An Examination of Variables Influencing the Acceptance and Usage of E-Learning Systems in Jordanian Higher Education Institutions

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I would like to extend my appreciation to Prof. Abby Ghobadian for his comments, prompt feedback and suggestions to complete my research.
DEDICATION

I wholeheartedly dedicate this work to my father Dr. Sood Abdel Jaber who provided all the possible means for me to finish my research. Also, my sincere gratitude to my mother, she encouraged me and prayed all the time for me to finish my thesis. In addition, I would like to thank my brothers Dr. Maen Abdel Jaber, Dr. Mutasim Abdel Jaber, Dr. Muawiya Abdel Jaber and Dr. Mohammad Abdel Jaber they all equally supported me and encouraged me all the time.
ABSTRACT

This research attempts to investigate the factors that influence E-learning adoption in academic institutions in Jordan in order to develop an appropriate model of the acceptance and usage of E-learning systems in Jordanian academic institutions. Therefore, an extensive literature review was accomplished to develop a conceptual framework on the basis of TAM and cultural variables related to technology adoption.

The research employed both qualitative and quantitative approaches in order to examine students, academics, IT and staff perceptions toward the factors influencing the acceptance and usage of E-Learning systems in higher education systems. A total number of 198 respondents were valid and considered for further statistical analysis and 20 of the respondents were participated by the semi-structured interview method. A descriptive analysis was first employed to provide a clear description of respondents’ demographic information. Inferential analysis was also employed using multiple regressions in order to examine the research hypotheses.

The results revealed that the intention to use E-learning systems in higher education systems was more greatly affected by the perceived ease of use, rather than the idea of perceived usefulness. Furthermore, it was clear that perceived usefulness, together with perceived ease of use, was positive in its effect on people’s intention to use any new E-learning system. Moreover, the study also proved that the cultural dimensions were vital in this particular context, and significantly predicted peoples’ attitudes to perceived usefulness and perceived ease of use.

It was observed through descriptive analysis that cultural factors, especially risk perception play important role in shaping Jordanians’ attitudes towards e-learning in general. Conventionally the Arab society is risk averse, therefore Jordanians prefer not to involve in E-learning if it is too difficult to operate or understand.
It was found that E-learning still largely remains concentrated in the higher income schools and some universities. Modern private sector universities are endeavouring to provide state-of-the-art learning technology to allow students to develop their skills and become an asset for country’s development. Policymakers are showing keen resolve to introduce modern learning aids in elementary school systems.

Through the ETAM model, it was observed that E-learning in Jordan is still in its infancy stage. Psychological perception of Jordanians towards this technology is important in shaping their attitudes towards acceptance. In addition, user experiences also form subjective norms that translate into general behaviour.

The contribution of this research is that it provides a holistic picture of the factors influencing E-learning and its acceptance in higher education institutions sectors in Arab nations (and in particular in Jordan), which adds knowledge in the area of information systems. Moreover, the study contributes to the understanding of the degree of influence that culture itself asserts on acceptance behaviour theory with regard to technological advancement.
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<tbody>
<tr>
<td>BI</td>
<td>Behaviour Intention</td>
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<td>COL L</td>
<td>Collectivism</td>
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<td>CRM</td>
<td>Customer Relationship Management</td>
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<td>CD</td>
<td>Cultural Dimensions</td>
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<td>EFA</td>
<td>Exploratory Factor Analysis</td>
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<td>GDP</td>
<td>Gross Domestic Product</td>
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<td>HCI</td>
<td>Human-Computer Interaction</td>
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<td>ICT</td>
<td>Information and Communication Technology</td>
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<td>IN</td>
<td>Intention to Use</td>
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<td>IND</td>
<td>Individualism</td>
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<td>INFQ</td>
<td>Information Quality</td>
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<td>IS</td>
<td>Information Systems</td>
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<td>IT</td>
<td>Information Technology</td>
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<tr>
<td>KMO</td>
<td>Kaiser-Meyer-Oklin value</td>
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<td>M</td>
<td>The Mean</td>
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<td>MAS</td>
<td>Masculinity</td>
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<td>MIS</td>
<td>Management Information Systems</td>
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<td>PCA</td>
<td>Principal Component Analysis</td>
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<td>PD</td>
<td>Power Distance</td>
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<td>PEOU</td>
<td>Perceived Ease Of Use</td>
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<td>PU</td>
<td>Perceived Usefulness</td>
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<td>SD</td>
<td>Standard Deviation</td>
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<td>SEM</td>
<td>Structural Equation Modelling</td>
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<td>SN</td>
<td>Subjective Norms</td>
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<tr>
<td>Acronym</td>
<td>Description</td>
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<tr>
<td>SRQ2</td>
<td>Service Quality and Attractiveness</td>
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<td>SYQ</td>
<td>System Quality</td>
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<td>TA</td>
<td>Tangibility</td>
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<td>TAM</td>
<td>Technology Acceptance Model</td>
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<tr>
<td>TAM2</td>
<td>Extension of Technology Acceptance Model</td>
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<tr>
<td>TPB</td>
<td>Theory of Planned Behaviour</td>
</tr>
<tr>
<td>TRA</td>
<td>Theory of Reasoned Action</td>
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<tr>
<td>UA</td>
<td>Uncertainty Avoidance</td>
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<tr>
<td>UE</td>
<td>User Experience</td>
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<td>WOM</td>
<td>Word-of-mouth</td>
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<td>WWW</td>
<td>World Wide Web</td>
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Chapter One: Introduction

1.1 Introduction

The main purpose of this chapter is to introduce the work produced in this thesis about E-learning system acceptance and usage in academic institutions in Jordan. It synthesises the main topics of the research, which are elaborated in their designated chapters; such as the research background, scope, objectives, questions, significance, methodology and implications. The study concludes with an overview of the content of this dissertation in the thesis outline section.

1.2 Background to the Research Problem

Information Technology (IT) is considered as one of the main drivers of the development of teaching and learning (Wong et al, 2010), prompting governments and university management to start new initiatives and support investment to make and sustain Information Communication Technology (ICT) infrastructures in schools and universities (Moses et al, 2008). In recent times, the use of the Internet has enhanced access to a wider spread of information and has helped change the nature of education methods (Teo et al, 2011). Management bodies in a number of institutions, as well as lecturers and administrators, have recognised how useful and flexible E-learning is, accommodating the requirements of all learners (Johnson et al, 2011).

E-learning is an opportunity that has emerged recently. It helps to develop the learning process by applying new pedagogical approaches that offer more efficient and effective methods based on the medium of information technology delivered directly to the learner, wherever they may be. It involves a wide range of teaching and learning activities. Using a variety of electronic methods, for example, carries out these activities: the internet,
intranets, and various multimedia systems. Recently, this trend of delivering learning to the learner in an increasing variety of ways and locations has been notably expanded by the creation of E-learning applications that use the medium of mobile telephony (Chang and Tung, 2008).

E-learning generally refers to the employment of new, advanced methods of learning that use electronically delivered instructional content via electronic media (Trombley and Lee, 2002) such as using CDs, e-training, etc. E-learning emerged as a new way for people to develop their learning in a more efficient and effective manner, eliminating the need to physically attend a learning centre, but still employing the traditional aspects of learning through virtual access to trainers and academics. Virtual seminars and lectures are now as established as their physical counterparts (Selim, 2007). E-learning demands a number of teaching and learning activities (Masoumi, 2006).

In recent times, research by universities and academic institutions shows that the acceptance and usage of E-learning is very low and still in the infancy stage in Jordan and most of the developing countries. Therefore, institutions need to consider the factors that determine and impact the E-learning system. Previous studies demonstrated and revealed that many factors have influenced the E-learning environment. These factors include different parties such as the system itself, the human aspect that operates within the educational environment (i.e., the students and the instructors), and those others that pertain to people’s behaviour.

Carter and Bélanger, (2005) argue that any acceptance and therefore, ultimately, achievement of an E-learning system is dependent upon the willingness of people to accept innovation itself. This would seem an inevitable part of new learning, but there is, however, a demonstrable lack of such uptake and acceptance of E-learning models throughout many academic centres across the globe. (Belanger and Carter, 2008; Choudrie and Dwivedi, 2005; Gupta et al., 2008; Kumaret al., 2007, Fuet al., 2006; Wang, 2003). The adoption and acceptance of E-learning systems often, ostensibly, occurs in a chaotic socio-political environment. It must be therefore of the greatest
importance for this study to deal with not only the technological aspects of this situation, but also the social and cultural aspects too, as this study will include the cultural influence on using E-learning systems.

It is very clear that if we do not understand how and why people are motivated to use E-learning systems, we will not be able to take strategic actions to increase the uptake of E-learning systems (Gilbertet al., 2004). There are a number of factors that determine e-learning uptake and our understanding of that particular phenomenon is currently not as fully understood, as it should be. Limiting factors include:

1. Few studies have made a point of focusing on the reasons for why people do, or do not, take up such learning methods, especially in the case of E-commerce and the Internet. (Tung and Rieck, 2005; Carter and Bélanger, 2005; Kumar et al., 2007; Reddick, 2005).

2. Empirical researches into technological reasons for such behaviour are few, and behavioural studies on this topic are fewer. (Hung et al., 2006).

It is clear, therefore, that more empirical studies are needed with regard to E-learning adoption. By doing this kind of research, it will ultimately help academic bodies and centres ameliorate their knowledge of why people act in relation to E-learning systems.

As mentioned above, there has been little research done in this area. What is more, careful study has shown that the vast majority of the published work done in this field has been carried out in developed, mainly western countries. How this reflects on the position of developing nations will be looked at closely as part of this study’s purview.

What becomes increasingly clear is that there is a tangible ‘knowledge gap’ between developed and developing nations and cultures; this is particularly apparent when considering Arab nations and Arab culture (Alhujran and Chatfield, 2008). The first objective of this work is, therefore, to address the lack of research carried out in the Arab world, which will support the hypothesis beyond the purposes of this work. It will also act as a useful adjunct to general cultural research in the field, address the gap in the
research, and also add to the literature by conducting empirical field research on E-learning systems adoption in the Arab world, specifically Jordan.

This study aims to create and extend a conceptual model that is founded on the Technology Acceptance Model (TAM) (Davis et al., 1989). The TAM model will be integrated with specific social and cultural dimensions that emanate from the research literature, such as system and information quality, subjective norms and Hofstede’s national culture dimensions (power distance, uncertainty avoidance, individualism, and masculinity). The idea of the extended TAM model is established in order to examine the impacts of the above factors upon e-learning system uptake in countries that could be described as ‘developing’ and provide a range of contrasts with the already explored western models. This will be done by reference to the Arab world and its very different cultural mores and models—specifically, that of Jordan.

One of the main reasons for the inclusion of Jordan is that in comparison with other Arab nations, it is ‘...one of the rare countries in the Middle East with a history of commitment to good governance and ICT-related initiatives’ (Ciborra and Navarra, 2005, p.142). In the last decade, Jordan has made a major push to provide E-learning system access in some of its universities. This means that Jordan, perhaps more than other Arab nations is already in transition, and therefore, by analysing the results of this study, there should be some scope to ascertain the level of uptake with regards to similar bodies in western institutions and the comparative uptake there. If there is any difference between similar bodies, the conclusion may be drawn that this is due to cultural differences rather than any technological ones.

That said, however, the comparative level of E-learning system adoption across Jordan as a whole outside of the capital Amman (where most universities are located) is still low when compared to US and European bodies of the same academic standing. Therefore, an understanding of the factors that influence adoption of E-learning systems outside the technological frame set by western organisations is equally critical. Also, though the study focuses mainly on Jordan, the key findings introduced in this study have important
implications for other Arab countries in both of these two understandings (technologically and culturally).

1.3 Scope of the Study

Previous research on E-learning system adoption has concentrated on two major themes: supply and demand-side pressure (Reddick, 2005). The first of these looks at E-learning system adoption from the perspective of supply (academic institutions). This approach examines features that influence the adoption and the implementation of E-learning systems by the institutions themselves (Holden et al., 2003; Reddick, 2005; Norris and Moon, 2005). These features deal with issues such as the use of existing IT infrastructure, the financial resources deployed in this field, the skill levels of those responsible for employing E-learning systems, and any resistance to the introduction of such technology.

The second perspective looks at E-learning systems adoption from the demand-side. There is an examination of the forces that influence people in their adoption and use of E-learning systems (Reddick, 2005; Carter and Belanger, 2005; Phanget al., 2005).

When examining these factors, the following are considered: culture, perceived usefulness, perceived ease of use, system and information quality, subjective norms and intention to use. It is clear from studying the literature, however, that almost all the focus in the past has been done on the supply-side factors that influence E-learning uptake. Conversely, very little has been done on the reasons that motivate people to take up a programme or not, whether personally or in the social factors that influence that decision (Alhujran and Chatfield, 2008; Carter and Bélanger, 2005; Kumar et al., 2007; Reddick, 2005; Tung and Rieck, 2005). This study will then make the main area of its focus on people’s reasons and motivations for their adoption of E-learning systems (the demand-side).
Research indicates that people’s acceptance behaviour is predicted most accurately by the use of models that rely on a technology acceptance model (TAM). Although a TAM is parsimonious, easy to apply in its structure, and exhibits a useful ability to explain factors that include time, population and context, it remains a model that is not without criticism by those who work in this field. The main criticism levelled at the model is its inherent ‘cultural bias’ that disallows accurate generalisation across cultures (whether national or organisational). Moreover, its fundamental assumption that it predicts acceptance behaviour based only on ‘individually-based reactions’ reduces its usefulness as part of a group survey. This normative and social influence is therefore largely ignored, it is argued. Lastly, when the TAM presumes to look at the effects of ‘external variables’ it does so only through the arbitration effect of any the technology’s perceived ease of use (PEOU) and perceived usefulness (PU). This means therefore that any results are arguably limited in their ability to be taken further than its limitations; by implicitly increasing supplementary factors either in a direct or indirect way to influence intention behaviour as part of its operation within a group (BI).

Overcoming these limitations is possible, however, by the use of an Extended Technology Acceptance Model\(^1\). This, naturally, needs to be tailored to suit the technological and cultural environment of a developing country. This has been done, with the caveats mentioned earlier of using the comparatively technologically more advanced universities of Jordan’s capital as part of the main structure. The model attempts to demarcate the arguably causal relationship between 'behavioural, normative, control, management-support, and task-specific beliefs', so a workable model of acceptance intention and usage can be created. Furthermore, the study looks in some depth at the overlooked forces of cultural pressure mentioned by Hofstede: masculinity/femininity, individualism/collectivism, power distance, and uncertainty avoidance, as well as the effect of subjective norms on non-direct relations that may predict acceptance behaviour.

\(^1\) For more information, see chapter 2 section 2.6.5
1.4 Research Questions

This study looks to answer the following questions:

1. To outline the current status of e-learning systems and their acceptance in Jordanian educational institutes;
2. To study the underlying factors that influence behaviour towards e-learning in Jordan;
3. To critically analyse in light of relevant theoretical frameworks, the attitudes of Jordanians towards e-learning systems; and
4. To suggest recommendations to add value to the research and build on conclusions made in this research.

1.5 Research Objectives

The research aims to explore the concept of e-learning systems in Jordan and to utilize theoretical frameworks to analyse the core psychological and social factors influencing acceptance of e-learning technology in Jordanian educational institutes. There are, however, also particular objectives the study wishes to address along the way:

1. What is the current status of e-learning systems in Jordanian educational institutions?
2. What are the key underlying social and psychological characteristics that influence acceptance of e-learning technology in Jordanian institutes?
3. Based on theoretical frameworks, what are the attitudes of Jordanian communities towards e-learning? And
4. What are the possible recommendations for researchers and theorists to understand this topic?
1.6 Research Significance and Motivation

Although there is a range of studies on the adoption of E-learning systems conducted in several developed countries, there is a notable lack of empirical research that makes its prime focus on the Arab world. Addressing this gap in the literature is a prime motivation for conducting this study in Jordan, with its markedly different culture and value system.

Moreover, as was noted earlier, the literature was able to point to the fact that there was a lower level of uptake in developing-world cultures. With regard to Jordan in particular, at present, there are no current statistics about the uptake of E-learning available. Empirical research, therefore, that relates specifically to this area in Jordan is highly significant. The reasons for this are reasonably clear. Specific research in Jordan will also illuminate the important causes of uptake; causes that can, with care, be shared closely with other regional cultures, and more generally in other cultures which share some of the parameters the study employs to make its conclusions. Furthermore, the identification of these shared factors will help to improve the ability of researchers in the future to assist in the increase of E-learning adoption rates in their own countries, by furthering specific cultural and social factors, which assist or obstruct the process of adoption.

It is also hoped that the results discovered in this study will aid and interest those in the following fields:

1. Universities and academic institutions managing e-learning system projects by identifying factors affecting E-learning system adoption.
2. Officials in charge of the development of private sector E-commerce. This is because there is an ostensibly close relationship between E-learning and E-commerce. Those who hold responsibility for the development of E-commerce in Jordan could therefore benefit from the results of this study.
3. Researchers in the field of E-learning will be able to gain additional knowledge and deepen their perspective regarding critical factors associated with E-learning adoption in Jordan, the wider Arab world, and in developing countries.
4. Researchers may also be able to exploit the results of the research by exploring the issue in further depth. This could be through the examination of further case studies for a greater range of Arab and developing countries, or it could entail the introduction of more variables into the existing research to further sharpen focus and therefore accuracy.

1.7 Research Methodology

The methodology employed throughout this study has been created to search through and scrutinise the variables (e.g. culture and user experience) influencing acceptance and usage of E-learning systems in the Jordanian higher education sector through a series of quantitative and qualitative research methods. In effect, there should be a demonstrable correspondence between the research objectives and the data collected, through the use of both qualitative and quantitative methods. To ensure that this does indeed take place, the interaction between the two will be followed by the careful use of questions and relating findings to the study’s objectives throughout.

The following sections examine the different aspects of the current research:

1.7.1 Research Population

The qualitative research population includes people who have verifiable experience related to this research. The following categories are included:

1. Lecturers and academic teaching staff in IT and the Social Sciences. It is essential that the research is valid, and the interviewing of those people who demonstrate knowledge and experience in the related theories and field sciences ensures this.

2. E-learning developers and experts. Their ability to provide professional knowledge means that they act as vital insider consultants \( v\text{îz-a-vîz} \) E-learning. Moreover, students and others who use E-learning systems as end-users can provide direct and unexpurgated views of their first-hand experience using the systems in question. This allows the study
greater breadth and depth, covering different aspects of the usage and acceptance of E-learning.

1.7.2 Sampling Methodology

Random sampling techniques have been employed throughout this study. Initial investigation suggested that this approach satisfies the criteria for a target population study given their related educational level and experience of E-learning. Furthermore, unlike other similar studies (which have depended wholly on student participation) this study has widened the base of the study parameters by the targeting of university staff, young professionals in private industry and government, and industry experts. This research sample reflects the relevant population more accurately than in previous studies, meaning those who are currently most likely to be involved in all aspects of E-learning. The study also acts as a useful sample of the opinions of those who use E-learning in general, as people in these socio-economic groups are also the core of the Internet population in countries such as Jordan.

With regard to the sample size, there is no consensus regarding what is the correct number for small or large samples. Research has confirmed that the minimum sample in any statistically meaningful enquiry should include more than 100 people—all of which should be included in the conducting of multiple regression statistical analysis (Hair et al., 1995; Saunders et al. 2003; Tabachnick and Fidell 2005).

In this study, there were two hundred and twenty-five (225) people included from the target population. These people came from the list above and were members of the student body and faculty employed from six universities in Jordan, with those involved in E-learning in private industry also included. Three universities were situated in Amman, the capital, two in the North and one in the south of Jordan. This means that there is statistical adherence to national population dispersion, whilst allowing a sub-group of equal statistical importance to be created from the central group.
After analysing the participants’ responses, the sample shows that 68% of the respondents were male and 32% were female. The disparity in student numbers according to gender accurately demonstrates the existing gender gap in Jordanian higher education, given its cultural conservatism over the education of women.

Respondents were chosen at random within the three groups created, and were asked to fill out the questionnaire. Respondents were only then informed of the purpose of this questionnaire. No compensation was offered for their participation.

1.8 Research Implications

This study has attempted to explore the adoption of E-learning systems from the perspective of those who use them, and those that operate them. The aim has been to make a contribution to theory through an increasing body of literature in this field, through the development and empirical validation of a conceptual model that combines a well-known and widely used adoption model (TAM) with a set of new and existing external variables drawn from the literature.

The research again aims to provide both those who employ E-learning and those who research it with a variety of causes that are responsible for people’s decisions to adopt E-learning systems. This allows them to better position their opinions and encourages them to adapt their approach so they can introduce improved, faster and more efficient services that serve the needs of everyone involved.


1.9 Thesis Outline

This section provides an overview of the complete thesis contents, of which this chapter is the first.

Chapter 2 discusses E-learning as a general topic, as well as the definition of E-learning, E-learning advantages and disadvantages, and the main challenges faced by E-learning systems. Additionally, it demonstrates the current status of E-learning in Jordan, as well as its history. The chapter also reviews the root of the research issues posed by this study and goes on to critically review the existing literature in order to make clear the current state of E-learning system adoption and the studies that relate to it. Finally, it identifies the important issues related to E-learning system adoption.

Chapter 3 explains issues related to the research model and the subsequent design of this work. The details of the two phases (questionnaires and interviews in which the research was conducted) are explained. It goes on to delineate the methodological systems used in the study, including data collection methods, questionnaire development, the pilot and its process and the data analysis to be employed.

Chapter 4 looks into the development of the research model that is the theoretical basis of this work. After, a brief debate of the theoretical model elements and research hypothesis is presented.

Chapter 5 looks into the procedures used for the preparation of the data employed in this study. This is followed by a discussion of response rates and the descriptive statistics of those who took part. Additionally, the chapter examines the scale validation process followed in this study. Finally, it demonstrates the reliability of the statistical results and the factor analysis.

Chapter 6 presents the conclusions of the research model testing and the research hypothesis as it is related to the research model. This was done through a number of
multiple linear regressions and simple linear regression analyses of the survey data. A complete list of all is included.

Chapter 7 lays out the results of the semi-structured interview analysis, which was conducted with targeted Jordanian participants in the three areas mentioned above. Furthermore, the chapter includes the interview sample, the instrument design and the interview procedures. The idea of conducting these interviews was to supplement the results of the survey questionnaire.

Chapter 8 concludes the work by looking at the major contributors to this research. It then goes on to outline the outcomes and examines their practical and theoretical implications. Finally, it highlights the limitations of the current research, and outlines further improvements for future work.
Chapter Two: Literature Review
E-learning Systems in Academic Institutions

2.1 Introduction

With the support of websites and new technology, many academic institutions have used the idea of utilising the E-learning system, which could be one of the most important systems provided by the internet. Some Arabic educational organisations have employed the E-learning systems and made their courses available online. These Arabic educational organisations believe that using E-learning systems can help in addressing many difficulties and challenges that arise from the increasing number of students locally and regionally compared to the available human, technical, and other resources.

This study looks to scrutinise the issues influencing the acceptance and use of E-learning systems in universities and educational institutions. Through adopting the Technology Acceptance Model (TAM), which is one of the most extensively accepted theoretical forms that have been used to measure new systems and technologies adoption and acceptance, four factors that influence the intention to adopt the E-learning system will be examined. These factors include: Perceived Usefulness, Perceived Ease of Use, User Attitude, and Intention to Use.

2.2 Background

E-learning generally refers to new and advanced methods of learning that use electronic instructional content delivered through electronic media (Trombley and Lee, 2002). E-learning as an opportunity emerged recently to develop the learning process by applying new methods of learning with more efficient and effective information technology (Selim, 2007). E-learning involves a wide range of teaching and learning activities (Masoumi, 2006). These activities are carried out by using a variety of electronic
methods, including the Internet, Intranet, websites, audio/video, CD-ROMs and the new trend to employ mobile telephones (Chang and Tung, 2008).

Recently, studies and research by universities and academic institutions show that the acceptance and usage is very low and still in the infancy stage, as there is no E-learning use in most of Jordanian universities. Therefore, institutions need to consider the factors that determine and impact the E-learning system. Previous studies demonstrated and revealed that many factors have an influence on the E-learning environment. These factors include different parties such as the system itself, the human side within the educational environments (i.e. the students and the instructors), and others that pertain to the people’s behaviour.

2.3 Theoretical Background

Researchers in Information Systems and Technology have been keen to examine the theories and models that forecast and describe behaviour in a range of fields. The driving force behind them is the desire to explore how usage can be promoted and, simultaneously, hindered. Each of these acceptance theories has different hypotheses, advantages and constraints.

An in-depth study is therefore essential, as hypothetical notions from these theories can help provide a foundation for the creation of a research model that efficiently reveals technology acceptance.

A literature review answers the chief research question: i.e., “what aspects affect and sway E-learning system usage and acceptance, dealing with new technology and E-learning system usage and adoption theory”.
The next few sections provide the theoretical background on the factors that affect the intention towards using the E-learning system, mainly focusing on the technology acceptance theories and models.

2.3.1 Definition of E-learning

E-learning is Internet-based learning systems in general. Most E-learning systems provide the services of searching, downloading, and delivering learning content. This includes text, audio, animation, flash, or video clips in order to enhance learning experiences (Duan, et al., 2006). Advantages of E-learning are flexibility and convenience for the learners: E-learners can value the fact that they are able to learn at their own pace without schedule restrictions (Kramarae, 2001).

Other advantages include the access to high quality content and to appropriate expertise irrespective of distance (ASTD and NGA, 2001; Bonk, 2001). E-learning also has the ability to reach more learners, to broaden access to those who have been side lined in the past (ASTD and NGA, 2001; Bonk, 2001; Kirk, 2001), and the ability to improve efficiency in research and teaching, resource sharing, and building partnerships (Bonk, 2001).

Through the evolution of teaching and learning using technology and the internet, several terms have arisen to describe and characterize this new means of learning. The following section summarizes the literature review for the definitions of E-learning.

Computer Based Training (CBT) is a term that is used to describe E-learning as a self-based course which is delivered either by CD-ROM or by downloading over the Web using intranet or internet. Users can start the course at their own discretion, even in the absence of an instructor (Wentlingetal, 2000). E-learning can be described as a combination of two recent technologies for encouraging computer learning: computer based training (CBT) and multi-media software delivered on CD-ROMs. This combination was first recognised about 11 years ago, when multimedia-based training
material had been transferred through the internet and presented in a web browser (Morch et al., 2004).

Eustace, (1994) considers E-learning as an integration of internet into the class, providing the learner with the opportunity to enrich his knowledge by facilitating global communication with experts. This enables the chance for discussion and an exchange of ideas and thoughts, using computer software available for browsing and networking, which creates an educational environment among people over networks. Morch et al., (2004) is in agreement with this. They believed that material and information could be made reachable online through the internet and intranet. This technique would give the user an innovative and enhanced way to access information. Burgess (2003) distinguishes internet-based learning from distance education, declaring the internet as a tool for delivering instructions and notes in text or video format, as a more flexible means of education. Internet-based communications create different ways for the educator to deliver the lecturer’s material and notes. On the other hand, Burgess (2003) defines distance education as "transmission of instruction from one location to multiple locations via telecommunication technology" like video, interactive television, satellite transmission or internet-based delivery, without the need for being in a specific location at a specific time.

The Backroad Connections Pty Ltd (2003) report considers E-learning as a broad term for describing the processes which utilize electronic facilities (such as internet, extranet, satellite broadcast, etc…), which means that education and training can be delivered in a more effective and flexible way.

Stockley (2005) agrees that e-learning is a term that is used to describe a means of delivering education, learning and training materials using an electronic facility. However Paulsen (2003) disagrees. He defines on-line education as a separated education that depends on the communications between learner and trainer using computer networks for delivering education content in two communication ways. In this manner, the learner can achieve the benefits he/she is looking for. Online learning relates to services that are
needed in education, while E-learning focuses more on the content of learning materials rather than the communication method.

In self-paced learning, students are able to organize their time according to their own individual needs, providing them with the ability to proceed at a comfortable pace through a flexible learning system that is dependent on the learner’s intentions to learn (loc.gov, 2003). Asynchronous E-learning could be attained through communications (even delayed ones) between the learner and tutor. Examples of such communications are discussions between online group’s and the sending of messages via email. Hall (2004) adds that "this approach offers the opportunity for support to be given, and feedback exchanged between the instructor and classmates". It usually differs from self-paced study in that the student attends class using e-mail or real time chat facilities to ask questions (Burgess, 2003).

The opportunity to increase the number of students will increase through the extendable sharing of resources and materials in the classroom and other academic institutions, where data can be transferred from one site to another using different multimedia technology such as audio and video. In this way, E-learning can be thought of as an attempt to adapt traditional education into an electronic system which utilizes communication technologies between the learner and tutor. These communications should improve the learning process and minimise any physical limitation (Hentea et al., 2003).

Throughout all of the definitions used to describe e-learning so far, the most essential elements which commonly arose were the technology used for E-learning, and the communications between teacher and student in which information and data are transferred. Even though the resource where the information is stored will most likely be in a distant location, there are no physical limitations for accessing this resource. Therefore using E-learning will improve education, the spread of education geographically, and allow for a more flexible learning process.
The restriction is in how technology will be developed in order to get the full benefits of transferring information between learner and tutor, and how to expand this technology. Figure (2.1) summarizes the various types of E-learning as dictated by the technology used.

![Diagram of E-learning Types](image)

**Figure 2.1 E-learning Types**

E-learning has been conducted in different ways in terms of methodology, material and IT infrastructure. E-learning activities use online technologies such as chat rooms, discussion boards, or email to facilitate interactions that can support learners and teachers (Watkins, 2005).

Furthermore, Naidu (2006) confirmed that the term E-learning is not only involved with online learning, virtual learning, distributed learning, networked or web-based learning, but also E-learning incorporates all instructive actions that are performed by "individuals or groups, whether online or offline, synchronously or asynchronously via networked or
standalone computers and other electronic devices” Naidu (2006, p.1). Table 2.1 below presents the various kinds of e-learning activity identified by Naidu.

**Table 2.1 E-Learning Modalities**

<table>
<thead>
<tr>
<th>Individualised self-paced</th>
<th>Individualised self-paced</th>
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<tbody>
<tr>
<td>E-learning <em>online</em></td>
<td>E-learning <em>offline</em></td>
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<tr>
<td>Group-based</td>
<td>Group-based</td>
</tr>
<tr>
<td>E-learning <em>synchronously</em></td>
<td>E-learning <em>asynchronously</em></td>
</tr>
</tbody>
</table>

Source: Naidu (2006)

Hall and Snider (2000) defined E-learning as "the process of learning via computers over the Internet and Intranets.” Hall and Snider ascertained that "E-learning is referred to as web-based training, online training, distributed learning or technology for learning." Urdan and Weggen (2000) demonstrated that E-learning covers a wide set of applications and processes, including computer-based learning, web-based learning, virtual classrooms, and digital collaborations.

Accordingly, Pollard and Hillage (2001, p.20) mentioned that the development of information and communication technologies have meant that E-learning has now come to mean much more than just learning from a computer. This is because elements of E-learning have been around in some form or another for over ten years.

E-learning is usually associated with learning via a computer (Pollard and Hillage, 2001), but this concept is increasingly broadening its focus to include a variety of learning options, learning administration, and the provision of learning support (Pollard and Hillage, 2001). Pollard and Hillage provide a three-level model that presents a more holistic view of E-learning that includes *information, interactive learning* and *multidimensions*. Rossett (2002) also supports this broad view in her definition of e-learning.
which she refers to as the "big tent view" of E-learning. Her “big tent view” incorporates at least five functions: (1) learning, (2) information support and coaching, (3) knowledge management, (4) interaction and collaboration, and (5) guidance and tracking. On the other hand, Ryan (2001) classified E-learning into three ways: self-paced independent study, asynchronous interactive learning, and synchronous interactive learning. The first two approaches tend to be the most common. It is possible for a specific E-learning course to combine two or more of these formats in some ways.

The growth of asynchronous E-learning systems has presented a unique challenge for both schools and industries. More students are pursuing their degrees after they finish high school, and more full-time employees are seeking to advance their careers by taking training courses. Therefore, the E-learning market continues to grow and attract more and more learners who wish to participate in such learning systems (Wang, 2003; Kimberley et al., 2004).

A growing number of physical universities, as well as online-only colleges, have begun to offer a select set of academic degree and certificate programs via the Internet at a wide range of levels and in a wide range of disciplines. The population of E-learners is increasing, which can be predicted to reach the large number of universities that will establish e-learning systems (Christine 2004). In addition, the value of the E-learning market is estimated to rise to $21 billion worldwide by 2008 (Tucker, 2005). Moreover, Mungania (2004) claimed that the E-learning market increased from $197 million in 1997 to $18 billion in 2005 in the United States. Similarly, the E-learning market in Taiwan has also increased remarkably in both schools as well as business enterprises that offer web-based learning programmes to their employees (Central News Agency, 2002).

