# A STUDY ON READINESS AND IMPLEMENTATION OF E-LEARNING AMONG ACADEMIC STAFF AT JORDANIAN INSTITUTIONS OF HIGHER EDUCATION

A Thesis submitted to the UUM College of Arts and Sciences in fulfilment of the requirements for the degree of Doctor of Philosophy
Universiti Utara Malaysia

By
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**2012**

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# Abstrak

Kajian ini meneliti tahap kesediaan kakitangan akademik dalam pelaksanaan e-pembelajaran di universiti-universiti di Jordan. Soal selidik yang dibina merangkumi item-item berkaitan dengan faktor psikologi, pentadbiran, teknologi, afektif serta faktor perubahan. Soal selidik diedarkan kepada sejumlah 367 orang kakitangan akademik di bahagian utara, tengah dan selatan Jordan. Selain itu, penyelidik turut menemu bual seramai 24 orang kakitangan akademik. Penyelidik menggunakan kaedah kuantitatif dan kualitif yang menggabungkan penggunaan soal selidik dan temu bual. Penyelidik juga menggunakan statistik perihalan, ujian ANOVA Sehala, ujian-*t*, korelasi dan regresi hierarki untuk menganalisis data. Kajian ini memperlihatkan bahawa kesediaan kakitangan akademik dalam pelaksanaan e-pembelajaran adalah tinggi. Kajian ini turut mendapati bahawa kakitangan akademik menunjukkan peningkatan dalam pelaksanaan e-pembelajaran. Namun begitu, lebih banyak usaha perlu ditingkatkan bagi mengatasi beberapa masalah yang berkaitan dengan prasarana dan kekurangan peralatan dalam e-pembelajaran. Dapatan kajian juga menunjukkan bahawa tidak terdapat sebarang perbezaan dari segi tahap kesediaan di antara kakitangan akademik di universiti awam dan di universiti swasta dalam pelaksanaan e-pembelajaran. Dapatan kajian turut memperlihatkan bahawa tidak terdapat perbezaan statistik yang signifikan dari segi jantina, umur, pengalaman, jenis universiti dan kedudukan universiti dalam penerapan e-pembelajaran. Namun begitu, kajian ini menunjukkan bahawa dasar teknologi telah menyederhanakan hubungan antara kesediaan e-pembelajaran dengan pelaksanaan e-pembelajaran. Penyelidik menyarankan agar pihak universiti memberikan lebih banyak sokongan kepada para kakitangan akademik dengan menyediakan peralatan yang mencukupi yang boleh membantu mereka menggunakan e-pembelajaran. Selain itu, dasar perundangan yang lebih kukuh perlu diwujudkan bagi menyokong mekanisme pelaksanaan e-pembelajaran di universiti-universiti. Penataran komputer di universiti juga amat penting bagi memenuhi keperluan yang semakin mendesak khususnya dalam melaksanakan e-pembelajaran dengan lebih pantas dan berkesan.



**Kata kunci:** e-Pembelajaran, Kesediaan, Pelaksanaan, Pendidikan tinggi, Jordan

# Abstract

This study investigated the degree of the readiness of academic staff towards the implementation of e-learning in universities in Jordan. The questionnaire incorporated items that addressed psychological, administrative, technological, affective and change factors. The questionnaire was administered to 367 academic staff from the north, middle and the south of Jordan. In addition, the researcher interviewed 24 academic staff. Thus, the researcher integrated quantitative and qualitative methods which combined the use of questionnaire and interviews. The researcher used descriptive statistics, one way ANOVA, *t*-test, correlation and hierarchical regression to analyze the data. The study revealed that the academic staff readiness towards the implementation of e-learning was high. The study also showed that the academic staff was making progress, but more efforts should be made to overcome some hindrances related to infrastructure and lack of e-learning tools. The results also showed that there was no difference in the degree of readiness between academic staff in public and private universities towards applying e-learning. Furthermore, the results indicated that there was no statistically significant difference based on gender, age, experience, type of university and ranks in applying e-learning. On the other hand, the study revealed that technology policy moderated the relationship between e-learning readiness and implementation. The researcher recommended that there should be more support from universities in providing the academic staff with sufficient tools that assist the adoption of e-learning. In addition, a strong legal policy should be established to support the mechanisms of adopting e-learning in universities. Upgrading computers in universities is very important to meet the increasing needs for speed and efficiency in adopting e-Learning.



**Keywords**: e-Learning, Readiness, Implementation, Higher education, Jordan

## Acknowledgment

In the name of Allah, the most Beneficent, the most merciful. All praises and thanks are to Allah, the lord of the universe and all that exist.

I could hardly find the words to express my appreciation for my supervisors Assoc. Prof. Dr. Abdul Malek Abdul Karim and Assoc. Prof. Dr. Ahmad Jelani, who were very patient and supportive, nourishing and cherishing not just during my studies, but also for their help and guidance throughout my time at UUM University. Their patience and willingness to discuss aspects of this research were invaluable as were their insights into the topic as well as their enthusiasm for philosophical inquiry.

I also would like to acknowledge Prof. Nedal Hawamdih, who was my first contact at Mutah university who provided the path from which I was able to begin the doctoral program. I appreciate his support and help. I am also very grateful to my Dr. Yasin Namir from Mutah university, who provided unending advice for me on this research and helped me make connections between the academic world of theory and the reality of research in instructional technology and education as it was practiced in so many ways. Other professors, who were instrumental in developing my understanding of instructional technology, and education, include Dr. Nabeel Najar. His continued support, encouragement, and positive attitude made it easier to me to overcome all difficulties in this process. I am also, indebted to my friends especially Professor Yahya Ababnih, Dr. Aiman Nassoura, Dr. Fayez Alsoub, Dr. Abdulhameed Alenezi, Mohammed Alenezi, Hisham Kamel and Mohammad Mahasneh for their support and understanding during the entire process. My family made the best efforts to support me and never made me feel upset or tired. I cannot thank enough to my parents for giving me life in the first place and their endless support. I also would like to thank my brothers and sisters for their support. Last, but not least, I would like to give a very special thanks to my mother and wife, Rana she always has been there for me and to my lovely for their patience and understanding all the hard works I went through.

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# CHAPTER ONE

# INTRODUCTION

In this chapter, the researcher will discuss background information regarding e-Learning readiness and implementation. This background will be followed by the statement of the problem, research questions, research objectives and significance of the study.

## 1.1 Introduction

As a result of the tremendous development in using Internet and information technology, the world has become a global village, and accessing information nowadays has become available to almost every one regardless of where he/she is. Moreover, information technology has a dramatic impact on societies (Shoniregun & Gray, 2003). With the ubiquitous services offered by the World Wide Web (WWW) and the fast development of information tools and telecommunications technologies, there is a strong tendency to use information technology (IT) in education sectors (Woodfine & Nunes, 2006).

After the emergence of internet services, many educational centers around the world have attempted to make use of these tools for educational purposes. Because of the rapid increase in the use of modern technology, internet has become a key element in many universities because of its importance for administrative, academic staff and students (Lorens & Salanova, 2002). Internet has indeed became one of the most

important instructional tools and the most effective means of communication in colleges and universities (Noor & Agboola, 2005).

After the upsurge of internet in the mid 1990s, Watkins and Leigh (2003) pointed out that 1.6 million college students and more universities throughout the world took at least one online course. Additionally, more than half a million of those students were completing their degrees entirely online. So, it is evident that e-Learning can be considered as a very effective learning system (Sun & Cheng, 2007), and it can be exploited and enhanced by the development of technology. It can be applied everywhere, and at any time. By applying e-Learning, there is a possibility for producing new competent generations (Forcier, 1999).

On the other hand Wang and Chen's study (2006) revealed that there is still shortage of effective use of educational technology in the educational process. In the same line, they argue that teachers of certain subjects, such as History and Geography, hardly use information technology in their teaching

According to Resta (2006) e-Learning plays an increasingly important role in developing the economic and educational growth of industrialized nations, and it can play a significant role in preparing a new generation of teachers in higher educational establishments.

By accepting and adapting the new changes in the learning environment, many educational institutions started using internet to provide access for their students to register, buy books, attend lectures and participate in discussions. This is what can be

called the activation of technology in education (Lorens and Salanova, 2002). In this respect, Shoniregun and Gray (2003) argue that:

> "In today's rapidly changing electronic world (e-world) the key to maintaining the appropriate impetus and momentum in organizations and academic environments is knowledge. Therefore, continuous, convenient and economical access to training and qualification assumes the highest priority for the ambitious individual or organization. This requirement is met by electronic learning (e-Learning). E-Learning is one of the fastest growing areas of the high technology sector" (p.43).

Furthermore, Baptista-Nunes and Mcpherson (2002), (as cited in Rosenberg, 2001) mentioned that:

> "The biggest growth in the internet, and the area that will prove to be one of the biggest agents of change, will be in e-Learning." e-Learning has provided more opportunities for sharing information and interaction among individuals and groups"(p.9).

E-Learning is a self-learning process that depends on students more than teachers in using modern technology (Goel & Kumar, 2004; Jochems & Merrieboer, 2004). So, with the activation of technology, it is predictable that the role of lecturers will change in education as well.

Baptista-Nunes and Mcpherson (2002) pointed out that not long ago, students would sit in lecture halls, use pen and paper to note down what their professors are saying and writing on the board. With e-Learning the matter is very different; because this system is dependent on the internet, and this indicates that teachers' role in e-Learning is expected to be more flexible in the sense that they can now tutor from their offices or from their homes, in campus or outside campus, so their teaching is expected to be less constrained (Keegan, 2002).

In the same vein, Rasaratnam (2006) pointed out that educationists should think of new methods to face the evolving challenges of the new situation in a more efficient and expedient way. This system of e-Learning is conducted through educational software called (Instructional Software or Courseware) designed and developed by a competent team to provide the student with the teaching required on a computer screen (Sadik, 2007; Haverila & Barkhi, 2009).

So, it is expected that with the application of e-Learning, teaching methods are going to be changed. This implies not only changes in course models, but also in attitudes, in order to know the new challenges posed by e-Learning in general and higher education (HE) in particular (Baptista-Nunes & Mcpherson, 2002).

However, one of the challenges that face e-Learning designers is that there is no universally designed product. Akbaba-Altun (2006) explains this point and argues that universal design is a process which yields products (devices, environment, systems, and processes) that are usable by and useful to the widest possible range of people. Consequently, it is not possible to create a product which can be used by everyone or in all circumstances.

Joris and Berg (2003) pointed out that there is still a gap between material design and model design. They argued that the material still needs more preparation, more time and efforts to be designed properly in all forms. This is why the design of the format must be provided as a model to introduce material which is easily accessible for all. Additionally, Jochems and Merrieboer (2004), pointed out that there is a

massive and huge gap resulting from the recent development in information technology and in order to compensate for this gap, much preparation and training are needed.

The preparation process is the important part in the stages for the evaluation and designing of appropriate models, but we must choose the appropriate time and good design, after the preliminary examination in terms of the availability of the necessary infrastructure. This must be a concerted effort for the success of all participants in the process of teaching members of the university staff and students. The responsibility is borne by the university, because a significant change in the methods of education will occur in the university (Vooi & Dahalin, 2004).

In spite of the great expectations from applying and implementing e-Learning services, it is evident that there are many factors that can affect either positively or negatively the success of this new application (Ataizi, 2006). One of the factors that a researcher wants to explore is staff's readiness which can affect positively or negatively the application of e-Learning.

According to So and Keung (2005) staff readiness in using the technology will determine the success of e-Learning implementation. This study investigates e-Learning readiness and implementation in Jordanian universities, explores e-Learning implementation and provides detailed information on the use of e-Learning by university departments.

## 1.2 Problem Statement

With the proliferation of information technology and its subsequent beneficial uses in the area of the educational processes in Jordan, still there is a gap between the facilities that are provided by having a good infrastructure on one side, and the readiness of the academic staff to implement this new system (Iadat, 2004). Many academic staff members do not have enough experience about the use of e-Learning in education. There is a lack of clear direction on where e-Learning is heading and how teachers can plan for its effective implementation in their universities (Linckels, Kreis, Reuter, Dording, Weber & Meinel, 2009).

E-Learning and the World Wide Web (www) are becoming widely popular in all sectors. Also, the use of technology tools for teaching and learning based on the Web system is now rapidly expanding. Academic staff members have already realized some of the potential of these tools in their works. Past success of Web utilization was largely dependent upon users' attitudes and own skills towards using the Web (Daugherty & Funke, 1998).

The lack of knowledge, skills, training and the negative attitudes towards the use of technology are the main reasons that make the academic staff resist using e-Learning in their teaching (Sadik, 2007). On the other side, teachers need to develop skills and confidence in using e-Learning across their career (Harris & Hall, 2004).

The infrastructure of e-Learning refers to the equipments offered to the users, the wireless and wired internet services, printers, scanners, webcam, etc, without which the implementation of e-Learning becomes impossible (Aydin & Tasci, 2005).

However, "the problem of technology is not technology, but rather its implementation" (Jochems and Merriboer, 2004, as cited in O'Neill and Singh, 2004, p.3).

The use information and communication technology tools has made educators rethink and realize some of the potential of web technology in education. They made use of new input tools such as sound, video and web cam, etc. (Burges, 2003).

