موضح، لن تتم الإشارة لي بشكل محدد ، والمعلومات الشخصية المقدمة مني ستبقى سرية.
- ما إذا كان بإمكاني المشاركة أم لا ، أو الانسحاب بعد المشاركة، وسوف يكون له تأثير على أي علاج أو الخدمة التي تقدم لي.
- إمكانية الإنسحاب من هذة الدورة أو المشاركة في هذا البحث دون عيوب.

٥ - وقد أتيحت لي الفرصة لمناقشة المشاركة في هذا البحث مع أفراد العائلة أو الأصدقاء.

توقيع المشارك ..... التاريخ.....

وأشهد أنني قد شرحت هذة الدراسة إلى المتطوع وأفاد / أنه يفهم ما سيشارك به وبإرادته يوافق على المشاركة.

أسم الباحث : بدر العجيمان

التوقيع..... التاريخ.....