The Taiwan Network Information Center's report (2006) states that "14.76 million residents of all ages have experience using the Internet in Taiwan." In other words, over 65% of Taiwanese residents have Internet experience. Furthermore, over 95% of people aged 12 to 20 have internet experience. This means that most students have experience
surfing on the Internet. Thus, there is no doubt that E-learning in Taiwan continues to increase.

Nevertheless, there should be a consideration regarding the failure to implement E-learning systems in order to explore the factors which affects users’ acceptance (Weaver, 2002; Woodill, 2004). Research has shown that 70% of E-learners do not complete scheduled online training, yet at the same time "...continued investment in human, time, and financial resources for E-learning is on the increase." (Meister, 2002 cited in O’Connor, et al., 2003). A study conducted by the Forrester Group among 40 Global companies in 2000 found that the majority of workers in the study (68%) would not sign up for voluntary online courses. Even when online courses were compulsory, over 30% refused to sign up (Dublin and Cross, 2003).

Another study indicated that, of those who do sign up for a course, between 50% and 80% do not finish the course (Delio, 2000). As companies quickly adopt E-learning, they are also facing unexpected barriers (Simmons, 2002). Therefore, research on the factors that influence acceptance of E-learning systems is required in order to have high quality E-learning systems as well as know the factors which play an important role in preventing learners from not completing the online training that they have started.

2.3.2 History of E-learning

As this section attempts to illustrate the history and advancement of e-learning, the complications that have been sketched out will be deemed smaller than the aptitude of the discussion, to emphasize the interactive capability of the present ICT applications.

If we deem that e-learning is an extension or type of distance education, its origin in different places can be followed back to the early years of the nineteenth century, when courses were given in by mail (Cavanaugh, 2001). In the early twentieth century, online education unofficially originated in Britain, until 1971 when, as Abdulaziz (2008) mentioned, it was officially recognized by the Open University, to be transferred later to
the U.S., Australia, Canada, Australia and more nations. However Aloreani (2002) had a different opinion and he illustrated that the concept of electronic learning goes back to the 1960’s when B.F. Skinner wrote about programmed education. In spite of these different opinions, all agree that distance learning has been enlarged by the ICT revolution.

According to Kaufman (1989), three generations of distance education are present. The first generation is marked by the use of correspondence and the lack of straight communication between the instructor and the learner. The second generation is characterized by the use of content and multimedia particularly designed for the distance education. The third generation makes use of the internet and introduces two way communications between instructors and learners themselves.

The latest of these generations contains the intrinsic ICT characteristic. In recent years it has been escorted with a rise in the number of users as well as the learner’s control over their education and chance for dialogue and endorsement of their learning competence. In Sawaan’s (2005) synopsis about the evolution of electronic learning, there was an analysis presented that reflected the 1950s; at that time the mode of learning was through radio, correspondence, and audio, with the help of developed universities. But in the 1980s the learning became more electronic as the computers were introduced; as a result the traditional method of education became complementary to these methods. Furthermore Sawaan also pointed out the change in the 1990s when learning became more dependent on the internet with the introduction of Blackboard and WebCT.

As the interface of the websites became more user-friendly and advanced during the 21st century, it allowed the users to design, organize, apply, supervise, and analyse the procedures of teaching and learning through the use of high speed internet (DSL). The education system has seen growth and expansion, which is due to the demand of users and the improvements made in social networks (such as Facebook, Twitter, YouTube, My Space, Wikis etc). Some examples of the advancements are E-books, iPads, IPods, Wikis, Podcasts, voice recognition, multi-touch interface and more. All these expansions have resulted in changing the whole concept of electronic education, both in terms of interactive features and presentation.
Furthermore there are also researchers who have made vital remarks regarding the changes. Four generations of ICT use in learning were recognized by Almosa and Almubarak (2005), beginning with the use of telephones and post mails in the past. The second generation was associated with TV, radio and other modes of video interactions. The third generation was associated with long distance education which focused more on electronic communication and interaction between the teacher and the student. The fourth generation (the present) has been associated with the web and its growth. This recognition of the obtainable technology with the pedagogy it is competent of sustaining gives a clear idea.

2.3.3 Review of E-learning Critical Factors in Developed Countries

A number of studies on the execution of E-Learning and decisive success aspects have been performed in the framework of developed western societies. For instance, a structure for an E-learning policy, a four-quadrant model, was projected by Salmon (2006) in Australia. Bringing in technologies in E-learning would necessitate careful preparation, expansion and support by faculty members and teachers, and outstanding ICT infrastructure within the university systems.

The function of IT communications services that have an effect on the achievement of E-Learning systems has been studied by Alsabawyet al (2013) in the framework of an Australian University. The research planned a model to assess the pros and cons of E-Learning systems. The research revealed the aspects that were very vital fundamentals for flourishing E-Learning system execution. These are as follows: communications services, perceived helpfulness, user contentment, customer significance and organizational value. Additionally the investigation also shed light upon the communications services construct, which was a basic way of attaining the success of E-Learning systems through its effect on helpfulness, user satisfaction, and increasing customer importance. Furthermore, the study indicated the importance of the factor of academic staff, showing that the use of E-Learning systems by academic staff was insufficient. Educational staff occasionally are not competent to use a number of functions of the E-Learning systems
and do not completely recognize the point of these functions. For that reason, the lack of experience of using all the aspects of E-Learning systems can have an effect on both the quality as well as the quantity of the benefits attained by staff from using this method. As a way out for this problem, the study planned training courses to offer academic staff extra knowledge on using E-Learning systems that could be helpful in educating them on its advantages. Moreover, extra attention has to be given to the function of IT infrastructure services, which helps students in various ways. For example, after looking at the students’ assessments and responses about the ICT division’s performance, the division knew that it needed to provide more channels to allow students to get in touch with ICT personnel through chatting, and supply students with several online programs or educational videos and lectures about employing the E-Learning systems and the major purpose of these systems. Ozkan and Koseler (2009) built a complete E-Learning judgment model to have good assessments of E-Learning systems in the United Kingdom. The study presented a hexagonal E-Learning assessment model (HELAM), signifying a multi-dimensional method for understanding management systems assessments. Consistent with the research, the features effecting learners’ pleasure were: service quality, system quality, learner perspective, content quality, supportive issues and instructor attitudes. In addition, the study also pointed out the function of the model: as a management instrument to understand the E-Learners’ views as well as the enhanced benefits of using and understanding management systems. There was another research project conducted by Abu-Al-Aish and Love (2013) in the United Kingdom, which focused on studying the factors that have an effect on the students’ approval of E-Learning. The research presented a model founded on the combined theory of approval and the utilization of technology (UTAUT) to recognize the aspects that have an effect on the approval of E-Learning in Higher Education and to study if the preceding familiarity with mobile phones has an effect on the approval of E-Learning. The research also portrayed the aspects that were very important in affecting the behaviour intention to employ m-learning, which were: effort anticipation, quality of service, performance expectancy, and personal innovativeness authority of faculty members. Furthermore it is also believed that the preceding experience of mobile devices was recognized to moderate the outcome of these constructs on behavioural objective. In other research,
McGill et al (2014) took another look at 74 studies (64 projects) every single one from developed nations (USA, UK, Greece, Australia and Spain) to comprehend the persistence of E-Learning in educational institutes. The review showed that the aspects that influence the sustainability of E-Learning system functioning were: maturity, appropriateness and stability of technology, the availability of ongoing financial support, sufficient training to staff members, and skills. Additionally, the research pinpointed the significance of applicants in local E-Learning initiatives developing a plan that covers the requirements of learners and teachers. On the whole, there are a lot of mutual aspects for the growth and execution of E-Learning in developed nations. The initial vital factors of a successful execution of E-Learning are quality of content, quality of service, user satisfaction and effectiveness of technology.

2.3.4 Review of E-learning Critical Factors Studies in Developing Arab Countries

Arab countries have also recently implemented higher education and school education e-learning systems in order to meet the students’ emerging needs and the teachers’ requirements. Various factors were examined by the study of Abdel-Wahab (2008) which looked at the behavioural intentions of students. In order to carry out an adaptation of e-learning in the Egyptian Universities, it was seen as necessary to explore the attitudes of the students towards their e-learning at the universities and the intentions of the students towards the adaptation of e-learning. The attitude of students towards E-learning, the ease of use, pressure to use, usefulness of e-learning and availability of resources were considered to be the important factors when predicting and understanding the e-learning response among the students. This study has learned about this concept by the use of key factors investigation being implemented in the Arab Open University in Jordan.

The Technology Acceptance Model (TAM) approach was matured, incorporating factors like subjective norm, knowledge of Internet, system interactivity, self-efficacy and technical support with association to perceived helpfulness, perceived simplicity of use and objective to use. The research revealed that self-efficacy is a very vital attribute of perceived easiness of use. The study also exposed that self-efficacy had a robust straight
effect on perceived ease of use. Moreover, the outcomes revealed that the students’ preceding Internet experience had a statistically major impact towards perceived ease of use but not perceived helpfulness. On the other hand, the outcomes did not present any proof that system interactivity has an effect on students’ acceptance of E-Learning. However, the outcomes revealed that perceptions of the intensity of technical support obtainable to users were deemed to have a direct impact on perceived helpfulness and some amount of indirect outcome on intent to employ. The results of the investigation are as follows: initially, the students who used the Internet regularly were more likely to employ E-Learning systems. Secondly, the self-belief and self-confidence of the students in their skill to use and profit from the E-Learning system impacts their approval of the system. Thirdly, students are relieved by technical support accessibility. In the end, students preferred to use the E-Learning system when it was accessible and user-friendly. In a different research that is linked with acceptance of E-Learning in GCC countries, Al-Harbi (2010) studied the factors that impact a students’ willingness to agree to E-Learning as an additional tool and for distance learning inside the Saudi Higher Education framework. The researcher presented a model established on the theory of planned behaviour wherein the students’ approach, subjective norm and perceived behavioural control were determinants of the students’ behavioural plan to take up E-Learning. The study referred to perceived behavioural control as the main important feature impacting Saudi University students in terms of E-Learning and long distance learning. In addition, the research revealed that for E-Learning to be approved as an add-on to face-to-face study, a subjective norm was the second chief feature impacting students’ choices, followed by students’ way of thinking. Alternatively, in the framework of accepting E-Learning for distance learning, students’ way of thinking was more important than the students’ subjective norm. In addition, Ahmed (2010) carried out research on putting E-Learning into practice in the United Arab Emirates University. The research investigated the essential success features that impact the acceptance of hybrid E-Learning, which include instructor characteristics, information technology infrastructure and organizational and technical attributes. The outcomes turned out showing that the factors mentioned above have a very vital and direct effect on the learner’s approval of hybrid E-Learning programs. These findings correspond with the
conclusions of Al-Fadhli (2009) who did a study in Kuwait University. In this research it was found that computer self-competency, technological attributes, social environment and instructor characteristics were vital and noteworthy factors that greatly affected thriving E-Learning execution. In their investigation on E-Learning in Bahrain, Al-Ammary and Hamad (2008) revealed the factors that have an effect on the approval and use of the E-Learning system at the University of Bahrain. With respect to the extension of the Technology Acceptance Model (TAM), four factors were thoroughly investigated (these were content quality, computer self-efficacy, subjective norm and culture) which impact the willingness to use the E-Learning system. In the University of Bahrain, the outcome showed that perceived helpfulness and perceived accessibility have an immense optimistic effect on the student’s behavioural objective to use E-Learning systems. The results showed that excellence of content and computer self-efficacy has an optimistic indirect consequence on the behavioural objective to employ E-Learning systems. A comprehensive version of the Technology Acceptance Model (TAM) was approved, and adjacent to the fundamental beliefs of “perceived usefulness and perceived ease of use” which were present in the TAM, two other attributes were incorporated into the model. These attributes were perceived gratification and subjective norm. The duties of extrinsic and intrinsic motivational aspects were also evaluated. As revealed by the research, mindset is a significant dynamic governing student approval of the E-Learning system. Furthermore, following the students’ approach and enjoyment, the perceived helpfulness aspect was found to be an essential determinant that affected the students’ willingness to use the E-Learning system. This aspect plays a very vital function in providing the students with incentives.
2.3.5 The Advantages of Using E-learning and Restrictions

Advantages of using E-learning

Many facets of E-learning, E-education, web-based education, computer based instruction, distance education, distance learning, and electronic learning have been developed to become increasingly more powerful. The use of the internet in these techniques has enabled an enhanced form of learning which is more useful and powerful for users, while at the same time eliminating many restrictions of the past which hampered learning development. Towards the end of 1999, the development of the internet was such that online courses and distance education could be offered for the first time, especially for colleges and universities. As a result, the number of learners enrolled in distance learning programs worldwide has increased to more than two million, leading to a rise in the number of educated people (Piskurich, 2004).

- Personal learner advantages

In this section, some of the most important advantages for learners that are involved in E-learning are listed, as noted by Piskurich (2004).

1. Reducing time and cost for the learner

Learners can save time normally attributed to the process of “learning, communicating, and collaborating” through the use of the technology available in distance learning, as they do not need to travel to the source of the data. It may also be easier to use such technology to access the source of the data, and consequently this will help the student to learn more efficiently, saving the time needed to get the required information (Piskurich, 2004). Financial issues are an important factor in any field of life, and learning via the internet and using web related technologies has reduced the cost of learning. Learners can improve productivity and use their time more efficiently, as they no longer need to travel or fight rush-hour traffic just to attend lectures (SmarterOrg, 2002). Online education
provides trusted knowledge, which is provided via internet technology, at competitive prices (Weller et al, 2003).

2. Self-based learning whereby learners can manage their individual schedules for greater convenience

Learners benefit considerably from the ability to access information from any distance, without any physical limitation or restriction to resources (providing the user has permissions) and therefore this allows education to be widely spread, as well as providing users with the flexibility of being able to learn anytime and anywhere (Weller et al, 2003) and (Rosenberg, 2001). Zhang et al., (2004) agree that subjects and materials can be accessed and studied online at anytime, anywhere, and that in this way, knowledge can be tapped continuously via the internet.

Moreover, distance learning and e-learning allow greater accessibility, since they offer the learner access to resources of education and learning regardless of geographical distance. As opposed to traditional learning systems, learners can choose the course they require and study it from a place that is suitable for them (Hentea et al., 2003). Since geographical distance is no longer a barrier, learning has become available for all (students, employees, organisations and others), reducing the time necessary to learn what is available (Carswell & Venkatesh, 2002). The distance learning strategy has increased the number of learners because of its perceived ability to provide universal training and access to resources (Hentea et al., 2003). When using the web as a tool of communication between group teams, working on a project is no longer a taxing issue (Carswell & Venkatesh, 2002).

Students need not worry if they are unable to access their tutors in office hours. Instead they can communicate via e-mail or online-chat facilities at a mutually agreeable time and such communications are made simpler from the fact that the tutor can answer their students without the need to be at their office. Students can also use the web for active participation in discussions and express their ideas easily and freely without the need to be in the classroom (Wegner et al., 1999).
Using online learning in this manner allows learners to immediately access the most current information, as it can be retrieved when needed and not only when training in classrooms is available. Consequently, this allows for a greater application of learning to on-the-job needs (Wegner et al., 1999).

- The Advantages for Educational Institutions

All the various types of E-learning are important for different levels of education. Where it is necessary to start from elementary and secondary school and continuing to college and the university, the benefit of using E-learning in any educational organization is that it increases the ratio of students to teachers, especially when applied to technology used in education. Educational institutions can derive programs designed to meet large groups of learners, which allows for the possibility of registering an unlimited number of students for a course (Porter, 1997).

Moreover, E-learning enables various types of communication between tutors and their students, such as teleconferencing and videoconferencing, that allow for more useful communication to suit each educator/trainer’s needs (Porter, 1997). The use of E-learning facilitates institutions working with high levels of knowledge, as well as sharing this knowledge and information amongst different cultures (Rosenberg, 2001). Grover and Segars (2005) state that employers can take advantage as well by broadcasting the E-learning via the internet with high quality technology.

- E-learning Business Benefits

Conducting efficient business is important for any organization, and saving money and effort in order to develop departments is an essential goal for any institution. The cost of implementing an E-learning infrastructure to facilitate distance learning means there can be a reduction in the cost of broadcasting material, and the labour working in this side. “IBM estimates that for every 1,000,000 classroom days converted to E-learning, more than $400,000 can be saved. For 1999, the company expected 30% of its internal training
materials to be delivered online, with anticipated savings of more than $120 million” (Rosenberg, 2001).

2.3.6 Challenges Facing E-Learning

While the world is moving towards becoming a tight knit global community, thanks to the rapid development of ICT, E-learning is becoming the tool that can get countries closer together. Through technology, learners can attend lectures taking place in different locations or even different countries. However, even though E-learning is providing the world with valuable solutions and alternatives to learning, a set of challenges and issues appear. The following section details some of the challenges which are thought to be the most significant with regards to E-learning.

Challenges Associated with Student E-learning Activities

The student’s experience is changed when he/she is involved in using an E-learning system. E-learning normally requires from the student a set of personal activities which involve more than just the simple taking of notes. These activities include contributing to online discussions, the building of WebPages, and conducting research for learning purposes (Arabasz & Baker, 2003).

Some of the challenges facing a student enrolled on an E-learning course include a low level of experience and confidence with computers, computer ownership, technical problems associated with computers and accessing the internet, as well as time management issues (Arabasz & Baker, 2003).

Also when a student joins an E-learning class he or she must focus not only on the subject but also must display proficient technical skills in order to be able take part in the course effectively. Sometimes, even those students who consider themselves as computer literate with a high level of proficiency may not have all the required skills (Arabasz & Baker, 2003) that help them to use the systems effectively e. g. how to use E-learning CDs.
Hentea et al., (2003) stressed that the preparation of students when they are involved in an E-learning system is important and that, prior to enrolling on such a course, they should have a basic proficiency with computers. The limitations of a dialup connection is considered as a major constraint on students which prevents them from having smooth access to lessons and course material, as well as delaying the speed at which they may access educational content (due to low bandwidth).

Students need to develop their management skills in order to better plan their time and complete the required assessments on schedule, and to show their initiative (Arabasz & Baker, 2003). In distance learning, continuous assessment makes up for the lack of face-to-face interaction between the student and tutor. These assessments need to be innovative and must involve new strategies to allow the instructor to generate sufficient feedback from which to monitor student progress (Hentea et al., 2003). Because of the physical absence of the student from their instructor, isolation and control limitation are other challenges that face the distance learning system (Weissman, 2003).

**Time Constraints**

Time is one of the most cited challenges of E-learning. It is expended on both the traditional courses as well as electronic courses (where the tutor needs time to organize the structure of an E-learning class), and is also needed to reform and rebuild courses so that they are suitable for on-line delivery (Arabasz & Baker, 2003).

This process requires a significant amount of effort and time to be invested by the instructor in order to find an oriented presentation target. A considerable amount of time is also needed in order to train teachers and instructors in technical and pedagogical disciplines as befits an E-learning course. This approach differs fundamentally from the traditional and requires intensive training and effort for instructors to teach it in the most suitable way (Arabasz & Baker, 2003).

Communication between instructors and students by e-mail also takes up time and adds more responsibility to the instructor; he or she needs to balance traditional and E-learning methods, which in itself is a challenge (Arabasz & Baker, 2003). According to pioneer faculty adopters of E-learning (who were highly motivated to make E-learning classes
function successfully), they were amazed by the amount of time required to develop an E-learning course and teach it for the first time, as well as the considerable amount of time needed to answer e-mails alone (Arabasz & Baker, 2003).

- Technical challenges relating to students and instructors

The success of an E-learning class somewhat depends on the instructor and the student’s computer proficiency and ability to develop their technical skills in order to use the tools of E-learning effectively. Teachers also need to develop their computer skills in order to make them better equipped to instruct students. They should also possess the ability to explore the lessons and achieve their pedagogical target using the available E-learning tools.

However, in some cases a lack of time constrains the instructor’s ability to develop their own computer skills (Arabasz & Baker, 2003). It is sometimes a challenge for instructors to have the basic skills which enable the instructors to lead the class. Technology supports are a challenge for instructors too, with some identifying different technology challenges: some lack the knowledge of how to design courses using technology, software, or platforms, and some lack knowledge of network software crashes during the class. They lack the technology knowledge needed to be able to keep up with the instructor’s demands, which is a challenge in itself (Arabasz & Baker, 2003). In order to participate in the course and study well, students need to possess basic computer skills, and this represents a minimal technical challenge for students.

Adapting to the technical infrastructure associated with an E-learning course could be the most significant challenge for students (Arabasz & Baker, 2003). The fact that students could be using computers at home which utilize a different network infrastructure with varying available bandwidth needs to be taken into consideration; as such a setup could be limited when compared to that of the institution providing the course. So when an instructor designs an on-line course, for example, to be used on large monitors with a predetermined display size for pictures, they need to ensure that a student will be able to access the same material from their computer at home and do not face difficulties in browsing course WebPages etc. It is more often the case that students who live off
campus do not have access to the proper equipment or high speed internet in order to make such courses more practical (Arabasz & Baker, 2003).

Access to technology on the part of the learner is a fundamental requirement for courses in an E-learning system since “…most of the course requires technology that is not readily available to distance learners…” (Hentea et al., 2003). Although new technologies are being used to enable the transmission of visual communications, there are still some constraints on its usage due to internet connection limitations and bandwidth (Hentea et al., 2003). "Home users rely on internet service providers (ISPs) in order to be able to gain access to the Internet” (Hentea et al., 2003).

2.4 E-Learning in Jordan

2.4.1 Jordanian Context

The Hashemite Kingdom of Jordan, a free country in the Middle East with a population of 9,523,000 million in a land measuring 89,342 km². It shares borders with Israel in the West, Syria in the North, Iraq in the East and Saudi Arabia in the South. The capital and biggest city is Amman, the main language spoken is Arabic and Islam is the major religion. King Abdullah Hussein II is the leader of Jordan, where sovereign rule still exists. The country’s principal natural resources are phosphates, potash, and shale oil. Limited natural water and other resources are the main challenges that face Jordan. As a result, human resources have become the alternative resource for the community and Jordan has the highest percentage of citizens enrolled in educational facilities in the Arab region. A key strength of the Jordanian community is that it is a very youthful one, where 37.8% of the population is below the age of 15 (http://www.jordantimes.com/news/local/population-stands-around-95-million-including-29-million-guests).
2.4.2 Education in Jordan

Jordan's educational system has seen a dramatic upturn over the years. From humble beginnings in the early 1920s, Jordan has created an inclusive, first-rate structure that assists its people admirably. Today there are 5,238 schools (Jei.org.jo, 2008), 24 universities and 48 higher national diploma colleges (http://www.kinghussein.gov.jo/resources3.html). Creating admissions for children in elementary-level education has been the key to the country’s plans. The Jordanian authorities’ government now provides any location with more than 10 school-age children with educational facilities. This has meant that even the most rural areas of Jordan now have educational benefits.

One of the most important aspects that have helped Jordan’s educational system has been the resolution to spend on elementary education rather than tertiary. Jordan has therefore raised literacy levels across the country. The country's record is remarkable even by
international benchmarks, and comes from the vision of the government and ruler, who knew that education was the key to future progress. (http://www.kinghussein.gov.jo/resources3.html).

Table 2.2 Facts about Jordan’s Education System

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of schools</td>
<td>5,238</td>
</tr>
<tr>
<td>Proportion of eligible population in Basic Education (grades 1-10)</td>
<td>M: 93.85% F: 94.16%</td>
</tr>
<tr>
<td>Proportion of eligible population in Secondary Education (grades 11-12)</td>
<td>M: 75.61% F: 75.67%</td>
</tr>
<tr>
<td>Number of Ministry of Education schools</td>
<td>2,948</td>
</tr>
<tr>
<td>Number of students in Ministry of Education schools</td>
<td>1,029,782</td>
</tr>
<tr>
<td>Total number of students (including students in public &amp; private schools)</td>
<td>1,459,208</td>
</tr>
<tr>
<td>Percentage of the national student population in public schools</td>
<td>70.57%</td>
</tr>
<tr>
<td>Number of teachers in Ministry of Education schools</td>
<td>54,609</td>
</tr>
<tr>
<td>Student/Teacher ratio (grades 1-10)</td>
<td>23.9</td>
</tr>
<tr>
<td>Student/Teacher ratio (grades 11-12)</td>
<td>10.2</td>
</tr>
<tr>
<td>Literacy rate (age 15+)</td>
<td>89.7%</td>
</tr>
</tbody>
</table>

Source: Jei.org.jo, 2008
2.4.3 E-learning Initiative in Jordan

Following the Dead Sea IT First National Economic Forum in 1999, a new vision for Jordan was conjured by His Majesty King Abdullah II. He stated as part of this new vision that "Jordan would become an IT hub for the region" (www.moe.gov.jo). In accordance with His Majesty's vision, Jordanian governmental, non-governmental, and public and private sectors have since put in intensive efforts by setting and implementing a set of strategies and initiatives in IT, education and employment in order to develop its community in the different areas necessary and achieve the maximum benefit for all citizens. Because of Jordan’s limited resources, the continued development of human resources is the key to Jordan becoming an IT developed country. Educational development, in particular, is the most important investment towards achieving such a goal (www.moe.gov.jo).

On the 21st June 2003, a pilot project called the Jordan Education Initiative was officially announced to develop the educational sector of the kingdom through effective E-learning (Unwin & Wong, 2012). The Jordanian Government and the World Economic Forum member companies and organisations have implemented this initiative to develop the educational facilities and services of the country, in order to enhance the learning level of its citizens. The Jordan Education Initiative is a PPP between the World Economic Forum members and the Jordanian Government. Nearly a hundred “Discovery Schools” are following the pilot. They are effectively a test of how ICT (Information and Communication Technology) can help schools. Though primarily targeted on learning, the plan also aids sustained development for the local IT industry through the development of infrastructure and e-content (Unwin & Wong, 2012).
2.4.4 EduWave: an E-learning Facility

EduWave is an E-learning platform, which has been developed by the Integrated Technology Group (ITG) to provide a powerful resource for learning in a comfortable environment. It was designed to integrate technology with the learning system so that it can be used not only at schools and universities but also at home and the work place. It was chosen from amongst 800 software tools from 135 different countries at the World Summit Award as the most inclusive platform for E-learning. It is available in a variety of editions, which allows it to cater for the various learning needs of the educational system. The different editions available are: EduWave (K-12), EduWave higher ED, and EduWave Corporate (Al-Shboul, 2012).

EduWave provides tools for all the needs of the education process, from the administration (Learning Management System), contents (Content Management System), and student systems (Student Information System). In this manner, EduWave allows learning institutions to allocate the content of learning and information from different sources (Al-Shboul, 2012).

2.5 Information and Communication Technology (ICT) in Jordan

2.5.1 Vision of IT industry in Jordan

According to the RECH 4.0 report (2004), Jordan is poised to become a leading exporter of products and services dealing in Information Technology in the region. In order to do so, Jordan will have to make the best use of the human resources it has at its disposal. The private sector will lead Jordan’s entry into the international markets for IT products and services. The Jordanian government, meanwhile, will allow this entry to occur as smoothly as possible through effective regulation and promotion of an atmosphere in which the IT sector can thrive. In order to achieve a sustainable level of development and to enable Jordan’s citizens to reap the full benefits of that development, the Jordanian government, the public sector and private sector must maintain a healthy alliance.
2.5.2 Government Support

The Ministry Of Information and Communications Technology (MOICT) is heading the connection of the Jordanian community to a network, making it the hub of technology in the region where strong technical assistance is available, in addition to consultation. In order to support this vision, a set of policies have been examined by the MOICT in order to support this vision: stimulating local and foreign ICT investment, advancing CT awareness and development, improving the take-up of technology, and overseeing Jordan's E-government initiative with the assistance of the private sector. In effect, the ministry is forming a legal and business environment, which can attract and facilitate investment in the IT sector (REACH 3.0, 2002).

E-government is an initiative that aims at improving the class of services provided to society by using technology solutions in a competitive business process in order to achieve fundamental governmental development. In Jordan, the expenses of having a computer and limited Internet access for a year is above and beyond the normal income of a typical Jordanian. The Ministry of Education has provided teachers and ministry employees with better facilities by loaning computers on a long-term basis. This provides all government employees with the opportunity to purchase computers by taking advantage of such schemes (REACH 3.0, 2002).

2.5.3 Impacts of ICT on Education

There is a substantial policy concern in the advantages that ICT can pass to learning, which is a very essential point of the findings of the Development Goals and WSIS. Educational researchers and scholars have reviewed the consequences of ICT (Institute for Statistics, 2009). For instance, ICT might carry important educational gains by supplying tools for coaching and learning progression and by supplying the skills required in a civilization that is progressively more dependent on ICT. On the other hand, learners who go into such a world lacking those skills may be incapable of entirely taking
part and as a result they may suffer from a digital-divide. The digital partition is expected to be a larger setback for developing nations, where entry to ICT is normally lesser than for OECD nations. Additional potential advantages of ICT in education are enhanced learning, maturity of teachers’ technology expertise and better conditions and access to learning and literacy (OECD, 2010; Kozma, 2005). Realistic trials that are extremely controlled can influence the relationship between used ICT and educational outcomes (Kozma, 2005). In the year 2000, one hundred primary schools were supplied with four computers in Vadodara, India. A strongly monitored research began in 2002. Half of the schools were arbitrarily allocated with educational and training software. It was seen that students who used the computer and played video games at least two hours a week performed better in mathematics compared to those students who were studying in a strictly monitored environment. The number of male and female students became the same, which positively benefited some of the students from both genders (Abhijit et al., 2007). Monitored experiments from the United States, Uganda and Kenya in addition displayed optimistic effects on student learning after certain kinds of computer use in precise school subjects, whereas more common accessibility and use of computers at school did not have an effect on student learning (Kozma, 2005). An examination of learning results from the Khanya project in South Africa displayed a constructive connection between mathematics scores and the use of ICT-based Master Maths programme and on standardized tests (James and Miller, 2005). The study was closely monitored, with evaluations completed between the test school and control schools. The results showed that students scored better grades on the ICT-based mathematics programs. An OECD study (2010b) examined practical experiments and correlation studies. In the end, the outcome of the former specified that ICT in the classroom enhance performance “if certain pedagogical conditions are met” and the latter, that there is no established reliable connection between ICT accessibility and use at school and educational accomplishment. However it is also claimed that extra concentrated use of ICT goes hand in hand with a rise in the social capital of students as calculated by extra corresponding educational achievements.
The basis of the Programme for International Student Assessment (PISA) is the different capabilities and skills that mature children have in different areas such as mathematics, science, reading, and common problem solving. It is perhaps the most excellent accessible medium for studying the effects of ICT on learning results. Outcomes from the PISA surveys (2003) indicated that students who had access to computers at home scored better at mathematics compared to those who did not. The gap was considerable for all countries in the research and, in 23 out of 31 countries, a performance improvement continued after accounting for various socioeconomic upbringings of the learners (OECD, 2005). The performance disparity linked with the school’s right to use computers was by and large less marked, with an encouraging relationship observed in just about half the participating nations. The concentration and category of computer use has also been found to be associated with the PISA scores. In a study in 2003, the uppermost performances in both mathematics and reading tended to be from students with a medium level of computer use, showing that too much computer use could have a harmful effect on the students’ performance. For a majority of the nations there was a strong constructive connection between the students’ performance on the math tests and the confidence they showed using the Internet as well as doing the routine ICT tasks. This might propose that the quality rather than the number of ICT activities is an additionally significant determinant of the involvement of ICT in student performance (OECD, 2005). The results obtained from the 2006 investigation were comparable and displayed optimistic connections between science scores and the span of time using computers, regularity of computer use at various places (with a stronger connection associated with home use), a reasonable intensity of usage, and superior levels of ICT self-confidence and self-belief. The groups of variables that had an effect on the science scores showed the same results for both students and schools that are not able to use ICT, whether applying to the regular use of computers at schools or at home (OECD, 2010).

2.6 Technology Acceptance Theories and Models

On the subject of Information Systems (IS), investigators have found that information technology is employed in many organizations, sometimes making enormous economic
loss to businesses. Therefore, many technology acceptance models have been formulated or employed to study information technology acceptance. The following section will investigate these theories and provide more details.