According to Daniel (1996), technology alone might not be the answer to all of the universities' problems. Furthermore, Aydin and Tasci (2005) point out that an organization might have enough resources for adopting e-Learning; but if it lacks the skills that are necessary to use these resources, the result might be failure.

However, before implementation, e-Learning requires that all teachers upgrade their information and communication technology (ICT) skills in accordance with their experiences in the ICT field; but still several initiatives are going slowly in order to upgrade the teachers' ICT skills to be used in their professional performance in the educational process (Deepwell, 2007).

However, many of the academic staff and administrators in Jordanian universities are novice technology users, who use computers only for the basic functions, such as word processing and PowerPoint presentation (Aldojan, 2007). Most academic staff have little experience or training in the knowledge and skills needed to use technology effectively (Noor & Agboola, 2005).

Many studies indicated that the implementation of e-Learning requires support and policies by the universities to enhance the staff members in applying the techniques. Bani Domi and Alshannag (2008), Goi and Ng (2009) pointed out that implementation of e-Learning by academic staff depends on the technical and administrative potentials by academic staff as well as the availability of modern hardware.

Darab and Montazer (2011) found in their study that the laws and regulations are the most important indices for the implementation of e-Learning systems by the Iranian universities. This imposes the need to change the policies that will support e-Learning implementation. On the other hand, legislations and regulations urge students to attend lectures anytime, now the educational process of learning is changing and academic staff must be ready for this change.

Literature is abundant with evidences that the implementation of e-Learning in the Arab world is still need more time. Wang and Chen (2008) argue that there are certain obstacles in the implementation of e-Learning and distant learning. In addition, there are some issues that will have an impact on implementing e-Learning such as policies.

Additionally, also the problem in this study is that taking the decision to adopt e-Learning in their teaching, as well as any other educational fields, it does not take into account teachers' attitudes as part of decision-making before implementing e-Learning (Abu Samak, 2006).

This problem can be highlighted that Jordan, as a developing country, has embraced e-Learning in education as a means to progress and modernization. Despite the mandating of e-Learning in all Jordanian public and private universities, there is little research specific to the locale to inform such a mandate (Abu Samak, 2006).

At present, only limited studies have been carried out on the use of the technology tools for academic work by academic staff in Jordanian public and private universities (Aldojan, 2007). He examines and determines the level of Internet and implementation of academic staff in Jordanian public and private universities regarding the use of technology tools in their academic work. This study investigated how academic staff members in Jordanian public universities use technology tools in their works. It also examined the readiness of academic staff regarding the use of technology tools in their teaching.

Given the relative paucity of research in this area while conducting this present study, it was of particular interest to understand the level of implementation of e-learning by academic staff in Jordanian public and private universities. As such, this work is a continuation of previous studies that investigated the level of readiness of academic faculty members of both private and public Jordanian universities in implementing modern technology tools and e-Learning in teaching.

Based on the above arguments, this study attempts to explore the readiness of the academic staff in the Jordanian public and private universities towards the implementation of e-Learning. .

## 1.3 Objective of the Research

The objectives of this research are to study and assess e-Learning readiness and implementation throughout Jordanian public and private universities. In addition, it aims to generate insights and understanding and to find answers to the questions of how, why, when, and where regarding the implementation of e-Learning.

The study will attempt to provide an understanding of the framework of e-Learning readiness of academic staff which includes some variables. The researcher will study e-Learning readiness in public and private universities in Jordan and the obstacles that the academic staff may face during the application stage like their readiness for change and the availability of the infrastructure.

This study aims at focusing on e-Learning readiness in the public and private universities in Jordan related to the readiness for change and response to the application of e-Learning. The main objectives of the study are to:

1. Investigate the degree of e-Learning readiness in public and private universities.
2. Determine the most important tools that are commonly used in e-Learning implementation.
3. Investigate the differences in e-Learning readiness in terms of gender, rank, age, computer experience, specialization and type of university.
4. Investigate the relationship between the e-Learning readiness factors.
5. Investigate the relationship between e-Learning readiness factor and implementation.
6. Identify the factors that contribute to e-Learning implementation in the Jordanian universities.

7. Investigate the role of policies regarding the relationship between e-Learning readiness and implementation.
8. Identify the obstacles facing academic staff in applying e-Learning in their teaching.
9. Determine the view of academic staff towards using e-Learning.

### 1.4 Research Questions

This study will answer the extent to which the readiness of academic staff in the e-Learning implementation in Jordanian universities. This will be carried out through findings from the answers on the following questions:

1. What is the level of e-Learning readiness in the Jordanian public and private universities?

2. What are the most important tools that are commonly used in e-Learning implementation?

3. Are there any differences in e-Learning readiness in terms of gender, rank, age, computer experience, specialization and type of university?

4. Is there any relationship between the e-Learning readiness factors?

5. Is there any relationship between the e-Learning readiness factors and implementation factors?

6. Which factors contribute to e-Learning implementation in the Jordanian public and private universities?

7. Does policy moderate the relationship between e-Learning readiness factors and implementation?

8. What are the obstacles facing academic staff in using e-Learning in their teaching?

9. What is the academic staff's view towards using e-Learning in teaching?

### 1.4.1 Research Hypotheses

Based on the above research questions the researcher proposes a research model with some hypotheses relative to the e-Learning readiness and implementation. In this model, e-Learning readiness is measured by an objective measure (score) and implementation in subjective measure.

The hypotheses given in this study are based on the above research questions and on the literature review as well as previous studies. This set of hypotheses cover the relations among independent variables in the research model and the dependent variable, with regard to the relationship between the e-Learning readiness factors and implementation factor. This study consists of the following hypotheses:

$H_0$1: There is no significant difference in e-Learning readiness among academic staff of Jordanian universities based on gender at Jordanian universities.

$H_0$2: There is no significant difference in e-Learning readiness among academic staff based on specialization at Jordanian universities.

$H_0$3: There is no significant difference in e-Learning readiness among academic staff between public and private Jordanian universities.

$H_0$4: There is no significant difference in e-Learning readiness among academic staff based on rank at Jordanian universities.

$H_0$5: There is no significant difference in e-Learning readiness among academic staff based on computer experience at Jordanian universities.

$H_0$6: There is no significant difference in e-Learning readiness among academic staff of Jordanian universities based on the age at Jordanian universities in Jordan.

$H_0$7: There no significant relationship between human factors and administrative factors of e- learning readiness.

$H_0$8: There is no significant relationship between human factors and technology factors of e-Learning readiness.

$H_0$9: There is no significant relationship between human factors and attitude factors of e-Learning readiness.

$H_0$10: There is no significant relationship between human factors and change factors of e-Learning readiness.

$H_0$11: There is no significant relationship between administrative factors and technology factors of e-Learning readiness.

$H_0$12: There is no significant relationship between administrative factors and attitude factors of e- learning readiness.

$H_0$13: There is no significant relationship between administrative factors and change factors of e-Learning readiness.

$H_0$14: There is no significant relationship between technology factors and attitude factors of e- learning readiness.

$H_0$15: There is no significant relationship between technology factors and change factors of e-Learning readiness.

$H_0$16: There is no significant relationship between attitude factors and change factors of e- Learning readiness.

$H_0$17: There is no significant relationship between human factors of e-Learning readiness and implementation.

$H_0$18: There is no significant relationship between administrative factors of e-learning readiness and implementation.

$H_0$19: There is no significant relationship between technology factors of e-Learning readiness and implementation.

$H_0$20: There is no significant relationship between attitude factors of e-Learning readiness and implementation.

H021: There is no significant relationship between change factors of e-Learning readiness and implementation.

H022: Technology Policy does not moderate the relationship between e-Learning readiness factors and implementation.

### 1.5 Significance of the Study

The significance of the study resides in the fact that it targets a group of workers at the higher education institutions in Jordan, namely, the academic staff who teach in the light of having an efficient means which helps them achieve their goals in enhancing the process of teaching and learning in Jordan in general. A limited number of studies addressed to know the e-Learning level from academic staff at Jordanian universities, and investigating the attitudes of teachers towards the use of e-Learning in their works.

This study is significant for the following reasons: To provide Jordanian universities with information about e-Learning readiness. This will lead to further research in academic staff knowledge of e-Learning and their attitudes toward this tool in the field of learning and teaching. Additionally to provide universities' presidents with future plans about their needs regarding computers as well as new understanding and insights concerning the variable that affects academic staff readiness of the Internet and their attitudes toward e-Learning, and to help researchers in the educational

fields to apply e-Learning readiness to their field and lead to further development in the use of e-Learning in higher education.

On the other side to enrich the libraries in the Arab world with information about e-Learning readiness and provide new information for other developing countries that may have a situation similar to that in Jordan. Also to help researchers open the door for further investigations in carrying out more comprehensive studies in e-Learning readiness and to be able to improve its effective use, also to help them plan for more professional training and encourage academic staff to use e-Learning and to develop the general framework for readiness about e-Learning implementation in the higher education (HE). To help decision-makers in realizing the obstacles of e-Learning readiness and set appropriate solutions.

Furthermore, this study will assist in providing recommendations to improve the current state of the use of e-Learning by academic staff and provide some suggestions for more studies in this field, on the other side to provide the new web sites with more information about e-Learning readiness and the level of readiness of academic staff with the use of e-Learning in Jordanian public and private universities.

Finally, this study provides more knowledge that may be of value to other researchers in others developing countries. In addition, based on the results of this study, other research can be conducted in various parts of the world to compare and contrast with Jordan.

## 1.6 Scope of the Study

This thesis provides a theoretical framework that is meant to identify the factors that lead to implementation of e-Learning in a university environment, and to explore the relationship between e-Learning readiness. The participants in this study involved 338 academic staff from different colleges in public and private universities in Jordan.

That begins in addressing the value of personalized e-Learning readiness in the academic environment, as this study is interested in individual staff in the organization. It will also cover the academic staff holding different academic ranks. Professor, Associate Professor, and Assistant Professor, in public and private universities in Jordan.

On the other hand, the study hopes to get a clearer understanding of which factors affect Academic staff towards e-Learning readiness. The scope of this study is focused on e-Learning readiness in Jordanian public and private universities for the academic year (2009-2010) across the following factors: Human factors, administrative factors, technology factors, attitude factors and change factors.

## 1.7 Operational Definitions and Measurement of Factors

### 1.7.1 Definition of Implementation

According to Nyvang (2006), implementation of ICT is defined as "the process leading from one practice to a new practice where the new practice is characterized by the use of ICT, (p.2).

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### 1.7.2 Definition of Readiness

According to Bowles (2004), it is defined as "How ready the organization is on several aspects to implement e-learning", (p.6). According to So and Swatman (2006), readiness is defined as being: " prepared mentally or physically for some experience or action e-Learning-readiness should be determined before organizations introduce e-Learning"(p.1).

### 1.7.3 Definition of E-Learning

E-Learning is supported by communications technology such as television, videotape, computers, e-mail, and mail. Begicevic and Divjak, (2006) defined E-learning as "A type of learning supported by information and communication technology (ICT) that improves quality of teaching and learning", (p.3). Also, it refers to learning supported by the internet, and it can be done inside classrooms. It can be done as a support to conventional teaching, such as when students work on the web at home or in the classroom. It can also be done in virtual classrooms, in which the entire coursework is done online. In this case, it is part of distance learning (Turban & Wetherbe, 2005).

### 1.7.4 Human Factors

Human factors refer to those factors that reflect the motivational skills of the individual driven by internal and behavioral aspects. The researcher in this study identifies three variables are; Psychological readiness variable, motivation variable and confidence variable.

#### 1.7.4.1 Psychological Readiness Variable

Mangal, (2007), defined it as "the science which aims to give us better understanding and control of the behavior of the organism as a whole", ( p.2). In this study, it refers to a teacher's intrinsic desire for developing him/herself and collaborating with his /her colleagues for applying e-Learning programs. To measure this variable, the researcher developed eight items that addressed teacher's readiness to apply e-Learning, the suitability of applying e-Learning in teaching, the desire to discuss issues related to e-Learning, a teacher's expectation from using e-Learning and to what degree a teacher is ready to maximize his/her performance by using e-Learning.

#### 1.7.4.2 Motivation Readiness Variable

According to Woolfolk (2010), " Motivation is usually defined as an internal state that arouses, directs and maintains behavior", (p.3). In this research, it refers to a teacher's persistence to use e-Learning in all circumstances regardless of the challenges he/she might face.

#### 1.7.4.3 Confidence Readiness Variable

According to Cairns's (2000), Concept of confidence refers to "confidence in the ability to take appropriate and effective action to formulate and solve problems in both familiar and unfamiliar and changing settings" (p.1). In this study, it refers to a teacher's unthreatened trust in his/her ability on using e-Learning professionally in order to create an interactive learning environment by using varieties of software and e-Learning resources.

### 1.7.5 Administrative Factors

Administrative factors refer to those factors that universities will provide to academic staff to help them acquire more skills in using e-Learning in their teaching. These factors comprise knowledge, training, environment, and human resources.

#### 1.7.5.1 Knowledge Readiness Variable

According to Fawcett (2003), “This factor refers to particular knowledge readiness reactions toward implementing e-Learning in university education”, (p.34). Here, it refers to a teacher’s background about using computer programs and his/her desire to keep developing his/her communication skills that will maximize his/her teaching performance.