2.6.1 Innovations Diffusion Theory (IDT)

The timing, reasoning and applicability of a new idea, concept or technology in a culture can be determined by a theory called Innovations Diffusion Theory. According to Rogers, a new introduction of a concept or technology reaches its target audience through the diffusion of communication (Surry, 1997). The spread of innovation is determined by various factors. Innovation diffusion theory is the most popular theory for explaining technological innovation (Sahin, 2006). According to Rogers (2003, p.12) innovation is defined as “an idea, practice, or project that is perceived as new by an individual or other unit of adoption”. Moreover, Rogers (2003) identified innovation and technology as the same terminology. He defined technology as a tool of action that is used to eliminate ambiguousness in the relationship between actions that are involved in accomplishing a desired outcome. For Rogers (2003), the decision of innovation is implemented by five main processes, namely: Knowledge, Persuasion, Decision, Implementation, and Confirmation, as shown in Figure 2.2 below.

Figure 2.2 Diffusion of Innovation model.
The first characteristic of innovation is knowledge, where individuals learn and seek information about the innovation in order to understand how and why it works. The second process is persuasion, where the individual has a favourable or unfavourable perception toward performing the innovation. The third process is a decision. In this step and after, the individual gathers information about the innovation. He has a choice to adopt or not to adopt the innovation. The forth process is implementation, where the individual puts the innovation into practice. The last process is confirmation. In this process the individual decides either to continue implementing the innovation or decides to reject the innovation.

However, diffusion of innovation is not possible without the efficient availability of human capital. An innovation cannot find success in the market unless it is accepted and adopted by a large number of people (Surry, 1997). This highlights the significance of human capital. However, once accepted, there comes a point in the lifetime of an innovation called the critical mass. At this point, it can be divided into major categories including innovators, early adopters, early majority, late majority and laggards (Rogers, 2010). Each culture and field responds differently towards diffusion as shown in the figure below.

Figure 2.3 Innovation Diffusion Theory
Rogers (2003) claimed that the time of adoption is influenced by the rate of innovation and that the rate of adoption is identified by the attribute of innovation. The attribute of innovation consists of five characteristics, namely: Relative Advantage, Compatibility, Complexity, Observability and Trialability.

Rogers (2003) explained relative advantages as the degree of perceived benefits and advantages of innovation adoption. He described that the potential adopter should first observe the benefits or strengths (such as cost and usefulness) of adopting the new innovation. He suggested that if individuals observe the benefits of adopting new technology, they will be more likely to adopt it.

In diffusion research, compatibility means the degree to which innovation fits the existing value of potential adopter. McKenzie (2001) found that individuals are more likely to adopt technology if it fits their needs because it reduces uncertainty in adopting technology.

The third characteristic innovation is complexity, which means the degree of difficulty that potential adopters may face in adopting the innovation. Rogers (2003) explained that individuals are less likely to adopt technology if they find it difficult to use and take more mental effort to understand.

Rogers (2003) found that trialability is very important to determine the rate of adoption. He stated that if the individual has a chance to trial innovation for period of time, they will be more likely to adopt the innovation because it will reduce uncertainty toward innovation as well as facilitate the rate of adoption.

The last attribute of innovation is observability. Rogers (2003) stated that the rate of adoption will increase if the results of an innovation are seen by others. In other words, if there is more ability to see the advantages of an innovation, individuals are faster and more likely to adopt the innovation.
2.6.2 Theory of Reasoned Action (TRA)

The theory of reasoned action was put forward by Ajzen and Fishbein (1977) as a more flexible behaviour model. Attitude behaviour studies can be given a deeper insight when applying this model. According to Oliver & Bearden (1985), due to its wide applicability it is often applied in present day academic writings and business fields. The behaviour of an individual is greatly dependent on behavioural intention, which is moulded through social norms and beliefs, according to the TRA (Montano et al., 2008). Behaviour is driven by intention, which is the willingness of an individual to express certain behaviour. Two main aspects in the TRA can determine intention. These include the attitude towards behaviour as well as the subjective norm for the said action (see Figure 2.4). The attitude towards the behaviour is determined before the person opts for the behaviour (Montano et al., 2008). Therefore, the intention is made before the decision. Outcomes also dictate whether the person will adopt the said behaviour or not. In other words, it can be said that an attitude largely depends on belief and evaluation of the results and consequences of the said behaviour, making intention the main factor behind the decision to adopt the behaviour (Sheppard et al., 1988). Therefore, if the behaviour is likely to yield positive results, the individual will be more interested in adopting the behaviour and will subsequently have a more positive attitude towards the behaviour. On the other hand, an individual who has the belief that the consequences of the said behaviour will not be positive will not be motivated to adopt the behaviour and will therefore express a negative attitude (Ajzen & Fishbein, 1977). The effect that the community has on the individual to adopt and execute a certain behaviour is called the subjective norms. In other words, subjective norms compel the individual to take into consideration the views and beliefs of the community regarding the behaviour regardless of whether the conclusion is in agreement or otherwise. It dictates the decision of the individual as dependant on the views and opinions of people. In order to foresee and predict the behaviour of humans, one of the most widely used models is the TRA (Ajzen & Fishbein, 1977). A number of theories are used to formulate the basis of the available models of technology; the theory of reasoned action formulates the technology related aspects.
2.6.3 Theory of Planned Behaviour (TPB)

The theory of planned behaviour suggests that three kinds of factors affect human behaviour (Ajzen, 2011). These factors are the expectations of the possible results and their analysis (behavioural beliefs), the understanding of the social norms and the standard acceptable behaviours (normative beliefs), and an insight into the factors that may help progress or hinder the performance of behaviour (control beliefs) (Terry & O’Leary, 1995). In other words, what can be understood from these factors is that behavioural beliefs are likely to compel the individual for or against the adoption of a certain behaviour, the normative belief is likely to set the subjective norms of what the community of the individual finds to be the normal behaviour, whereas the control beliefs bring into existence the perceived behavioural control (Conner & Sparks, 1996). In addition to that, behavioural intention is based on the attitude towards the subjective norm. The likelihood of adopting the behaviour increases with higher perceived control and favourable subjective norms and attitudes. When individuals find control over the behaviour, they are more likely to practice their intention of taking up a presenting opportunity and execute the behaviour, which suggests intention to be the driving force behind behaviour (Terry et al., 1999). Apart from intention, the significance of perceived behavioural control arises when efficient control cannot be had over behaviour. However, perceived behavioural control can indirectly impact actual control which can then be used
to serve the purpose of analysing behaviours (Hardeman et al., 2002). A figurative depiction of this theory has been made in the figure below.

![Theory of Planned Behaviour](image)

**Figure 2.5 Theory of Planned Behaviour**

### 2.6.4 Technology Acceptance Model

As mentioned above, several models have been developed to explain and understand the factors influencing the acceptance of new technology. However, studies confirm the most frequently used model by Information System academics and practitioners is the TAM design by Davis (1989) (Hallegatte and Nante 2006). According to Hallegatte and Nante (2006), TAM is a highly respected and important research model in the field of determining information systems and information technology (IS and IT) acceptance. TAM is well-supported by researchers and has been extensively scrutinised, corroborated and copied, becoming an influential and economical model for examining user acceptance (Venkatesh and Davis 2000).

TAM is based on the Theory of Reasonable Action (TRA) in the field of IS (Fishbein and Ajzen, 1975; Davis, 1989; Bagozzi, 2007; Khushman, et al 2009). TAM aims to provide an explanation of information technology acceptance and usage (Davis et al, 1989). The original TAM proposed that two factors ('perceived usefulness' and 'perceived ease of use') are the main variables required to explain the variance in a user’s intention behaviour (Davis et al, 1989) - See Figure (2.6).
TAM theorises that 'perceived usefulness' and 'perceived ease of use' defines someone’s intention behaviour regarding various technologies, where behaviour intention to use is leading and a mediator of actual technology use (Davis, 1989). Perceived usefulness is also considered as being directly affected by perceived ease of use. According to (Davis, 1989) "...perceived usefulness can be defined as the degree to which a person believes that using a particular system enhances his or her job performance. Furthermore, perceived ease of use is the degree to which an individual believes that using a particular system will be free of effort’(Davis, 1989). Perceived ease of use and perceived usefulness can, therefore, be thought of as the main factors that influence users’ intention behaviour to accept and use a particular system.

Several studies have been conducted in which TAM was used in determining the acceptance of educational tools. In a study conducted by Saade and Galloway (2005), TAM was used to determine the acceptance of an E-learning implement and was able to provide the anticipated or required results. Liu et al. (2005) also conducted a study in which intent behind the usage and acceptance of E-learning was to be explained through the use of a hypothetical model using flow theory along with TAM. Variables studied as part of the model included presentation (combinations of text, video and audio) and attentiveness. It was concluded that changes in presentation and attentiveness greatly impacted the intent behind use and acceptance.
Roca et al (2006) conducted a study to understand and explain the intent that underlies the continued usage of an E-learning tool or framework by students. Roca et al. (2006) believed that contentment, which has been achieved through using E-learning framework, can be used to determine the impact of the supposed usefulness and usability of the same after continued usage. It was found that the supposed usefulness of the E-learning system played a major role in determining the intent underlying continued use.

2.6.5 A Comparison of TRA, TPB, and TAM

After a considerable amount of deliberation, researchers have still not been able to determine whether measures should be developed from generally held beliefs (TAM) or prompted beliefs (TRA and TPB). The issue is still a matter of debate amongst researchers today. Some researchers believe that the nature of a study factors greatly into which kind of beliefs are used. Proponents of TRA and TPB theories that suggest the use of prompted beliefs, such as Ajzen and Fishbein (1980), state that there is a greater probability that prompted beliefs will be representative of the beliefs of a research population. Davis (1982) argues that the usage of general beliefs is likely to make the research uniform and well rounded as well as reduce time spent on research.

As stated above the nature of the research (whether predictive or explanatory) is a factor in determining the type of beliefs that will be employed. Karahanna et al. (1999) have used both types of beliefs in their research and discovered that the use of either type of belief is equally reliable in terms of behaviour predictions. Mathieson (1991) has stated, after comparing TPB and TAM, that the former was better at explanation than the latter.

TRA, TPB and TAM differ in their approach towards social or cultural standards and customs. Davis et al. (1989) have stated that since social customs are dependent on results, a belief also expressed by Moon and Kim (2001) and Chen et al. (2002), they did not consider social or cultural customs in TAM. It can be contended that customs, in their subjective nature, are one of the main factors that determines whether a website is accepted and subsequently used.
All of the three theories and their models are used to provide an explanation and prediction for behaviours. The models provide information regarding the factors that can influence and determine behaviour and intent and what relationship exists between the variables that they employ or identify. Although explanations and predictions might seem to have a close relationship, they have separate meanings. It is next to impossible to predict things we cannot explain. We can, however, explain things we cannot forecast. The explanations provided by the models cannot be considered wholly accurate unless the predictions of the models are deemed to be accurate. A majority of research and studies conducted using TAM have only provided explanations on factors that impact the intent behind the use of an information system. By solely focusing on explanations, these studies have rendered their models invalid in terms of predicting real behaviour and thus the explanations that these studies offer are unverified. TAM provides a more accurate prediction of the usage of software dealing with word-processing than TRA, according to Davis et al. (1989).

A comparison of TRA and TAM, in terms of their treatment of beliefs, will show that TRA treats beliefs as a bundle whereas TAM gives separate consideration to each belief (among a number of beliefs), as indicated by Pikkarainen et al. (2004). Davis et al. (1989) feel that an individual consideration of beliefs by researchers is better when outlining the factors that impact the usage and acceptability of information systems.

From a study of the research conducted into TRA, TPB and TAM, TAM has emerged as being the best in terms of explanation. It is also apparent from the research that TAM carries more validity than either of the other two models. TAM has, therefore, been selected as the foundation on which this study will be conducted.

Yousafzai et al. (2007) have stated that the application of TAM is easy compared to the other two with respect to different contexts of technology acceptance (TRA and TPB depend on prompted beliefs which are separate for each context whereas TAM relies on general beliefs which are largely similar for different contexts). They also state that TAM has been specifically designed to address and explain behaviours related to the acceptance and usage of e-commerce websites and similar technology. TAM is also beneficial in that it does not consider subjective customs. TPB and TAM are advanced versions of TRA.
and thus are better at predicting and explaining behaviour and intent with regards to technology usage and acceptance.

2.6.6 Technology Acceptance Model 2 (TAM2)

TAM established the foundation for the development of TAM2 by Venkatesh and Davis in 2000. This model involved the integration of two processes. The first is the Social Influence Process, which includes the subjective norm, voluntariness and image. The second is the Cognitive Instrumental Process, which mainly refers to job relevance, output quality, perceived usefulness, and result demonstrability. In order to ensure that users understand and are willing to implement them, these processes played a significant role.

TAM primarily helps to understand the reason behind the acceptance or rejection of an innovative information system by users. To understand the likely path of the behaviour adopted by employees, the TRA was brought forward by Fishbein and Ajzen (1977). According to Roca et al. (2006), the perceived convenience of the application and perceived effectiveness help analyse system usage. It also indicates the external variable and beliefs of users.

Subjective norms are likely to have an impact on the intention of the consumer to utilize a certain technology and its perceived usefulness to them. This has also been indicated by the internalization effect in both TRA and TAM (Wu et al., 2005). In addition to that, the attitude of a consumer, subjective norms and constructs of TRA are also brought into consideration. However, behavioural intention is majorly affected by attitude. According to Venkatesh and Davis (2000), TAM does not require users to consider the effects of variable subjective norms on behavioural intention.

Social Influence Processes

TAM2 consists of an amalgamation of three main constructs. Their inter-relationship is crucial to understanding of the factors behind user acceptance or rejection of an
innovative system (Pavlou, 2003). These constructs include subjective norm, voluntariness and image.

One of the direct means of understanding behavioural intention is through subjective norm. Moreover, this is also the basis of TAM. Subjective norm refers to the social influence on TAM2 as it is the impact that the peers and family of an individual has on their decision to adopt a certain behaviour based on the perception and acceptance of that behaviour socially (Schepers & Wetzels, 2007). The power of subjective norm is also reflective in the Theory of Planned Behaviour (TPB).

When analysing subjective norms Venkatesh and Davis (2000) reached the conclusion that differentiation should be applied when studying usage of innovative systems. To do this, they put forward voluntariness, which divided it into mandatory and voluntary settings. TAM2 considers voluntariness as the willingness of a user to accept it as a moderating variable (Koufaris, 2002). The usage intentions of users are variable as despite a system being mandated by an organization, some users may not be willing to comply (Mathieson, 1991).

**Cognitive Instrumental Processes**

Perceived usefulness is determined primarily on the basis of four cognitive instrumental processes in TAM2. These include job relevance, output quality, result demonstrability, and perceived ease of use (Szajna, 1996).

Job relevance is a process of matching carried out by the user in an effort to determine the extent to which the system will prove to be beneficial. TAM2 also refers to it in terms of the applicability it has with the user’s job. Therefore, the job description of a user dictates what systems are applicable (Straub et al., 1997).

The output quality refers to the extent to which a user thinks that the innovative system can be successful. It judges the level to which the new system can reach consumer expectations and achieve its objectives.

According to Koufaris (2002), perceived usefulness is also greatly affected by result demonstrability. If the positive conclusions can be easily understandable for the users, it
is more likely that the perception of individuals regarding the new system will be positive. Therefore, it can also be said that if the result demonstrability is not high, the users who are applying the system may consider that their achievement of goals is owing to work behaviour instead of the efficiency of the system.

Perceived usefulness is also dependent on perceived ease of use according to TAM2. Perceived ease of use dictates that the easier and user-friendlier an innovative system is, the more likely it is for users to apply it (Roca et al., 2006). In addition to that, various studies have indicated that perceived ease of use allows an understanding of intention and higher ease of use increases the intention of individuals to use the product. Various additional studies are being carried out based on perceived ease of use. However, this is not in the scope of this TAM extension.

Another variable for TAM2 is experience (Venkatesh and Davis, 2000). The level of acceptance a user has for a system is also affected by the amount of experience they have. Higher experience increases the chance of acceptance. Therefore, to test this hypothesis, acceptance was tested before the system was applied, one month after application, and three months after application. The conclusions drawn from these tests suggest that before the use of the system, the decision of the individual largely relies on subjective norm. However, when testing three months after use, subjective norm is seen to be of little importance.

In order to ensure that the proposed opinions are tailor made for the system in question, it is important to have a basic understanding of beliefs regarding the system (Straub et al., 1997). The knowledge of users should also be improved following implementation of the system.
Figure 2.7 Technology Acceptance Models 2

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

UTAUT was developed by Venkatesh et al. (2010) through the technology acceptance model in light of the available research conducted before. As mentioned earlier, there are four establishments for the UTAUT; performance expectancy, effort expectancy, social influence and facilitating conditions. These constructs have an impact on the behavioural intention to use the technology. Performance expectancy in terms of consumer technology in UTAUT refers to the level at which customers can be facilitated by a certain technology and how it will assist them in carrying out activities. In addition to that, effort expectancy is the comfort level that customers experience with technology. The extent to which customers believe that the technology is favouring their friends and family is referred to as social influence. Finally, the perception of consumers regarding the resources and the facility to perform an activity is called facilitating conditions (Brown and Venkatesh2005; Venkatesh et al. 2003). The UTAUT suggests that the behavioural intention of consumers for the use of technology is affected by performance
expectancy, effort expectancy and social influence. On the other hand, the use of technology is determined by facilitating conditions and behavioural intentions. In addition to that, modern relationships in UTAUT also consider variables such as name, age, gender and experience. To make the theory practical one alteration had to be made. This is expressed in Figure 2.8, where the lighter line expresses the original UTAUT.

![Figure 2.8 Unified Theory of Acceptance and Use of Technology](image)

2.7 Summary

This chapter provides the theoretical background to the study. The chapter discuss E-learning in general: its advantages and disadvantages, and its main challenges were examined in this chapter. In addition, E-learning in Jordan is also presented alongside its history and the current situation.
Theories of acceptance are discussed in depth. The focus is on the Technology Acceptance Model (Davis, 1989). This model will be employed and used in this study, as it is significantly suitable for the current study.
Chapter Three: Research Methodology

3.1 Introduction

The purpose of this chapter is to outline the methodological approach that will be used in directing this study’s research. It will also describe the information and data collection methods used in order to analyse the research consequences and outcomes. These data represent the core of this research effort.

The methodology for this research will adopt an appropriate approach in order to obtain the information required about E-Learning systems in higher education in Jordan. It includes both secondary and primary data. This chapter will present a suitable description for the procedures, methodology and techniques that will be used in the research in terms of information gathering, analysis and testing the methods of data gathering.

This chapter also outlines the research objectives which aim to examine the issues raised by the study, and to understand them in the context of the current era.

The chapter starts with some details about the research approach and research strategy. A discussion of the research sample, pilot study and data collection methods is illustrated, followed by a brief summary of statistical techniques and reliability and validity assessments.
Figure 3.1 Methodological steps processed during this study

Focus of the Study
Understanding and identification of the research problem

Literature Review:
The main concept subject of investigation (E-learning systems), current strategy views concerning competitiveness and the context of application (Jordan)

Purpose of Study

Research Objectives

Research Design

Qualitative and Quantitative Approach

Designing/Conducting Questionnaires & Semi-Structured Interviews

Preliminary Analysis of the Data Collected

Analysis of Quantitative Data Collected

Research Findings and Discussion

Conclusions and areas for further research
3.2 Research Approach

In order to meet the research objectives and obtain acceptable results, an empirical research approach was designed and implemented. This model describes the process used when testing the theoretical framework; it also explores the environment of concern in this research (Jordan).

This approach represents a combination of the quantitative and qualitative methods used in order to employ both types of data and offers an opportunity to explore in depth those issues raised by the researcher, the questions, and the study objectives. This type of design enables the use of triangulation.

3.2.1 Qualitative Approach

Saunders et al (2007) have categorised research into two main types; quantitative and qualitative, both of which have benefits as well as flaws. However, scholars have suggested as to which type of approach is best suited to a particular situation or research problem. The nature of the data gathered in these two types is the primary distinguishing aspect between the two (Myers, 2009). Quantitative research is based on the analysis of statistical data and interlinking different variables to deduce the results. On the other hand, statistical data is required for a qualitative research as it is concerned with employing interactive mediums (interviews and questionnaires) in order to gather primary data and referring to the literature on the subject matter to assemble the secondary data (Silverman, 2013). Miller and Miller (2010) believe this approach to be more accurate as it allows the researcher to assess the data collected without any uncertainties or partiality.

A qualitative research can facilitate researchers in developing a better understanding of the data and allows them to deduce more detailed and comprehensive results. In addition to that, it possesses merits such as richness through which a situation can be assessed within the context of the subject. It also enables the researcher to suggest appropriate
theories regarding the situation (Crowther and Lancaster, 2012). Bryman (2001) has argued that there are six steps involved in the process of a qualitative research. In the first step, the researcher has to formulate a vast range of research studies and queries. Following that, the second step would involve the selection process of the most viable cases for examination. The third step would be to gather considerable information that would be relevant to the research and would help in answering the research questions. The interpretation of this collected information to postulate theories for the explanation of the scenarios would constitute the fourth step. The results obtained in this step would require the researcher to collect more information to further clarify the answers to the research question, which would be the fifth step. And lastly, the researcher would draw final conclusions from the results and data obtained in all the previous steps; thus, presenting the researcher’s own findings.

The study carried out by Nel et al. (2008), in which they scrutinized the relationship between the employees working in the same organization is an example of qualitative research (Maxwell, 2012). The study served to highlight that the choices and decisions made by these employees under study were heavily influenced by the HRM strategies being implemented and their own responsibility within the organizational structure. These employees under study were referred to as sensible active individuals.

Silverman (2013) has stated that the one of the more significant and crucial aspects of qualitative research is its capability of presenting a theory about the subject. Conversely, the initial phase of the research would examine the theories as per the positivist approach, in addition to making generalizations due to the sample being statistical in nature (Bryman and Bell, 2007). Silverman (2013) has suggested that it is not necessarily true in the case of a qualitative research; however, that does not imply that theories cannot be tested in this particular approach. Maxwell (2012) has further added that a qualitative study can account for considerable amounts of data by employing a number of techniques.

A qualitative research helps in establishing relevant theories about a situation, as stated by Smith (2002). Any piece of research is assessed and judged on the basis of the aims and objectives that it is trying to achieve, rather than it being right or wrong. The most
common criticism directed at a qualitative research, like that levelled by Myers (2009), is that the data collected is flawed or the process itself that was conducted was not thorough enough. While conducting research, the aim of the researchers is to produce results that are generally accepted, rather than subjective results (Silverman, 2013). On the other hand, subjectivity is attributed as one of the primary features of a qualitative research.

In regards to the study of mainstream or conventional social sciences, a qualitative research approach has been observed to produce the best results. The subjects of the research can be analysed in a more closely established relationship with the researcher, which could lead to a better understanding of the scenario. This is because a qualitative approach is not primarily based upon studying and testing a certain hypothesis (Crowther and Lancaster, 2012). The trends and recurring themes can be easily identified, which facilitates the researcher establishing links and grounds for the research, as stated by Maxwell (2012).

A qualitative approach acts to allow the gathering of sufficient information in terms of quality as well as allowing the researcher to be able to choose those individuals who possess enough relevant experience to bear weight on the results of the study, and by also allowing an informed choice of whom to include in the selection process. This method means that the use of interviews is central, and allows a greater amount of information than would be the case with mere questionnaires. Furthermore, it allows greater flexibility for the interviewer, giving them more manoeuvrability than would be expected from a questionnaire, where individuals are subject to the direct question exhibited on the paper (Saunders et al. 2007).

The interview phase will be the initial phase of the research and the researcher will conduct all the interviews, trying to uncover the required data in as much depth as possible. All interviewees will be from different walks of the Jordanian university system, but all will be experts in the field of Information Technology and Social Science.
Data obtained from this phase will serve to explore and appreciate the variables that power the uptake and usage of E-Learning systems in the higher education sector. Categorisation will help the researcher to focus on issues related to E-learning acceptance. Practitioners and academics in the sector will be key in representing these issues through Simi case studies, conducted in interviews. Moreover, it is hoped that these case studies will help contextualise E-learning acceptance in the post ‘Arab Spring’ changes that have swept the Arab world. It is further hoped that the broad scope and vision of the research and its approach will be sufficient to cover all bases with regard to the applicability of its findings across the full social spectrum by using a combination of qualitative and quantitative methods in this study.

The quantitative studies will be used to measure specific characteristics with large samples in order to represent a category of people’s opinions (if not the whole population). The quantitative research will be used to create an in-depth investigation in a more unstructured manner with a small but well-selected sample.

<table>
<thead>
<tr>
<th>Quantitative style</th>
<th>Qualitative style</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measure objective facts</td>
<td>Construct social reality, cultural meaning</td>
</tr>
<tr>
<td>Focus on variables</td>
<td>Focus on interactive processes, events</td>
</tr>
<tr>
<td>Reliability is key</td>
<td>Authenticity is key</td>
</tr>
<tr>
<td>Value free</td>
<td>Values are present and explicit</td>
</tr>
<tr>
<td>Independent of context</td>
<td>Situationally constrained</td>
</tr>
<tr>
<td>Many cases, subjects</td>
<td>Few cases, subjects</td>
</tr>
<tr>
<td>Statistical analysis</td>
<td>Thematic analysis</td>
</tr>
<tr>
<td>Researcher is detached</td>
<td>Researcher is involved</td>
</tr>
</tbody>
</table>

*Source: Neuman (1997)*
A qualitative means of analysis under no circumstances attempts to represent the entire population either in a country, city or in a firm; on the contrary, the goal is to understand the nature of the phenomenon in a holistic sense rather than to numerically measure and impose analysis on a predetermined set of variables (Venkatesh and Davis 2000).

As a technique, qualitative research requires a high degree of analytic capabilities and skills; it also should not be looked into as a competitor but as complementary to quantitative research. Considering its nature, qualitative research is expected to assist the research in the exploratory stages of the research process. This is because of the credibility of the people in the interview as well as being an additional tool for the manipulation of the research data at every level. Additionally, qualitative research has been always used in all stages of the research process; it also helps as an input for quantitative research, particularly in questionnaire design.

3.2.2 Quantitative Research

The empirical quantitative phase in this research will derive its information from the questionnaires distributed to categories of people. Each and every category was carefully selected and then run as a pilot study in order to sharpen and enhance the robustness of the questionnaire and achieve a high degree of accuracy.

In principle, this information will emerge from the data gathered via the drafted questionnaires. These were designed in accordance with the principal concept underlying the research and the literature review phase.

As shown below in Figure 3.2., initiation started with the development of questions. Then, objectives were determined and delineated, and the hypothesis was formulated.
3.3 Research Strategy

According to Haas and Springer (2014) and Yin (2014), exploratory study is a study tactic which conducts research on topics that has never been researched on before. This helps to develop a better understanding of the topic by studying, understanding its meaning and looking at it from various different perspectives. The requirements of this study can be completely fulfilled with the help of the exploratory research method, which is why this method has been selected (Sreejesh et al, 2014; Haas and Springer, 2014). It is
not easy to present the results of this study by the research exploratory method, generally, even though a large amount of information was derived from its conclusions (Yin, 2014).

Descriptive investigation is more beneficial when the thorough evaluation of a single person or a procedure is necessary out of investigation (Collis and Hussey, 2003). Theory derivation, explanation of methods, judgment making and looking for substitute aspects: all these factors are possible with the descriptive procedure (Yin, 2014, Flick, 2014). This method also helps in finding out the true opinions and insights of the members participating in the study (Haas and Springer, 2014). In order to gain complete knowledge about a subject, descriptive research evaluates every one of its prospects. Facts and figures regarding the census are composed to have a better look on the situation of the population, its features and to gain an improved understanding of it in a specified time period (Creswell, 2009; Miller and Miller, 2010). Every topic related to the subject being researched is studied under descriptive research.

This method of research was chosen by the researcher because it provided the most knowledge about the topic being studied. Exploratory research evaluates all aspects of the topic from various perspectives to reach the most accurate conclusions and results (Haas and Springer, 2014). Focus groups are interviewed and literature reviews are constructed as parts of an exploratory research (Yin, 2014; Flick, 2014). The topic is better understood when the researcher learns about the latest styles regarding the topic. This also makes impending studies simpler to carry out and helps articulate new procedures. The same cause is given for why this method of research is more beneficial for those creating trends, but is not used to study a particular topic only (Myers, 2009). Therefore this research will only use the exploratory method of research in order to examine the obstacles restraining the efficiency of achieving the best operational results.

The most important points of any topic are easily found using exploratory research. Nevertheless, the researcher must first set specific goals that need to be achieved by the end of the research, before initializing it (Silverman, 2013). One outcome may demonstrate to be the correct procedure for the study. Still, an absence of clarification or objectives does not suggest using exploratory research techniques.
The strategy of this thesis is designed to explore and examine via quantitative and qualitative research methods the variables influencing the acceptance and usage of E-learning systems in the Jordanian higher education sector. In other words, the strategy requires a correspondence of the objectives to the research throughout the exploration of the data collected by both the qualitative and quantitative methods. In order to interact with the research, questions and objectives will be answered throughout. The objectives of the research are presented in the following section.

3.3.1 Research Questions and Objectives

In order to establish a platform to start our research strategy from, general questions and general objectives will be presented not only as a reminder but also as a clarification of the researcher’s position in terms of the methodology selected.

The following are the key questions:

1. What are the main factors influencing the acceptance and usage of E-learning systems in the Jordanian higher education sector?
2. What is the cultural influence in the E-learning system acceptance and usage?

Questions are also required to analyse the acquisition methods used and their coherence with the objectives of this thesis and the whole research project. Objectives are demarcated to assist more specifically in the proving of the hypothesis. This includes the qualitative and quantitative research methods. As stated before, the main purposes of this study are to:

1. Explore the extent to which Jordanian universities are using E-learning systems.
2. Examine the advantages and disadvantages of using E-learning systems.
3. Look at the issues affecting the acceptance and usage of E-learning systems in Jordanian universities.
4. Develop a suitable model that may help to increase and enhance the acceptance and usage of E-learning systems.

Furthermore, it is important to highlight that the theoretical framework underlying all research phases is a resource-based view. Extensive research from secondary sources, including academic journals, books, industry publications and other sources, was made in
In order to obtain as much information as possible to minimise the effects of any possible limitation.

The strategy of the research process is to enclose the subject of research and work to get reliable results. *Figure 3.3 shows the strategy of research for the completion of the thesis.*

The strategy of the research implies three main phases:

**A) Phase one:** problem definition, research objectives and literature review. This phase helped to determine the research approach and how to focus the data collection (light green area in Figure 3.3).

**B) Phase two:** after producing the research questions, the methodology was planned and the research approaches were determined by the researcher (under the guidance of the supervisor). Both qualitative and quantitative approaches are conducted in this phase and analysis is carried out in light of the collected data (light purple area in Figure 3.3).

**C) Phase three:** the conducting of the review. This phase acts as the connection to the delivery method of the final thesis (light yellow area in Figure 3.3).
Figure 3.3 Strategy of research
3.4 Research Population

The research population consists of those selected to implement both qualitative and quantitative research approaches within the paradigm selected for this research.

3.4.1 Qualitative Research Population

The qualitative research population consists of people who have demonstrable experience of the areas related to this research. The following categories were included:

1) Lecturers and academic staff in IT and Social Science departments. It is vital for the validity of the research to interview those who demonstrate knowledge and experience of related theories and of field sciences. They are necessarily a resource.
2) E-learning website developers and consultants. Their professional knowledge allows them to act as consultants in the field of E-learning. They are also aware of the best uses of its application in a business context, following all the relevant laws and bylaws.
3) Students and users. Their use of E-learning sources as end-users and their experiences in using them offer a different perspective of the usage and acceptance of E-learning.

3.4.2 Quantitative Research Population

Questionnaires were distributed to other categories of people than those above where the researcher expects to find answers that indicate an understanding of the underlying concepts. E-learning education and experience is not assumed as it is in the interviews; this mechanism provided an alternate perspective of the research. In other words, there is an uncertainty factor which may be relevant when compared with the qualitative data. The research’s main population includes students from the university as well as the
general staff and academics; these are most probably going to have an understanding which is elementary of E-learning that the ones in the general population do not have.

The one’s involved their nationalities were different; the study considers to include the ones which are in Jordan but not only Jordanians. The expectation is that there will be those who are Arab as well considering the universities in Jordan and in the Middle East generally.

3.4.3 Sampling Methodology

Sampling is the process of selecting a specific sample that would be studied under the research from the broader population that is being targeted. Thus, it is important for a successful research to derive a relevant sample out of the population that would be able to represent that population effectively. Smith (2002) has defined the population as the group at which the research is being directed. Flick (2014) has further elaborated that the total number of individuals, entities or scenarios that can facilitate the researcher in collecting relevant information. An individual or entity must possess a certain set of characteristics to be considered as a part of the target population, which is known as the eligibility criteria.

However, it would not be possible for the researcher to interview or survey the entire population due to various constraints such as time and finances. Thus, a sample is selected out of the total population to be studied under the research and is usually a percentage of the total population (Collis and Hussey, 2003). They further add that sampling is a process through which certain events or individuals can be selected in order to evaluate and assess them. Moreover, the conclusions drawn from the study of this sample can be used to generalize these findings for the complete population, as explained by Maxwell (2012). Yin has stated that it is up to the researcher to decide upon the size of this sample while keeping the scope of the study as well as the constraints in mind. Sampling may be done through various methods such as systematic and random.
sampling. The quality of the research is not affected by the size of the sample, in the case of a qualitative research, as explained by Miller and Miller (2010). There are instances in which a researcher may decide to alter and change the size and nature of the sample population during the research, in light of the developments made in the research up to that point. Moreover, the sampling process is a continuous one that prevails until sufficient information has been extracted from the sample to further the research and generate results.

Random sampling techniques will be employed throughout this research. Initial research suggested that this approach satisfied the criteria for a target population study given their educational level and experience of E-learning. Furthermore, unlike other similar studies (which depended wholly on student participation) this study has also widened its base by targeting university staff, young professionals, and industry experts, as can be seen above. This sample reflects the characteristics of those who are currently most likely to use E-learning. It also serves as a good sample for those who use E-learning in general, as they are also the core of the population of internet users.

3.5 Data Collection Methods

There are two main types of data collected for this research: the secondary data obtained from other sources mentioned below, and the primary data that is derived from interviews and questionnaires.

3.5.1 Secondary Data

Secondary data will be collected using different resources such as books from general and public libraries, the internet, and articles published in local and online media, both at the national and international levels. The international media was useful in acquiring information about models and methods used elsewhere. In addition, articles from daily,
weekly and monthly journals, as well as those issued by government were used (see Figure 3.4)

The major portion of the secondary information gathered for this research was derived from the literature. This was done through conducting a literature review of the Information Technology field, especially with regard to the acceptance and usage of new technology and E-learning. This literature proved to be the best conceptual base on which to advance the research in other areas.

Internet sources and information from both public and private websites relevant to the field were also considered, checked and then used either to broaden general understanding or used directly in the research and referenced.

Figure 3.4 Secondary data used in this study
All available data were then reviewed, organised and compared in a systematic process of analysis in order to acquire a level of consistency, in accordance with the study parameters.

3.5.2 Primary Data

The primary data was collected through interviews and questionnaires.

3.6 Qualitative Research

3.6.1 Interviews

The data collection process is viewed to be the most critical phase in any research; thus, the data collection strategies should be carefully devised and implemented (Bryman, 2001). A phenomenologist’s philosophy, adopted and followed by this particular research, requires reliable qualitative data to be collected. For this purpose, the researcher has elected to conduct interviews as a way to collect information.

Interviews can be further classified into three primary types; unstructured, semi-structured and structured (Saunders et al, 2007). A semi-structured interview enables the researcher to improvise his questions and queries according to the responses of the participants. This is the reason that a semi-structured interview approach had been adopted for the collection of data in this research project.

Miller and Miller (2010) have defined an interview as a venture in which two individuals exchange and share their ideas regarding a specific theme or subject matter. Maxwell (2012) is of the opinion that through a qualitative interview, the point of view of an individual regarding certain situations or experiences can be easily reviewed and analysed; allowing the researcher to gain an insight in the general perspective of the participants.
Smith (2002) has highlighted that the majority of the researchers tend to employ and incorporate semi-structured interviews in conducting research and it is believed to be the most widely adopted approach. This implies that although the researcher decides some of the questions before the start of an interview, he/she can also ask questions according to the reactions and responses shown by the participants during the interviews as well as improvise the questions that had been already decided. Moreover, the order of the interview questions can also be changed by the researcher based on these responses and the flow of the interview session. Thus, a researcher is encouraged to devise an interview guide which he/she would follow, rather than formulate a set of pre-determined questions to ask the respondents. A semi-structured interview, as noted by Saunders et al (2007), helps a researcher following a phenomenologist’s approach to better understand the perspective of the participant that is being interviewed.

However, Flick (2014) points out that the emotional state and awareness level of the participants can be a crucial factor in manipulating the responses given by the participants and can prove to be a hindrance in the way of collecting accurate information. For instance, an annoyed or anxious participant, during the course of the interview, would not provide the researcher with sufficient or, in some case, correct information. Myers (2009) has proposed a possible solution to this problem, saying that the interviewer should conduct the interviews in a comfortable and controlled environment and should let the participant respond on his/her own accord, without the interviewer showing bias or prejudice and without enforcing their personal opinions upon them.

The qualitative approach used in this methodology is based on in-depth personal interviews for people in defined categories, with prepared series of questions and discussions that underpin the topic of the research.

Saunders (2000) defines an interview as, ‘…a purposeful discussion between two or more people.’ Such a discussion, he argues, helps in the collection of valid and reliable data relevant to the research questions and objectives asked as part of the study. There are two ways such information can be obtained: a physical interview, where the interviewer is in
the presence of the respondent, and remote interviews, which can be conducted through differing means, such as email, audio and video telephony (either through conventional networks or through the internet) and the postal service.

Saunders et al (2003) describes three types of interview that can be utilised across the media mentioned above. These are: structured, semi-structured and unstructured interviews. The structured interview is often used in descriptive studies for the purpose of acquiring quantitative data. In the structured interview, the researcher goes through each of the questions, recording the interviewee’s responses on a standard answer sheet, which may or may not have a range of codes that answers are framed within.

Semi-structured interviews are not as standard as the structured interview above is. It is often used in explanatory studies. In this type of interview, the researcher has a register of general and specific themes and questions that cover the parameters of the study. This kind of interview has the advantage of offering greater flexibility so certain questions can be left out, or others added, depending on the particular requirement of the interviewer or the subject under study. Moreover, the order in which questions are asked and the form of the questions themselves may also be varied (perhaps according to factors such as age, for example) (Leedy and Ormrod, 2001).

Lastly, in order to explore research questions and additional objectives, more questions could be added to the interview schedule (Sekaran, 2003). When such interviews use most or all of these options, they can be described as being unstructured interviews. This type of interview is where questions can be changed or adapted to meet the respondent's understanding, intelligence, or belief. They do not give a pre-set range of answers for an interviewee to choose, but instead promote the idea of listening to how an individual responds to particular questions.

Leedy and Ormrod (2001) argue that by using certain types of interviews as methods of data collection, researchers will affect the objectives, and arguably, the outcomes of the
research. It is with this in mind that the study uses the semi-structured interview is the most appropriate data collection method for this part of the research.

In addition to these arguments, an additional factor that ostensibly weighs heavily in this particular study is that researchers working with Arabs who reside in the Arab cultural milieus of the Middle East, have discovered that face-to-face semi-structured interviews are a much more successful way of collecting data (in tandem with questionnaires), than using alternative media such as telephony and the internet. This is ostensibly because individuals in the Arab culture prefer to have face-to-face interaction rather than write or communicate remotely, especially where there is greater impersonality through lack of facial and bodily gesturing (Al-Ali, 1999). This is also pointed out by Mona (1986), who noted that ‘…there is a strong preference within the Arab culture for business transactions of all kinds to be based on personal contact’.

This is alluded to later in this study, and acts as a main component of the argument that the perceived need for personal interaction in Arab and Jordanian culture notably affects individuals’ ability to appreciate and take up E-learning systems themselves.

One major reason this methodology was chosen was because, rather than allowing interviewees to talk generally about the research problem, the use of the semi-structured interview allowed the researcher to focus on the particular themes and issues that need to be highlighted for the purpose of the study. Conversely, the utilisation of this form of data collection has benefits that include flexibility, ease of use and ability to administer, and achievability of measurement. These benefits are heightened when combined with other methods, as objective data deficiency problems exist with this method. The level of detailed responses acquired from this method also contributes to results that have strong reliability.

Interviews, can however, be prone to potentially serious drawbacks that include problems in the identification of sufficiently large numbers of experts in the chosen field, acquiring agreement on which experts to choose, time and cost-effectiveness (particularly where
there are many people to be interviewed (Hussey and Hussey, 1997)) and lastly, as is the case with any verbal scaling, the legitimacy of any measurements made. Interviews, therefore, ought not to be used as the only method of data collection and should be supported by the literature and at least one questionnaire.

3.6.2 The Sample

To achieve the research objectives and support the results of the questionnaires, semi-structured interviews were conducted with students, academics, IT personnel and other staff.

With regard to the number of interviewees, it has been suggested by researchers that 15-20 participants are sufficient (Yin, 1994; Saunders et al., 2003; Tabachnick and Fidell, 2005). 20 participants, therefore, were picked to conduct the interviews, as shown in Table 3.2 below.

<table>
<thead>
<tr>
<th>Participants</th>
<th>Interview numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students</td>
<td>6</td>
</tr>
<tr>
<td>IT and General Staff</td>
<td>8</td>
</tr>
<tr>
<td>Academics</td>
<td>6</td>
</tr>
</tbody>
</table>

For the interviews, a list of the people who were related to the research subject was created by the researcher who, then, initially contacted them by phone, email, or post to inform them of the research objectives and request an opportunity to carry out the interview with them. A list of those who had agreed to take part was then created in advance of the interview. These interviews were then held at a time and place of their convenience.
It is worthy of note that respondents were informed in advance of the study objectives and main issues that would be covered in the interviews to give them the opportunity to prepare themselves so the researcher could expect to receive more informed responses. It is unlikely that this would have skewed the results in any meaningful way, as by informing them, they were able to reflect on positions that they previously held, and would not, apparently, change their previous position.

3.6.3 Instrument Design

The interviews comprised three sections: the first being demographic information such as, age, gender, academic level, as well as general questions regarding levels of usage and the amount of experience they had gained. The second section comprised questions that dealt directly with E-learning acceptance and usage. The aim here was to find information about what they considered to be the main factors that affected E-learning system acceptance, as well as the influence of national culture on using such systems.

The third section included numerous interview questions that had been designed to explore a number of different Cultural Dimensions that had previously been known to characterise Jordanian culture. Namely, these were: uncertainty avoidance, collectivism, individualism/collectivism, power distance, and masculinity/femininity. The aim of these questions was to discover whether or not these variables have adequate power to explain how Jordanians regard and use E-learning systems. Appendix (1) includes the full interview questions.

3.7 Interview Results

Semi-structured interviews were carried out with students, academic and general staff in several universities across Jordan. This was to obtain a better and more comprehensive understanding of the research problems that might occur due to varying levels of technological availability and through the varied experiences of all those involved in E-learning usage.
3.7.1 Interview Data Interpretation

Analysis of user interview results revealed essential factors that affect the use and adoption of e-learning systems. The first general finding confirmed that 86.7% of respondents preferred to use E-learning systems in their mother tongue (Arabic) as it was easier to use and allowed a greater degree of understanding. There was no stated intermediary effect when working through English, which they revealed created unnecessary obstacles to comprehension and ease of use.

Additionally, users intimated that Arabic language websites and systems were rare in their fields of expertise. One point that came through across the board was that many Jordanian e-learning systems had not seemed to consider Arab cultural factors even when in Arabic, as many websites were employing ready-made templates designed for English-speaking cultures; that so many websites based themselves on western cultural and formal principles rather than adapting to the cultural needs of their Arab users, was a major factor in acceptance. Users of all backgrounds explained that they felt much at ease using Arabic E-learning systems that reflected Arab cultural norms and mores, whether in social, religious or political contexts. That said, however, some of those interviewed added that websites in English in the context of technology and business were superior to Arabic websites, despite their cultural insensitivity, whether on Western or Jordanian sites.

Additionally, they tended to agree that E-learning systems were more effective when they assisted them in achieving their goals and objectives easily and quickly. Further proof of this was given when it was mentioned that when E-learning systems provide users with an in-depth online experience, and all the relevant information needed to use the system is provided comprehensively and with relative ease, they found they were keener to use and re-use that particular system, especially if navigability was also aimed at making their experience a positive one.
Indeed, navigability was judged as the most important issue facing Arab users when using e-learning systems with regard to system and information quality. 70% stated that they found it difficult to navigate many sites after following the instructions contained in the first few pages. This, therefore, demonstrates the importance of system navigability and ease of use for these users.

Interviewees also mentioned that their ability to remain with certain E-learning systems that did not have good and easy to use navigability was limited, and that often they would move on to other systems, or even stopped searching altogether.

Another important factor that interviewees mentioned was that of technical problems with browsing and downloading in many E-learning systems. Also, they mentioned that most of the E-learning systems and websites do make any concessions to the IT infrastructure generally available in Jordan, with nearly 70% facing such technical problems.

Furthermore, many of those interviewed (63%) argued that a lack of interactivity in E-learning systems and sites was very important in their consideration of its usefulness. They argued that effective E-learning should be expected to have forms that allow interaction. This inability to relate to new pedagogical and existing cultural factors was also considered of great importance.

With regard to interactivity, interviewees reflected the views that would be expected in a culture of high-collectivism, as they argued they would enjoy any E-learning system that had activities that improve or include interactivity in their design. This included, they suggested, the employment of a chat function in Arabic with discussion rooms in the areas in which they were interested.

As previously mentioned, around 63% of users use the internet for the purposes of keeping in touch with other users by email, social networks and messenger programs; thus enhancing their sense of social collectivism and improving social communication. El
Nawawy and Ismail (1999) and Wheeler (2004) support this contention that the main activities people take part in on the internet are for the receipt and sending of emails, for chatting and seeking entertainment. Social networking, as a later method, was not mentioned by these authors, but serves much the same function; especially since the chat function is built into popular social networks.

Typically, users expect quick fast responses for communication, which has seen a decline. This is especially true for younger users who place a greater reliance on social messenger programs and social networking sites, given their ability to employ instantaneous communication. Also, user experience has an influence on user interaction with the Internet. 63.3% of interviewees commented that if they had a greater experience and therefore ability to use these systems, their subsequent interaction with E-learning systems would be greater.

Many of those interviewed stated as a preference that they enjoyed using multimedia, as this helps them to express themselves more easily and improves the quality of their experiences. While the use of multimedia features is by no means unique to Jordanian culture, the need for such additional support is particularly strong in this orally dominant culture. Multimedia items such as presentations, videos, and music, help improve the Jordanian user’s experience.

Additionally, it was discovered that many of those interviewed preferred to use E-learning systems that they were moderately or largely experienced in, even when there were new systems with better additions to improve their enjoyment of the experience. This result does go some way to showing that Arab culture tends to avoid ambiguity. Hofstede (1980) said that it might be expected that users with high uncertainty avoidance (such as Jordanians) will not feel at ease in such situations.

When discussing system design, interviewees seemed more at ease with simplicity rather than complexity, even where enjoyment of such systems was negatively affected. 70% of respondents mentioned that they preferred simple e-learning systems (those with fewer
images), which does seem to go against cultural norms until one understands that the search for content outweighs the opposing factors.

Similarly, the high uncertainty avoidance factor is well demonstrated in their negative reaction to pages, which confuse the user and go against the overall design of the site in total. Huizingh (2000) argued that it was important that a similar presentation style should be used on all internal pages of a website. In addition, color-coded sectioning of material was, he said, definitely useful. Additionally, bread crumbing was, he argued, a vital aspect of a website as it always reminds the user where they are at that particular time.

The availability of information necessary for study was also, interviewees believed, highly important, and many said that E-learning systems ought to also contain required information that respected currency, accuracy and transparent characteristics. With regard to the cultural features, they made clear that the inclusion of a glossary of key terms as well as FAQ lists were essential, as well as the provision of the latest entry information. Information should be, they stated, comprehensive, accurate and regularly updated.

E-learning system usability was reckoned to be a very important aspect of system use, as was made clear by the 67% of interviewees who affirmed that E-learning systems should be user-friendly and easy to use. Moreover, their main anxiety was the matter of navigation. This was expressed as not wanting to feel they are unable to get through the rigours of the system while taking advantage of it. This was followed closely by the need for interactivity, and then the quality of the information offered.

As mentioned previously, many interviewees expressed a preference towards using E-learning systems even in the English language, if they offered the elements just mentioned. This is in opposition to typical expectations that might assume that Jordanians would prefer Arabic. However, if the E-learning system design and content did not take Arab religious and cultural considerations into account, this would impact their likelihood
of using the system. Indeed, they made the suggestion that meaningful images and tropes that represented Arab culture and identity should be incorporated into any design.

A notable percentage of those who took part in the study had, it turned out, never used an E-learning system, either for the purposes of teaching or studying. In fact, they reported that they favoured face-to-face interaction, whether for teaching or learning, rather than take advantage of online and technologically enhanced means of teaching or learning. Also, interestingly, interviewees were better disposed to trusting governmental and quasi-governmental bodies for the provision of e-learning systems in the quality, veracity and accuracy of the information they provide.

When interviewees were requested to comment on their preference regarding the use of easy-to-use E-learning systems rather than those systems that provided more useful information, almost 57% reported that they favoured easier systems over those that were useful. They argued that this was because they believed that if E-learning systems are to be useful they should not take an undue amount of time to master them, or they feel deterred and will not use the system in question.

Contrariwise, others argued that there were additional reasons for their non-use of E-learning systems:

1- Lack of trust in E-learning systems as a concept, as well as in the information they may or may not contain, and the accuracy therein.
2- E-learning systems developed outside the cultural milieu of the Arab world were often likely to rest conclusions based on assumptions that did not sit well with the religion and customs, and indeed, often went against them.
3- The idea that personal contact via word of mouth was very important in Arab social circles as a learning tool, and E-learning tools took no account of this fact.
4- By merely using E-learning systems, they believe it will negatively affect their relationships with friends, family and wider social groups including authority, and result in deterioration of social and cultural bonds.
5- Others mentioned prior use of E-learning solutions but that they found the experience detrimental as they faced severe difficulties in the ability to find the required information and they found the systems difficult to navigate.

6- Yet others stated that they had no experience whatsoever of using the E-learning systems and that they expressed a preference to use only those methods they were used to that existed in traditional teaching and learning methods.

Interviewees were also asked about how their respective academic institutions balanced traditional methods in teaching and learning with newer technologically modern methods in E-learning systems. Many stated that university management did this, sometimes under pressure from government and other external bodies, but generally, uptake of innovative systems was limited, with a continued tendency to continue the usage of traditional methods despite the availability of computers and Internet access. Demonstrably, academic managers have shown a tendency to avoid uncertainty, as might be expected in this cultural milieu.

Overall, this tends to explain behaviour in public bodies, while private academic institutions do tend to seek and exploit new technology much more readily. In public institutions, this is still limited to upper management and senior members of department. This is compounded by a lack of investment and resources in public bodies, where private institutions often receive substantial support from private industry and leading industry figures.

As a general trend from the information gathered as part of this study, it was notable that many interviewees preferred direct personal contact rather than using Internet services which acted as impersonal proxies. They preferred to both teach and study in classes and lectures, feeling distinctly more at ease in environments where there was physical and verbal interaction, which as has been noted is highly important in the Arab culture as it is thought to be the defining cultural factor for delivery of any kind of service that traditionally was delivered in that manner. Also, other users mentioned that they actually preferred to solicit information from friends or families both when they could not find
information from the E-learning system, and, indeed, when they could. This goes some way to showing that cultural affinities are preeminent in Arab society.

3.7.2 Interview with Academics

Of those interviewed who were involved in the delivery of academic syllabi, most admitted that the uptake and use of E-learning systems was highly limited in Jordan and the wider Arab world, based on their experience. They also believed that the technology was still in its infancy here, and that it was finding teething troubles in finding its market in this region.

They confirmed that the individual’s choice to use and accept E-learning systems was due to much the same reasons posited by student interviewees. They also agreed with the conclusions drawn by the students that personal contact in a pedagogical environment was crucial, and that word of mouth communication for such purposes was also more trustworthy than that available on websites. Again, there were strong cultural reasons rooted in the face-to-face contact tradition and group mutual assistance that created these conditions. They felt that the information passed on in the physical presence of an educator to a student was of more value, and therefore more real, than that in an E-learning system. Again, the lack of trust of those outside the social grouping that springs from tribal tradition is clear.

They also noted that there was a very real lack of marketing and promotions to support the use of E-learning systems. The intrinsic qualities of the existing systems available to the institution were still in many cases effectively in the beta or prototype stage, given the reluctance to engage in the form and the general lack of investment. A weak communications infrastructure and a distinct lack of E-learning systems expertise were also noteworthy aspects that they observed in their comments.
Regarding the cultural influences on using E-learning systems, academics confirmed that culture has an influence on the acceptance and usage of E-learning systems. They mentioned that Arab culture is an in-person culture and they do not prefer to write and use new technology. Also, some people believe that using E-learning systems and technology will effect on their social life and also in their customs. Therefore, they do not encourage their sons, relatives and friends to use it.

Academic staff did point to some successes from the importation of E-learning systems from the west which were then re-interpreted from an Arab cultural perspective, overcoming the resistance of those who operate and use them and effectively stymying any objections and hesitations about their likelihood of undermining Arab cultural positions.

In general, they summarised the essential problems of E-learning system use as:

1- A negative impact on the overall use of the Arabic language, as E-learning systems often required the use of English to operate them. This could be either for educational reasons (such as to promote English as a medium of pedagogy and greater performance in the world market), or it could be for financial reasons (institutions may have taken software directly from the west and could or would not spend time and money to translate both the language and the cultural impacts such systems contain within them). Additionally, Arabic-language programs were themselves weak due to a lack of expertise in the field by Arabic speakers.

2- Due to the general weakness of Arabic E-learning systems, most people do end up using western systems, which require English, so users hesitate to use them due to their relative weakness in that language.

3- People are afraid of operating E-learning systems as they have the tendency to conflict with users’ cultural and religious values.
3.7.3 The Validity and Reliability of Interview Questions

This study used an interview instrument format that was derived from those used in earlier studies, with some modifications made to match the current research requirements.

Davis (1989), Venkatesh and Davis (2000) and Khushman et al (2009) were used as the basis of the E-learning acceptance and usage questions, while Hofstede (1980) and (1991) and Alkouret al (2006) were employed with regard to the cultural dimension. Amendments were made to meet the current study objectives.

The questions were the subject of a pilot study which took advantage of six Arab research students who were at that time living in the UK, and three Arab people who were working in the UK as well. Furthermore, questions were emailed to three lecturers in Jordanian universities, who were specialists in IT, marketing, and social science, respectively. It was decided to follow these procedures so as to improve the reliability and validity of the interview questions. The study resulted in a limited restructuring of some of the questions, and the abandonment of others.

3.7.4 Interview Administration

Interviews were largely carried out in person in Jordan from August to September 2011. Interviews with academic staff were held in offices at the university and in the library with students (or anywhere else that was convenient for them and was suitable for the purpose). The reasoning in these choices of venues was that it would allow an increase in interview reliability and validity if the place and time of choosing were to the subjects’ own advantage, therefore making them more at ease and likely to cooperate. Moreover, these people had already expressed a preference for joining in with the study given their experience of, and interest in, the subject of the study. Interviews were carried out in Arabic, for the same reasons as above, although English terms were used where required.
3.7.5 Conducting an Interview

Regarding the conduct of these interviews, several strict practices were adhered to so that the level of bias was reduced and the potential for an improved quality of response could be assured. The following practices are considered by researchers in the field to be amongst ‘best practice’:

a) Attempts were made to make the interviewee feel relaxed and at their ease so that they were able to reflect without a sense of pressurisation. They were made to feel comfortable in giving responses that would be more accurate.

b) There was a clear assurance of full confidentiality and anonymity to all participants at the beginning of the process. These included recordings of the interview, the transcribed version and the presentation of the final results.

As it was necessary to explain the rationale of the study to all those involved, with regard to the general themes of the study and the specific purpose of the interview, the following information was given to all participants at the beginning of the process:

‘The purpose of this interview is to learn more from your experiences about E-learning website uptake and usage. Little is known about why people from Jordan and the wider Arab world act as they do with regard to E-learning uptake and usage, and we would like to enrich the literature by using your experiences as a basis of finding out what national and cultural factors encourage or discourage you to use E-learning systems.’

Furthermore, those who took part in the study were informed about how they had been chosen for interview as their opinions could help future developments in the uptake of E-learning systems, given their particular experiences as existing Jordanian users of E-learning systems.

Permission was also sought before interviews were conducted to record their responses, with the justification that as there were more than one interview scheduled for any one
particular day, the ability for the interviewer to recall precise details without using their exact responses would be impossible and therefore could lead to an increase in error and bias. Interviewees were therefore requested to give permission to audio-record the interview and were given direct assurances that all information supplied for this study would be handled with absolute confidentiality and in total anonymity, not being disclosed to anyone outside of the research. That meant that no reference would be made to any person by name.

Unfortunately, however, most interviewees did not wish to have their interview audio-record, and so, date recording was done manually in a written form utilising notes in all cases where the audio-recording request was turned down. This procedure was carried out to avoid making interviewees unduly nervous.

The unstructured sections of the interviews did allow for a substantial amount of questioning about the research issues. This kind of unstructured questioning did in fact turn out to be useful, as a notable amount of those people interviewed talked directly about their personal use of E-learning systems and mentioned cultural aspects that they believed had actually affected their approach and acceptance of E-learning systems. This was an advantage to the alternative, where people remained resolutely focused on the question without digressing.

3.7.6 Questionnaires

A questionnaire comprises of a number of pre-defined questions related to the issues and problems, all of which can be addressed through asking participants for their opinions (Collis and Hussey, 2003). The responses given by the respondents are then analysed by the researcher in order to establish a general view or conclusion. In order to collect primary data, surveying techniques had been employed to account for the various underlying factors such as population type, sampling, time, costs, response rate, question contents and formats etc. The choice of data collection method further depends upon the training of advisors, colleagues and researchers, social pressure being exerted by others
and the aims that are sought to be achieved through the research (Jackson, 2014). The organization had been considered as a study unit, which is the reason why this approach had been adopted. The general idea of the research issue was understood by adopting the survey approach, where different participants, which were comprised of individual users and customers, were required to provide their inputs, as stated by Silverman (2013). Furthermore, such an approach also addresses the different variables involved through the use of theories and models. A number of issues had been observed to be present that were related to supply chain management, which need to be addressed before the initialization of the research process. These issues can create insufficient knowledge on handling, not being able to accept change, back sliding, inability to acquire resources etc. The proposed conceptual model requires the hypothesis to be tested and evaluated in order to obtain accurate results.

Being the tool of the quantitative approach, questionnaires were designed and tested using the pilot study described later. Questionnaires were distributed in categories thought to be useful for the research (as elaborated on in the research population section). The following are the main areas that clarify the use of this tool of data collection:

3.7.7 Means of Distribution

The questionnaire distribution process had been planned so as to ensure the required categories are met with the appropriate content which will vary according to the particular demographic.

There are two main means of distribution:

1. Hard copy distribution of the questionnaire as mentioned above. Responses are expected to be adequate given the tight focus of the questions according to the particular demographic.
2. Soft copy distribution of the questionnaire is preferable to those demographics where operating factors will improve return.
3.7.8 Evaluation of Alternatives

For the purpose of collecting data in a qualitative research analysis, the researchers can examine and observe the events or the behaviours of the individuals themselves, according to Collis and Hussey (2003). This method of collecting information is referred to when other methods prove to be insufficient or ineffective in gathering adequate information. Thus, the researcher then gains insight into the issues by making observations of the subjects and events of the persisting scenario. These observations are made in great detail, evaluating the different behaviours and attitudes of the people involved with respect to the prevailing circumstances or changes in the spatial environment (Miller and Miller, 2010).

The role of the researcher is crucial in governing the processes that would be undertaken to further proceed the research, as found by Yin (2014). The researcher can either make the observations directly or act as a passive investigator when collecting relevant information. However, there are instances in which the researcher may begin the data collection procedure with a lower level of involvement, culminating in a higher level of involvement eventually. However, the involvement of the researcher within the environment of the subjects can prove to be offensive to the subjects and would cast a negative impact upon the overall process of the research (Collis and Hussey, 2003). This can be avoided by remaining undercover during the initial phases and gradually revealing oneself to the subjects so as to not be intruding towards the subjects and their environment. The one major demerit of this practice is that it clashes with the morals of credibility and honesty, as stated by Merriam (2014). The observations made by the researcher are usually regarding the reactions of the subjects, their attitudes, activities and the impacts of these activities, their routines, acquaintances and the interactions with the environment.
The process of evaluation is an indirect process in which the researcher remains limited in his/her involvement. Merriam (2014) has explained that researchers can exploit IT and technology to their benefit when recording their observations through data logging or audio and video recordings. It provides the benefit of minimizing the involvement of the researcher along with allowing the researcher to focus more upon the targeted sample space, as stated by Merriam (2014) and Yin (2014). When compared to the direct observation approach, this method proves to be more time efficient and generally more productive towards the aim of collecting information (Yin, 2014). Myers (2009) is supportive of this approach, arguing that the approach does offer its benefits and enables the research to propose various methods in which the actions and interactions of the subjects can be monitored and observed rather easily and effectively. These observations then provide enough data that can be used in the assessment of the motives and perspectives of the subjects, as stated by Jackson (2014). In an interview session, the participant may not convey his/her true feelings or ideas or would be unable to do so due to feeling reserved. However, in the process of making observations, subjects are generally unaware of the presence of the researcher, thus depicting their true actions as well as feelings (Collis and Hussey, 2003; Yin, 2014). Thus, these observations can be used to further refine the data collected through interviews by discarding erroneous responses.

Document Analysis is primarily used for research objectives; however, it has also been observed to be employed as a source for writings, articles, reports and journals (Collis and Hussey, 2003). The qualitative research procedure is based upon these documents and is reviewed by the researchers in regards to the subject of the research. Moreover, it
addresses the public aspects of the subject and is a crucial part of the triangulation process (Yin, 2010).

This particular approach is based upon the researcher reviewing the information present in the documents that is related to the scenario or the subject undertaken for the research, as explained by Yin (2014). These documents can be of different types, such as official documents that contain factual data and formal interpretative results. The strategy devised to evaluate the data obtained from these documents is the same as that for the analysis of data obtained from primary sources.

Yin (2014) highlights the role of these documents in authenticating the data as well as the subject matter after data has been collected through the employment of other means. Documentation presents a number of benefits such as avoiding the flaws and errors that would exist in the interactive relationship between the researcher and the participants, saving not only time but also costs that would incur when conducting surveys or interviews. It also allows the researcher to refer to the already available and authentic data while reducing and minimizing the capital investment. However, according to Yin (2014), this approach also possesses one major drawback, which is that the data obtained from partial documentation would produce inaccuracies in the results.

3.8 Pilot Study

To try and limit the misunderstandings as well as ambiguous queries, there was a pilot study initiated. According to Yin (1989), a pilot study assists investigators to fully refine the plans of data collection based on the data content as well as the relevant procedures. Below is a list of how the researcher is helped by the pilot:

1. Length: Make sure that the questionnaire is of reasonable length.
2. Clarification: To make sure that the instructions are clear and the layout is pleasant with full clarity as well.
3. Reliability: This is the stage where the pre-testing happens which enhances the reliability of the questionnaire; it is possible to succeed in achieving the validity of the content where the potential variation is minimized so that interpretation errors are minimized also.

3.8.1 Pilot Study Aims

Testing the questionnaire is the main aim of the pilot study. This is to minimise serious defects (if any) when used in the field and to validate the survey questions, as well as to check that respondents understand the questions.

In addition, the pilot study provides information about the response rate and helps in determining the appropriate data collection method in terms of content and data procedures. According to Gilbert (2001) a pilot study also helps the researcher to ensure the adequacy of the questionnaire, design a research procedure, assess whether the research procedure is workable, determine the sample size, and collect preliminary data.

There are many vital areas that assist the questionnaire’s validity by shedding light on participants’ opinions.

Areas of vagueness or difficulty:
1. Time required for filling in the questionnaire.
2. Level of comprehension with regards to the wording of the questions.
3. Any other comments from the participants.

3.8.2 Application of Pilot Study

In order to make the application of the pilot study sufficient, a sample of the selected survey population will be utilised to test both the questionnaire and the procedures. There is, though, no consensus regarding what is the exact or right number for small or large sample means, but researchers confirm that a minimum sample size should be more than
100 observations which should be available to conduct multivariate regression statistical
analysis (Hair et al., 1995; Saunders et al. 2003; Tabachnick and Fidell 2005).

Churchill (1999) confirms that the pilot study subjects should be around 10% of the
sample size to conduct the pilot study. The questionnaire will be distributed to 50 people
in each category, except for the last one as shown in Table 3.3. As a result, the pilot study
will be carried out with 5 people from each category. The sample for the pilot study
consists of the regular number of subjects. This selection helps to give sufficient feedback
about the contents of the questionnaires and research procedures.