#### 1.7.5.2 Training Readiness Variable

According to Chapnick (2000), "Training readiness refers to professional preparation of teachers’ skills in using new tools in their work place to help him or her attain a required level of knowledge or skill", (p.23). In this connection, the researcher uses the term as the continuous process that caters for providing academic staff with relevant as well as useful knowledge and skills that can bring about efficient performance.

#### 1.7.5.3 Environment Readiness Variable

According to Chapnick (2000), "It considers the large-scale forces operating on the stakeholders, both inside and outside the organization including such issues as technical constraints of the delivery platform , network, and software", (p.6). This refers to the policies and the institutional attitudes that either hinder or support e-

Learning. It also refers to the medium of instructions by which e-Learning is conducted. It further refers to the staff collaborative relationship in applying and using e learning.

#### 1.7.5.4 Human Resource Readiness Variable

According to Contino (2005), human resource readiness is defined as: "The leadership supported by the right staff, including, management team, and all other employees", (p.54). In this regard, the researcher applies such term to refer to the facilities and technical support that are offered to the academic staff in order to facilitate using e-Learning adequately.

### 1.7.6 Technology Readiness Factors

It refers to the availability of the service of computers and internet, communications skill, and the equipment for providing assistance in the implementation of e-Learning. It includes:

#### 1.7.6.1 Technological Readiness Variable

According to the National Science Foundation (2008), it is defined as "High technology industries have a great dependence on science and technology innovation that leads to new or improved products and services", (P.76). Consequently, it relates in this study to the accessibility of using updated technology in the field of e-Learning in addition to the necessity of having a positive attitude towards using this technology skillfully.

#### 1.7.6.2 Equipment Readiness Variable

According to Haverila and Barkhi (2007), it is referred to as "The availability of hardware, software, network, and ICT literacy", (p.23). In relation, the researcher uses this term to refer to the information and communication tools which are used in e-Learning. These tools include computers, Internet, E-mail, networks, and high internet speed.

#### 1.7.6.3 Communication Readiness Variable

According to Walrand and Jean, (1991), it is referred to as "Communication networks are arrangement of hardware and software that allows users to exchange information at different areas, as well as allowing them to exchange messages and computer files", (p.43). Here in, it refers to the skills needed to send and receive information related to e-Learning. This communicative process can include sending and receiving assignments, conducting lectures and holding conferences, etc.

### 1.7.7 Attitude Factors

Eagly and Chaiken (1993) state that attitude factors refer to “A psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor”, (p. 15). In this work attitude factors refer to the extent of accepting the implementation of e-Learning in the learning process. These factors are divided into four parts: anxiety, confidence, liking, and usefulness:

#### 1.7.7.1 Anxiety Variable

Henderson, Deane, and Ward (1995) refer to anxiety variable as "the drive that motivates the organism to avoid the stimulus for anxiety", (p.3). In this study it refers

to the emotional responses that affect the general conduct of the individual in the performance of work.

#### 1.7.7.2 Confidence Variable

According to Lloyd and Gressard (1984), it is referred to as "ability to use or learn about computers", (p.3). Practically, in this research it refers to the usage and implementation of modern technology in the practical part of the learning process.

#### 1.7.7.3 Liking Variable

According to Lloyd and Gressard (1984): Liking refers to "liking computers or enjoying working with them", (p.3). In this aspect, it relates to the willingness of the individual in using and implementing modern technology in the practical part of the learning process.

#### 1.7.7.4 Usefulness Variable

This term refers to the beneficial value in using and implementing modern technology in the practical part of the learning process.

### 1.7.8 Change Factors

This refers to the ability to create new innovation in the implementation of e-Learning; they include:

#### 1.7.8.1 Self Development Readiness Variable

According to Khan (2005) **"**A process you should use to enhance previously acquired skills, knowledge, and experience. Its goal is to increase your readiness and

potential for positions of greater responsibility. Effective self-development focuses on aspects of your character", (p.123). In this study it refers to the willingness of staff to voluntarily develop themselves regardless of their time and budget constraints.

#### 1.7.8.2 Innovation Readiness Variable

According to Subrahmanya (2005): "Innovation refers to the economic application of new idea and technological innovation is described as a new process which transforms idea to the commerce"(p.269). This refers to the necessary changes which can bring about a more efficient e-Learning environment.

Also, it refers to new concepts or products that are derived from individual ideas or from scientific research. Innovation is using web developed resources and other higher order academic applications of computers in the education process. On the other hand, innovation is a new idea to be implemented that is perceived as new by individuals or other units. Innovation attributes can explain the rate of innovation adoption.

### 1.7.9 Technology Policies

According to Iadat (2004) technology policies associate with "New regulations for teaching and learning to improve real-time instructional support available to teachers who use teaching"(p.125). This refers to the legal legislations and regulations which support the implementation of e-Learning.

### 1.7.10 Assistant Professor

He/she is the academic person who is in the lowest academic rank, and has a Ph.D. He/ She needs to spend at least five years and submit five indexed research papers to get the promotion to the associate professor rank**.**

### 1.7.11 Associate Professor

He/ she is an academic person who is in the mid-level position and holds a Ph.D. He/ She needs to spend at least five years after the rank of assistant professor and submit five indexed research papers to get the promotion to the associate professor rank**.**

### 1.7.12 Professor

A professor is the rank given to an academic person who holds a Ph.D. He/ She needs to spend at least five years of service in a university after the rank of associate professor and submit a sufficient number of indexed research papers to get the promotion to the professor rank**.**

## 1.8 Summary and Organization of Remaining Chapters

This thesis is organized into five chapters. The first chapter introduces the nature and the objectives of the study. It outlines the results of the need to establish a holistic e-Learning readiness model for the academic staff towards e-Learning and explains some issues which have impact on the e-Learning readiness followed by developing e-Learning readiness in the workplace. It ends with an outline of the various chapters found in this thesis. The second chapter provides a literature review. The third chapter describes the research design and methodology. The fourth Chapter

presents the findings of the study. The fifth chapter summarizes the findings of the investigation, and presents some recommendations based on the findings. Based on the introduction and background provided in the first chapter, the next chapter presents a review of various studies conducted on e-Learning readiness, organized into ten units: Introduction, the definition of e-Learning, the Importance of e-Learning, key to success of e-Learning in education sector, e-Learning obstacles, e-Learning framework, e-Learning tools, e-Learning readiness factors, education in Jordan, theoretical framework and conclusion.

# CHAPTER TWO

# LITERATURE REVIEW

## 2.1 Introduction

Dewey (1991) points out that: **"**The goal of education is growth and the goal of growth is more growth. We find education is not a preparation for life, education is life itself" (p.54). With the rapid growth of internet (Davis & Wong, 2007), internet users require more enhancement and harnessing of education, training programmers, and skills development (Ortiz, 2001). This is why, the former American president, Bill Clinton called for the intensification of efforts to connect all American schools to the Internet. In the same year, the introduction of the federal school academic Internet project was the first school to teach online in the state of Washington. The application of e-Learning was not only confined to the United States but also extended to many countries such as China by the University of Hong Kong.

As far as education in the Middle East is concerned, Abu Samak (2006) argued that there are numerous international initiatives to encourage these countries to integrate e-Learning in the education sector. An example of this is the United Nations Development Program which has sought to help Arab countries by bringing about enhancements in their ICT learning systems for the sake of development. Similarly, the Egyptian minister of Education emphasized that e-Learning would be applied to meet the needs of the country in terms of making education more advanced and up to date (Amer, 2005).

However, e-Learning has become a major domain of debate in the educational profession (Isackson, 2001). The operational definition and the educational policy of e-Learning may differ from place to another. e-Learning will not just be introducing new technology for learning and teaching, but it will also introduce a new method of learning which needs special specifications such as the preparation and training of the academic staff and enabling them to understand what is meant by e-Learning and what the potential advantages can achieve (Almusaswi & Abdelraheem, 2004).

## 2.2 The Definition of E-Learning

With the rapid growth of network, many definitions have been given to e-Learning such as: Web-Based Learning: WBL, Web-Based Instruction-WBI, Web-Based Training–WBT, Internet-Based Training–IBT, Distributed Learning-DL, Advanced Distributed Learning- ADL, On-line Learning-OL, Mobile or m-Learning, Nomadic Learning, Remote Learning, Off-site learning, and a-learning: anytime, anyplace, anywhere learning (Khan, 2005).

Further, Keegan (2002) points out that e-Learning comprises the following terms: distance education, distance teaching, distance learning, online learning, online education, web-enabled education, distributed learning. Also, terms like "electronic-learning" are used at the present time (Macpherson & Homan, 2005; Mutual, 2002).

Khan (2005) argues that “e-Learning is intended to deliver information to the learner in the shortest time”. (p.6) in the same context, Begicevic, Divjak and Hunjak (2006) argue that e-Learning is: “a type of learning supported by information and communication technology (ICT) that improves quality of teaching and learning”.

(p.3). Similarly, Baptista-Numes & Mcpherson, (2002) point out that "e-Learning refers in this stage to the effective integration of a range of support to traditional teaching and learning". (p.2). Hadjiathanasiou (2009) states that e-Learning can occur in the halls of the universities, from home and at the work place, not limited to one place.

From the above definitions, it can be assumed that there are numerous definitions of e-Learning and the most common feature is that it is a type of a teaching method that uses the mechanisms of modern communication, computer networks, multiple modes of voice and picture, the drawings, and electronic libraries, as well as Internet portals, either remote or in the classroom. Furthermore, it is supported by communications technology such as television, videotape, computers, e-mail, and mail. It relies upon the Internet /World Wide Web. It can be formal and informal and or can be used for teaching and professional development via any electronic methods involved but not limited to the internet, CD-Rom, videotape, and DVD. Thus, e-Learning enables students to learn whenever and wherever they want. It provides flexible access to the teaching materials at the learners' convenience'. Based on the above it seems valid to explore the potential advantages of e-Learning in detail.

### 2.3 The Advantages and the Importance of E-Learning

E-Learning is one of the most important systems that has many useful applications for improving the quality of teaching and learning. This argument is much supported by Bates (2005) who pointed out that e-Learning comprises different teaching methods such as information management, creative thinking, critical thinking, problem solving and collaborative learning.

Likewise, Karmakar and Wahid (2005) highlight that expanding e-Learning applications brings many attractive opportunities for organizations, such as (1) saving time, cost and effort,(2) satisfying educative needs of learners from remote areas,(3) providing self-education opportunities,(4) providing positive impact on learning process,(5) broadening opportunities to present the course content in a way that better suits the needs of the learners,(7) overcoming learning problems in certain subjects such as languages and sciences,(8) providing mechanism of collaborative learning. Furthermore, Harriman (2007) mentioned nine advantages of applying e-Learning in education as follows: (1) the accommodation of multiple learning styles, (2) offering individualized instruction, (3) providing self-paced instruction, (4) offering on-demand access, (5) allowing collaborative learning, (6) engaging users, (7) increasing retention, (8) increasing consistency and (9) tracking learners.

Reflecting on the advantages of e-Learning, we can realize its importance and usefulness. To overcome the limitations of time and space, e-Learning is aimed at ensuring high levels of higher education for students in their residential places through the creation of an integrated e-Learning environment through the World Wide Web of the Internet. e-Learning does not need classrooms or directly face to face instruction from the professor; it allows students to exchange information through a special site on the Internet (Dan, 2001). So, it offers solutions to several challenges such as lifelong learning, and the ongoing demands for continuous professional development, and the drive to widen participation (Haverila & Barkhi, 2009).

Also, e-Learning can help academic staff to support and enhance learning (Contino, 2005). Moreover, it is a formal learning activity, which occurs when students and instructors are separated by geographical distance or by time (Haverila & Barkhi, 2009). Thus, e-Learning improves the flexibility and quality of learning (Nyvang, 2006). According to O'Neill & Singh (2004) E-Learning is considered, by many, as the only viable solution to the problem of delivering the resources required to facilitate lifelong learning. On the other hand, e-Learning is carried out within scheduled start- and end-dates, and assignment timelines. However, the times you choose to work are entirely up to learners. So, it is flexible and convenient without geographical barriers (Bigg, 2004).

Additionally, the role of e-Learning in the classroom can support teaching - although it will not replace teachers and textbooks, it makes them more effective. The design of distributed e-Learning is different from traditional classroom instruction in teaching and learning process, the traditional classrooms are space bound and a closed system, but e-Learning are more flexible in this process (Khan, 2005).

Furthermore, Amer (2005) points out that e-Learning is useful in the development of vocational teachers, in particular, who find it difficult to attend university classes. It is according to change in the way and method of collection of scientific research for the students in the performance of their duties. E-Learning can help to communicate with other foreign languages and learning process. Students of special needs can benefit from e-Learning with very minimum effort and cost. Society's provision of money to support research on e-Learning is very helpful in order to speed up the

process in finding the best e-Learning solutions and more benefits can be gained, and it would give the staff more time to spend on research (Fogerson, 2005).

Baker (2006) and Green (2000) pointed out that e-learning reduces costs. Similarly, Stockley (2004) stated that a good e-Learning project can save a lot of money. In a report published in 1997 in England, Lord Dearing proposed that more and more e-Learning should be used, and not only to resolve some problems arising from growing numbers of students and decreasing funding of universities (Woodfine & Nunes, 2006). Given that, the e-Learning program can be positive when it is used to save money or reduce the overall cost (Fogerson, 2005).