<table>
<thead>
<tr>
<th>Category</th>
<th>Distributed questionnaire</th>
<th>Pilot study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecturers</td>
<td>50</td>
<td>5</td>
</tr>
<tr>
<td>Staff</td>
<td>50</td>
<td>5</td>
</tr>
<tr>
<td>Students</td>
<td>50</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>150</td>
<td>15</td>
</tr>
</tbody>
</table>

Table 3.3 The sample size of the pilot study compared to the total sample

3.8.3 Pilot Study Phases

There are several phases in the pilot study that the researcher will conduct:

1) Firstly, the drafting of the questionnaire: the questionnaire will be drafted in both
    Arabic and English; however, Arabic was mainly used because the majority of
    participants were Arabic speakers. The process of translation will be conducted by the
    researcher and by another bilingual independently and then compared for accuracy.
2) The second pilot phase makes sure that the contents of the questionnaire correspond to the objectives of the research, and at the same time, ensure the length of the questionnaire is reasonable.

3) The third phase will conduct the pilot group so as to modify any defects in accordance with their points of view as academic students in the field of study.

A covering letter will be attached to introduce the research study, its purpose, the person who will collect the data and the importance of responding in order to achieve the research objectives. Hard copies of questionnaires will be handed to each potential respondent personally, together with the covering letter.

In addition, on both the hard and soft copies, the following information is required for statistical purposes and to ensure a sufficient level of analysis:

(1) Nationality: to know the nationality of the respondents.
(2) Gender: to compare the samples of males with those of females.
(3) Education: to know the level of education of the respondents.
(4) Work experience: to know the number of years of experience.
(5) Age: to know the category of the age of respondents.

Finally, all respondents will be instructed to write their comments at the end of each questionnaire, stressing the importance of completing the questionnaire in full. Any incomplete questionnaire will be discarded from the analysis.
3.9 Reliability and Validity

3.9.1 Reliability

Hair et al. (1998) defined reliability as ‘The degree to which a set of latent construct indicators are consistent in their measurements’. Hair et al. (1998) also indicate that reliability is the extent to which a set of two or more indicators ‘share’ in their measurement of a construct.

In this research, the tools of data collection were considered, with notes taken during interviews to accurately convey the conversation. Interviews was also recorded. The data transcription process was used twice: the first, right after the interview to report minor matters that might have slipped from memory, and the second, done at the convenience of the researcher, so a process of comparison could take place and reliability be assured.

With regard to the questionnaires; the researcher deliberately introduced repeat questions in different places. This was done to reduce bias and show that the respondents understood the questions. During the hard copy collection process, the researcher also tried to ensure that the respondents answered the questionnaire in the correct manner by perusing the completed questionnaires during informal discussions.

The method of questionnaire distribution was aimed at avoiding errors resulting from misunderstanding and ambiguity. In addition, the adoption of other questions or scales from previous studies facilitated the comparison of the findings with other studies.
3.9.2 Validity

Hair et al (1998) defined validity as ‘the ability of a construct’s indicators to measure accurately the concept under study’. Validity should correspond to reliability in order to sharpen the study results. It must be made clear however, that they are separate factors, because validity is about accuracy while reliability is about consistence. Hair et al (1998) stated that a measure ‘may be accurate (valid) but not consistent (reliable) and it may be quite consistent but not accurate’; hence, validity and reliability are two separate but interrelated conditions.

Content validity can be determined by a careful definition of the research topic and the items included in the measurement scale (Punch, 2005). To achieve content validity, an extensive literature review was performed to define and clarify the scales used in this study. Most of the items and scales have been defined and used previously in the literature (Churchill and Lacobucci, 2004).

In addition, opinions and academic experience from field experts provide relevant inputs, adding to what had been identified from the literature. The draft of the questionnaire will be pre-tested by several PhD students and a panel of academic experts in the UK and in Jordan to evaluate the content validity of the questionnaire.

The pilot study will be another tool to test the validity of the questionnaire as a tool of collecting data. Throughout its process, the pilot study has helped to hone the questions and ensure the clarity of the questionnaire’s central concept. In addition to this, statistical techniques help to support the validity and reliability of the research.
3.10 Data Analysis

The first step in conducting a thorough process of understanding the gathered data and its meanings, including any indication that can be derived from connecting conditions, has meant the researcher has had to pay attention to the interview areas, the intonation and stress in individuals’ language patterns, as well as body language signals when responding to the information in the questionnaire and during interviews.

This process of association is more fruitful during interviews because the researcher can collect from the information given at the time of interview, as the presence of the interviewer can influence the result. When questionnaires are being completed, the opposite is the case given the absence of the interviewer.

However, in both cases, hermeneutics, as a tool of analysis, was used to derive the meaning from the text. Taylor (1976) says that ‘interpretation, in the sense relevant to hermeneutics, is an attempt to make clear, to make sense of an object of study’. Hence, hermeneutics was used to acquire the meaning of the data collected using both methods.

3.10.1 Analysis of Qualitative Data

Qualitative Data Assessment

There are various methods of analysing or assessing qualitative research data and all are bound through their use of textual analysis (non-verbal or otherwise) (Sutton, 1993). This study provides an examination of only three of those methods or approaches to analysis of qualitative research data: namely, semiotics, narrative and hermeneutics.

Semiotics

Conversation analysis, content analysis and discourse analysis are the three principal forms of analysis that make up semiotics.
Conversation analysis involves assessing the implications of a text in the context of an exchange. Wynn (1979) states such a type of analysis involves immersing oneself in situations that can provide information about the backdrop of the practices.

According to Krippendorf (1980), content analysis involves the search for patterns or frameworks in the text of interest on the basis of allowing for conclusions to be drawn regarding the context of the text. Content analysis has been defined as a method used to create reproducible and cogent references from given information or data to its context.

Discourse analysis consists of analysing what are called ‘language games’. According to Krippendorf (1980), a language game is a unit of communication that is clearly defined. A language game comprises of an arrangement of spoken exchanges. Allegories and idioms are common elements of the exchanges. Discourse analysis is considered to be a product of both the conversation analysis and content analysis.

Semiotics majorly deals with the connotation and significance of language in terms of symbols and signs. The notion is to allocate certain words and symbols to the various classes of concepts and to highlight the main parts of a theory that require assessment. According to Patton (1990), the significance of an idea can be understood from the consistency with which it occurs in a given text. The purpose of semiotic analysis here will be to assess the wording of the responses provided during the interviews, to comprehend the study’s meanings and to establish a relation between the aims of the research and the responses.

Narrative and Allegory

Narrative is generally defined as a story that is stated in the first person. Responses given by interviewees during an interview can be defined as a narrative and usually require a historical context to be understood.

An allegory or metaphor is defined as the use of a term or phrase to describe a thing or an action to which the term or phrase cannot be factually applied. In discussions and assessments of literature, both narratives and metaphors are considered to be important elements. Over the years, both have also been recognized as important parts of various forms of thinking and social customs. According to Herda (1999), researchers have been
looking into the roles played by narrative and metaphor in native cultures, organizations, the field of medicine, etc.

Hermeneutics

According to Taylor (1976), in terms of hermeneutics, interpretation involves developing a clear understanding of an object of interest. Hermeneutics involves assigning meaning to or figuring out the meaning of a given text. Hermeneutics involves untangling and understanding the multiple levels of meaning that may exist in a given text. It brings the conflict that exists between the understanding that comes from a part of a text and the understanding of the text as a whole to the forefront.

According to Godamer (1976), the relationship between the meaning of a text as a whole and the meaning of the parts of text is circular i.e. that understanding of the overall meaning of a text leads to an understanding of the parts of that text and vice versa.

Hermeneutic analysis in research involves developing an understanding of research considerations by interpreting and analysing the responses given by interviewees during the interview sessions.

3.10.2 Level of Acceptance

Assumptions presented in this research will be accepted or rejected throughout the outcomes and results that derive from the completion of the research. Hypothesis acceptance or rejection is based on an agreement level of 95% with a margin of error of 0.05%. However, questionnaires will not be as accurate as interviews because of the nature of generality and the broad category of application.

It is important to remember that within the social sciences, a 10% margin of error is reasonably acceptable considering that the margin of confidence might be 60% with a 10% margin of error (Doyle, 2004). The reasons for this are:

1. Each environment, firm or entity has its own uniqueness.
2. Behaviours are difficult to standardise.
(3) The researcher’s experience plays a crucial part in terms of delineating the scope of acceptance in accordance with personal experience and understanding the strength of the methodology.

The foundation on which the research methodology used for this study is considered more suited than the rest is that:

- Researchers, readers, and analysts all find the approach very simple to understand.
- The methodology is efficient despite the time and cost constraints a researcher usually faces.
- The results of the qualitative research carried out show the way the sample population perceive the subject matter and are considered to be impartial. Moreover, the credibility of the study increases significantly as the all the secondary data sources are cited and acknowledged.
- The approach is very accommodating to the needs and requirements of the researchers.

3.11 Limitations of the Methodology

Despite the numerous reasons that show this methodology is best suited for the study, it still has some limitations and setbacks. Due to the qualitative nature of the research, some of the data collection techniques used during the process e.g. one-on-one interviews increased the cost and the time frame of the project. The use of this approach in the field of conventional social sciences has numerous drawbacks. To begin with, as the results are majorly established on the way the researchers perceive the data they consider significant, they tend to be subjective. To replicate qualitative research is not feasible as the study doesn’t have any specified framework. Often the conclusions drawn from relatively smaller cases are incorporated in the qualitative studies and hence the results can’t be comprehensive. Neither the investigative course of action followed by the researchers nor the methods they followed for the derivations are effectively presented in the full course of action the methodology adheres to. The quality of research is affected as numerous cases are taken off record purposefully in order to take into account this complication. Interpreting the questions from an under-study individual’s view point and
then comprehending it can be a challenge in itself while assisting the interviewee in a session.

3.12 Ethical Consideration

The ethical standards that a researcher must keep in mind during the research are discussed in this section. An official seal of approval was required from SME’s accordingly.

In addition to considering the risk factors involved, the researcher must make sure that no harm is done to the sample in any way and neither is it exploited (Munhall, 1988). This research is of a sensitive nature and hence demands the researcher to protect the sample’s original psychological mindset; as it is important to put the interviewees at ease, special measures are taken. Silverman (2013) very rightly pointed out that it is of high importance to make sure the information that interviewees provide isn’t used against them in any way or form. Therefore, after collecting all the information, the researcher in this case saved and protected all the data, including written and recorded material, and once the research was concluded, the information was destroyed.

Right to Self-Determination

It is imperative that the potential participants are not compelled or pushed in any way to be a part of the research as seen in the self-determination right. According to Collis and Hussey (2003), if the participants refuse to be a part of the study then there shouldn’t be any penalty enforced upon them. The researcher approached the participants and then explained the project’s objectives. Additionally, the researcher also explained before the project started that the participants can quit at any point without any issue. The participants weren’t pushed to join the project and every participant gave their consent before being a part of the study verbally as well as in writing.

The right to full disclosure

This principle states that all the aims and objectives of the project are briefed to the potential partakers in detail by the researcher and the choice to take part in the project ultimately resides with them. Collin and Hussey (2003:78) are of the view that the notion
of full disclosure relies on self-determination. As mentioned earlier, all the information about the purpose of the project, the interview procedure and any other information that is connected to the project in any way or can be helpful to the project is explained to them.

**The principle of justice**

The principle of justice incorporates the fair treatment and right to privacy for all the interviewees.

**The right to fair treatment**

Yin (2010:181) described the concept of fair treatment as the fairness on which the participants are selected in accordance with the requirements of the research project, and not based on the researcher’s biased opinion.

- The contributors who decided to not take part in the project were duly excused and their personal data was removed without holding their decision against them.
- In case of any queries, the researcher was well within reach to clarify any doubts the participants may have had regarding the project.
- Deep and utmost respect was shown to all the different faiths, lifestyles, sentiments and cultural norms that the participants practiced.
- A polite and courteous attitude was directed towards all the participants at all times during the course of the project.
- To tailor the sample, experience was set as the bases of selection criteria for the participants.

**The right to privacy**

McLaren (2001) explained the right to privacy as the way of safeguarding not only the individuals and their personal information but also their views and ideals from being used without their consent. It was mutually understood that the participants would only share the information knowing that even though their viewpoints are to be shared, their identities will not be compromised. Therefore, the link between the information and the
informants was broken and full anonymity was ensured. The interview sessions were video-graphed to store the information which was then kept confidential through verbal and written consents; this process aimed to ensure anonymity. To further ensure the confidentiality of the informants special measures were taken, which include:

- The lists carrying the names of the participants, their transcriptions and notes were secured in a safety locker which remained locked.
- The lists carrying the names weren’t kept in the same place as the collected data, recorded videos and other notes from the interviews.
- Neither the tapes and notes nor the transcriptions were labelled with names or any other personal identification of the informants.

3.13 Summary

This methodology will be used in order to obtain the required level of research information needed to result in positive outcomes in terms of correspondence to the objectives and to answering the research questions.

The researcher will make use of personal experience and access to the area of study in order to facilitate the utilisation of research tools, and will also benefit from previously acquired acquaintance networks.

The combination of qualitative and quantitative methods will be employed with an aim to produce accurate and positive results. Interviews will be conducted by the researcher after following through a precise question preparation process, and other arrangements related to facilitating the correct conduct in interviews.

Means of objectivity, accuracy and comprehension will be adhered to at the highest levels when conducting the methodology and through the analysis phase, including interview preparation, question wording and construction, translation, recording (if permitted by interviewees), the coverage of questionnaire categories and all other relevant areas.
Chapter four: Research Model and Hypotheses

4.1 Introduction

The theoretical framework used here lays down the foundation upon which the entire study is built, demonstrating the relationship between the research factors and the study problem. The theoretical framework provides a clear understanding of the research problem and plays an important role in yielding testable hypotheses.

The research is grounded in the belief that culture is a discernible factor in the E-learning system acceptance process and can be interpreted as impacting users’ intentions to use and accept E-learning. The assumption is that cultural specific factors are related to users’ thinking, values and opinions on, and the subsequent acceptance and usage of, E-learning systems. Also, it is assumed that internet users’ cultural backgrounds will influence their adoption or rejection of particular E-learning systems. Thus, assuming there is a correlation between culture, perceived usefulness, and the perceived ease of use and intention to use websites, there is a need to model websites to fit users’ cultural attributes.

Based on a review of the current literature, this study specifies variables related to the research problem. The dependent variable for this study is ‘intention to use E-learning systems’, while independent variables include: ‘cultural dimensions’, ‘perceived usefulness’, ‘subjective norms’, ‘system & information quality’, and ‘perceived ease of use’.

The following sections consist of the proposed theoretical framework. Based on this model and the literature review, specific hypotheses will be posited to explore the factors which influence users’ acceptance and use of E-learning systems and how cultural dimensions influence perceptions about the acceptance of E-learning systems.
4.2 Research Aim and Objectives:

This research aims to investigate the factors that influence the acceptance and usage of E-learning systems in universities and educational institutions.

The main objectives of this study are:

1. To improve the knowledge and understanding of the current state of E-learning in Jordan.
2. To investigate the factors that influences the acceptance and usage of E-learning systems in Jordanian academic institutions.
3. To extend and study an exclusive theoretical model that demonstrates the essential factors that influence people’s adoption of E-learning systems in Jordan.
4. To suggest recommendations for future action that can help to increase and improve the acceptance and usage of E-learning systems.

4.3 Conceptual Background

4.3.1 The Technology Acceptance Model (TAM)

Several studies were explored before choosing the ‘Davies TAM Model’. This has been used for previous studies in Arab countries (e.g., Straub, et al 1997; Akouret al, 2006, Khushman, et al, 2009) which found that TAM had, to some extent, better predictive power than other acceptance theories. TAM was also preferred because it is an extensively used, practical and robust model of technology acceptance, dealing as it does, with different issues that came out of this study. E-learning system acceptance is chosen to point out user acceptance that comes as a result of user intention to use e-learning systems.
The developed model might be considered as an enhancement of the Technology Acceptance Model. According to Davies’ 1989 TAM model, the behavioural intent to use a technological innovation is determined by two its Perceived Usefulness (PU) and Perceived Ease of Use (PEOU).

In many ways, the perceived usefulness of a system is also determined by the ease with which it is used. Davis (1989) defined PU as ‘...the degree to which a person believes that using a particular system would enhance his or her job performance’; conversely, PEOU is described as ‘...the degree to which an individual believes that using a particular system would be free of mental or physical effort’ (Davis, 1989).

The TAM model explicates how the main variables (PU and PEOU) arbitrate the external variables, influence a user's attitude, and help decide the intention of a person in the acceptance of a particular technology and later on, to apply it. The TAM model does not, however, take in cultural aspects and subjective norms.

Previous research has checked the validity of TAM and even enlarged the model to tackle diverse variables and populations and include variables, such as those linked to social influence. Therefore, on the whole, it expands the ability to explain and has greater predictive power (Davis et al. 1989; Venkatesh & Davis 2000; Hu et al. 2002).

TAM proposes that users’ beliefs regarding PU and PEOU would influence their attitudes as part of a ‘user behavioural intention’ to agree to and utilise information technology, which in turn creates real system use. The PU and PEOU were both pressured by external variables. PEOU was theorised to affect perceived usefulness, and perceived usefulness was also believed to affect an individual’s intention to really use (Veiga and Floyd, 2001).

While previous studies have found a direct relationship between usefulness and technology usage (e.g., Subramanian, 1994), for the purpose of this study, ‘intention to use’ (IN) will be employed and used as a dependent variable rather than as an actual
usage in the developed model. This means that measurement will not be accurate, as previous research shows that ‘intention to use’ leads to actual use (e.g. Khushman et al., 2009). External variables are often the precursors of these beliefs. The TAM claims that the effect external variables have on IN should be fully reconciled by the PU and PEOU factors (Davis, 1989).

The fact of whether one chooses to accept e-learning systems is often linked to a user’s psychological state regarding the intended use of a special technology (Chau and Hu, 2002). As mentioned above, in this study, IN is used to signify user acceptance: ‘the use of intention to explain or predict behaviour based on theoretical foundation and is based on sufficiently strong empirical support.’ (Khushman et al, 2009)

Researchers have commented that there are difficulties related to objective measurement of a person’s behaviour as there is little public access to information on privacy violations. Currently, within the workplace, the use of PCs and new technology has become mandatory, and workers are required to use it to accomplish their work. Consequently, real and exact acceptance is not easy to measure. This requires that the management enhance workers’ intentions to use the websites in the long term and so not only focus on the actual usage in the short term.

Practically, internet and technology use in the workplace in Jordan is in its infancy with regards to acceptance; looking at website and new technology acceptance may be useful for examining why there should be help to widen usage at a time when new technology is undergoing expansion in Jordan.

Davis et al (1989) confirm that the goal of TAM ‘... is to provide an explanation of the determinants of computer acceptance that, in general, is capable of explaining user behaviour across a broad range of end-user computing technologies and user populations, while at the same time being both parsimonious and theoretically justified’.
User attitude was removed from the final model of TAM (Davis, et al, 1989) because the results of the analysis show that it has a weak impact on IN and a weak relationship with PU. They posited that technology might be used because of its utility, although there was not a positive view regarding the use of such technology. Also, Gardner and Amoroso (2004) and Sun (2003) pointed out also that user attitude ‘is not a reliable predictor of intention to use in essence or degree ‘.

Figure 4.1 Technology Acceptance Model (TAM) Davis (1989)

4.3.2 E-learning Technology Acceptance Model (ETAM)

The E-learning Technology Acceptance Model (ETAM) is set out in Figure 4.2. It proposes that intention to accept an E-learning system is created by user views of key variables that relate to system information and quality, user experience, cultural dimensions and subjective norms. In all, these variables are believed to affect PU and PEOU, except subjective norms, which in turn will affect user intention to accept and use e-learning systems. There is a direct connection between the cultural dimensions and subjective norms with the intention to use.

Figure 4.2 ETAM model
The proposed model is built on previous studies; in particular, PU and PEOU are extracted from Davis’ 1989, 1992, and 1993 studies. The use of Cultural Dimensions (CD) is based on Hofstede (1980) (in a study called Power Distance, Collectivism, Uncertainty Avoidance, and Masculinity), and Subjective Norms is drawn from Venkatesh and Davis (2000). Section 4.3.4 will focus on each factor.

4.3.3 Research Propositions

The study draws on three main hypotheses that will be explored throughout the section. 1) It is possible that the perception of E-learning features will vary according to differences in national culture and that these variations will relate predictably to particular constituents of that culture. 2) It is anticipated that the developed model will expect intention to use E-learning systems. 3) It is believed that factors in the model will vary as expected as they depend on the same differences in culture.

Several researchers have employed TAM in educational settings (Saade& Galloway, 2005; Liu et al, 2005; Landry et al, 2006). Saade& Galloway (2005) and Landry et al (2006) use TAM to determine students’ levels of acceptance of web-based E-learning systems. In their studies TAM worked well with the main hypothesis (Saade & Galloway 2005). Landry et al (2006) found acceptance was caused by the two TAM variables, PU and PEOU, and could, furthermore, find support for the two other variables proposed for PU: perceived importance and perceived effectiveness. A relationship between university students' perceptions of usage and ease of use was found but indicated varying levels of acceptance.

Another piece of research produced by Liu et al (2005) aimed to predict whether students would accept new e-learning systems. However, in this study, extra constructs were examined. These included a variety of presentation types, (text, audio, audio-video, text-
audio-video) and concentration. They found that different presentation types and concentration factors continue to influence the intention to use new systems.

Roca et al (2006) also chose to look at the factors that impacted the intention to use e-learning systems. As their research focused on continued use, they proposed a satisfaction variable as a means of comparison. Roca et al (2006) claimed that the two TAM variables (PU and PEOU) influence continued use, but that this is mediated by user satisfaction. The team not only made use of TPB (behavioural control and subjective norms) as well as expectations in disconfirmation theory (EDT), they divided the PU factor into perceived quality and perceived usability and suggested other factors for inclusion into a user satisfaction model (information quality, confirmation, service quality, system quality and cognitive absorption). There were significant levels of support for the model developed by Roca et al (2006); once more, PU was the most powerful influence on user acceptance.

Previous research confirmed that people with high collectivism and UA (e.g., those from an Arab Culture) are negatively related to e-learning systems. Although practitioners and academics made greater efforts to enhance the social presence in e-learning systems, the e-learning systems’ experience was still an inaccessible, objectified and depersonalised procedure. Face-to-face teaching or lectures between student and lecturer or between one student and another are swapped with an impersonal setting with no shared exchange. It is also anticipated that users in low IND cultures (e.g. Western Cultures) see the more impersonal system experience connected with e-learning as being lower in status and prestige than users in high IND cultures.

Moreover, Sheehan and Hoy (2000) and Miyazaki and Fernandez (2001) pointed out that people with high levels of UA in a culture may assist in creating negative perceptions of e-learning. Websites seems to promote a greater feeling of risk than face-to-face contacts, because of the impersonal and virtual nature of the relationship process. Arlt (2005) formed three rules for expansion and growth in business internationally. These roles support the idea that users should be able to: ‘...find online information;
understand online information; and feel comfortable about the way online information is presented’.

These rules support three significant subjects that should be considered when firms target international customers or users: that websites or systems should be found easily through search engines and be easy to locate, be easily understood in terms of language, content and design, and finally users should feel comfortable when using these e-learning systems.

Also, regarding system quality and information, E-learning systems should consider the navigation system as users around the world with different cultures have different reading methods. For example, Arabic scripts are read from right to left, while Latin scripts are read from left to right. Navigation of E-learning systems should be tailored to users’ use of script and culture.

Therefore, according to Becker (2002), e-learning systems design and content should be adapted to ‘...appeal to local users and promote brand loyalty as it relates to the overall web experience. In addition, a culturally sensitive image, icons, symbols, and colours should be taken into account as well as, linguistic considerations regarding word choice and the use of clichés and slang’. E-learning developers and management should consider global users and their cultures due to increase number of E-learning system users in non-traditional (i.e. western) internet-using cultures.

As mentioned previously, Hofstede’s model (1980) offers a theoretical foundation on which to examine the impact of cultural differences on the usage and acceptance of E-learning systems. The current study applies Hofstede’s model at two levels. The first is the practice of communication and the acceptance of e-learning in a community and how it is related to its dominant cultural values. It could be argued that when an E-learning system is consistent with, or supports existing cultural values, the typically stated rules governing the process of technology acceptance should be observed. The second is the influence of cultural values on the variables in the Technology Acceptance Model.
Undoubtedly, e-learning acceptance researchers would find it much more helpful and practical if it was commonly known which TAM constituents affect or are affected by cultural influence.

It is believed that if e-learning users feel that systems are more practical and less time-consuming than traditional methods of learning and support or do not undermine their cultural values, they will be likely to perceive the system helpful and accessible which leads to an intention to take advantage of the system and recommend it.

4.3.4 Conceptualisation and Operationalisation of Research Variables

The rationalisation of constructs in this study is performed by describing each factor in terms of its conceptualisation, operationalisation, and source. Variable or factor conceptualisation refers to the explanation of the variable and what it represents, while the operationalisation of the variable refers to the translation procedures from the abstract meaning of the variable to a concrete and measurable item. Finally, the variable source refers to the theoretical background based on the previous literature.

E-learning System Quality

System quality refers to E-learning system functionality (Cao, et al, 2005): *usability, availability and response time* (DeLone and McLean, 2003). Researchers (e.g. Smith and Merchant, 2001) found that users are very interested in easy to read and navigate webpages. Robbins and Stylianou (2003) confirm the importance of a website that is responsive to users. Weinberg (2000) confirms that a webpage design should consist of website appearance and loading time. Slow loading time is a very important issue which negatively influences a user's adoption of a website (Loiacono and Lin 2005).

This is especially so in the Middle East where, despite the rapid upgrade of IT and internet infrastructure across the region, connection speeds are relatively slow and bandwidths far smaller than those in Europe and Asia. In some cases, dial-up connections are still often the norm. Cao et al (2005) pointed out that the system quality of a website
can be evaluated by search facility, responsiveness and multi-media capability. This is especially the case with Arab users who require a personal interface that is difficult to supply without personal interaction or is only possible through the use of visual media such as video. That this requires a more robust internet infrastructure goes without saying.

DeLone & McLean (1992) mentioned that information quality and system quality have impacted Intention to Use (IN) and, what is more, also have an effect on one another. Seddon (1997, p. 242) expressed that the D&M IS model can cause discombobulation when evaluating the success of information systems, as it comprises ‘temporal and causal interdependencies’. He considers that the use variable includes up to three meanings, (‘benefits from use’, ‘impact of use’ and ‘future IS use’). However, after analysing each meaning, it is found that only one of these meanings (benefits from use) can be utilised with the D&M IS model.

Peter and McLean (2009) argued that system quality was equivalent to the technical level of communication. They added that system quality is the ‘functioning of the information system as it includes system reliability, ease of use, functionality, and other system functions.’

**E-learning Information Quality**

Some of the researchers mentioned above state that the system’s information quality refers to the information available to the websites where the provided information should be ‘...sufficient, clear, targeted, and relevant to users’ (Huizingh, 2000; Lii, 2005). Rachman and Buchman (1999) stated that content is ‘...the key factor driving visitors to websites’. ‘Content is king’ is expressed by Huizingh (2000) who confirms that it is a well-known slogan. He emphasises that the essential purpose of the website is to 'provide information'.
Kim et al (2003) mention that 50% of system or website users move to another website if they cannot find the required information and 40% will not visit the website again if they have a negative experience in terms of information or navigation. Therefore, the information provided should include the following characteristics; clarity, accuracy, depth of information, relevance of information, concision, and scalability and accuracy (Cao et al, 2005; Hassan and Li, 2005)

Cultural dimensions - Hofstede (1980)

Hofstede (1980) created four cultural dimensions using 166,000 IBM employees. The study employed Hofstede’s work to build a new e-learning acceptance model. A short account of each dimension is set out below:

Power Distance (PD)

According to Hofstede (1980), the PD dimension explains how diverse societies take care of inequalities in social structures. Hofstede asserts that high PD countries often have centralised political power and leadership, extended hierarchies in their organisations and notable variations in salary and work arrangements or status. This is clearer also in management styles. Leaders or managers have marked influence on their subordinates’ work, so workers do what they are told. Parents also teach obedience, and expect respect. Thus, inequalities are expected, and may even be considered desirable; certainly they will come to be perceived as the natural order of things. In low PD cultures, however, employees and supervisors work directly together and are more likely to interchange, with smaller hierarchies and smaller variations in salary and status. Employees tend to be better organised and have a more casual affiliation with their bosses.

Individualism vs. Collectivism (IND)

Hofstede (1980) found that the extent to which individuals take care only of themselves, or are loyal to a faction and culture, varies according to levels of individualism or
collectivism. Individualistic cultures allow personal time, autonomy, value challenge, and are positive about extrinsic motivators such as material rewards at work. Individualism concerns the affiliation between individual people within society; therefore, the expectation is to look to self-help or close relatives but no one from outside this circle.

In individualist societies, the focus is on the individual and there are weaker ties between individuals. Here, personal freedom is respected and valued and personal decision-making is encouraged. On the other hand, in collectivist cultures, there is more focus on religion, custom and tradition. Also, consensus is very important and there is a strong relationship between individuals and between individuals and groups. Society, therefore, is more homogenous and joined in stronger relationships. The following of societal norms is valued highly and group decision-making is encouraged (Stengers et al, 2005; and Kang and Araujo, 2006).

Tsikriktsis (2002) further states that individualistic customers look for good service, while collectivist customers tolerate poor service because they do not want to appear disharmonious, and prefer to keep good relationships with other customers and service providers despite their dissatisfaction.

**Masculinity vs. Femininity (MAS)**

The masculinity-femininity dimension suggested by Hofstede (1980) demonstrates and describes "...the role of masculinity and femininity in different cultures and societies." Masculine cultures, he argues, like assertiveness, aspirationalism, achievement, and performance. In such cultures, 'power is good' and clear gender roles are the standard. Contrariwise, ‘feminine’ cultures tend to like attractiveness, environment and nurture, and gender roles are often unclear (Kang and Araujo, 2006).

A high MAS culture appeals for contest, aspiration, and acts as motivation to offer fast returns, and navigation is to do with investigation and power (Marcus and Gould, 2001). In low MAS cultures, on the other hand, there is more emphasis placed on shared
relationships and collaboration rather than competitiveness. Also, attention is gained through the arts, such as poetry, which offers a more emotional appeal, especially as this particular art has strong historical and cultural affinities in Arab countries (Stengerset al., 2005).

**Uncertainty Avoidance (UA)**

People have differing levels of anxiety when dealing with uncertainty, as opposed to the more widespread emotion of fear caused by identified or unidentified threats. Hofstede shows that cultures differ in their evading of uncertainty with diverse values regarding formality, punctuality, legal-religious and social requirements, as well as a forbearance on ambiguity.

Hofstede (1980) notes that cultures with high uncertainty avoidance often have high levels of suicide, alcoholism, accidental death, and a large number of prisoners. In contrast, cultures with low UA often have demonstrated higher caffeine use, have a lower intake of calories, higher heart-disease mortality rates, and more people with chronic psychosis.

According to Hofstede (1980), the extent that cultures are able to endure uncertainty and ambiguity varies among cultures. Some cultures have a high level of uncertainty avoidance, as they prefer security and low-risk, while others are lower, but have a greater tolerance for ambiguity and risk.

According to Nakata and Sivakumar (1996), customers from a high–uncertainty avoidance culture would hesitate to choose uncertain situations, while customers from a low-uncertainty avoidance culture are more accepting of uncertainty and risk. Donthu and Yoo (1998) found that high uncertainty-avoidance customers expected higher service quality compared with customers with low uncertainty-avoidance. In addition, Furreret al. (2000) found that uncertainty avoidance is positively correlated with reliability,
responsiveness, assurance, and empathy, and is negatively correlated with website design and visual appeal.

Regarding website design, high-UA cultures emphasise practical navigation systems; an easy-acting content whose simplicity restricts the amount of data and colour cues, typography, and sound, for example, to reduce ambiguity. On the other hand, low UA cultures place emphasis on helpful navigation systems, more options and content focused on wider understanding of the concepts rather than merely narrow tasks (Marcus and Gould, 2001).