It is worth mentioning that, e-Learning should not be viewed as an alternative for the traditional classroom; however it provides a good level of knowledge, it offers flexibility for learners (Haverila & Barkhi, 2009). In the following paragraphs, we are going to explore how e-Learning can be a key element in providing successful education.

Literature is rich with evidence that implementing e-Learning at universities can be more time efficient. All members then potentially get more available work – time for research. Time considered very important to spend writing more articles and attending conferences.

### 2.4 E-Learning in Education

Technology has changed many aspects in our life; the way people live, work, and learn etc., that means there are many educational benefits that help individuals to

reach an output value of education greater than traditional education system (Marina, 2001). e-Learning is a consequence of the huge evolution in the sector of information technology, particularly, in the computer science. Therefore, it was essential to introduce the use of technology in the educational institutions as an important tool to improve the education process. Daniel (1996) mentioned that while technology alone might not be the answer to all of the university's problems, e-Learning can certainly play a key role regarding education problems.

In this regard, educational means have been re-evaluated, and necessary improvements have been adopted. Internet has been allowed as a mean of learning or the so called flexible e-Learning, where flexibility comes from the physical environment surrounding the student. So student can choose the right time and place for learning. There are also other e-Learning methods including open e-Learning, distance learning (Zoubi, 2006).

According to Watkins (2005) most teachers -of all ages- are not adequately prepared to effectively benefit from the technology-rich training opportunities offered by organizations.

Additionally, before starting with this system (e-Learning), we need to have a clear vision of education and innovation and the purpose of e-Learning implementation, this matter is indisputable, if we only knew the importance of implementation in education sector (Jochems & Merrieboer, 2004). A lot of researchers and educators devoted enough attention to the importance of the introduction of computers in the education process on a basis that, it is an excellent tool in the delivery of

information; however a number of researchers discussed such related ideas (Clark, 1984). Identifying practical e-Learning and technical skills is needed before implementing this system (Watkins & Leigh, 2003).

The critical factors for successful implementation of e-Learning systems at the educational departments are: previous experience of using technology; the technological infrastructure must be available; and the lecturer must have the new key elements to succeed with the e-Learning experience (O'Neill & Singh, 2004). Two essential skills for success in e-Learning are adapting old skills and habits from the traditional classroom to suit e-Learning and developing and applying new e-Learning skills and habits for e-Learning. From building a robust vocabulary of technology-related terms to adequately preparing for a debate in online discussion board and building the skills for e-Learning typically takes many of the study habits from the traditional classroom and applies them in new ways using technology. For example, learners can apply the cornell note-taking system even when they're reading a PDF file they downloaded from the organization's training (Watkins, 2005).

According to Blinco and Curtis (2004) the e-Learning implementation process is composed of many considerable and important components to achieve a successful process: portal application, web application, client application, software agents, web service providers, web service enabled tools, standards based services, repositories and web services management tools. Therefore, the implementation of the e-Learning process goes through some phases namely, system design and academic standards, management of programmer delivery, student development and support,

staff communication and representation, and staff assessment (Quality Assurance Agency, 1999).

Arab countries including Jordan have spent much money on the use of computer technology, but there is still a gap between the availability and utilization. Indeed Jordan is the leading Arab country in this regard, but it still needs a lot of time to achieve good goals (Alammari, 2004). The recent developments have been aimed to explore the use of technology in the educational programs, especially in universities which serve in the role of major generations (Gurr, 1997).

According to Abdul Karim and Hashim (2004), the success of online learning in higher education may be attributed to the following factors: sustainable government sponsorship, total commitment and support from top management, participation, cooperation and support from major universities, advanced technical skills, technical support, expertise in instructional design, marketing experience and skills.

The teaching style and teaching material must reflect the change in the real world. It has become universally recognized that education in all forms, has developed to be the basic platform and the main tool to achieve the hopes and aspirations of every human being and every nation (Arsham, 2002). Thus, the major change is that we have broadened the change perspective introduced. The primary emphasis continues to be on the concerns-based view; other perspectives are introduced to add to your overall understanding of change" (Hall & Hord, 2006).

To cope with the current demands, internet is now used in all spheres of life channeling to avoid the transmission of information in many of the traditional methods of searching between libraries; the benefit of e-Learning in academic institutions is now invaluable (Shelley, 1983).

All educational departments including faculty members consider that the system as appropriate when organized in clear and smoothly written prints as well as submitted and posted in a mode that some educated staff can afford it in a flexible fashion. Therefore, it has become clear that an appropriate interaction makes e-Learning a useful investment in educational institutions without any governmental impediments (Khan, 2005). Additionally, since the introduction of the World Wide Web and increasing global access to the internet, educational institutions from various educational sectors, universities particularly, have experimented to what is known as e-Learning process, while much has been accomplished, e-Learning process has been very important in our lives (Khan, 2005).

With the advent of the internet and the related technology, including the use of e-Learning, the educational institutions have been active in the production and development of learning materials needed for this type of e-Learning, particularly since the success of this system requires a planning and design, not just making it available to educated people (Khan, 2005).

Moreover, a result of the development of technical communication, learning techniques, evolution of life requirements and the inability to attend the university, all of these factors helped in the emergence of a pattern of education which later

became known as e-education. Some accredited universities in the United States and Europe applied e-Learning. An example of that is Rochester University of Technology and the University of Georgia's, which both decided to shift to e-Learning completely in the coming years (Roddy, 1996).

According to the above, the academic staff members have to learn to use the technologies on more levels, and this use depends on previous skills and knowledge. Additionally, the academic staff may also need support from the university leader about the design of the university. On the other side, they must improve academic use of the e-Learning, they should be informed on regular basis about any new information technology, such as word processes and databases. Studying the above advantages, we can safely classify them into the following points:

**1. The Accommodation of Multiple Learning Styles**

It is evident that students are different in their learning styles. Some of them can learn directly from a text; some can learn more effectively by using audio aids, others much prefer visual aids. The variety in learning styles among students makes e-Learning a necessity since it can address all these types of learning styles (Irfan & Dianne, 2006).

**2. Offering Individualized Instruction**

By accommodating multiple learning styles, e-Learning is also expected to be able to address individuals' needs by considering the different styles of instructions. Students can be assessed by being exposed to a text, an audio material or a visual

one. So, the assessment styles developed by applying e-Learning can create a fair environment that caters for the individual needs.

**3. Providing Self Paced Instruction**

When e-Learning is applied, the advanced learners are expected to move forward in their course without having a need to wait impatiently for the less advanced learners. In that way every learner can learn at his /her own pace.

**4. Offering on Demand Access**

When e-Learning is applied, a learner can freely determine when he/she wants to learn. This facility gives learner's flexible time how to study at the time and place they like.

**1. Allowing Collaborative Learning**

In e-Learning, learners do not feel isolated and maximize their own learning by interacting with each other. They can easily share their information.

**2. Engaging Users**

Having a variety of data and information presentation tools, students are going to have a very stimulating content which can engage them and reinforce their learning progress.

**3. Increasing Retention**

E-Learning can help to reinforce learners more consistently than other approaches.

**4. Increasing Consistency**

When the learning is captured and delivered by technology, students are expected to get acquainted with this learning style that encompasses different types of instructions; this consistency will result in accepting the system as an effective tool.

**5. Tracking Learners**

In e-Learning you can easily follow learners and provide proof for their work and skill development.

## 2.5 Challenge in Implementing E-Learning

In spite of being keen on using technology to improve the educational process, Arab countries are still lagging behind; Nada (2005) numerated many obstacles that hinder the integration and the implementation of e-Learning such as: the difficulty of dealing with untrained students in the use of computers, the difficulty in mastering computer skills and resisting change. Additionally, the limited resources and lack of technical support make it difficult for staff members to e-Learning (Sadik, 2005; Alammari, 2004; Momani, 2003).

As far as Jordan is concerned, e-Learning in Jordan still needs more time before using e-Learning. Also, there is lack of well-trained teachers in using this technology in the education process (Zyadat, 2000; Iadat, 2004; Abu Samak, 2006). In addition to the above challenges, there are some obstacles as follows:

**1. Investment:**

E-Learning is a capital intensive endeavor and its costs are often underestimated.

**2. Reduced Face to Face Interactions**

E-Learning can be isolating if care is not taken to balance the learning modalities. While adult learners can often adapt, young learners should have a balanced learning approach with enough interaction.

**3. Dependency on Technology**

Technology can be a blessing or a curse as it requires resource, certain know-how from the learner, and maintenance.

**4. Inappropriate Match of Technology, Content, Objectives, and Approach**

Appropriate instruction requires a four way match between the technology, the nature of the content, and how it is presented, the objectives that must lend themselves to the medium, and the approach taken to produce learning. If any of these fail, e-Learning is suboptimal or perhaps worse (Harriman, 2007).

## 2.6 The Difference Between E-Learning and Distant Learning

According to Almuhasen & Hashem (1998) e-Learning is a kind of distance e-Learning, and is known as a process of acquiring skills and knowledge through studied interactions with the curricula. However, we can see that one of the most problematic obstacles facing the effectiveness of e-Learning lies in the weakness of the infrastructure of the Internet in some countries, a matter which makes information less accessible because of the lack of readiness and preparation.

According to So and Swatman (2006), readiness is defined as being: "prepared mentally or physically for some experience or action. e-Learning -readiness should

be determined before introducing e-Learning" (p.1). Readiness includes learners' ability to adapt to technological challenges, collaborative training and synchronous as well as asynchronous self-paced training. It also depends on their motivation and their discipline to learn in a self-driven mode and to respond to online instructions.

Moreover, there is a huge gap between the required skills for dealing with the Internet and the availability of individuals, who are ready to learn synchronously, Table 2.1 shows the difference between Asynchronous and Synchronous:

*Table 2.1 : The Difference Between Definition of Synchronous and Asynchronous*

| | (A)<br>Individual self-study/ computer-based instruction/ learning/training | (B)<br>Collaborative/ computer-mediated communication |
|---|---|---|
| (1)<br>Online synchronous communication ("Real-time") | Surfing the internet, accessing Websites to obtain information or to learn (knowledge or skill)<br>(Following up a web quest) | Chat rooms with(out) video (IRC; Electronic Whiteboards)<br>Audio/Video conferencing (NetMeeting) |
| (2)<br>Offline Study asynchronous communication ("flexi-time") | Using stand-alone courseware/ Downloading materials from the Internet for later local study<br>(LOD-learning object download) | Asynchronous communication by e-mail, discussion lists or a learning management system<br>(Web CT; blackboard; etc.) |

Khan (2007, p.65)

e-Learning refers to learning supported by internet, and it can be done inside classrooms. It can be conducted as a support to conventional teaching, such as when students work on the web at home or in the classroom. It can be also done in virtual classrooms, in which the entire coursework is done online. In this case, it is part of distance learning (Turban & Wetherbe, 2005). In order to know and deeply understand the difference between e-Learning and classroom learning, a comparison between these systems is shown in Table 2.2.

*Table 2.2 : The Difference Between Classroom Learning and E-Learning*

| **Classroom Learning** | **e-Learning** |
|---|---|
| Textbooks and reading lists | Content portals and online resources |
| Chalk and talk | Rich multimedia & interactive content |
| Class discussion | Inter-classroom collaboration online |
| Help after class | Web-based tutoring on demand |
| Quarterly report cards | Real-time student information system (SIS) |
| On school grounds | Multiple locations |

Khan (2007, p34).

e-Learning avoids the traditional ways of teaching and learning and encourages the more advanced methods through the use of technology. Some public universities in Saudi Arabia started to use e-Learning such as King Fahad University of Petroleum and Minerals (KFUPM) which was established in 2003 to promote the use of the web in teaching and learning. It uses some e-Learning tools to offer integrated access to online resources for both students and academic staff in the learning process (Alkhalifa, 2010).

Academic staff are looking at this change from an anecdotal perspective via an overview of ways in which universities are responding to the perceived social demand for flexible services. These can be clustered in terms of new characteristics of the university, new models for flexible delivery, new partners and competition (Jef Moonen, 2001).

E-Learning can be conceptualized as a process of building up and organizing knowledge and to the change of behavior, attitudes, values, mental abilities, and task performance in education (Hug & Friesen, 2009). In order to promote new ways of communication amongst and between learners, professors started to use e-Learning tools in order to enhance and change interaction among students and teachers (Dimarco, Maneira, Robeiro, & Maneira, 2009).

Changes on many issues such as change in teaching methods, change in class scheduling, change in instructions and legislation, change in the politics of the university in terms of admissions, will give more flexibility to the university to cope with the increase in the numbers of students (Iadat, 2004). The change towards new technologies sometimes incur more-flexible learning, and this requires cognitive readiness to accept this change in higher education, and we have enough reasons to go forward for the change like: new market, funding, partnership, dynamic environment, flexibility, demands from learners, emerging technology, and dependence on IT (Jet Moonen, 2001).

This study can give the decision-makers important information on the issues that are pertinent to the factors that affect the implementation of e-Learning. Moreover, the study will provide an analytical description of the current situation in terms of the degree of using educational technology in public and private universities in Jordan. Thus, the findings of this study are expected to contribute to the understanding of the implementation of e-Learning at Jordanian universities.

The impact of e-Learning is thus tremendous, especially in education, and it also influences the world economy as evident in the global market trend. Economies are predominantly knowledge-based either in the manufacturing or agro-based sectors. In education, curricula and instruction must be reviewed in the light of demand of information and communication technology (ICT)-related technologies, as well as in the pedagogical shift from the teacher-dominated role to the student-centered role in the delivery mechanism. e-Learning will be the future learning trend, especially in Open Distance Learning (ODL).

The Internet or Web-based application will be the main instructional and learning mode used in most ODL institutions. There will be a great demand for higher education in Southeast Asian countries among working adults; for example, more teachers need to be trained to cope with the increasing numbers of children attending schools (Abdul Karim & Hashim, 2004).

In recent years, most governments of both developed and under-developed nations have become increasingly excited about the possibilities of online learning to deliver cost effective, easily accessible and ever current education to all ages and social

backgrounds, regardless of time and geography (O'Neill & Singh 2004). With the advance in information technology in daily life, it creates more changes in our society; it has a tremendous impact on educational system encourages students to adopt e-Learning. There are three main approaches using e-Learning within the education sector:

1. Using the technologies to support or supplement the traditional face-to-face course.
2. Integrating online activities into a traditional course to enhance the learning and teaching process.
3. Delivering a course that is entirely online via www (Abdul Karim and Hashim, 2004).

### 2.7 E-Learning Obstacles

Implementing e-Learning at an educational establishment is not an easy task and many challenges must be considered when the process of implementation is executed in order to make e-Learning an eve lasting and productive tool at workplace. A lot of barriers have appeared with the rapid growth in the electronic learning program, particularly during the 1990s. However, more readiness was needed to overcome many of these barriers at the higher education sector (National Committee of Enquiry into Higher Education, 2001) and thus providing traditional universities in the world with an opportunity to meet the changing worldwide demand for education, some of these barriers are, infrastructure, training, time, knowledge, motivation, experience some external and internal barriers shown in Table 2.3.

*Table 2.3: Comparison Between External and Internal Obstacles to Use IT*

| External Obstacles | Internal Obstacles |
|---|---|
| Lack of access to resources | Lack of time. |
| Lack of effective training. | Resistance to change & negative attitudes |
| Technical problems | No perception of benefits |

Khan (2007, p.21).

The table about shows that academic staff encounter internal obstacles that include lack of time and resistance to change towards using new methods in teaching and external obstacles that include lack of adequate training and lack of resources necessary to implement and activate e-Learning strategies and techniques. These obstacles constitute a very important factor in the ability to use e-Learning in an expedient and efficient way.

Moreover, some of the factors related to these obstacles can be inter-related. For example, it is realized that there is a relationship between the lack of technical support and teachers personal access to use information technology at university even when machines are available, and technical support is absent - any technical problems will impact that access until the problems are solved (Becta, 2004).

According to Phillips (2002) failure in e-Learning can occur at some levels: the product level (poor course design; inadequate technology infrastructure); the user level (poorly prepared learners, lack of motivation, no time); or the organizational level (low managerial support, lack of reward structure). Moreover, Phillips expanded this tri-partite model of the sources of failure.

Khan (2005) mentioned that there are many obstacles face the use of e-Learning. These obstacles are divided into some levels: product level, learner's level, teachers' levels, and organizational level (External Context). Product level includes poor course design (chunks of theory and facts with very little real-life application). Poor e-classroom design includes complex navigation, chat rooms that crash, ugly interfaces). Performing technology contains poor audio, jerky video, interrupted data downloads, etc. Poorly managed course comprises social interactions (untrained or untried online moderators) and slow instructor/mentor response times. Learner's level (Internal Context) includes lack of time and low motivation for learning where poor self-study skills and poor time management skills are also involved. Lack of necessary e-skills include downloading files, subscribing to e-mail lists). Psychological resistance to losing face to face learning perks (social networking, travel, snacks). The difficulty of learning through the transition from traditional to modern methods, which means resistance to change. The difficulty of applying it to some fields of knowledge. The difficulty of obtaining computer equipment for every staff. Confusion that is happening during the process of using computer and practicing e-Learning (Nada, 2005). Teachers Levels include the difficulty of dealing with untrained students in the use of computers. Difficulty in mastering computer skills and resistance to change.

The degree of complexity of some of the articles require time and great effort (Nada, 2005). Organizational level includes poor internal marketing of courses and event, lack of clear reward structure, failure to provide quality learning environment, failure to provide quality learning equipment, failure to provide managerial feedback and

support of learning, failure to provide time on-the-job to train, corporate-wide lack of dedication to a learning culture, blanket mandate of e-Learning as the new-new thing; removal of all other methods, and failure to match internet training to its most appropriate purposes (Khan, 2005).

In a study performed by Tuparova and Tuparov (2006), they revealed some problems in the implementation of e-Learning in Bulgaria such as shortage of e-Learning content especially in humanities areas; insufficient information and lack of readiness of university lecturers and school teachers for using e-Learning technologies; insufficient didactical readiness of the teachers for using e-Learning technologies in the right way and. Lack of legislations in schools and some universities to stimulate teachers to develop and use e-Learning content. The teachers, who participate in education establishment, whose responsibilities are in preparing new generation learners' are required to use all possible tools available to prepare new leaders, who can lead countries towards more development. But, when using these tools some obstacles are faced, particularly those which refer to participant characteristics like (gender, specialty, job place, and age), external factor perceptions, stereotypes, and teacher training in using information technology (Minidi & Hlapanis, 2005).

Moreover, Polyzou (2005) states that any available tools at the education sector require more comfortable and necessary facilities to practice ICT in the education process. Sadik (2005) found out that the available facilities at an educational sector would lead the e-Learning team to a more successful practice in their job.

There is a clear challenge to reduce the gap between Arab countries and the developed countries in this field. Some of these obstacles are the lack of affirmed conviction of the decision-makers in the Arab countries in the field of importance of using computers in the educational systems, the inadequacy of existing educational software and the non-conformity with the Arab curriculum, and the lack of well-trained teachers in using this technology in the education process.

### 2.8 Infrastructure

According to some researchers there are two broad obstacles which impact the use of information technology by teachers, the external factor, such as limited resources or lack of technical support, and the internal factor, which includes teachers' attitudes towards using ICT (Snoeyink & Ertmer, 2001).

#### 2.8.1 Investment

The whole economy sector is based upon rapid changes in the technology, all countries are going to be able to use new data, and employees with up to date knowledge and education is a must because e-Learning can be an effective way to educate individuals and it can be of economical use for countries (Ong & Lai, 2004). Productivity from e-Learning infrastructures investments rise particularly when the infrastructure required for training and high skills will be taken as positive investments (Isackson, 2001). Johnson (2001) points out that, the use of e-Learning technologies in training still grows as some studies expected that, spending on e-Learning will reach up to 550 $ million in 1998, up to 4 $ billion in 2001, and in 2004 it was expected to rise to 14.5 billion. This refers to the importance of this program (Bostrom and Kadlec, 2004). At present e-Learning is still a small part of

the overall global training market and this forecasts the market to rise to over $33 billion by 2005, which would make up almost one third of the overall global training market and still continue to rise (Shoniregun & Gray, 2003). McNical and Nankivall (2002) stated that; in the future academic staff will find themselves in combat with new and advanced technologies in all of the educational processes, and this will create more flexibility in different levels, which also will require more improvement in our required acquisition of skills. According to Watkins (2005) most teachers are not adequately prepared to effectively benefit from the technology-rich training opportunities offered by organizations. As a result, the training investment in high-tech delivery systems and courseware are not regularly achieving their potential impact on learner performance, with the correct environmental and other technological aspects.

### 2.8.2 Time

Academic staff' faces lack of time due to the fact that many lecturers have more workload of teaching ranging from five to nine courses, because of the lack of academic staff and the social and political problems that originate in many countries as the salaries are relatively lower compared to developed western countries. Therefore academic staff should ask assistance from the new technologists of pedagogy and give them any needed information (Mihhailova, 2006).

Also, Becta (2004) mentioned that one of the barriers of using e-Learning is that individuals don’t have time. According to Guernsey (1998) most of the academic staff said that they didn’t have the time and skills to gain experience towards using the World Wide Web in their teaching. Academic staff spent a great deal of time on

developing material for Internet uses. Another barrier was the learning time for the technically computer illiterate. Time spent in learning this new technology could be used for preparing classes and conducting research (Guernsey, 1998).

A survey done by the Social Care Institute for Excellence (SCIE, 2006) mentioned seven related keys of e-Learning readiness, which include social context, content delivery, technology access, learning style, collaboration capacity, organizational learning environment and personal motivation. Another relationship between implementation and success is the fear of things going wrong due to the teachers' lack of training skills. With the lack of skills in training, teachers may experience anxiety about possible technical problems as they would have less understanding of how to avoid or solve such problems with training (Becta, 2004).

Isackson (2001) states that great strides towards interoperability have taken place in the last five years; and many barriers still exist to the creation of a truly common e-Learning culture the first is the reliability of technology which includes hardware and software, loss of a large time for technical reasons and fixing the effects of motivation and concentration. The second relates to the stability of technology which includes the rapid evolution of the technology is another source of concern because these machines are not suitable in the real time, the interface and its ease of use, the cost of equipment and access, the maintenance costs & infrastructure, conversion costs (equipment, skills), the standards and the culture(s) of standards, specific institutional policy and the hostile reaction of the most interested parties.

### 2.8.3 Motivation

Serge (2009) in his study about the use of information and communication technologies (ICT) in education, distributed questions in an online survey and the results of the study indicated that most of the teachers use ICT in some way in education, but printed documents remain the most popular source of information during class. The main argument listed to use ICT is the increase of students' motivation, while the major concern is the technical hardware dependency or unavailability. Also, important number of teachers is concerned about the increased preparation time that is in most cases not rewarded. Finally, vast majority of teachers are willing to take part in an e-Learning training program, probably because they feel unqualified or they do not (yet) see the advantage of ICT for their classes.

Alotaibi (2006) conducted a study to search the constraints of e-Learning education in Saudi Arabia and examined these constraints by distributing questionnaires to a sample of 420 leaders from Saudi Arabia. He revealed several constraints in the electronic education most of them lacked e-Learning mechanisms and it contains too many borders. It was also shown that concentration of curriculum lies in the density of school curriculum, lack of harmony between curriculum and rapid development present. There were also reports of lack of technical support, lack of information and communication with the internet and the administrative constraints lie in the increased number of students in one lecture hall and few computer sets, lack of proper place and staff shortage, and the cost of this type of education.

### 2.8.4 Knowledge

The process of e-Learning is concerned with attitudes, values, skills and knowledge, and also has the aims towards affecting a change in performance and behaviors of human to achieve the objectives of the organization (Mackenzie, 2004). In the same vein, the e-Learning courses at present, lack interaction between group coherency and identity that positively have impact on information exchange and knowledge sharing especially in a problem-solving scenario (Pena & Martin, 2001). Pedagogic considerations in the information age need to associate with the usefulness of technology to enhance the learning experience via e-Learning usage. The information technology will potentially enhance the learning process in the developing countries, and then this encourages the developing countries towards the implementation of e-Learning in the education sector (O'Neill & Singh, 2004).

Chen (1998) in his model states that, there must be an adequate support system and knowledge in order to support the implementation process of e-Learning, or most extensively the program will fail without such support system. He also pointed out that implementation of a support system can be divided into five dimensions, mentioning the importance of the capacity dimension in the successful implementation process. Therefore, insufficient readiness of teachers to use e-Learning technology in an educational environment, and the lack of a regulatory system in some universities that are necessary to stimulate teachers to develop themselves under some skills are considered to be the most important factors in readiness (Tuparova & Tuparov, 2006).

### 2.8.5 Experience

E-Learning is a very essential trend in education at the present time, as many institutions started to implement this program especially at higher education level. Due to the importance of this sector, most of world countries started to consider such aspect and prepare the new generation to face the trend in this technology to support human beings and enhance their personal and professional achievements. Many previous studies revealed that there are many obstacles in e-Learning in Jordan especially in the infra structure and the lack of experienced trainers. This requires more technical and financial support in order to increase the quality of the system.

## 2.9 Studies Related to E-Learning Readiness

Several studies were carried out to address the use and implementation of e-learning in Education in the world and in the Arab world as the following. Readiness' assessment helps to review the comprehensive readiness status of academic institutions' e-Learning and phases that should get ready for e-Learning (Khan, 2005). The teachers are expected to implement new practices, but they have many problems in terms of knowledge and training (Hall & Hord, 2006). Akaslan and Low (2011) carried out a study that revealed that the readiness of the academic staff in higher education institutions with the subject of electricity in turkey seems to be sufficient toward use e-Learning. Similarly, Darab and Montazer (2011) found out that the academic staff in Iranian universities are ready for the implementation of e-Learning systems.