**Subjective Norms (SN)**

According to Athiyaman (2002), subjective norms refer to a person’s perception of social and group pressure. Like all the Hofstede dimensions this has a very broad impact, including whether or not the behaviour under consideration is carried out. Considering the fact that Arab culture is more collectivist than individualist (Hofstede, 1980) and that a collectivist culture is more willing to comply with others than is the individualist, it is expected that Arabs will be more strongly influenced by reference groups (e.g. friends, family members, and managers). Thus, the use and acceptance of certain websites will comply strongly with group norms.

Since E-learning systems have been developed relatively recently, they are at the early stages of implementation. It is therefore to be expected that subjective norms have a strong impact on E-learning acceptance. It follows that integrating subjective norms will enhance the understanding of differences in behavioural intentions.

Users usually refer to their parents, family, friends, and managers, for example, to make their choices or decisions. Because of the concomitant complexity, the social impacts which are presented by the subjective norm, though considered significant, are neglected intentionally in the original TAM model. Recently, however, its importance has been reconsidered and supported.
Venkatesh and Davis (2000) assumed that SN has a significant relationship with IN in settings where its use is mandatory, and has no relationship if technology use is done on a voluntary basis. However, since Arab countries have powerful social influence (because of high power distance and collectivist tendencies), this study assumes that SN will affect IN on the basis that ‘people may choose to perform a behaviour, even if they are not themselves favourable towards the behaviour or its consequences, if they believe one or more important referents think they should, and they are sufficiently motivated to comply with those referents’ (Venkatesh and Davis, 2000:p.187).

For the purpose of this study, it is considered that if people important to users (such as managers, friends, and families) suggest that e-learning systems are useful, users may conclude that they are actually useful, and consequently, form an intention to use e-learning systems. People frequently react to social norms to institute or uphold a sympathetic image within a reference group (Yu et al., 2005).

As far as the SN is concerned, it is interesting to note that the underlying principle for SN’s direct effect on intention to use, is that individuals may carry out and execute actions or behaviours if they are led to believe that people who are significant to them think they should do likewise, even if they are not themselves sympathetic toward the behaviour or its outcomes.

**User experience**

Prior experience was included as a construct in a developed model for determining the factors influencing E-learning system acceptance, because it can be argued that users with previous exposure to e-learning systems will increase the users’ perception of ease of use. If a user has used e-learning systems before, then it is believed that this experience would have been either positive or negative and can therefore affect the intention to revisit the website.

The main benefit of experience in measuring E-learning system usage is increased user speed, adaptation and familiarisation to similar interfaces and environments (Heidjen and
Van Der 2000b; Wöber and Gretzel, 2000). In addition, with prior experience, cognitive effort will be decreased, as simple repetition improves task performance by reducing the cognitive effort required to complete the task (Alba et al., 1987).

**Perceived Usefulness (PU)**

Davis (1989) defined (PU) as ‘...the degree to which a person believes that using a particular system would enhance his or her job performance.’ People assess the results of their behaviour and action in terms of perceived usefulness and establish their behaviour on the attractiveness of that usefulness (Mathieson et al., 2001; Venkatesh et al., 2003). Van der Heijden (2003) found that perceived usefulness had a notably direct result on personal computing usage in small companies. Sun (2003) argued that perceived usefulness is the most important factor affecting user acceptance.

The conclusion is that e-learning systems are useful or not depending on design, content, and any technological elements. In other words, the user is easily able to find the needed or useful information and is easily able to understand how to interact with the e-learning system.

**Perceived Ease of Use (PEOU)**

This construct reflects ‘...the degree to which an individual believes that using a particular system would be free of mental or physical effort’ (Davis, 1989). Perceived ease of use notably influences' usefulness, attitude, intention, and actual use' (Chau and Hu 2002).

PEOU helps to free new users from worry and difficulty, which is often more acute for those with high uncertainty avoidance. Davis (1989) argues that a piece of technology is pleasurable and comfortable to use when it is user-friendly, and, is more useful in its capacity to ameliorate work productivity.

Venkatesh (2000) argues that PEOU is directly related to anxiety diminution, and is connected to uncertainty avoidance. As UA has a positive impact on the PEOU-PU
relationship, the diminution in uncertainty and therefore anxiety is greater when accepting new websites. The website is also seen to be useful, and its ease of use is perceived to be better.

**Intention to Use (IN)**

Intention to use refers to the willingness and desirability of an individual to take a certain action or activity (Van der Heijden, 2003; Gardner and Amoroso, 2004). Different studies indicate that user behavioural intention is good at predicting actual usage and acceptance of new technology (Davis et al., 1989; Taylor and Todd, 1995; Venkatesh and Davis, 2000; Sun, 2003). Davis et al. (1989) conclude that individual new technology use can be forecast from their intent. Consequently, factors that affect people’s behaviour can be seen as indirect influences through his/her intention (Davis, 1989).

Results in prior studies (Davis, 1989; Venkatesh and Davis, 2000; Sun, 2003) show that the greater the increased utility and ease of use website is seen to be, the greater the level of acceptance.

4.4 Research Hypotheses

If one is allowed to attribute action to an abstract concept, one can say that culture has an influence on user intention to use an e-learning system. Users from different cultures prefer, and have positive intentions to use, e-learning systems. A user with a positive attitude toward using e-learning systems that reflects and matches his/her cultural values will use e-learning systems. E-learning systems should address different cultural dimensions that may impact the user’s choice of usage and acceptance.

Huizingh (2000) argues that website content is ‘…the information or service that is offered on the websites’, and design is‘...the way the content is made available for website visitors’. It is assumed that the e-learning system content and design are compatible in order to determine its usefulness. If an e-learning system’s users find
valuable information and can easily surf the system without any effort, this system will be regarded as useful.

Studies show that there is an affirmative association between system quality, information and perceived usefulness (Teo et al., 1999; Moon and Kim, 2001)). Davis et al. (1989) assume that perceived ease of use can directly and indirectly affect user behaviour through their effect on perceived usefulness. Davis et al. (1989) found these effects to be significant. Thus, it is proposed that perceived ease of use is related to perceived usefulness and website usage, and has direct and indirect effects on usage use through its impact on perceived usefulness.

Perceived usefulness and perceived ease of use have been shown to be the main determinants of information technology acceptance and usage (Davis, 1989; Adams et al., 1992; Venkatesh and Davis, 2000; Venkatesh and Morris, 2000). Previous studies using TAM have shown empirical support for a positive association between perceived ease-of-use and perceived usefulness (Van der Heijden, 2003; Sun, 2003; Yu et al., 2005).

Perceived usefulness, in turn, is influenced by users’ confirmation of expectation from prior use of e-learning systems; this indicates that perceived usefulness is a main determinant of behavioural intentions to accept and use websites. Venkatesh and Davis (2000), Van der Heijden (2003), and Mao and Palvia(2006) found that perceived usefulness has a direct effect on use intention and the effect of usefulness on intention was strongest where it is a direct result of experience (Rogers, 1995; Venkatesh and Davis, 1996; Agarwal and Prasad 1999; Moon and Kim, 2001; Chau and Hu, 2002; Yu et al., 2005).
Based on the discussion above, this study tests the following main hypotheses:

H₁  There is an association between cultural dimensions and perceived usefulness.
H₂  There is an association between cultural dimensions and perceived ease of use.
H₃: There is an association between the system and information quality and perceived usefulness.
H₄  There is an association between the system and information quality and perceived ease of use.
H₅: There is an association between user experience and perceived usefulness.
H₆  There is an association between user experience and perceived ease of use.
H₇  There is an association between subjective norms and intention to use.
H₈  There is an association between perceived usefulness and intention to use.
H₉  There is an association between perceived ease of use and intention to use.
Chapter Five: Descriptive Analysis

The statistical techniques undertaken in this study are processed consistent with the following sequence. Initially, descriptive analysis processes were carried out. This included data screening and a demographic analysis. Then, the correlation analysis was performed using SPSS17. Next, a regression analysis was carried out. This included the measurement model fit analysis, the testing of hypotheses and an examination of the relationships between the model variables.

This chapter includes the following sections:

- Demographics and descriptive statistics
- Construct reliability and validity assessment
- Chapter summary
5.1 Descriptive Analysis

Descriptive analysis (also called exploratory analysis) involves the transformation of obtained data into a form that presents information to describe a set of factors in a particular situation. Descriptive analysis will be employed to establish the respondents’ demographic and general characteristics and summarise the information about the main variables of the study. The discussion of the respondents’ demographic information offers a clear perspective of the factors that influence the acceptance and usage of e-Learning systems in higher education systems, which were investigated in this study.
Frequencies and means were used to achieve the explorative objectives of this study, determine the sample characteristics and to develop a primary insight into the data distribution. More specifically, they were used to analyse and interpret the findings of the descriptive statistics analysis for research variables.

5.1.1 Respondents’ Profiles

As described in chapter 3 and Table 5.1, from the 225 respondents who were asked to complete the questionnaire from different sectors, 198 questionnaires were returned. Moreover, the return rate was 88%, as is presented in Table 5.1 This high rate is perhaps due to the method of distributing the questionnaire (self-administered) as well as the continuous follow up by the researcher. Out of the 198 returned questionnaires, 14 questionnaires were excluded; as they did not answer all the questions and/or repeated the same answers. Consequently, 184 questionnaires were valid for further statistical analysis.

Table 5.1 the number of the questionnaires distributed and return rate

<table>
<thead>
<tr>
<th>Category</th>
<th>Number of distributed questionnaires</th>
<th>Returned Questionnaires</th>
<th>Number of excluded questionnaires</th>
<th>Analysable Questionnaires</th>
<th>Return Rate</th>
<th>Analysable rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecturers</td>
<td>75</td>
<td>63</td>
<td>4</td>
<td>59</td>
<td>84%</td>
<td>78.6%</td>
</tr>
<tr>
<td>Staff</td>
<td>75</td>
<td>68</td>
<td>3</td>
<td>65</td>
<td>91%</td>
<td>86.6%</td>
</tr>
<tr>
<td>students</td>
<td>75</td>
<td>67</td>
<td>7</td>
<td>60</td>
<td>89%</td>
<td>80%</td>
</tr>
<tr>
<td>Total</td>
<td>225</td>
<td>198</td>
<td>14</td>
<td>184</td>
<td>88%</td>
<td>82%</td>
</tr>
</tbody>
</table>
This section presents a descriptive analysis of the sample to evaluate and provides an overview of the demographic information according to the following criteria:

Age

Table 5.2 shows that the age of the respondents in the 20 to 29 group was predominant with over 55%, the 30-39 age groups represented 15%, while the 40-49 age groups represented only 9.6%. This suggests on the basis of this poll that younger people are ostensibly most likely to use E-learning systems than their older compatriots. The reasons behind this could be due to the fact that most universities and schools arrange IT courses to encourage people to use the internet. Furthermore, younger people have high rates of using the Internet. Moreover, Al-Alak (2005) stated that young people in Arab countries are more likely to use E-Systems than older people. Table 5.2 depicts these details.

<table>
<thead>
<tr>
<th>Age</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>less than 20</td>
<td>18</td>
<td>9.1</td>
<td>9.1</td>
<td>9.1</td>
</tr>
<tr>
<td>20-29</td>
<td>110</td>
<td>55.6</td>
<td>55.6</td>
<td>64.6</td>
</tr>
<tr>
<td>30-39</td>
<td>30</td>
<td>15.2</td>
<td>15.2</td>
<td>79.8</td>
</tr>
<tr>
<td>40-49</td>
<td>19</td>
<td>9.6</td>
<td>9.6</td>
<td>89.4</td>
</tr>
<tr>
<td>50 or above</td>
<td>21</td>
<td>10.6</td>
<td>10.6</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>198</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Table 5.2 Age

Gender

The sample is skewed in terms of gender, as 68% of the respondents were male and 32% were female. This might be due to social factors, which sometimes constrain women in work or participating in social events, where those who participate and share in such social events are more likely to be male. It was also noticed that males were more liable to complete questionnaires than females. Table 5.3 shows these details.
Table 5.3 Gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid Male</td>
<td>135</td>
<td>68.2</td>
<td>68.2</td>
<td>68.2</td>
</tr>
<tr>
<td>Female</td>
<td>63</td>
<td>31.8</td>
<td>31.8</td>
<td>100.0</td>
</tr>
</tbody>
</table>
| Total | 198 | 100.0 | 100.0 | |}

Table 5.3 Gender

Education

Table 5.4 shows the distribution of the study sample in relation to their education. The table shows that 21.7% hold a High School Certificate, 43.4% hold an Undergraduate – BA, and 15.2% hold a PG. This means that in general, the respondents were well-educated. Table 5.4 below shows the results in more detail.

Table 5.4 Education
Usage and experience

In order to identify the general experiences of E-learning systems usage, the respondents were asked three questions regarding their experience of using the internet in general and E-learning in particular. The questions were derived through the following variables; (1) Internet usage (2) use time over the week and (3) using E-learning systems associated with the education sector.

With regard to Internet usage, 29.3% of the respondents started using the Internet less than 5 years before the survey was taken. 18.2% of respondents reported their Internet usage as being 5-10 years old, 27.3% answered that they started using it 10-15 years previously, while 25.3% have been using the Internet for more than 15 years. It is noticeable that the majority of the respondents are (29.3%) likely to have started using the Internet in the last 5 years; this shows that Internet use began late in developing countries.

Table 5.5 Usage – How long they have been using the internet

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 5 years</td>
<td>58</td>
<td>29.3</td>
<td>29.3</td>
<td>29.3</td>
</tr>
<tr>
<td>5-10 years</td>
<td>36</td>
<td>18.2</td>
<td>18.2</td>
<td>47.5</td>
</tr>
<tr>
<td>10-15 years</td>
<td>54</td>
<td>27.3</td>
<td>27.3</td>
<td>74.7</td>
</tr>
<tr>
<td>More than 15 years</td>
<td>50</td>
<td>25.3</td>
<td>25.3</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>198</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>
With regard to the time spent using during the week, it’s noticeable that most of the respondents use the internet 2-3 times a week, as shown in table 5.6 below.

<table>
<thead>
<tr>
<th>Usage 2(Times of using during the week)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>Valid</td>
</tr>
<tr>
<td>Not at all</td>
</tr>
<tr>
<td>once/week</td>
</tr>
<tr>
<td>2-3 times / wk</td>
</tr>
<tr>
<td>Several times/wk</td>
</tr>
<tr>
<td>once/day</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

Table 5.6 Usage 2

Regarding E-learning system usage, around 48% of the sample did not use E-learning systems and very few use E-learning systems 3-4 times a month. See Table 5.7 below.

<table>
<thead>
<tr>
<th>Experience 1 (Using E-learning systems)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>Valid</td>
</tr>
<tr>
<td>Not at all</td>
</tr>
<tr>
<td>Less than once a month</td>
</tr>
<tr>
<td>1 to 2 times a month</td>
</tr>
<tr>
<td>3 to 4 times a month</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

Table 5.7 Experience 1 (Using E-learning Systems)
5.2 Reliability Analysis

In order to examine the data collection instrument, all variables of the research model have been evaluated for reliability, convergent and discriminate validity. Regarding the reliability test, the internal consistency for each variable was measured by computing Cronbach's Alpha to ensure that all the items in the scale were sufficiently inter-related.

A Cronbach Alpha was used for this purpose, as it is considered to be the most common method used for measuring the stability and consistency of the instrument (Sekaran 2003). Nunnally (1975) argues that reliability estimates of 0.50 to 0.60 can be considered adequate for basic research, whereas other researchers believe that a good reliability should produce at least a coefficient value of 0.70 (Pallant 2005). However, Bagozzi (1994) considered 0.60 to be an acceptable level for a newly developed scale or an application across fields of study.

In this study, the reliability analyses of all variables show that the Cronbach's Alpha value was (0.785), as shown in Table 5.8.

<table>
<thead>
<tr>
<th>No. of Items</th>
<th>Cronbach's Alpha Based on Standardized Items</th>
<th>Cronbach's Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>39</td>
<td>.805</td>
<td>.785</td>
</tr>
</tbody>
</table>

Table 5.8 shows that the internal consistency between the variables was high and more than the recommended minimum mentioned above.
5.3 Factor Analysis

Factor analysis is a statistical technique that aims to look for a method that could help to reduce and summarise the collected data for small groups of factors (Hair et al., 1992). According to Hair et al. (1998), factor analysis is a part of a multivariate statistical technique which aims to address the interrelationships between variables by defining a set of common underlying factors.

There are two main approaches to factor analysis; exploratory and confirmatory (Pallant, 2005). Exploratory factor analysis was used in the early stage of research after collecting data to explore the correlation among a set of variables, while confirmatory factor analysis (which is more sophisticated and complex) was used to confirm the hypotheses concerning the structure underlying a set of variables (Pallant, 2005).

In this study, Exploratory Factor Analysis (EFA) was performed on the data set so as to identify and extract the large number of variables into smaller number of factors underlying conceptual constructs (Tabachnick and Fidell 2001). In order to perform factor analysis, the sample data must show a number of key characteristics:

1. The sample should be as heterogeneous as possible (Kline, 1994);
2. The sample should match as closely as possible the target population for which the instrument is intended, in this case the lecturers, staff and students in Jordanian universities (Kline, 1994);
3. The sample size must be sufficiently large enough to reduce the standard error of correlations to negligible proportions. The minimum acceptable sample size is around 100 (Tabachnick and Fidell 2007), where the sample size for this study is 198 respondents.

Like any statistical technique, factor analysis is subject to measurement and sampling error (Chatterjee et al., 1991). Darden and Dorsch (1998) mentioned that principal components are sample specific and may, in part, be the result of sampling difference.
Thus, future studies with large samples and replications are two of the greatest necessities for the reliable identification of variables in such studies (Mostafa, 2006). However, according to Pallant (2005), the following steps are involved in factor analysis:

- **Assessment of the Suitability of Data**

  This assessment includes two factors: sample size and the strength of the relationship among the variables. As mentioned in chapter three, there is no agreement about the sample size; most researchers recommend, ‘the large, the better’, which could help to generalise the results. In line with Saunders et al (2001), the minimum sample could be 30. In addition, for performing factor analysis, Hair et al (1998) and Tabachnick and Fidell (2007) suggested the minimum sample size should be 100 at least. However, the sample size of this study is 198, which exceeds the recommended number and helps to enhance the result generalisation.

- **Factor Extraction**

  This step involves determining the factors that can be used to best signify the interrelations between items (Pallant 2005). Although there are different types of extraction techniques that could be used (e.g. principal component, factor component), the most commonly used is principal components (Pallant, 2005).

  To determine the number of factors to retain, Pallant (2005) suggests a number of techniques that could be used, such as Kaiser’s criterion\(^2\) and Scree Plot. Kaiser’s criterion is also called Eigenvalue, according to this test. The Eigenvalue should be 1.0 or more which corresponds to the amount of total variance explained by this factor. Scree plot includes plotting each type of the eigenvalue of the factors and looking at the plot to find a point at which the shape of the curve changes direction and becomes horizontal.

\(^2\)a criterion used in factor analysis to determine the number of factors or components for consideration and possible rotation. Source [http://srmo.sagepub.com/view/the-sage-dictionary-of-statistics/n276.xml](http://srmo.sagepub.com/view/the-sage-dictionary-of-statistics/n276.xml)
The Scree Plot helps the researcher to determine the numbers of factors to be retained in the factor loading (Field, 2005).

- **Data rotation:**

Factor extraction assists in determining the number of factors to be retained for further investigations (Pallant, 2005). These factors are difficult to interpret; therefore, factor rotation is needed.

Two main approaches could be used for rotation: orthogonal and oblique. According to the orthogonal approach; the underlying constructs are not correlated. It used to maximize the variance of factor loadings by making high loading higher and low ones lower for each other (Tabachnick and Fidell, 2001). In other words, variables loading higher than 0.3 will be retained while low loading variables will be removed (Pallant, 2005). On the other hand, the oblique approach assumes that underlying constructs are correlated (Tabachnick and Fidell, 2001). Researchers tend to use the orthogonal approach due to its ease to be interpreted. It is deemed appropriate for this research. For the purpose of this study, the Varimax rotation (orthogonal) was used.

Within these approaches, the most common statistical technique used is orthogonal varimax which aims to minimise the number of items that have high loading in each factor (Pallant, 2005).

According to George and Mallery (2005), factor loadings show the strength of relationship between the variable and factor, which varies between -1.0 and +1.0. Factor loadings higher than 0.4 (which is the cut-off limit for loading variables) are considered acceptable and show excellent face validity while factor loading less than 0.4 indicate that the variable and should be eliminated from analysis (Hair et al. 1995). Some researchers (George and Mallery, 2005) recommend that the loading factor should be
above 0.5 while others (Knafl & Grey, 2007) recommend that the loading factor should be above 0.3. For the purpose of this study, the loading factor will be above 0.4.

5.3.1 Result of Factor Analysis

Before executing the factor analysis, three steps should be performed as mentioned above, which include determining the factors, interpreting the factors and selecting the final factor solution (Stapleton, 1997).

•Suitability of the data for Factor Analytic Techniques

Initially, the suitability of data for factor analysis was assessed. The Kaiser-Meyer-Oklin value (KMO) was used for this purpose. According to Norusis (1994), a KMO measure more than 0.50 is satisfactory for factor analysis to be valid, a value of 0.70 is considered “reasonable” and a value of 0.80 is considered “good” and values above 0.9 are excellent.

The initial solution of our factor analysis revealed a KMO value of 0.845, which is great according to Norusis (1994) and exceeds the recommended value of 0.6 (Tabachnick and Fidell, 1996; Pallant, 2005). The Bartlett Test of Sphericity was noteworthy (p<0.001), supporting the factorability of the correlation matrix as shown in Table 5.9 below. The results of these two tests showed that the data was appropriate for a factor analysis.

Table 5.9 KMO and Bartlett's Test

<table>
<thead>
<tr>
<th>Kaiser-Meyer-Olkin Measure of Sampling Adequacy.</th>
<th>.845</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bartlett's Test of Sphericity</td>
<td>Approx. Chi-Square</td>
</tr>
<tr>
<td></td>
<td>df</td>
</tr>
<tr>
<td></td>
<td>Sig.</td>
</tr>
</tbody>
</table>
Regarding the sample size, as mentioned above, there is no agreement over the sample size needed to perform the statistical analysis. Hair et al (1998) suggested that the minimum sample size should be 100 at least to execute the factor analysis. However, the sample size of this study is 198, which exceeds the recommended number and enhances the results generalisation process.

- **Factor Extraction**

After confirming the suitability of the data for performing factor analysis, factor extraction involves identifying the factors that can be used for further analysis. Table 5.9 shows the eigenvalues associated with each factor before extraction. Generally, the eigenvalues associated with each factor show the variance explained by that particular linear component. The table presents the eigenvalue in terms of the percentage of variance explained (e.g., factor 1 explains 23.750% of total variance). It is noted that the first 13 factors explain relatively large amounts of variance (68.924%), whereas the following factors explain only small amount of variance (around 31%). The table shows thirteen factors with eigenvalues of more than 1.00. The result of extraction yielded 13 factors that could be used to determine the appropriate number of factors for further analysis.
Table 5.10 Total Variance Explained

<table>
<thead>
<tr>
<th>Component</th>
<th>Initial Eigenvalues</th>
<th>Extraction Sums of Squared Loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>% of Variance</td>
</tr>
<tr>
<td>1</td>
<td>9.975</td>
<td>23.750</td>
</tr>
<tr>
<td>2</td>
<td>2.465</td>
<td>5.869</td>
</tr>
<tr>
<td>3</td>
<td>2.206</td>
<td>5.254</td>
</tr>
<tr>
<td>4</td>
<td>1.865</td>
<td>4.441</td>
</tr>
<tr>
<td>5</td>
<td>1.716</td>
<td>4.087</td>
</tr>
<tr>
<td>6</td>
<td>1.664</td>
<td>3.961</td>
</tr>
<tr>
<td>7</td>
<td>1.587</td>
<td>3.778</td>
</tr>
<tr>
<td>8</td>
<td>1.408</td>
<td>3.351</td>
</tr>
<tr>
<td>9</td>
<td>1.311</td>
<td>3.120</td>
</tr>
<tr>
<td>10</td>
<td>1.272</td>
<td>3.029</td>
</tr>
<tr>
<td>11</td>
<td>1.226</td>
<td>2.918</td>
</tr>
<tr>
<td>12</td>
<td>1.179</td>
<td>2.807</td>
</tr>
<tr>
<td>13</td>
<td>1.075</td>
<td>2.559</td>
</tr>
</tbody>
</table>

The Number of Factors

There are different methods that help to determine the number of factors to choose. The latent root criterion is the most common used, according to Mitchell (1994). For principal component analysis, only variables with values with an Eigenvalue of greater than one
could be considered significant. The scree plots test is also a good indicator of the number of factors that should be reserved for the factor loading. The scree plot shows points of inflexion on the curve located after the fourth factor (see Figure 5.1 below). This indicates that these factors should be considered to determine the number of retaining factors.

The component matrix before rotation was performed to produce the loadings of each variable into each factor. These results were supported by the scree plot results and the decision to retain five factors for further analysis.

![Scree Plot](image)

The decision was made to consider these factors as these factors account for a high percentage of the total variances (39.313%), as seen in Table 5.9. These factors were also supported by the literature review and the results of the interviews, thus, these factors will be appraised and investigated further in the reminder of the PhD study.
Researchers confirm the fact that factor analysis should be used as data exploration not a rigid and solid statistical technique (Tabachnick and Fidell, 2007). The factor analysis should be used to help and guide the researcher to make rational decisions about the number of factors, which should be removed or retained (Hair et al, 1998; Tabachnick and Fidell, 2007).

- **Data Rotation**

Once the numbers of components have been identified, the next step is to determine the pattern of loadings for easy interpretation. As mentioned above, there are two main approaches for rotation: orthogonal and oblique. For the purpose of this study, the Varimax rotation (orthogonal) was employed because of its ease to be interpreted.

Using the EFA test, item loadings in excess of 0.30 were retained, in agreement with the recommendations of Pallant (2005), who also noted that item loadings should be higher for the constructs they are meant to support, in comparison with other factors. The greater the loading, the more the variable is a pure measure of the factor. The cut-off point for interpretation in this study is all loadings of .30 or above.

In some cases, some variables do not load on any factor. In this case, the researcher has two options; first, interpret the solution as it is and simply ignore these variables, or second, exclude these variables. Hair et al, (1998) contended that ignoring the variables should depend on the contribution of the variable(s) to the research objectives.

In the next stage, after rotating the data, the results need be interpreted. According to (Tabachnick and Fidell, 2001) only variables with loading of .30 and above could be interpreted. In this stage, naming the factors will be carried out. The variables with high loading are System & Information quality, Cultural dimensions, Subjective Norms, Perceived Usefulness and Perceived Ease of Use.
The first component was named *System & Information Quality*, as the items in this dimension reflected the characteristics and main factors of E-learning system quality. The second dimension was named *Culture Variable*, which includes Hofstede’s cultural dimensions, such that the items contained reflect the cultural dimensions of the respondents based on Hofstede’s cultural dimensions. The third dimension is *Subjective Norms*, as it contains variables, which show the influence of social norms on respondents’ behaviour and usage of E-learning system.

The fourth dimension was named *Perception of Usefulness* as the items reflected the extent that the respondents feel that using the E-learning system will be useful for them. The fifth dimension was named *Perceived Ease Of Use* as the items reflected the degree to which those respondents believe that using the E-learning system will be effortless.

### 5.4 Summary

This chapter introduced a descriptive data analysis for the demographic factors in research after the process of data-collection. Generally, this chapter provides a contribution to describing the relationship between the sample and its population, describing the characteristics of the participants (i.e. age, education, etc.) that are common to both the sample and the population. Accordingly, the first section commenced by illustrating and describing the demographic variables in frequency tables using SPSS to illustrate the basic statistical relationships. Using principal component analysis as the method of extraction and varimax rotation methods with KMO, the most related actors emerged with Eigenvalues over 1.00. These factors are *System & Information Quality, Cultural Dimensions, Subjective Norms, Perceived Usefulness and Perceived Ease of Use*. These factors were perceived as the most important drivers of the intention to use and accept E-learning systems. Moreover, the results confirmed the existence of factors that accounted for 39.313% for the total variance.
The next chapter will employ multiple regressions and simple linear regression analyses in order find the correlation relationships between the model variables, test the relationship between the model variables and the acceptance for both, and test the Model fit.
6.1 Introduction

The previous chapter dealt with the analysis of the respondents’ demographic characteristics and provided a summary of information regarding the main focus of the study. This chapter, however, attempts to discuss the correlative relationships between the independent and dependent variables that are included in this study, and to demonstrate the results of the hypothesis testing with regard to E-learning-system acceptance. This will be done by the use of multiple regression analysis.

The chapter initially analyses the main assumptions of the regression technique used including the test of normality, linearity, and homoscedasticity. This is followed by an assessment of multi-collinearity. It then deals with the outcomes of the regression models discussed. The general aim of this chapter is to answer the following research questions:

1. Is there any correlation relationship between cultural factors and E-learning acceptance in the research sample?
2. Is there any connection between system & information quality, cultural factors, PU and PEOU, user experience and E-learning system acceptance in the case of the research sample?
3. What are the main factors influencing user acceptance of E-learning systems?

It emerged through the factor analysis that there were five main features, which came to light. These were: System & Information Quality (S&I Q), Cultural Dimensions (CD), Subjective Norms (SN), Perceived Usefulness (PU), Perceived Ease Of Use (PEOU), user experience and Intention to Use (IN). All these factors were investigated and supported by the literature in chapters 2 and 4. These were seen as the main factors that influence behavioural intention with regard to E-learning systems.

To demonstrate the correlative relationship between the Cultural Dimensions and the E-learning system’s users’ intention to use, a Pearson’s Correlation Coefficient was
employed. The Pearson Correlation Coefficient measures linear relationships in parametric tests; i.e., the coefficient of correlation depicts only the existence of a linear relationship between two variables or more (Tabachnick & Fidell, 2001). Its use is discussed in detail in Section 6.1. Finally, the decision was made to implement regression analysis as the technique for data analysis.

The motivation behind choosing regression analysis was in its suitability for hypothesis testing and examining how independent variables (in this case SQ, UE, SN, CD, PU, and PEOU) can be employed to predict a dependent variable (Intention to use (IN)). Moreover, it is consistent with methods applied in similar previous studies, such as Davis et al. (1989), Straub et al. (1997), Moon and Kim (2001), and Chesney (2006). Amoako-Gyampah (2007) comments that using regression analysis is a suitable method as it has been used in previous TAM and extension studies to assess the relationships between model variables, and it facilitates comparison of the study results with previous research. Therefore, it has been employed in this study.

Legris et al. (2003) mentions that a linear regression model was most often used in TAM model analysis. Using linear regression is desirable as it relies on relationships between variables, and provides greater detail and a more complicated evaluation of the associations between the variables. Stockburger (1998) pointed out that regression models are useful for predicting a dependent variable based on others.

‘Model Fit’ is based on a standard regression analysis. The analysis shows how much of the total variance exists in the dependent variable (in this case, the Intention to Use). It is possible to explicate by use of the independent variables (System & Information Quality, User Experience, Subjective Norms, Cultural Dimensions, PU, and PEOU). The F-Statistic measured the impact of the independent variable on the dependent variable. A high value in the F-Statistic indicates significance, while a low F-Statistic value indicates a lack of statistical significance.
In the analysis, the P-value of the F-test should be less than 0.05, which shows a significant relationship between dependent and independent variables. A P value between 0.05 and 0.10 illustrates weak significant relationships. When the P-value is more than 0.10, it shows that the association is not statistically significant. The R² value shows how much of the variance in the dependent variable is explained by the factors in each model, and is used to evaluate them. An adjusted R² indicates the rightness of fit of the model to the study population, taking into account the sample size and the value of the number of items used.

Figure 6.1 shows the ETAM model before the application of analysis in order to obtain a better understanding of how the variables included in the model contributed to the prediction of the dependent variable.
6.2 Correlation Analysis

The correlation coefficient provides the relationship between variables. It helps to show the direction and strength of any correlation. It indicates, therefore, only the existing relationships between variables and not their causality (Schumacker and Lomax, 2004). In this study, the Pearson Correlation analysis was used to test the bivariate correlative relationships between System & Information Quality, Cultural Aspects, SN, PU and PEOU, UE, and the acceptance of E-learning systems (IN) (Tabachnick and Fidell, 2001).