Hadjiathanasiou (2009) evaluated the e-Learning readiness of Cyprus's primary teacher's integration into Cyprus's schools. A questionnaire was sent to a random

sample of 480 teachers from a population of 3986 teachers working in 344 Cyprus primary schools during the school year 2007-2008. The study focused on a theoretical framework that evaluated teachers' readiness by measuring their technological, psychological and pedagogical readiness for conversion to a blended learning system. Almost all of the respondents considered it as important to have adequate technical support in school. The majority of teachers (77%) agreed. The study revealed that Cyprus' primary teachers need continuous professional development in order to: (a) become psychologically ready to move towards e-Learning and (b) to realize how pedagogical practices change in an e-Learning environment. The study concludes by suggesting of developer of learning environments where e-Learning is integrated to facilitate knowledge construction that might increase Cyprus' primary teachers' e-Learning readiness

A study conducted by Sadik (2007) investigated the readiness of faculty members to develop and implement e-Learning in an Egyptian university. The goal of his study was to develop and validate an instrument to assess the state of readiness of academic staff and implement e-Learning in university teaching. Exploratory factor analysis was conducted within each of three subscales (competencies, experience, and attitudes), with composite scores showing acceptable levels of reliability. Furthermore, relationships between instrument subscales and with external variables support the validity of the scores. Responses on the three subscales suggest that faculty has adequate pedagogical knowledge and skills and inadequate equipments and skill, particularly with the latest information technology resources, web-based interaction tools, and authoring packages. He found inadequate e-Learning experience in computer, technology use, and real practice. Also anxious about the

new technology, but rather confident in their abilities and appreciative of the importance of e-Learning in facilitating learning, they are minimally encouraged to develop and implement e-Learning in their university teaching due to institutional and individual barriers.

Molla (2006) mentioned the importance of the commitment readiness element that reflects enough energy and support e-Learning from all aspect of an academic staff and especially from the strategic apex. It refers to having a clear-cut e-Learning vision and strategy championed by top management leadership, pedagogical and educational -wide support of e-Learning ideas and projects. He also mentioned some variables including commitment, human resources, business resources, technological resources and governance.

Furthermore, So & Swatman (2006) conducted a study in Hong Kong to examine teachers for e-Learning readiness each of factors students' preparedness, teachers' preparedness, IT infrastructure, management support, school culture and preference to meet face to face. The results indicated that teachers in Hong Kong were not prepared to use e-Learning technologies for teaching and learning, but differences for e-Learning readiness were perceived between male and female teachers. Analysis was applied to identify those factors affecting the e-Learning readiness of Hong Kong teachers.

Fogerson (2005) performed a study on the readiness and satisfaction of e-Learning at the University of Tennessee. The sample of the study consisted of 317 staff. The investigation intended to analyze some factors that influence the readiness process.

The instrument used was the Readiness and Satisfaction Questionnaire. The findings of the study showed that some influence exists between these variables, and statistical analysis of the readiness factors also revealed a significant correlation between self-direction and age towards readiness. Some of the readiness factors associated with experience correlated significantly with confidence in online distance learning. Another factor was computer-related experience with online collaborative environments, and experience with online subject. Recommendations were needed for more studies on participants' confidence in the online learning environment at different factors. Further use especially with college and university-level students was also recommended. Finally, qualitative positive studies that might enhance understanding of satisfaction with online courses from the participant's point of view on this kind of teaching were also advised.

Additionally, Aydin and Tasic (2005) described the development and assessment of e-Learning readiness of companies in Turkey, where the study consisted of 100 companies. The purpose of the study was to obtain the answer of the given question are the companies in Turkey ready for e-Learning?. Data was collected through a designed questionnaire survey. Results of the study showed that, companies in Turkey were ready for e-Learning but needed more improvement, particularly in the human resources.

Khan (2007) however discussed certain factors related to readiness for e-Learning that include technical factors such as basic computer skills, networks, experience with online forums and other tools. Learning factors such as ability to work independently, self motivation, as well as positive attitude towards e-Learning and

time management factor which refers to the best time to deal with courses were also discussed.

Chapnick (2000) developed an instrument to assess organizational readiness for e-Learning. According to her, e-Learning readiness must answer three questions: 'Can we do this? If we can do this, how are we going to do it? and what are the outcomes and how do we measure them?. Based on the above, Chapnick referred to several factors that must be considered to assess readiness, sixty six factors were divided into 8 categories: 1) psychological; 2) sociological; 3) environmental; 4) human resources; 5) financial readiness; 6) technological skill (aptitude); 7) equipment; and 8) content readiness. In a different way, Chapnick provided a list of choices for each question and expected managers to select only one response that represents the situation of their respective companies. Each response has a point value indicated in parenthesis at the end of each choice. According to Chapnick's model that examined the users' readiness of e-Learning, managers and other sectors should be helped in getting ready to use e-Learning.

Furthermore, Rosenberg (2001) in his study on e-Learning readiness investigated the seven factors of understanding namely business readiness, the changing nature of learning and e-Learning; instructional and information design, change management; re-inventing the training organization, the e-Learning industry, and personal commitment, showed some difference from that conducted by Chapnick (2001) who intended the same purpose (implementation of readiness) – the differences were at the factors.

A study conducted by Haney (2002) suggested that managers should ask themselves 70 questions for assessing their organizational readiness. These questions are classified into seven categories as follows: 1. Human resources; 2. Learning management system; 3. Learners; 4. Content; 5. Information technology; 6. Finance; and 7. Vendor. Haney's instrument was a sort of a checklist that required managers to choose levels of importance for each of the questions. However, the three major categories were: 1. Information technology, 2. Finance, 3. Vendor, and Haney believed that these items should be always considered as very important in any e-Learning assessment process of readiness.

A report published in 2004 included many universities in the United States that faced problems in e-Learning, but such problems have been resolved. Ruth (2006) found that academic staff believes that the quality of e-Learning now matches that of traditional teaching methods. Therefore, studies and reports on e-Learning have shown trends and changes towards using e-Learning in their university departments as it sought influential and effective productivity at the workplace. For instance, a study provided by the three-fourths report of academic leaders at universities showed that those academic leaders believe that online learning quality equals or surpasses face-to-face learning. Research has shown that readiness is one of the most important factors that contributed to the implementation of e-Learning.

### 2.10 E-Learning Framework

Khan (2007) mentioned eight dimensions in his e-Learning framework (Figure. 2.1) that included the pedagogical dimension that refers to teaching and learning. This

dimension addresses issues concerning content analysis, audience, goal, media analysis, design approach, organization and methods and strategies of e-Learning environments, the technological dimension which examines issues of technology infrastructure in e-Learning environments. This includes infrastructure planning, hardware and also major internet software, the interface design which refers to the overall look of e-Learning system. Interface design dimension encompasses page and site design, content design, navigation, and suitability testing from staff and learners, the evaluation of e-Learning program that includes both assessment of learners and evaluation of the instruction and learning at good environment, the management of the e-Learning that refers to the continuous maintenance of the learning environment and distribution of information, support of the e-Learning framework and examination of the online support and resources that require fostering meaningful e-Learning environments at education sector.

The ethical and pedagogical considerations of e-Learning that are related to social and political influence, cultural diversity, bias, geographical diversity, learner diversity, information accessibility, etiquette investigated from legal issues towards good implementation, the institutional dimension which is concerned with issues of administrative affairs, academic affairs and student services related to e-Learning that made us rethink of the importance of the implementation process dimension.


*Figure 2.1: Khan's Framework for E-Learning. (Khan, 2007).*

Khan (2007) indicated that to implement e-Learning, a country must have good planned technological and adequate resources, infrastructure readiness that includes many factors like human resources readiness, equipments readiness and technological skill readiness.

Contino (2005), carried out a study at university of Arizona in USA, he referred to some factors about readiness (eight key readiness factors) that can be applied as conditions to yield an indicator of organizational readiness: 1. People, the right leadership supported by good staff, including senior executives, and management team. The workforce is experienced, educated, of good quality, diverse, motivated, flexible, and open to change. 2. Processes are well documented with a high level quality of support for process stability and adherence. Continuous improvement, drive to improve, and endeavor of innovation to correct solutions are ingrained into the organizational culture at departments. 3. Resources-available funding, professional staff, and materials include the ability to share resources. 4. Technology and information and Information include access to enabling technology and other infrastructure, hardware, and software applications. 5. Market climate major product

or service change, and shift in technology. 6. Strategic Alignment, the plan ensures good implementation. 7. Corporate governance that drains organization resources and energy, and reduces the opportunity for new initiatives and organizational. 8. Organizational energy refers to the willingness and capacity to undertake a major change initiative. The above discussed detailed factors are shown in figure 2.2:

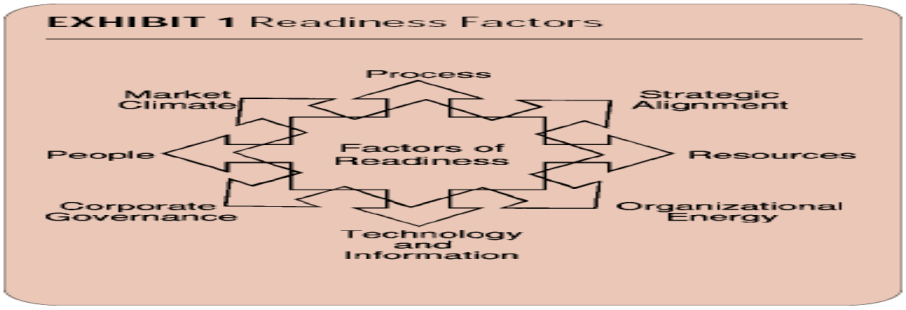


*Figure 2.2: Contino's Framework for E-Learning. (Contino, 2005).*

Many of the studies conducted in the field of e-Learning implementation have adopted different factors to measure it. Every researcher chooses an appropriate factor for his study environment. For example, Machado (2007) adopted a variety of factors to measure e-Learning implementation as shown in Table 2.4:

*Table 2.4: Machado's Factors for Measuring E-Learning Implementation*

| **Key Factor** | **Example of Inputs** | **Throughputs** |
|---|---|---|
| Ability of HEI stakeholders | Changes in learning policies | HEI current Policy<br>HEI future Strategy |
| Capacity of learning stakeholders | Provision of ICT training | Knowledge<br>Teaching and learning styles<br>Instructional methodology<br>Techno cultural acceptance |
| Facility by learning technologies | Introduction of PCs | Infrastructure<br>Network services |

Control of the ability, capacity and facility is provided to a higher education (Machado, 2007) and ability, capacity and facility factors mean do people understand how to use technology and its potential use? this shows that effective e-Learning requires good planning for the process of implementation (Machado, 2007). Users have a great capacity to create a suitable environment if structured properly (Henry, 2000). Briges (2004) and Smith (2005) mentioned that facility is a key factor for executing a successful implementation process of an e-readiness measurement. Successful implementation of new learning technology systems depends upon effective designs for ability and flexibility, and to know how to access available materials without any problem. Efforts on e-Learning worldwide are still focusing on resolving the implementation issue (Abbas., Umer., Odeh., McCatchey., Ali. 2000).

**2.11 E-Learning Tools**

This study reviews the implementation of e-Learning at different sectors. This system will be applied through the internet only if we are ready to use the internet in all processes which will lead to easy implementation of e-Learning in our works. The new methods in educational technologies (EDT) emerged as a result of the convergence together with computing and telecommunications, and the results development of other tools such as e-mail, video, and the voice (Baptista & Mcpherson, 2002). There are highly skilled factors that play a key role in contributing to a positive e-Learning, sharing and motivating attitudes and values among staff. The university must provide technical infrastructure tools to make e-Learning easy and accessible to all staff and provide comfortable computer rooms (Ortiz, 2001; Collison & Elbaum, 2000).

Universities however suffer sometimes from old fashioned teachers' mentality that resist change and do not accept new technology, so universities must train those teachers on the necessary technical skills (Ortiz, 2001; Fogerson, 2005). According to Duderstadt, & Womack (2003), one of the biggest factors expected to impact faculty support application is the heterogeneity between faculty staff towards e-Learning. Samarawickrema and Benson (2004) performed a comparative study between two and eight members of the technical staff in the education field to evaluate the work of e-Learning. The result of the study indicated that technical staff in the education process was positive and members had some suggestions to improve the use of e-mail and solve problems in the use of the site.

Aydin and Tasci (2005) found that e-Learning strategies and efforts require considerable up-front right analysis and appropriate development time, more money, and support of technological infrastructure and leadership; all these are important for success. Managers should assess their companies' readiness for e-Learning before implementing this innovation so it would lead to good results. Khan (2005) mentioned many tools for the successful implementation of e-Learning. They should be capable of using all the new technological means of instructing, such as using the web cams, the e-mail, the chatting facilities, the slides, and video & audio clips.

The implementations of information and communication technology tools help in overcoming the existent gap between learning processes, based on Aldojan's (2007) study for adopting the various tools in measuring e-Learning implementation in Jordanian universities.

According to Abdul Karim and Hashim (2005) the implementation of the e-Learning system by any institution can be achieved using one of the three approaches; the level of readiness in terms of the budget, infrastructure and human resources. Many institutions are already practicing e-Learning in one way or another without using the network but by deploying the computer stand-alone learning materials such as the CD-ROMs, CAI courseware and other locally produced courseware.