6.2.1 Correlation between the model variables with IN

<table>
<thead>
<tr>
<th>IN</th>
<th>CULTURE</th>
<th>S &amp;Quality</th>
<th>PU</th>
<th>PEOU</th>
<th>SN</th>
<th>UE</th>
</tr>
</thead>
<tbody>
<tr>
<td>IN</td>
<td>Pearson Correlation</td>
<td>1.000</td>
<td>-.770**</td>
<td>.808**</td>
<td>.776**</td>
<td>.793**</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td>N</td>
<td>184</td>
<td>184</td>
<td>184</td>
<td>184</td>
<td>184</td>
<td>184</td>
</tr>
</tbody>
</table>

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

The results indicate that the IN has a high correlation with all models and variables, and culture has a highly negative correlation with IN, while System & Information Quality, PU, PEOU and SN have positive correlations.
6.2.2 The relationship between the Cultural Dimensions and E-learning system acceptance

Here, the Pearson Correlation analysis is used to include all aggregate CD. Further investigation will consider for each CD variable in detail.

<table>
<thead>
<tr>
<th>Table 6.2 Correlations between the aggregate CD and IN</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>IN</strong></td>
</tr>
<tr>
<td>IN</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>CD</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Table 6.3 Correlations between the CD and IN</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>IN</strong></td>
</tr>
<tr>
<td>IN</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>N</td>
</tr>
</tbody>
</table>

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

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

The legend below explains the correlations in table 6.2 and 6.3.

IN: Intention to Use, SN: Subjective Norms; MAS: Masculinity; PD: Power Distance; IND: Individualism, and UA: Uncertainty Avoidance.

Tables 6.2 and 6.3 demonstrate significant results for all CD relationships with IN, in that they do seem to show consistent correlations between them. These results, as discussed below, ostensibly show not only the direction of correlation, but also its strength of correlation too (this includes both positive and negative relationships).

The results would seem to confirm that new technology and E-learning systems develop under low power distance, low uncertainty avoidance, high individualism, and in a high masculinity culture, which is certainly what takes place in western countries (Hofstede, 1980; Akouret et al., 2006). Therefore, the development of technology is compatible with individuals' beliefs, behaviours, culture, and languages.

Following the same model, it is apparent that this is not true in the case of other cultures, especially the Arab culture, which arguably is one of high power distance that demonstrates a greater degree of high collectivism. It has the aspects of a low masculinity culture and demonstrates notable high uncertainty avoidance in many areas (Hofstede 2001). It can be argued therefore that these signpost qualities of Arab culture can be seen,
at least at first glance, to deny both the possibility and the actuality of high-level innovation in new technology uptake, meaning there is a real obstacle to such innovation. In Arab countries, there has been a relatively slow uptake, not just in the more conservative cultures of the Arabian Peninsula (who have only recently begun to include modern technology in their work and cultural practices, but equally true of the North African Arab cultures, and those of the Levant, too.

Over the past two decades, as innovations such as the internet have made wholesale gains across the west and the far east, the Arab countries of the Middle East (as well as those affiliate cultures across North Africa and in the Pacific Rim, where many cultural norms are followed and mirror the Arab world, through religion, for example) have been slow to make the infrastructural innovations required for inclusion of new technology in day-to-day personal, social and work-related life. This is the result of cultural resistance that has come about due to conservative elements, who see the new technology as being something that weakens the cultural bonds and boundaries prevalent in these predominantly conservative and Muslim countries. These conflicting values continue to impede radical changes, although, arguably, the level of resistance has slowed as cultural resistance bodies have come to realise that by careful use of the new technology they are able to further their own political and social agendas themselves, confirming that technology is a broader implement than had hitherto been imagined. There are now uses of new technology that are being actively married to traditional beliefs – such as Qur’anic mobile telephone apps that notify believers of prayer times, Qibla directions, or act as religious repositories for related information. So too, the Internet is seen more favourably than before, as new technology becomes part of the Arab Internet user’s ABC.

There is also the aspect of infrastructural investment. In the Levant and North Africa, the lack of finance available for such activities is noticeable. This may be due to differences in priority, a belief that the new technology lacks utility for more traditional society, or more likely that cultural resistance is the driving force. In the Gulf States, the lack of financial investment is certainly not due to lack of available capital. Again, the same cultural drivers as mentioned have often, arguably, caused slow uptake previously.

In the study, there is no notably strong correlation between SN and IN (r=0.103).
Additionally, there was also no real significant correlation at the 0.025 level (2-tailed). In earlier research carried out by Venkatesh and Davis (2000), they posited that the relationships only demonstrate a true significance when the introduction of new practices that involve innovative technology has been compulsory; usually from officialdom. What is more, they argue that there is no significant influence of SN on IN if the introduction of technology has been done on a voluntary basis. This is unsurprising given that the typical characteristics of Arab cultures, as mentioned above, demonstrate a strong social conservatism to the introduction of new technologies and practices. This is, arguably, due to the high levels of collectivism and power distance. With this in mind, this study proposes that SN has a clear and direct influence on the levels of IN.

Having carried out the research for this problem, the results clearly indicate that SN has no significant direct influence on IN. Again, this is on the understanding that E-learning system use, as outlined in this study, is a practice carried out on a voluntary basis. Each person who decides to use an E-learning function makes their decision based on a number of existing social and personal factors, and are not forced, coerced or are otherwise guided into their decision by an exterior body, factor or person. It is no surprise, therefore, that these findings squarely match Venkatesh and Davis’ (2000) results.

These results, demonstrating as they do, a non-significant link between SN and IN provide a greater body of proof to prop up the suggestion that any direct compliance effect of SN on IN does not work when there is freedom of volition (Venkatesh and Davis, 2000). This is particularly so given the cultural context such as that mentioned above for members of Arab and other related cultures, due to the high levels of conservatism and where social influence on the individual is strong in almost every part of daily life. This applies not only to groups and social formation, but even to the point of language resistance that is inherent in speech structures which have incorporated religion into modes and phrases of expression. While this is true even in the West, the degree of incorporation of conservatism into language means that there is a cognitive level of resistance that is not even consciously understood by many people when they make decisions about E-learning uptake, or any other matter that comes into potential conflict with accepted laws, morals and mores.
Moreover, it can be posited that after users have had initial experience of browsing E-learning systems or websites and partaking of their services (even with a minimal level of experience), behavioural intention to use is arguably mainly based on their personal assessment of the system, rather than on that of friends, peers or social groups who have influence. In fact, Davis et al. (1989) did not find a significant effect of subjective norms on intention to use in such cases.

The results indicate that PD, IND and UA negatively affect intention to use = -.260;-.395, and -.573, respectively P= 0.05 level (2-tailed). Interestingly, however, masculinity shows a slightly positive relationship (r=0.103), which is significant at the 0.05 level (2-tailed).

Studies discussed in section 4.3.4.3 would lead us to expect that Arabs show more culturally masculine inclinations than westerners. This was not the case, and the results presented appear to contradict Hofstede’s (1980) findings (see chapter four section 4.3.4.3).

As discussed in chapter four, this aberrant result may be due to a change in culture over time. It could be the case that Arab people who experience new technology during their learning in Western countries may have consciously or unconsciously deviated from common norms and cultural labels of femininity (Akouret et al, 2006).

Previous studies have pointed out that a high PD culture has a direct negative impact on the acceptance of new technology (Straubet al 1997; Bagchiet al., 2004; Srnka, 2004). Following the above, it would not be impossible for Arab respondents to believe that using E-learning should be limited to levels. These results are in consensus with Hofstede (1980).

Regarding the relationship between UA and IN, a directly attributable negative association was found. Previous studies have shown that cultures with high UA, such as the Arab one, often use new technology less (Taylor, 2004; Faganet al., 2004; Akouret et al., 2006). This refers to the principal that using new technology is an alteration; something new and unexpected and therefore that this change is erratic and could lead to negative
outcomes. In addition, cultures with high UA resist change even when useful, as they prefer to stick to pre-existing patterns of social behaviour and levels of conformity.

Thus, Arabs, it can be argued, tend to consider E-learning systems and the internet generally, as either ambiguous, threatening, or risk-laden; they, arguably, see them as potential threats for both for the future, and for their morals, mores and culture as a whole, especially when there is a connection or consequence that relates to families and children. And so, therefore, they actively resist new technology (Taylor, 2004).

Hasan and Ditsa (1999) argued forcefully that the idea that the high levels of uncertainty avoidance in Arab culture regarding the uptake of new modes of technology is especially relevant in the case of E-learning and the Internet. They argue further that elements of Arab culture are potentially and actually fundamental in the decision to use or not use IT in varying aspects of daily life, whether it is work, social behaviour, or for personal purposes. They assert that it is the avoidance of risk itself (in that anything new and untried is a potential risk) that drives their decision. Additionally, this risk-avoidance is an integral part of the culture prevalent in the Arab world.

An avoidance of ambiguity (for what is not tried and tested must, by its newness, be ambiguous) is the driving factor in the uptake of anything that is new and potentially runs counter to pre-existing cultural values and mores—or has the potential to do so. In the case of E-learning, not only is the content suspect, but the pedagogic style in which the learning is delivered, as well as the manner in which it is delivered (via the internet) are also alien to traditional, rote-learned, monolithic text methods favoured for centuries in the region.

6.3 Regression Analysis

6.3.1 Testing the Assumptions of Multiple Regression

Multiple regression analysis is a statistical method that lends itself well to the investigation of the relationships between single dependent and multiple independent
variables. Hair et al (2003) posit that multiple regressions are particularly useful when employing a number of independent variables to anticipate single dependent values when they have been selected by a researcher (Hair et al, 2003).

In this study, it has been assumed that there are three types of regression analysis that need to be considered for the investigation of whether errors exist in the extant data and whether this data is applicable for use in regression models (Hair et al., 1998). The three types of regression analysis are: (a) the normality of the data, (b) the linearity of the phenomenon measured, and (c) the homoscedasticity. It is anticipated that any data collected from behavioural constructs such as those demonstrated in this study will not wholly satisfy all the basic assumptions set out above. That said, Hair et al (2003) believe that regression analysis is still the ideal method for use in these situations, on the proviso that any data collected do not appreciably and actively undermine the assumptions made in the use of regression analysis. The sections that follow discuss the assumptions made for the purpose of this study in more detail.

**Normality**

When going through the process of regression analysis, the assumption is made that all the research valuables are distributed normally. If there is data that does not follow the parameters of normal distribution, or is, for some reason, skewed, this lack of adherence can mean there is a significant distortion in both relationships and tests of significance. A method to be used to eradicate this potential problem is visual inspection. Inspection was done of frequency distribution, kurtosis, skew, and of data and PP plots. However, De Vaus (2002) asserts that the effect on the outcome of analysis on normal distribution trends is limited when sample size is sufficiently large. According to StatSoftInc (2003), when samples exceed one hundred or more they are likely to be an accurate reflection of behaviours and trends in larger groups. When this size is indicated, it is argued, there is an appropriate and acceptable level of normality.
The work conducted for this study was assessed as mentioned above and the data normality was found to be distributed as laid out in Figure 6.3 below. This demonstrates a level of close to near normality. In Figure 6.4 there is a diagram, which signifies the normal probability plot, where the observed residuals are roughly normally distributed. Although, there are some divergences (particularly at the lower levels), these are not significantly divergent from the norm and therefore the overall tendency for the residuals is that they adhere closely enough to normal distribution for a firm conclusion to be drawn.
Figure 6.2 Distribution of the Data

Histogram

Dependent Variable: IN

Figure 6.3 The normal probability plot
Table 6.4 The residual statistics

<table>
<thead>
<tr>
<th></th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Predicted Value</td>
<td>1.2062</td>
<td>4.7501</td>
<td>3.0532</td>
<td>1.09705</td>
<td>184</td>
</tr>
<tr>
<td>Standard Predicted Value</td>
<td>-1.671</td>
<td>1.626</td>
<td>.000</td>
<td>1.000</td>
<td>184</td>
</tr>
<tr>
<td>Standard Error of Predicted Value</td>
<td>.0390</td>
<td>.143</td>
<td>.074</td>
<td>.018</td>
<td>184</td>
</tr>
<tr>
<td>Adjusted Predicted Value</td>
<td>1.2035</td>
<td>4.8385</td>
<td>3.0243</td>
<td>1.09882</td>
<td>184</td>
</tr>
<tr>
<td>Residual</td>
<td>-3.01065</td>
<td>3.22860</td>
<td>.00000</td>
<td>.60012</td>
<td>184</td>
</tr>
<tr>
<td>Standard Residual</td>
<td>-4.871</td>
<td>5.350</td>
<td>.000</td>
<td>.992</td>
<td>184</td>
</tr>
<tr>
<td>Stud. Residual</td>
<td>-5.010</td>
<td>5.347</td>
<td>.000</td>
<td>1.000</td>
<td>184</td>
</tr>
<tr>
<td>Deleted Residual</td>
<td>-3.06435</td>
<td>3.24223</td>
<td>-.00012</td>
<td>.61421</td>
<td>184</td>
</tr>
<tr>
<td>Stud. Deleted Residual</td>
<td>-5.135</td>
<td>5.453</td>
<td>.000</td>
<td>1.005</td>
<td>184</td>
</tr>
<tr>
<td>Mahal. Distance</td>
<td>1.770</td>
<td>38.748</td>
<td>11.990</td>
<td>5.665</td>
<td>184</td>
</tr>
<tr>
<td>Cook's Distance</td>
<td>.000</td>
<td>.040</td>
<td>.002</td>
<td>.003</td>
<td>184</td>
</tr>
<tr>
<td>Centered Leverage Value</td>
<td>.002</td>
<td>.062</td>
<td>.018</td>
<td>.007</td>
<td>184</td>
</tr>
</tbody>
</table>

a. Dependent Variable: IN

Figure 6.4 shows where standardised residual values are in the range 3≤-3, which, in a typical distribution sample, would expect only one per-cent exclusion (Pallant, 2005). The table goes on to show if there was any unanticipated influence from the outliers on the result as a whole. The one factor that has more potential to influence the model with
any degree of significance is the value of Cook’s Distance. This should be less than one. If it is greater, there is room for a significant influence on the model (Tabachick and Fidell, 2001).

**Linearity**

It is assumed that if the relationships between the two variables (independent and dependent) are linear, then it follows that the results of the regression analysis will be precise. Pedhazur (1997) suggests that to detect the degree of linearity, there should be an examination of the residual plots’ standardised residuals, when expressed as a function of standardised predicted values. Whether this is the case or not, can be estimated by the application of regression analyses that include curvilinear elements, or through the appliance of nonlinear regression options that are commonly accessible in a number of statistical packages. It has been assumed that linearity is achieved if residuals are spread according to chance and at the same time evenly through the plot of the scatter graph.

The evidence produced as laid out in the graph above (Figure 6.2) tends to suggest that the dependent variables do not violate any presuppositions of linearity.

**Homoscedasticity**

It is also assumed that if the variance in error formation is equal at all levels of the independent variable, then it can be claimed that there is evidence of homoscedasticity. If homoscedasticity is discovered, there is the possibility of serious distortion and so could challenge the analysis (De Vaus, 2002). Inspection for the purposes of discovering homoscedasticity is carried out through a process of visual examination on the residual plots of real standardised values (De Vaus, 2002). This is included in the regression analysis done in SPSS. The scatter graph (Figure 6.2) demonstrates that there is no presence of homoscedasticity indicated in this case.
Multicollinearity

Multicollinearity can be defined as the state of inter-correlation in independent variables (Field, 2000). When multicollinearity is present, arguably, it affects the internal legitimacy of any regression analysis that has been carried out and increases the probability of Type II errors when hypothesis testing is undertaken (Field, 2000). The assessment of multicollinearity is best expressed by reference to both the Variable Inflation Factor (VIF) and the Tolerance Value (TV) (De Vaus, 2002). A satisfactory value of TV is ≥ 0.1 where the VIF value is under 10 (Kolacz, 2002). Table 6.5 lays out the values of TV and VIF for the data. All the listed TV values are greater than 0.1, and all VIF values are less than 10, so are, therefore both acceptable in their range of values.
### Table 6.5 Collinearity statistics of the variables

<table>
<thead>
<tr>
<th>Model</th>
<th>Coefficients</th>
<th>Collinearity Statistics</th>
<th>Tolerance</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>(Constant)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SQ</td>
<td>.854</td>
<td></td>
<td>1.172</td>
<td></td>
</tr>
<tr>
<td>UE</td>
<td>.718</td>
<td></td>
<td>1.423</td>
<td></td>
</tr>
<tr>
<td>SN</td>
<td>.753</td>
<td></td>
<td>1.318</td>
<td></td>
</tr>
<tr>
<td>PD</td>
<td>.747</td>
<td></td>
<td>1.337</td>
<td></td>
</tr>
<tr>
<td>IND</td>
<td>.627</td>
<td></td>
<td>1.540</td>
<td></td>
</tr>
<tr>
<td>MAS</td>
<td>.889</td>
<td></td>
<td>1.148</td>
<td></td>
</tr>
<tr>
<td>UA</td>
<td>.935</td>
<td></td>
<td>1.181</td>
<td></td>
</tr>
<tr>
<td>PU</td>
<td>.272</td>
<td></td>
<td>3.556</td>
<td></td>
</tr>
<tr>
<td>PEOU</td>
<td>.278</td>
<td></td>
<td>3.445</td>
<td></td>
</tr>
</tbody>
</table>

*a. Dependent Variable: IN*

### 6.4 Analysis of the Regression Models

Essentially, the hypothesis of this study is looking to ascertain the effects of the independent variables. These are: CD, UE, SQ, SN, and PU. PEOU’s effects on IN is
discussed separately in chapter 5. As was noted in 6.2.1, a number of regression analyses experiments were undergone to verify the veracity of the accumulated data. Linear regression analysis relies on the relationships between a group of independent variables and a single dependent variable. Regression analyses were conducted with these four independent variables and one dependent variable as mentioned above. The multiple regression equation for the factors included in this work is as follows: \( Y = B_0 + B_1 X_1 + B_2 X_2 + \ldots + B_n X_n + E \). \( Y \) is the response variable; \( X_1 X_2 \ldots X_n \) are the predictor variables; \( B_0 B_1 B_2 \ldots B_n \) are the partial regression coefficients and, \( E \) refers to the remaining error, or residual.

6.4.1 Multiple regression of the ETAM Model

This part of the study showcases the overview of the multiple regression models and discusses whether the factors influencing E-learning system acceptance are explained satisfactorily by the current model. The results demonstrate how successfully the proposed model anticipates E-learning system acceptance within the research parameters.
Table 6.6 The Multiple Regression of Model Summary

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.904a</td>
<td>.814</td>
<td>.813</td>
<td>.48221</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), PEOU, SQ, UE, CD, PU, SN

b. Dependent Variable: IN

SPSS 17 was used to generate the data in Figure 6.6. It evinces the summary outlined above. Again, six predictors were used in this model. It introduces all of the independent variables (PEOU, SQ, UE, CD, PU, SN), and also the dependent variable (IN). The figure presents, in addition, other constructive information about the model. These are the values of $R$, $R^2$ square and the adjusted $R^2$.

Moreover, the individual contributions of each of the independent variables (PEOU, SQ, UE, CD, PU, SN) were applied to try and ascertain the effects of the dependent variable (IN) by use of the Standardised Coefficients (Beta).

Table 6.8 Coefficients

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardised Coefficients</th>
<th>Standardised Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a
<table>
<thead>
<tr>
<th></th>
<th>.812</th>
<th>.071</th>
<th>.381</th>
<th>13.225</th>
<th>.000</th>
</tr>
</thead>
<tbody>
<tr>
<td>UE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SQ</td>
<td>.612</td>
<td>.049</td>
<td>.234</td>
<td>6.567</td>
<td>.000</td>
</tr>
<tr>
<td>CD</td>
<td>-.535</td>
<td>.071</td>
<td>-.252</td>
<td>-8.345</td>
<td>.000</td>
</tr>
<tr>
<td>PU</td>
<td>.184</td>
<td>.039</td>
<td>.167</td>
<td>4.725</td>
<td>.000</td>
</tr>
<tr>
<td>SN</td>
<td>-.013</td>
<td>.037</td>
<td>-.011</td>
<td>-.348</td>
<td>.720</td>
</tr>
<tr>
<td>PEOU</td>
<td>.281</td>
<td>.035</td>
<td>.267</td>
<td>7.860</td>
<td>.000</td>
</tr>
</tbody>
</table>

a. Dependent Variable: IN

Figure 6.8, demonstrates clearly how UE has the greatest input in its effect (beta=0.381). SQ, CD, PU, and PEOU, although also possessing a high degree of significance, are not as important. PU, of all the five, has the lowest level of significance when compared to the others. It is possible to argue, therefore, that these factors are the key determinants in the uptake of E-learning systems in some, if not all, Arab countries, due to the factors raised earlier in this chapter.

In the section that follows, independent and dependent variable relationships are interrogated individually using the tool of multiple regression analysis.

**System and information quality and the intention to use**

There are three sub-factors included in the category of system and information quality. These are: SYQ information quality, INFQ and service quality, and SRQ2 or attractiveness. To perform the regression analysis, IN was chosen as the dependent variable, and the SQ was utilised as the independent variable. The use of sub-variables allows for a better understanding of the actions of each of the sub-variables in the uptake of E-learning systems.
Table 6.9 Results of Multiple Regression Analysis: SQ and IN

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardised Coefficients</th>
<th>t</th>
<th>Sig(^a).</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>SRQ2</td>
<td>.172</td>
<td>.058</td>
<td>2.842</td>
</tr>
<tr>
<td></td>
<td>SYQ</td>
<td>.737</td>
<td>.042</td>
<td>14.274</td>
</tr>
<tr>
<td></td>
<td>INFQ</td>
<td>.717</td>
<td>.061</td>
<td>13.734</td>
</tr>
</tbody>
</table>

Equation

\[ R = .839^b \]

\[ R^2 = .677 \]

\[ F = 331.819 \]

\[ \text{Sig.} = 000 \]

- a. Predictors: (Constant), SYQ INFQ, SRQ2,
- b. Dependent Variable: IN

The measurement of the SYQ of the E-learning system was carried out by referring to its responsiveness and multi-media capability. INFQ, however, is demonstrated by looking at the information contained therein, as well as its inherent clarity, the relevance of that information, as well as its scan ability, currency, concision, and, arguably perhaps, its accuracy. The factors of trust and empathy were also included in the calculation of SRQ2.
Figure 6.9 lays out the results of the regression analysis carried out in the study. The significance of the regression model study is at a level of .001. This allows it to explain 67.7 % (R square = 0.677) of the variation of SQ. The contribution of each individual to the regression model sub-variable from SQ is noted by the Standardised Coefficients (Beta). SRQ2’s regression coefficient was tabulated as Beta, 0.085, \( t = 2.842, p < .001 \). This correlation is noticeably weak. Additionally, the SYQ coefficient was Beta, .447, \( t = 14.274, p < .001 \) and the INFQ was Beta, .429, \( t = 13.734, \) and \( p < .001 \). It is clear that SYQ is the largest contributor to the model (Beta, .447). SYQ, as previously noted, refers to how functional the system is when indicating usability, availability and response time.

The study results seem to suggest that Arabs who are involved in E-learning uptake care more for functionality than they do the content. It can therefore be extrapolated that they care more for a system that is easily comprehended and is clearly simple and legible. Also, the ease of use and its navigability is the driving factor rather than the general idea of mere utility. This is clearly more specific. These results, therefore, agree with the conclusions of the interview chapter (see chapter 7), where most respondents stress the navigability and ease of use. If the system is merely useful, but is designed in such a way that the information is hidden or is difficult to find on first encounter, then the user will not remain and persist, but will, instead, migrate to another system and not return to the old system unless they have been instructed of changes to its functionality that fit closer to their self-perceived needs.

Trompenaars (2009\(^3\)) argued that Arab culture was one that responded to a ‘use’ factor. In other words, they responded only to variables that came from external influences if they worked together with the cultural norms that ostensibly exist within Arab culture, and those that were able to be easily incorporated wholesale into that system of culture and tradition. If there were oppositional factors and these impeded cultural acceptance, it would be extremely unlikely that they could be included. Also, given that ease of use and navigability were so ingrained in Arab cultural identity issues, they would play a decisive

factor in any form of cultural acceptance. Indeed, they were so important that they could be described as ‘priority’ factors that would by their very nature exclude potentially oppositional outside influences, given their high risk factor and the dislike of risk within the Arab cultural model.

This, Trompenaars (20094) argued, was ostensibly due to factors inherent in the Arabic language, which due to religion has changed little over the centuries and is in itself a formidable barrier to external change, as well as the formal difficulties when translating layout on the page and the corresponding text. This is because Arabic is read right-to-left rather than the conventional left-to-right direction one reads (and writes) in non-Semitic languages. Alternatively, there could be other surface factors relating to form or content. Content applicability to the predominant cultural and religious models of Arab culture is particularly relevant. Arab culture, although far from being monolithic, has mores and cultural norms that can be relatively unique and are shared by few members of western cultural systems.

At the heart of this issue, there is, according to Furrer et al (2000), the vital factor of Power Distance (PD). In a high PD culture, such as the Arab culture, there is a negative correspondence between lack of responsiveness and lack of reliability (e.g. poor download time and page interaction). On the other hand, there is a positive correlation and positive emotional appeal with issues of privacy, security, the design, layout and functionality of a system, especially its visual appearance and conformity with Arab cultural norms. This association of expectations of smooth responsiveness and flow do not sit well with high power distance. However, privacy and security, interactivity, design, and visual appeal all connote positively with such high power distance.

Marcus and Gould (2001) substantiate the point made above, that cultural power-distance has a highly significant effect on accessing information in E-learning contexts. Low PD cultures tend to expect both form and content to be easily accessible and contingent on cultural models. There is a greater demand for freedom to explore the system in ways that

are meaningful to their expectations. In a high PD culture, however, acceptance of restrictions on the use of E-learning systems, even when right-to-use is limited to those of higher social rank or position, is relative to the social position of the user (Jack and Mike, 2005).

High UA cultures, however, emphasise practical navigability when discussing E-learning system design. This allows users to navigate easily and without the presence of stressful exterior factors that work against the experience. Language and text direction, as well as video and still image inclusion and placement, is therefore highly important when considering navigation system design.

If content and form work together guided by an overarching aesthetic that works on fundamental simplicity (allows easy navigation, is easy to operate, has limited amounts of data, reduces redundancy and works on inclusion rather than the exclusion of the user through careful use of visual stimuli such as video, still images, colour, typography, and sound to reduce potential ambiguity), E-learning may be accepted. On the other hand, low UA cultures prefer the idea of a helpful navigation system (such as the offer of more options than are often used in non-Arab cultures), and a greater focus on the ability to explain broad concepts to users rather than by focusing on a narrow focus of tasks (Marcus and Gould, 2001).
Cultural Dimensions and intention to use

In the discussion of cultural dimensions, the following sub-variables need to be included: Power Distance (PD), Uncertainty Avoidance (UA), Individualism (IND) and Masculinity (MAS). When carrying out the regression analysis, IN was employed as the dependent variable and each of the cultural dimensions sub-variables was used as an independent variable.

Table 6.10, below, shows that the standardised coefficient (beta) values for IND, PD and UA are all negative and significant ($p=0.000<0.1$). Additionally, the results point to the fact that there is no significance in the relationship between MAS and IN where $p = .114>0.1$.

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardised Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PD</td>
<td>-.233</td>
<td>.035</td>
<td>-.223</td>
<td>-6.623</td>
</tr>
<tr>
<td>UA</td>
<td>-.279</td>
<td>.038</td>
<td>-.229</td>
<td>-7.188</td>
</tr>
<tr>
<td>IND</td>
<td>-.195</td>
<td>.034</td>
<td>-.172</td>
<td>-5.725</td>
</tr>
<tr>
<td>MAS</td>
<td>.075</td>
<td>.049</td>
<td>.043</td>
<td>1.532</td>
</tr>
</tbody>
</table>

Equation
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>R</td>
<td>0.809(^a)</td>
</tr>
<tr>
<td>Adjusted R Square</td>
<td>0.649</td>
</tr>
<tr>
<td>F</td>
<td>122.580</td>
</tr>
<tr>
<td>Sig.</td>
<td>.000(^b)</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), MAS, UA, IND, PD
b. Dependent Variable: IN
The individual contribution of each sub-variable in each case demonstrated a marked difference.

Arab culture, as mentioned previously, exhibits the qualities of high power distance and collectivism, low masculinity, and high uncertainty avoidance (Hofstede, 1980). There does seem to be a distinct rejection of and lack of support for the uptake of E-learning systems within these cultural characteristics which is mirrored by the conclusions of Akouret et al (2006). In Arab countries, there have been attempts to introduce advances in IT and computer technology, but all have demonstrably faced resistance from cultural elements within those societies. These have had to be overcome before integration into the workplace or the home environment has been achieved. Furthermore, the results of any such schemes support this hypothesis as users have demonstrated a clearly negative reaction to the uptake of new technology and E-learning systems.

SN and IN have shown clear relationships, having shown to be positive in this study. Yet, while they are positive, they have not proved to be in any way significant as P=0.058 > 0.001. Venkatesh and Davis (2000) are amongst those that claim that the relationships is significant only in cases where there is some enforcement; there was no significant influence of SN on IN when the use of the technology was voluntary. As discussed earlier though, it has been made clear that Arab countries have high levels of collectivism, creating notable social pressures that affect the intentions of individuals. This study would hypothesise that SN (Cultural Dimensions and their sub-factors) directly influence IN.

Yet, analysis made during this study has demonstrated that ostensibly, SN has no significantly direct effect on IN. As the study has introduced the concept of the E-learning system as a voluntary act, the result tallies with the findings made by Venkatesh and Davis (2000), which shows that SN has no direct impact on IN as a result of the voluntary nature of engaging with IT. As there is no clear link between SN and IN, one could claim that the phenomenon of SN impacting on IN does not work in cases where uptake is of a voluntary nature (Venkatesh and Davis, 2000). This applies even in Arab
countries where social influence is, arguably, very strong. Furthermore, the evidence seems to point to the fact that after users have experienced E-learning systems (even when that experience is low level), their behavioural intention to use as a decision depends essentially on their personal assessment of the system in question, rather than that of friends, colleagues or external social influence (whether from individuals or organisations). In support of this conjecture, Davis et al. (1989) did not discover any significant influence by subjective norms related to people’s intention to use.

It seems, at least as far as the evidence suggests, that users are likely to view the virtual experience as something more complex and less easy to use than users who are less risk averse—which again is another function that operates with Arab culture. People who are disinclined to accept risk and risk-forming situations experience heightened anxiety or find it necessary to exert additional effort into negating the uncertainties faced in using unfamiliar or ill-designed E-learning systems (Khushman and Amin, 2011). Straub (1997) argued that high-collectivist cultures such as Arabs prefer face-to-face meetings to augment the factors of social presence. This can be compared to emailing, where the lack of presence arguably leads to reducing social and group interaction to the point of abstraction. Furrer et al. (2000) found that power distance culture has a positive correlation with personal assurance and tangibility. This strongly suggests that Arabs prefer direct contact with others, especially those who lead the pedagogical instruction rather than using E-learning systems.

The relevance of the pedagogical method, its history and significance in Arab culture is strong. Traditionally, the educator has been a person of some status in the culture and the religion. The educator is seen less as a facilitator than a source of unimpeachable knowledge. Students were expected to pay attention to this person, note their utterances and memorise through rote learning the knowledge passed on for later use. This stems partly from the fact that the earliest schools in the region were religious, and there was a strong requirement to memorise holy texts, in all the major religions. The impact of withdrawing this major figure cannot be understated, as even today there is strong resistance to western styles of student centred learning that changes the role of the pedagogue to one of facilitator in learning rather than the source of knowledge.
A culture’s collectivism and UA, could therefore, ostensibly be negatively related to perceptions of E-learning by individuals precisely because of this historical framework. There have been attempts to introduce more of a physical presence into E-learning systems, as IT and internet technology have advanced through the use of video and the incorporation of programmes such as Skype, where users can actively encounter recorded or live interaction through the E-learning system. This, though, is still comparatively rare, often due to a lack of understanding even from Arabs about the nature of E-learning, and a lack of physical infrastructure that allows a sufficiently high connection level to allow these systems to operate. As mentioned above, even if these systems are present and there is a perceived difficulty in using such systems, there is every chance that users will become estranged from the system, move on and not return. Otherwise, the E-learning experience can be a rather isolating and impersonalising process. Where Arabs are involved in the process, this means that it is likely that the weight of Arab culture will mitigate against any benefits within that system. For Arabs, ease of use and the need for individuals to experience a socially positive system where personal contact is made and kept with the pedagogue is of vital importance.

Face-to-face encounters, which would be the norm in everyday social life, are replaced with a monitor screen and exchanges are often done impersonally and not in real time. The physical disconnect for Arab users is ironically, palpable. As a result, users in high IND cultures record lower trust levels when put side by side with users in low IND cultures.

This is made worse by the use of non-graphical content on E-learning systems. In the early years of the internet, low connection speeds meant that with dial-up, graphically intensive sites were impractical, and today with the advent of streaming video and live connections, connections in the Arab world are still much slower than in the far-east and western countries. This means that the graphical intensity that would go some way to alleviate Arab concerns about the impersonality of the system is still somewhat of a problem and only slowly changing due to limited uptake of super-fast broadband connections on both conventional computers and modern new-generation mobile devices.
An Atkine (2004) state that Arabs believe that new technology threatens their traditional life style, particularly with regard to group or family relationships. However, they are more likely to be willing to use the technology as long as there are no evident perceived negative social effects in their lives. The idea could be expressed as so: they want the benefits of the technology but not the software, games and entertainment that comes with it, due to the intensely heavy concomitant social baggage that come with it.

This resistance to external cultural norms does not show, however, a realisation that the mere application of the new technology has made a difference to culture *sui generis* and that technology is itself a cultural Trojan horse. Arab culture has not remained unchanged in just the same way. Where Arabs once used traditional methods of transportation in their everyday lives (through the horse, camel and donkey), the 4x4 has now replaced them, forcing these traditional models to be an accessory rather than a necessity, creating new roles that have come about from their previous irrelevancy in their old roles since replacement. Arab culture has moved sideways and forward at the same time. Technology has moved the central arena of what once constituted Arab nomadic life to the periphery, even in areas of the Arab world that have not been involved in such a way of life for centuries.

Alkadi (2005) looked into the impact of the internet as a social phenomenon on life in Jordan. The results show that the main dissatisfaction with the service was with older people. They felt most strongly about the negative effects and influence on Jordanian social life, particularly on marriage arrangements and gender relationships. It is perhaps the crux of the issue that age-related criticism is at the centre of the argument regarding change. Alkadi (2005) argues that Arab people as a whole (with a greater focus as the age category increases) do not like to change their life style, traditions, and customs of interaction and commonality between groups.

Sheehan and Hoy (2000) and Miyazaki and Fernandez (2001) demonstrated that high levels of UA in any culture may also serve to create negative perceptions of E-learning systems. Websites and new communications technology, they argue, are generally
regarded as risk-related or risk-heavier than traditional physical face-to-face dealings because of the impersonal and virtual nature of the new transaction process and its transformation of arenas. The inability to physically touch and feel the purchase goods or see the face of the vendor of the goods and/or services, the change in reliance from traditional cash payment to an electronic one, the threat of insecure handling of financial or private information, and the unfamiliar or importantly, foreign participants in the exchange cause problems for UA cultures. These are nearly always remotely placed and beyond the culture in which the individual is based. The degree of abstraction of these processes makes them highly unpopular with those who are used to traditional systems of barter.

Robichaux and Cooper (1998) discovered the idea that individuals often avoid actions that are seen as unsuitable with regard to their authority and position in a group, even if they are convinced to suppose that the actions are helpful. This goes some way to explaining why a negative relationship effect was discovered in this study. High PD people do not value more abstract interaction, such as email; its use is considered to be improper in that any communications using this method of interaction would equalise differences in organisational social status. This is partly because an email server would not be set up with safeguards that allowed people only to email those in their social tier and their immediate superiors. Even though it would still not be used, the potential for a degree of subversion is contained within its very structure. It would have a potential full reach. This would never have been possible under the strict formality of an office where letters would have been rewritten at each level of the hierarchy.

Straubet al (1997) suggests that power distance subtly influences communication patterns. They claim that computer-mediated communication (CMC) technology often has a mediating effect on culturally defined communication, but that this is not a notable feature in high PD cultures. In high PD societies, individuals observe authority by nonparticipation in the use of email in the form of straightforward texts. It would require a much higher degree of formality that would echo the letter system used in the past –
and again would be limited in to whom it was sent. Therefore, they argue email is limited by social norms such as these.

It is not a great leap from this understanding to assume that the perception of power distance by many working in Arab cultural situations would lead them to assume that an E-learning system is not desirable, as it allows the possibility of reducing perceived deference to superiors. By undermining leaders, making them feel less powerful and levelling power levels within the hierarchy, change could be considered a high-risk activity in a thoroughly risk-averse work culture (Sarbaugh-Thompson and Feldman, 1998).

There are a number of implications that can be drawn from this. Though, arguably, there is greater cost-saving and efficiency, E-learning systems are likely to be seen as less able to fulfil the required aim of social dominance in their communication with people who operate under high PD values. Furthermore, technologies with equalising influence would not be seen as useful in the preservation of social hierarchies for people with high PD values.

Therefore, despite the efforts made by many companies and individuals in the Arab world to promote new technologies and E-learning systems, which, for the purposes of this study may be seen as the main supply of SN, individual employees may be quite unwilling to make use of them because of their high-risk ability to equalise where it is not seen to be useful. This matches research that E-learning systems can have unwanted consequences when ‘rich’ messaging is required (Walther, 1995). It might therefore be more profitable to argue that is better to spread e-learning system use through managers and superiors first. This would arguably, be more a more effective method in alleviating employees’ concerns over the effects of equalising or levelling.

**Regression analysis of PU, PEOU and IN**

When performing the regression analysis in this study, PU and PEOU were employed as independent variables, and IN was the dependent variable.
Table 6.11 Results of regression analysis for PEOU & PU vs. IN

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardised Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PEOU</td>
<td>.506</td>
<td>.044</td>
</tr>
<tr>
<td>PU</td>
<td>.436</td>
<td>.045</td>
</tr>
</tbody>
</table>

Equation

R Square                   | .681
Adjusted R Square             | .688
F                              | 505.066
Sig.                           | .000a

a. Predictors: (Constant), PU, PEOU
b. Dependent Variable: IN

---

Figure 6.11 shows that E-learning systems are more useful and easy-to-use when more people accept and use them. The results show that PEOU has a notably direct and positive effect on E-learning system uptake, showing that E-learning systems are high significance models when they contribute to a higher acceptance rate. PU also has a strongly positive influence on e-learning system acceptance, and this is less than PEOU. The beta coefficient for PEOU and PU was 0.478 and 0.390, respectively.
The results of the study therefore confirm that PEOU is a highly important factor in judging the effectiveness of E-learning system uptake within Arab culture. Also, they show that Arab users prefer E-learning systems that are easy to use and operate, rather than ones which might be considered ‘useful’. PEOU, therefore, is still the main element of concern for E-learning system uptake purposes. PU, however, showed noticeably less effect on intention to use. So, when promoting a user's intention to accept an E-learning system, universities and academic institutions are advised to promote the e-learning system’s ease of use rather than its usefulness. Arguably, enhancing E-learning system usefulness alone would not necessarily increase a user’s acceptance of an E-learning system.

Davis et al (1989) pointed out, in the original TAM, that PU’s total influence is greater than that of PEOU on IU. These findings contradict this study’s findings, where PEOU influence is greater than PU on IN. This demonstrates that PEOU is more relevant than PU in users’ acceptance of E-learning systems in the case of this Arab sample. This is in agreement with the findings of Igbaria et al (1997). In effect, what this means is that Arab users accept E-learning systems mainly on the basis of ease-of-use rather than on their usefulness. These results also go against the findings of Al Sukkar and Hasan (2005) and AbdulAziz et al (2006). Furthermore, the results support the fact that PU and PEOD (the main components of TAM) are significant in influencing user intention to use E-learning systems outside of North America, as was indicated by Davis et al (1989).

6.4.2 Final ETAM Model

Once the regression analysis was complete, the final ETAM for Arab culture did not include MAS and SN. The exclusion of the non-significant sub-variable CD (SN and MAS) from the final model included these variables: System and Information Quality, Cultural Dimensions (TR, TA, UA, PD, and IND), PU, PEOU and IN. Figure 6.5 clearly shows the final ETAM.
6.5 Summary

This chapter has presented the data analysis processes, which have formed the basis of this chapter. These were in two main phases: the first was focused on discovering the correlative relationship between culture and E-learning system acceptance. The results as laid out in this chapter show that there is a significant association between CD and E-learning system acceptance. The second showed how multiple regression analysis was carried out to discover any possible relationship between the independent variables (SQ, UE, CD, PU, SN, and PEOU) and the dependent variable (IN). The results show that some of the cultural dimensions, such as MAS and SN, are not significant.

In the following chapter, the conclusion and discussion of this study will be presented, as well as its implications, limitations and suggestions for further study to clarify the conclusion.
Chapter Seven: Discussions and Conclusions

7.1 Introduction

The first and most important aim of this work is to consider ostensible reasons for the approval and ultimate uptake of E-learning systems in Jordan. Further, it aims to afford a comprehensive model of E-learning technology acceptance which establishes plausible predictions of people’s intent with regard to behaviour *viz-a-viz* E-learning system acceptance.

This will be achieved by posing the following question:

What factors influence E-learning users’ behaviour with regard to their approval and adoption of E-learning systems in Jordan? The supplemental questions asks: how important are these factors, what is the relationship between them, and how can the results obtained from this study assist Jordanians and other Arabs in similar cultures to plan and take up E-learning systems that will assist them as much as is possible in their future endeavours?

To achieve the results required based on these questions, the study aimed to firstly undertake a literature review. This is contained in chapter 2, while chapter 3 examines the research design. This was phrased within a positivism paradigm, making use of a survey instrument (a questionnaire) to collect the data. Chapter 4 looks closely at the development of the research model that is the theoretical basis of this study. The exegeses of the relationships that are contained within the proffered theoretical model and research hypothesis are presented in chapter 5 following a brief debate of the model’s theoretical components.

Chapter 6 begins with a description of the steps taken for the preparation of the data. This is followed by a discussion on the rates of response and the personal statistics of those
taking part in this section. Furthermore, it goes on to look at the scale validation process undertaken in this study. It gives the results of the reliability statistics and gives a description of the factor analysis.

Chapter 7 presents the research model testing results and the research hypothesis connected to the research model. This was managed by the use of a series of multiple linear regressions and simple linear regressions and an examination of the data gathered in the survey. Chapter 7 presents the analysis results of the semi-structured interviews conducted with those targeted for participation in Jordan. Moreover, there is also the interview sample, the instrument design and a full list of the interview procedures followed when carrying out this study and how the findings of the survey were supplemented through the use of the questionnaire employed.

The study concludes with an overview and final analysis of the research by presenting the full implications of the results and its contributions to the theoretical, methodological and managerial perspectives followed and the potential research limitations with suggested directions for any future research.

7.2 Summary of the Results

Chapter one examined the empirical research carried out to investigate E-learning system acceptance in the Arab world—in particular, Jordan. The reason for this study is due to the poor uptake of such systems in Arab countries such as Jordan. E-learning is a useful, and, arguably, these days essential learning technology that has the potential of not just opening up new areas of study, but also to help more people come into the higher education fold, and to revolutionise traditional methods of learning. E-learning, cannot however, improve the ability to deliver learning and improve learning outcomes if it is not accepted and used. It is paramount, therefore, that this study addresses the reasons for any non-uptake, and to gain a better understanding of the underlying reasons why this should happen. Apparently, by bringing these reasons to light, the opportunity to improve
adoption rates through a greater understanding of these forces will ultimately help not just potential E-learners, but also those who design and operate such systems.

A second reason for pursuing this study is because of an evident lack of empirical data on this subject in the literature on the milieu of the developing world, Arab nations, and, in particular, Jordan. Jordan, as a Levantine Arab country with markedly different cultural rules, mores and social norms, cannot be dealt with based on the findings of data from western cultural milieus given the disparity in technological advance, cultural views of new technology and E-learning, and widely variant social norms.

The aim of the study is also to focus on the key research problem, through the careful use of the Technology Acceptance Model (TAM). This thesis aims to create a theoretical model based on the TAM given the results of a close examination of the current literature. This study adds TAM to a set of cultural, social, and other variables that the literature review has pointed out as being of particular usefulness; namely, elements of national culture, and subjective cultural norms.

It was decided, after weighing the alternatives, to use surveys utilising questionnaires as the best method to empirically test the data required for the study. Data was gathered from a random sample of university students and staff in various parts of Jordan. Additionally, further qualitative research was undertaken through personal interviews. These were made up of semi-structured interviews with students, IT staff, and a number of lecturers in various academic positions within the Jordanian higher education establishment in several universities from across Jordan. The combination of these types of data collection allows for a greater concentration in depth of the factors the study sought to analyse. This meant that different perspectives were taken into consideration on the matter of E-learning system adoption in Jordan, and that there was a real and valuable comparison of theory with practice.

Generally, the results confirmed that the research model had been correct in its hypothesis, in that it managed to reveal 81.3% of the variance in people’s attitude to the
uptake of e-learning systems. Perhaps most curious, however, was that the results evinced the notion that ‘intention to use’ was more greatly affected by perceived ease of use, rather than the idea of perceived usefulness. This is wholly consistent with the assumptions of the TAM model. Furthermore, it was clear that perceived usefulness, together with perceived ease of use, was positive in its effect on people’s intention to use any new E-learning system.

Significantly, the study also proved that the cultural dimensions that this study had been convinced were vital in this particular context, significantly predicted peoples' attitudes to perceived usefulness and perceived ease of use. The three cultural dimensions that made a real impact (uncertainty avoidance, individualism and power distance) had a significant connection with an intention to use. Moreover, system and information quality was significantly related to intention to use. Yet, it was equally clear that subjective norms had no significant relationship with people’s intention to use.

7.3 Academic Contributions of the Study

The thesis was designed to create information that deals with the underlying causes of E-learning system adoption in the Arab world and Jordan. This has been carried out and the results arguably point to the fact that the study should make a significant contribution to the literature in E-learning system acceptance research. These contributions relate to:

1. On the whole, the literature points to the TAM as being potentially the most useful model. That said, the essential underpinnings of the model (perceived usefulness and ease of use) were not in themselves sufficient to accurately reflect the full picture of the acceptance model and therefore, an additional range of variables that would shore up the discrepancies were required.

The literature supports the contribution of the model used in this research for empirical study in this field. New research regarding the potential creation of future technology acceptance models will be in a position to introduce and strengthen its position by the
introduction of new notions and variables, or even set up a new relationship model between existing types (such as those demonstrated in the literature) by evaluating the relative importance of the contributions made by this study.

The expansion of the technology acceptance model (TAM) in this study, therefore, would include other, perhaps more detailed or from a larger (international) sample, social and cultural influences that tighten the margin of error found in this work. Moreover, there can be a more in-depth study of subjective norms, a greater emphasis on the quality of the systems and the information they generate, as well as cultural factors, both within Jordan, wider Arab culture, or even as far as examining the cultural factors in other developing nations.

2. The use of and the empirical justification of the wider theoretical model in the context of Arab culture and Jordan, with the end of studying E-learning system uptake.

3. The study also contributes to the understanding of the degree of influence culture itself asserts on acceptance behaviour theory with regard to technological advancement. Previously, behavioural differences in terms of acceptance in different cultures were scrutinised following the model introduced by Hofstede (1980). In his research, Hofstede discussed differences within national culture without in fact, measuring the cultural dimension sui generis; this is supported by Straub, Keil & Brenner (1997), Karahanna et al. (2005), Alsajjan & Dennis (2010) and Yang (2010). The current work, however, actively examines culture both at the group and the individual level. This full coverage of aspects of social behaviour regarding technological uptake creates a much more accurate empirical milieu in which the effects of culture on IT acceptance behaviour can be measured with some confidence.

The study also tenders several further contributions regarding the methodology. It examines the forecasts of already entrenched technological models of acceptance theory and completed in a milieu notably variant in its cultural imperatives from those where the first theories of this model were originally devised: namely, western nations in North
America and Europe. By applying the existing theories in such an original milieu, the study is able to validate and clarify the measurements made with its exact statistical tests to affirm the soundness and dependability of the new model. Although the model is not exactly as it was first conceived through the leaving out of several factors that would prove to be counterproductive, the overall study model demonstrated a notable degree of convergence and ability to discriminate, as well as high levels of soundness and dependability. The study also fulfilled the fitness indices, as more than fifty per-cent of the relationships existing within the model demonstrated a plausible significance. The study, therefore, makes an active contribution to the literature in the examination of conceptual data in the context of both developed and developing countries.

7.4 Practical Implications

As one of the research parameters to this study was related to the idea of how Jordan and other Arab countries could be helped in improving E-learning system acceptance, the ability of the study to identify ways that this could be achieved (with realistic and easily communicable checklists of social, cultural, political and technological causes, and which would be effortlessly part of the study design and would take into account users’ views) was deemed to be essential.

The survey of E-learning users demonstrated that the cultural aspects that involved uncertainty avoidance, individualism, power distance, system and information quality, user experience, perceived usefulness, and perceived ease of use make a significant contribution to E-learning system acceptance. Moreover, it was vital that interviews exhibited proof of other important factors. These include: the ability to offer financial support, a demonstration that users are aware of existing E-learning systems, the quality of information security and privacy, the levels of service quality and IT-literacy.

It has been established that developing countries such as Jordan and the other countries of the Arab world are currently facing low levels of E-learning system adoption. The results
of this current research should, arguably, help national and regional attempts to improve E-learning systems by allowing officials, policy makers and designers to better affirm their strategies to support quicker and better understood methods that will in turn create a higher rate of acceptance of systems in this field.

This study seems to suggest that there should be a greater deal of attention paid by designers, officials and policy makers to issues relating to the dominant culture in Jordan regarding E-learning acceptance, and by extension, other Arab and developing countries. One way in which this could be achieved is through the provision of training to reduce anxiety levels amongst users, which would in turn lead to higher levels of technological acceptance (Al-Gahtani, 2004) in the field of E-learning systems.

Moreover, they should, at the same time, offer the provision of systems that users find easy to use. Carter and Belenger (2005) believed that there were a number of ways in which there could be a notable increase in perceived ease of use. One of these methods is to supply online tutorials utilising the university’s intranet and IT infrastructure to demonstrate how users can use and interact with systems like these.

It could also be the case that systems developers and IT professionals who are employed by universities should also seek to ameliorate help and search facilities through this same IT architecture. This would allow users to find the relevant information much more effectively and quickly. Furthermore, feedback garnered from users about the ease-of-use of their E-learning websites could be evinced and analysed to draw conclusions as to how to improve the system in place. This means that system developers and IT professionals operating in universities would be in a better position to redesign websites and E-learning systems in such a way that it improves the user experience of the system and therefore improves the likelihood of its uptake. Easy navigation is a key to success for Jordanian users.

Also, this perceived dominant effect of perceived usefulness allows system developers and IT professionals to incorporate functional information, services and training and
promotional opportunities into their websites and other operations. Together, this can drive a better service for everyone concerned and develop users' confidence in the usefulness and value of the E-learning systems on offer.

One other result that this study has brought up is the perception that those working and studying in academia see all social norms, support, and drivers of behaviour in a different way. This is, obviously, due to their cultural differences. It is recommended, therefore, that higher educational management should classify the particular sectors accordingly and design precise information for explicit social groups or bodies.

One way of doing this, might, for example, be where an administration assumes the responsibility to begin locally based programmes that improve levels of learning efficiency. This kind of support from either local or national government, or from an organisation’s own administrative body, does have the potential to influence IT acceptance. This would be achieved by the introduction of specialised education and training programmes, which improve people’s perception of the ease of use of the system in question. Moreover, the provision of a greater choice of applications and software solutions designed to be used by the specific users of that institution, or more widely in the Jordanian, Arab and developing world context respectively could also be useful. These kinds of tools have a potential use and relevance that, while difficult to measure accurately, would certainly be of tremendous use in helping people to accept new technology and E-learning systems.

University management may also be able to play a positive role by encouraging their academic and non-academic staff alike to take up new technological systems, by offering training, incentives and supporting new uses of any such system by users and academics. Also, a comparison between existing systems and the impact of new ones would also prove worthwhile. In conclusion, it seems quite clear that more active support of new technology in the academic context, and supporting everyone involved, will ultimately augment acceptance of the technology.
7.5 Recommendations

E-learning systems are normally learned due to the motivational theory. Essentially, people are motivated to use E-learning systems for a variety of reasons whether it’s an organization wanting to develop or a student wanting to become more efficient and self-regulatory. For instance, many nations encourage people to keep using IT systems so they are updated with the latest technologies for a variety of reasons; an example of this would be students wanting to prepare for a future job. In other cases, students may not want to fall behind in comparison to their peers and keep learning to catch up. It is important for students to have access to these E-learning systems as they provide a myriad of benefits. Aside from creating a better learning environment, such systems can also provide additional opportunities to learn with new systems that are effective. The following bullet points are suggested for any further research activity in this field:

- In any questionnaire in further research, the population has to be inclusive by involving lecturers, business people, students, educational authorities and the University deans or presidents. Make sure the number of respondents is as big as possible to guarantee good level of confidence. The analysis by SPSS has to be confined in each type such as if the question answer is quantitative, categorical and multinomial to find the high accuracy index of regression in each type of questions. The respondent’s population has to be balanced so it can contain different demographics such as age, gender, city or village population and the level of income.

- The educational institution should also focus on the attitude and perspective towards E-learning; this means that they construct motivation towards E-leaning by showing it in a positive light. As previously mentioned, the motivational theory is a big factor in people using the E-learning system. The institutions with the system have to try and motivate people to learn the system so that they have a positive perspective towards it. The educational institute has to emphasize E-learning where a lot of such courses are offered and are easy to use as well. The
institution has to synchronize all their offerings and efforts based on the E-learning system to find future success with it.

- Furthermore, despite how effective and useful E-learning models are, they have to be practical. In other words, these systems have to be implemented in a way where they are user friendly and acceptable towards the students. These students need to be able to learn and understand the system, which means that the E-learning system is user-friendly as well as having its orientation around the content for success.

- Additionally, E-learning models need to be expanded and implemented in other uses as well. For instance, E-learning can be used by researchers also to expand its scope and benefit. Thus, the potential for this system is great, as it should be applied throughout the institute and beyond. Once this system is implemented in other places, it will be used commonly by all including students.

- Another method to use the E-learning model is to develop some aspects from the profit or business world. This would mean marketing and implementing it based on the free market so that it follows the same conventions of such an institution. The free market provides many opportunities to overcome lag and delays as government and educational institutions are often plagued with them.

- Finally, one way to actually enhance the E-learning model or to develop is to basically research it according to Arab culture and society. The educational institutes have to initiate research programs to effectively use and implement this system practically to find success.

Essentially, it is about the future of E-learning systems and what their place will be in Arab society. It is important that E-learning systems get the benefit of Arab institutions backing them so they can have a regular place in society. Without some sort of incentive, it is difficult to practically have it in place Middle East countries. The problem is that there needs to be a market incentive for any real change to come in Jordan. Typically, change happens when it is incentivized in some monetary benefit. Without this aspect with E-learning systems, it is
unlikely that the system would be implemented effectively in these institutions. The European free market is a strong example to see how fast systems can be implemented if there is a monetary reason behind it. If this free market system can be implemented with E-learning systems in Arab Countries, then the speed and effectiveness of its implementation will be strong which one way to approach it is. The problem with non-profit systems is that they take a while which is why E-learning systems may not have been implemented even though the technology has been developed. This technology is relevant towards the future but it is still behind based on what is needed to grow towards the future. Overall, it is a challenge to change perspectives and the system in Jordan, as there will always be resistance to change or simply a lack of concern to want to see anything actually implemented.

7.6 Limitations of the Study

The constraints of this research can be best summed up below:

1. This study took up a cross-sectional approach. This cross-sectional study demonstrates a snapshot, and does not reflect how someone’s attitude and behaviour may change over time. More in-depth study that takes advantage of a longitudinal design would help to evaluate prevailing attitudes towards existing government E-services and how they have changed over time.

2. This study applied Hofstede's framework regarding national culture. Although Hofstede’s work been widely used and cited, a number of people working in the field have criticised it given that there are some areas of methodological weakness (Baskerville, 2003; McSweeney, 2002; Fang, 2003). Further research work may have to take into account these weaknesses.

3. The study relied upon a single case study to spot the forces that influence E-learning system acceptance in Jordan. It would be much better in future to employ multiple case
studies so as to create more diverse factors that arguably affect E-learning acceptance (Al-Shehry et al, 2006) by considering the multi-dimensional aspects of the study.

4. The final limitation comes from the geographical location of this study: Jordan. Although, the findings do seem to be generally applicable to other Arab countries that share a similar demography with Jordan and provide similar E-learning systems, the results are not necessarily predictive of other Arab countries, especially of those who are behind Jordan in the use of E-learning, or those ahead, as in the oil-rich Persian Gulf states.

There may also be degrees of resistance due to cultural factors in such rich countries as Saudi Arabia. Therefore, more studies in these different countries would arguably add weight to the findings of this study. Also, the recent Arab spring and the political changes in the region may have altered some of the cultural and demographic equations, thereby influencing the acceptance of new technologies like E-learning systems.

Despite these limitations, this study should offer useful insights into the study of the acceptance and usage of E-learning, and help its diffusion.

7.7 Future Directions

This study is the first iteration of a number of studies required to research this field adequately. It has followed a cross-sectional design, as previously mentioned in section 6.4. It would therefore be useful to carry out a longitudinal study to examine whether or not the relationships between variables are constant over time. Given changes that occur as part of cultural development in every context, this is unlikely to be the case for very long.

Davis (2007) indicates that the TAM model requires extensive theoretical expansion and clarification over a projected time scale. One possible modification to the original TAM
would be to substitute perceived usefulness with perceived public value, and also to re-calibrate Hofstede’s cultural dimension indices for use in the Arab world. This is because cultural dimension indices are based on data gathered nearly two generations ago, long before the internet phenomenon was what it is - indeed, before today’s information world was even a reality. The shift of the internet from what was a minor military system before morphing into an academic tool, and then into the cultural revolution that it has become today, means that the forces of globalisation have increased pressure on the peoples of the Arab and developing world to dramatically adjust, if not overthrow, their existing cultural values in virtually every aspect. The Arab World, like the rest of world, has changed in terms of values, interest and habits.

The validity of Hofstede’s dimension scores is therefore something that should be approached with more than a small amount of scepticism, even if the basic concepts themselves still apply. More modern data does, however, exist: The Global Leadership and Organisational Effectiveness (GLOGE) project is one such source (Kabasakal and Bodu, 2002).

The results discovered in this study are, it would be safe to say, helpful for Jordan’s and other Arab Countries’ E-learning system planning processes. Better accuracy, though, might be achieved with comparative case studies. These would be useful in assisting the matching of the findings of this study with other developing countries. Carrying out similar studies in other countries that share cultural characteristics with Jordan would be effective in validating whether the assumptions made are correct, which could then affirm or extend its results.

Future research can also benefit from customized social research techniques. One possibility of innovation can be to choose a different type of population. For instance in this research, the researcher has employed students, professionals and IT experts as interviewees. Future researchers can include policymakers and academicians who can provide a different perspective on the topic. Crowther & Lancaster (2012) expounds this
claim and notes that broadening the scope of population sample in social research, helps visualize new dimensions of the topic.

Another possibility could be use different statistical techniques. While interview and questionnaire methods are frequently employed social research tools, empirical analysis using quantitative tools such as MATLAB and GRADS can yield measurable and justifiable facts that are authentic. However, Bryman & Bell (2007) has explained the difficulty of quantifying social research topics. He notes that quantitative methods are usually difficult in case of such researches due to the abstract nature of the topic. To counter this, the researcher suggests that a mixed approach utilizing both qualitative and quantitative methods may be employed to elaborate findings of this research further. Thematic analysis of these findings can help direct research and make it convenient to follow the research study.

According to Creswell (2009), a larger population size signifies greater accuracy of results. While it is virtually impossible to account for the entire population, future researchers may seek to increase the number of people included in the sample. In addition to broadening the scope, increase in population size can lead to further accuracy. Larger surveys spread spatially over Jordanian institutes can give deeper insight into the E-learning practices and can also point out the differences in acceptance behaviours. Also, a longitudinal study based on temporal differences in the past few decades can help understand the evolution of e-learning systems in Jordan and can shed light on future rate of assimilation into the society. Bryman & Bell (2007) notes that longitudinal studies spread over a certain time period, help researchers predict sociological trends and therefore predict future behaviour.

Another possible recommendation for new research is to make separate questionnaires for different sets of respondents. This is because each segment represents a different institution and has different background. Moreover, respondents are in a better position to respond to questions from their own domains and there are greater chances of honest and
quality responses. Therefore, customized surveys can result in better quality data that can add value to the research.

Finally, assessment of e-learning trends against demographic factors such as age, gender and socioeconomic class segments can also yield interesting trends that can be valuable for public policymakers. This research has shown that there are certain differences in acceptance and usage of e-learning platforms on socioeconomic levels. Interlinking these differences with cultural and sociological factors using relevant theoretical frameworks can reveal important social conclusions that can improve future research on this topic.

7.8 Concluding Comments

Although there are substantial limitations to this study, the research undertaken has added significantly to E-learning system acceptance research and practice. This study has attempted to integrate cultural, social, political, and technological factors in the study of E-learning system adoption in the Arab world, specifically Jordan. On the conceptual front, this study has employed the technology acceptance model (TAM) and incorporated cultural aspects, norm evaluation, subjective norms, and system and information quality.

The research model created in this study may actually be able to serve as a basis for future research on E-learning system adoption. The results have shown the significance of technology adoption and the cultural, social, and political constructs that lead to the adoption of such systems. They have also demonstrated that intention to use is influenced by culture. This suggests that cultural constructs need greater attention in future with regard to E-learning system adoption, due to its significant influence on usage intention. In light of this, researchers and policy makers should reflect on the impact of these forces so as to set right the existing low-levels of E-learning system adoption in the Arab world, including Jordan.
References


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Appendices

Appendix 1  Interview Questions
Appendix 1: Interview Questions

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<td>1. Questions about background information will be used with all interviewees, for example age, education level, income status, position status, experience and anything related to the study.</td>
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<td>2. Could you tell me about the E-learning system used in Jordan?</td>
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<td>3. To what extent do Jordanian students and staff believe that the E-learning system has been adopted and used successfully/effectively?</td>
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<td>4. Could you tell me about the possibilities of adoption and using the E-learning system as an individual and as an organisation? How cultures affect that adoption?</td>
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<td>5.</td>
<td>How do students perceive E-learning systems compared to traditional learning systems?</td>
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<td>6.</td>
<td>What kind of strategies should universities use to change student and staff attitudes towards E-learning systems?</td>
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<td>7.</td>
<td>How could universities adopt and motivate students and staff to use E-learning systems?</td>
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8. What we can do to help individuals and academic organisations to accelerate the adoption of E-learning systems?

Thank you ....
Appendix 2: The Questionnaire

An Examination of Variables Influencing the Acceptance and Usage of E-Learning Systems in Jordanian Higher Education Institutions
Section (I): Classification information:

A. Demographic information:

1. Age:  less than 20 □  20-29 □  30-39 □  40-49 □  50 or above □

2. Gender: Male □ Female □

B. Educational Background:

High School Certificate □  HND Diploma □  Bachelor degree □  Postgraduate □

C. Monthly income

Less than 500 JD □  1000-less 1500 JD □  1500-less 2000 JD □  2000 JD and over □

D. Background of your Internet usage

A1. How long have you been using the Internet (years)? (Please √ only one answer)

| a | Less than 1 year | b | 1-5 years | c | 6-10 years | d | More than 10 years |

A2. At present, overall, how often do you use the Internet? (Please √ only one answer)

| a | Don’t use at all | b | Use five to six times a week | c | Use several times a day |

A3. What is your self-assessment about using the Internet? (Please √ only one answer)

| a | Low experience | b | Moderate experience | c | High experience |
Section (2): E-learning system acceptance

Please, indicate your choice by marking the appropriate answer alternative (“1” stands for “strongly disagree” and “5” stands for “strongly agree”):

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<td>You can consult an online discussion group when you need help.</td>
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<td>You can use the Internet to gather data.</td>
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<td>You can troubleshoot Internet problems.</td>
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<td>You can usually handle most problems that you find when studying online.</td>
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<td>You find most software applications you have tried to be difficult.</td>
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<td>You enjoy working with E-learning system.</td>
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<td>E-Learningsystem makes me much more productive.</td>
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<td>You are convinced of your ability to take advantage of computers when you study.</td>
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<td>You think it is hard to make computers do what you</td>
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You usually think it is simple to learn how to use new software applications.

Using E-learning makes studying more fun.

You always seem to be in trouble when you use E-learning.

You find it hard to use software you have used.

You like working with E-learning applications.

Some e-learning packages really make learning easier.

E-learning systems are good aids to learning.

E-Learning helps you save a lot of time.

When you use a computer you get worried thinking you might do something wrong and damage it.

Using e-learning aids the learning process.

Using e-learning enhances your effectiveness in studying.

Using e-learning in your study.
improves your knowledge.

You find e-learning to be useful.

You clearly understand what you need to do with your e-learning system.

If you have any comments to add, please use the space below:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Thank you for your time and effort in completing this questionnaire