Begicevic and Divjak (2006) investigated the implementation of e-Learning in the higher education sector in Croatia, where the universities in Croatia are currently at the first stage of strategic planning of implementing e-Learning in the existing academic activities. The researchers developed a theoretical model for decision making about e-Learning implementation and created the questionnaire based on this theoretical model. They also used four phases: 1) intelligence, 2) design, 3) choice and 4) implementation. The participants were: vice-rectors for teaching, vice-deans, members of university, students, members of government, as well as university teachers. Five factors were found to confirm e-Learning implementation. These are: Human resources; Specific ICT infrastructure for e-Learning; Basic ICT infrastructure for e-Learning; Strategic readiness for e-Learning implementation; Legal and formal readiness for e-Learning implementation.

Aldojan (2007) carried out a study to examine how often educational academic staff in Jordanian public universities utilizes Internet in their professional performance and what types of Internet tool is used on a daily basis by academic staff, and how satisfied are academic staff with the use of Internet for academic work. The results of the study indicated that all the respondents' use of the Internet ranged between 2-3

times a week to daily. E-mail was the most often used on a daily basis, followed by the World Wide Web, electronic journals, online databases, list-serves, transferring files, followed by online services, and discussion groups. Factors that limit faculty use of the Internet in their professional performance were: access to the Internet, Internet content, administration-related limitations.

The respondent's statements revealed that they believed that officials in their universities should recognize the need for adopting a comprehensive plan to integrate new technologies offered for developing their institutions. Moreover, the same study confirmed the importance of the analyses towards characteristics of the staff in the study of e-Learning readiness and implementation. It confirmed that they possess the ability to facilitate and improve the capacity of the main actors in the learning process. e-Learning will be developed into an accepted practice if the new generation of teachers participates, and the educational institutions facilitate specific training for the teaching staff (Machado, 2007).

The researcher adopted the following tools according to the above studies: email, www, chat room, word, power point, Excel, online database, discussion group, application program, transferring files, electronic newspaper, electronic journals, online services, video conferences.

**2.12 E-Learning Design**

Implementation of e-Learning has contributed to the advancement of higher education (HE) that considers the strategic objectives of the universities in the near future (Begicevic & Divjak, 2006).

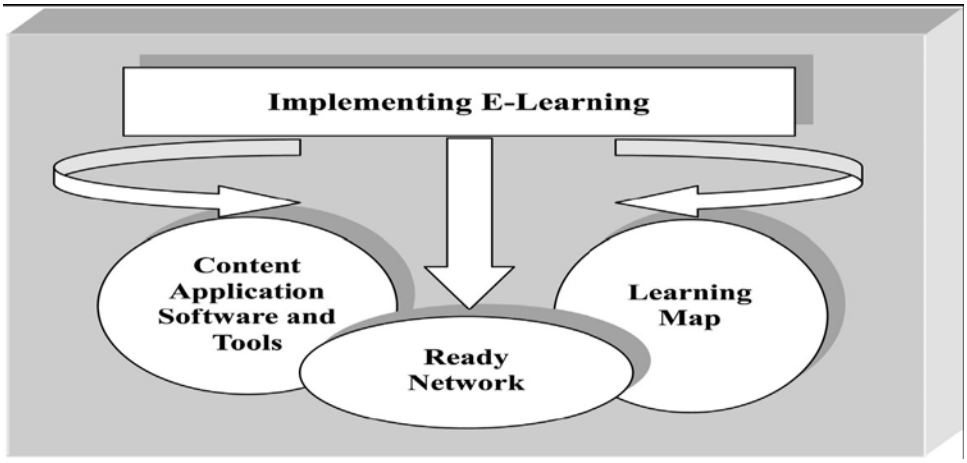


*Figure 2.3: E-Learning Framework (Wil & Griggs, 2002).*

The implications of e-Learning for academic staff is very important and should not be overlooked by institutions implementing such programs, and academic staff must be ready and should be provided with sufficient time and resources to ensure that online courses are suitably used, developed and implemented to meet the needs of students. The transition into new teaching styles must be managed effectively to ensure that academic staff are supported through and beyond the evolutionary period of implementing e-Learning (O'Neill & Singh, 2004). Hall (2002) states that material development must comprise good design and principles comprised of: small unit size: clear objectives, regular feedback from staff, good structure, and interaction regarding synthesis from all staff. Furthermore, there are several reasons for standards being important in e-Learning design and implementation: Standardization encourages interoperability between software and hardware components, making it easier to deploy e-Learning applications into local, regional, statewide or even national school systems, standardization encourages innovation as more vendors have opportunities to join the market with new products to add enhancements to previous products and standardized products make it is easier for

training, as new products or versions are based on similar precepts and not proprietary systems (Huffaker, 2006, p. 61).

### 2.13 E-Learning Readiness Factors

Literature is rich with evidence that there is a growing demand on e-Learning in Europe (Aydin & Tasci, 2005). On the other hand, it is expected that the demand on e-Learning in the Asian countries is going to be negatively affected by the economic instability (Soner, 2000). This alarming fact demands from all the concerned bodies, educational institutes, companies, and private and public sector to figure out the factors that can affect e-Learning readiness.

Some researchers mentioned some factors towards readiness and implementation of e-Learning such as: human factors (Fogerson, 2005), administration factors, technology factors (Contino, 2005), and implementation process (Machado, 2007). Hall and Hord (2006) mentioned some factors that refer to the implementation of e-Learning such as; human factors and technological factors. With a rapidly changing electronic world (e-world), the key to all organizations and academic environments is knowledge that depends on technological factors (Shoniregun & Gray, 2003). The following explains the dimensions of the present study. The human factors include: psychological, motivation and confidence factor.

#### 2.13.1 Human Readiness Factors

This factor considers the availability and design of the human-support system which refers to the knowledge and the skills of the employees being the e-learners. Support of e-Learning by all sections of an organization, the availability (accessibility) of

employees with adequate experience and exposure to information and communications technology (IT) and other skills (such as teaching, relationships), are needed to adequately staff e-Learning initiatives and projects (Molla, 2006). Almusaswi and Abdelraheem (2004) indicated some issues in human factors, through progressive implementation of e-Learning, and predicted these issues and overcoming problems in higher education in Oman.

Mitchell and Honore (2006) mentioned that the importance of human factors such as attitude and motivation of individuals play a major role in virtual learning success, more so than in the classroom. Molla (2006) showed that human factors have significant roles in successful e-Learning and its benefits. Chapnick (2000) stressed some elements of human factors such as psychological, motivation and confidence factors:

#### 2.13.1.1 Psychological Readiness

This factor considers the individual's state of mind as it impacts the outcome of the e-Learning initiative. Psychology is usually defined: "as the science which aims to give us better understanding and control of the behavior of the organism as a whole" (Machado, 2007, p.75). The numerous studies have focused on some various variables in measuring this variable of e-Learning. Vooi and Dahalin (2004) investigated readiness of members of the faculties at Universiti Utara Malaysia (UUM) for the application of e-Learning across eight key readiness factors: psychological readiness, sociological readiness, environmental readiness, human resource readiness, financial readiness, technology readiness, equipment readiness of the administrative and academic staff, and showed that readiness in e-Learning was

weak in three factors readiness namely: psychological, financial and equipment in one hand, and on the other hand the findings were positively around implementation of e-Learning at UUM. A study, which was conducted in 2000 by the Ministry of Education in Malaysia, found out that the psychological readiness was considered one of the most important factors in the implementation process for e-Learning (Chapnick, 2000).

Another study, which was conducted to measure the technical skill readiness, found that the lack of computers was considered a significant element that impacted the success of the implementation of e-Learning, and one of the barriers was that teachers were weak in adopting e-Learning, and have negative attitude to participate in e-Learning, also teachers lacked confidence in using e-Learning. Moreover, persistence to change was shown from teachers' part (Becta, 2004).

Yun and Murad (2006) found that there was a strong and positive correlation between influencing psychological readiness and technical skill readiness towards e-Learning, but this result was consistent with Bect's finding. Karmakar and Wahid (2005) conducted a study to examine the status of e-Learning readiness, proposing some useful recommendation about readiness and its implementation in Bangladesh. Results on some factors like Psychological readiness showed negative effect towards e-Learning readiness.

#### 2.13.1.2 Motivation Readiness

The purpose of the present research is to investigate the impact and role of motivation on the academic staff at universities through implementing e-Learning.

“Motivation is usually defined as an internal state that arouse, directs and maintains behavior” (Woodfine & Nunes 2006, p3). The motivation theorists assume that motivation which supports the performance of all learned responses and behavior will not be enhanced unless it is energized. The question amongst psychologists is whether motivation has a primary or secondary influence on behavior that also depends on behavior, better principles of environmental/ecological influences, perception, memory, cognitive development, and emotion. The consensus is, motivation at least encourages performing more work (Citation, 2001).

Mihhailova (2006) conducted a study on the application of e-leaning from lecturer's perspective and found that there were several problems from e-Learning lecturers’ perspective such as: lack of time, lack of interest- motivation, and lack of co-operation. Ali (2004), in his study on e-Learning in Malaysia, pointed out that there was still a lack of awareness amongst teachers in Malaysia towards e-Learning and some authors indicated the importance of considering such variable in any educational field in countries around the world (Agboola, 2005).

Motivation is an important aspect that has great effects on educational fields and has to be taken into account based on e-Learning tools (Astleitner, 2000). On the other hand, the motivation factor is overestimated or may have even a negative impact on the learning process effectiveness of students (Aldojan, 2007).

Furthermore, the Social Care Institute for Excellence (2006) conducted a study on a similar field and mentioned significant keys or factors such as personal motivation. The sample of the study consisted 512 participants, where questionnaire survey was

used in the study. However, the study concluded that 42% of the respondents revealed that their employees did not have the knowledge and confidence to use ICT, as well as employers were not ready for e-Learning, the reasons being more cultural in nature rather than technological.

#### 2.13.1.3 Confidence Readiness

Concept of confidence indicates that; "...confidence in your ability to take appropriate and effective action to formulate and solve problems in both familiar and unfamiliar and changing settings"(Cairns's, 2000, p.1). Baker (2006) conducted a study to investigate confidence of students in England towards computers. Data was collected via questionnaire; the result, however, showed that there was computer confidence and strong positive relationship towards learning and using computer in education sector. According to Agboola (2005), e-Learning confidence and e-Learning training were statistically significant for both e-Learning adoption and e-Learning readiness.

Murphy and Greenwood (1998) and Social Care Institute for Excellence (2006) reported that younger lecturers have higher level of confidence than older ones in using computers in teaching. According to Fogerson (2005), participants' perceptions showed that the technical and pedagogical demands of the online environment were within their range of abilities**.** But, computer confidence had no effect on the criterion variables on ICT use related to job period (Muse, 2003).

Agboola (2006) conducted a study on the academic staff at the International Islamic University Malaysia. The researcher used some measurement factors and found that

confidence was one of the most important factors in e-Learning. Therefore, the findings indicated areas of specialization and e-Learning confidence. It also showed that there were no interactive effects on e-Learning. Gender areas of specialization had no influence on e-Learning training. Finally, the respondents' gender and areas of specialization had no interactive effects on e-Learning consequences, as well as e-Learning readiness and e-Learning adoption.

A study was conducted by Phelps & Hase (2005) to investigate the use of computer in the learning and teaching processes and how teachers implemented that in conducting their classes. Findings represented some differences between computer competence and computer capability towards the education process. Results showed a significant awareness in the ability to understand computer learning.

### 2.13.2 Administrative Factors

A lot of researchers Chapnick (2000), Veen (1993) and Agboola, (2006) point out that administrative factor included four variables, namely; training, environmental**,** skills, and knowledge variable:

#### 2.13.2.1 Training Readiness

According to Chapnick (2000), training readiness refers to professional preparation of teachers' skills in using new tools in their work place, usually through formal course work and practice teaching. Similarly, Mackenzie (2004) argues that the status of training has always played a major role and is problematic in the learning process, as the e-Learning proposition played pressure on the aspect of training by promoting the financial savings. While the potential cost benefits of e-Learning

proved very attractive, it is at the expense of perpetuating a perception of training of individuals while isolating the activity of the other groups. Veen (1993) stated in his study that the lack of initial training to use information technology by teachers was a serious obstacle towards ICT use and implementation.

However, a study by Agboola (2006) referring to the predictive power of the individual indicated that only three factors were statistically significant namely gender, e-Learning confidence and e-Learning training. They were significantly related to e-Learning readiness and in addition, e-Learning training was the best factor of e-Learning readiness. Some previous studies on organizational readiness included university framework, faculty strategy towards development and the financial readiness. It was mentioned that such factors were the most influential criteria for e-Learning implementation. Furthermore, the human resources criterion must possess appropriate skills that cover continuous training of academic staff (Begicevic, Divjak & Hunjak 2006).

Henry (2001) mentioned that e-Learning implementations should be viewed in the same way as other organization-wide important initiatives in that, its success depends on the commitment of high management and an understanding of all the cultural and technological elements inside the organization. However, we need some tools when adapting e-Learning courses, as we still have a lack of courses and need to change the standards, and lack of training or software which results in these machines to become big obstacles in the implementation (Educause Center for Applied Research, 2003). A study conducted by Karmakar and Wahid (2005) sought to examine the status of e-Learning readiness and focused on factors like training

readiness and the results were negative towards e-Learning readiness. Begicevic and Divjak (2006) found out that some criteria are important for the successful implementation of e-Learning process. Organizational readiness of environment, availability of infrastructure, development and availability of human resources, legal and formal readiness of environment and the availability of specific infrastructure are ranked below the average.

This last ranking reflected the state of e-Learning and therefore the importance of legal framework and appropriate infrastructure. The survey emphasized the need for strategy development, network infrastructure, and continuous training of academics and specialized e-Learning centers. Minidi and Hlapanis (2005) investigated teachers during their training in learning on how to use ICT. They collected data via questionnaire where the first section of the questionnaires focused on the first day of the training which investigated the attitude of teachers towards the use of ICT in education. The second question of the survey stressed on the last day of training. The sample of the study consisted of 133 teachers. They encountered some obstacles due to the difficulties in training on the use of ICT in respect to gender, specialty, and the type of their job. Therefore, 93% of respondents believed that using ICT would improve teaching; meanwhile, 60 teachers have shown lack of direct training on how to use ICT.

Social Care Institute for Excellence (2006) conducted a study that uncovered that respondents are overwhelmingly satisfied with the levels of work-related knowledge and skills of their employees. More than 94% of them said they were satisfied, 28% of them who were “very satisfied” and mean while 40% were very satisfied with

their staff's level of knowledge and skills, and some were satisfied with the amount and quality of training of their staff (90% and 96% respectively). Most of those who said they wouldn't want to make more use of the program (52%) mentioned that they were very satisfied with the amount of training their staff received or the quality of training they received (52% and 51% respectively).

This study compared those who would like to make more use of e-Learning to those who don't (33% and 37% respectively). This would seem to indicate that a significant part of staff didn't feel the need to extend their training. Lloyd & Gressard (1984) measured the teachers' attitudes towards computers in four areas: computer anxiety, computer liking, computer confidence, and computer use. The data was then subject to multivariate analysis. The results of the study indicated that the teachers' anxiety towards computers decreased significantly after training. In addition, the teachers' levels of confidence and liking of computers increased after the training.

#### 2.13.2.2 Environmental Readiness

Chapnick (2000). Considers the large-scale forces operating on the stakeholders, both inside and outside the organization including issues such as technical constraints of the delivery platform, network, and software. For introducing e-Learning in any organization should be prepared with the correct environmental and other technological aspects (Karmakar & Wahid, 2005). According to studies carried out by Mwanza and Engestrom (2005), the use of e-Learning environments to support teaching and learning has had great impact on the education process held by teachers and students. The study was conducted using questionnaire survey, and

findings indicated that mediators, relationships, motives and socio-cultural environments have great influence on e-Learning.

#### 2.13.2.3 Knowledge Readiness

Fawcett (2003) points out that this factor refers to a particular faculty members' knowledge readiness reactions toward implementing E-Learning in university education. Faculty members should have the necessary knowledge accomplishments to be acquainted with the major obstacles that make the application process a difficult one. These obstacles make staff members face e-problems like e-mail, and weak network connection, which are considered as the most significant obstacles in e-Learning process. Furthermore, a lot of research has been conducted to examine the status of e-Learning readiness such as Karmakar and Wahid (2005) who showed that the effect of knowledge readiness on e-Learning towards e-Learning readiness was negative. Experts in education are giving good efforts and focus on planning and developing well-built e-Learning infrastructure, although some elements like knowledge and training have significant impact on the efficiency of e-Learning program (Abbas et al. 2000). An outstanding example of such e-Learning development is the present case of Monash University-Malaysia, which prepared its academic staff to enhance their skills and teaching through using e-Learning (Samarawickrema & Benson, 2004). A successful implementation of e-Learning should first involve improvement of staff development and provision of training of new processes. Training can be very effective and make sure that staff has the knowledge and skills they need to comply with relevant legislation and regulations (Stockley, 2006).

Polyzou (2005) showed that his study was one of the five case studies that investigated the evolution of teachers' knowledge towards information technology and collected data via interviews and proved the staff readiness factor plays the major role in implementing e-Learning. The study was conducted in an area in Greece on secondary school teachers. The study investigated teachers who did not have previous information about ICT. Results of the study showed that more efforts should be given by the teachers to understand e-Learning technology's application in education process.

#### 2.13.2.4 Human Resource Readiness

Contino (2005, p.54) point out that human resource readiness is defined as: "the leadership supported by the right staff, including management team, and all other employees". The workforce is experienced, educated, well trained, diverse, motivated, flexible, and open to change. This factor considers the availability and design of the human-support system. According to Mason and Wozniak (2007), this factor refers to the available support tools, as the even implementation of e-Learning sometimes needs the necessary support to allow everyone to succeed, because this program is not based on individual efforts but on collaboration with others.

In another study conducted by Aydin and Tasci (2005) to measure readiness toward e-Learning on companies in Turkey, it revealed that human resource was one of the most significant factors in implementing e-Learning. The overall finding of the study showed that companies' staff was ready for the implementation of e-Learning but they needed to improve their human resource factor.

Moreover, findings of the study showed that human resource was very essential factor that must be taken into account in order to benefit from e-Learning. The study assessed readiness within some variable fields of human resources development, especially in emerging countries where human resources development field has just shown an improvement.

### 2.13.3 Technology Factors

Nowadays, information technology is considered as an important factor when using technology in any project, because it will save data and information for a long time and enhance the education process. According to Molla (2006) and Almusaswi and Abdelraheem (2004), the following technological factors have a very significant role in the success of the implementation of e-Learning.

#### 2.13.3.1 Technological Readiness

According to Mobaideen (2006), high technology industries have great dependence on science and technology innovation that leads to new or improved products and services. Technology is one of the important factors in the stage of e-Learning implementation, and in addition, the learning process can be effectively conducted through adapting a technological innovation in an educational establishment (Rogers, 2003).

Rogers views technology components in two parts: first, hardware which is the part of technology that includes the physical side; second, the software part that consists of the information aspects which helps in using it to perform certain tasks. These factors refer to the IT base of an organization and assess the extent of

computerizations at educational departments, the flexibility of existing systems, and experience with network-based applications. Also, it is helpful to know how we can use these tools and deal with them (Molla, 2006).

In addition, Bitner and Bitner (2002) indicated significant teachers' attitudes towards using information and communication technology in their respective jobs, and considered teachers' attitudes a key factor in facilitating successful technology integration with traditional education. This however requires from the educational leadership to equip teachers with the necessary IT skills before the implementation of e-Learning. Mobaideen (2006) also pointed out that the most used educational tools should include access to enabling technology such as PCs, laptops, and other infrastructure, internet line, hardware, and software applications (Contino, 2005).

This element refers to and focuses on the infrastructure requirements, and indicates whether the current infrastructure is suitable and can accommodate such initiative (Smith, 2005). Also, it considers observable and measurable technical competencies (Chapnick, 2000). Technology experts and educators and students at various stages of university education have overcome the distance problem and the lack of communication with each other and raised the desire and enthusiasm to increase the effectiveness of changing the qualitative and quantitative assessment of the education process. Fawcett (2003) refers to the infrastructure maintenance as a reliable and robust technical factor to use e-Learning effectively and successfully. Computer is considered an important element in the application stage.

E-Learning efforts and experiments currently receive much attention across the world. Although the global availability of computer and networks became a part of our daily lives, support is needed towards building new ways of e-Learning strategies in the near future (So & Swatman, 2006).

However, as Broadbent (2001) states, e-Learning does not require a huge infrastructure in the initial stages. Even a well working Internet connection and enough supply of computers for an establishment would be sufficient for an effective e-Learning project. Any assessment of tools should include identification of the hardware available in universities. In the questions for this study, staff were asked about the hardware capabilities of their workplace, specially on the access to computers. Rogers (2003) states that adopted innovations are rapidly and easily understood more than those which require the adopter to develop new skills and understanding. Additionally, staff should also have basic computer and Internet skills to get benefit of e-Learning.

A study conducted by Russell & Bradley (1997) showed that around 58-65 percent of any organization's staff was generally uncomfortable with new technology; they found that the American public was not ready to use Information Superhighway. Moreover they mentioned that, staff didn't take into consideration that there will be university resistors for whom they have done nothing to help; thus they were going to suffer from reduced worker productivity, lower job satisfaction and motivation, their profits and their efficiency are going to decrease company wise.

An e-Learning initiative may suffer due to technology, as well. The reason behind this suggestion is that an organization, for example, might have enough resources for adopting e-Learning in the universities; but, if the organization lacks the skills and other resources that are necessary to use those resources towards improvement. Also without training, the result might be failure. At the same time, another organization might have both the resources and skills to implement e-Learning yet have a common negative attitude towards technology, with the outcome being the same as the previous example (Aydin & Tasci, 2005).

Aydin and Tasci (2005) in their study on companies' employers in Turkey found that employers have difficulty to access to internet outside the workplace such as home or café, and this result showed the challenge in adopting e-Learning and encourages employers to use computers at their workplace allowing them to borrow these machines during training. The findings of the study also showed that employers possessed very high skills and ability to use computers and internet, and had positive attitudes towards the utility of technology.

A study conducted in 2004 by the Ministry of Education in Malaysia found that technical readiness is one of the most important factors in the implementation process of e-Learning. The study showed that teachers' result was positive attitudes towards readiness and e-Learning implementation (in cited Chapnick, 2000). In another research conducted by Yun and Murad (2006), they found that there were strong and positive attitudes from staff partly towards technical readiness of e-Learning.

Karmakar and Wahid (2005) conducted a similar study to examine the status of e-Learning readiness amongst participants. The result also turned out negative in e-Learning readiness in technical variable. Further, in a study by So & Keung (2005) to investigate teachers' e-Learning readiness in Hong Kong, the result indicated that teachers were not ready to prepare themselves to use e-Learning technologies for teaching and learning.

Also, the findings revealed some differences in readiness between male and female secondary school teachers. This study also showed that many departments believed that their staffs did not have the skills and motivation, but the employees themselves disagreed. Adding to that, it was mentioned that two-thirds (66%) of the employees have the skills to use IT, with only 15% disagreeing towards using IT (Contino, 2005).

#### 2.13.3.2 Equipment Readiness

This factor considers the question of proper equipment possession as e-Learning requires some tools such as availability of hardware, software, network, and ICT literacy. Haverila and Barkhi (2009), and Chapnick (2000) found that it was important to provide all academic staff with technical tools and equipment at their work place. Staff must also possess appropriate skills on how to deal with these tools. The university should have at least the minimum hardware requirements and the software required to use that hardware. The hardware part of e-Learning includes the physical equipment that must be able to support e-Learning (e.g., servers and networks) along with equipment for end-users to be able to access the services.

Green (2000) mentioned in the report of Campus Computing 2000, that, 97% of academic staff have access to the World Wide Web and 68% of classrooms have Internet access. Larner and Timberlake (1995) found out that teachers were worried about showing their pupils that they did not know how to use the technology equipment in their students' teaching and learning process.

Aydin and Tasci, (2005) state that the hardware part of e-Learning (e.g., servers and networks) includes the physical equipment, that means this equipment must be able to supply e-Learning to students and without this equipment the users can't access the services. Equipment is one of the most significant factors in technology adoption process can also be effectively used in an organization (Rogers, 2003). According to Rogers (2003) technology has two components: hardware and software. Hardware is the part of technology that includes the physical components. He also mentions that a technology may only involve software, citing examples such as a political philosophy, a religious idea, and a new event. Oliver and Towers (2000) suggested an appropriate, good and easy access equipment to obtain information, without which there can't be a successful implementation of e-Learning (as cited in Aydin & Tasci, 2005).

#### 2.13.3.3 Communications Readiness

Walrand and Jean, (1991, p.43) point out that "communication networks are arrangement of hardware and software. That allow users to exchange information at different areas, as well as allowing them to exchange messages and computer files". It also helps employers to learn about the fastest growing sector in the world. Information communication and technology ICT has not been used very

systematically in the education sector yet. Half of the teachers have e-mail addresses and interact together, but only a few examples exist of exchange of assignments and information between teachers and students via ICT. According to Wilson (2001), the following are some communication tools that should be adopted to be practiced on participants who will use e-Learning: E-mail, Email signature, online resume, conference, chat instant message, voice, video chat, presentation, you can represent your work using tools such as digital photos, sound clips, movie, iPhoto, or web pages, online documents, file storage, publishing, blogging, wiki web. And digital Photos.

In a research conducted by Abu Samak (2006), it was discussed that, staff members have a reason for possessing a preventive attitude to using ICT for communication with students. It is because they do not want to replace the implemented traditional face-to-face communication with information technology. This refers to the vast collection in accessing information through interconnected networks (Transmission Control Protocol/Internet Protocol (TCP/IP)) that everyone can use in the e-Learning process (Barker, 2003). Participants in Internet-based distance education can gain access to the course site from anywhere in the world. So, this only goes to show that more people are widely using Internet technology in their daily lives in different sectors (Kirkman & Osorio, 2003). " The Internet might overcome the drawbacks of common distance education, while enabling computer-supported communication between teachers and students" (Jochems & Merrieboer 2004, p.178).

The Center for International Development at Harvard University, USA, supported by IBM, identified four key factors describing differences between developing and

developed countries in terms of readiness and implementing e-commerce (Kirkman & Osorio, 2003). These four factors are adapted to study e-Learning in this research, which are termed as National e-Government Infrastructure (NEI) factors (Network Access, Network Learning, Network Economy, and Network Policy).

According to Sun and Cheng (2007) the difference of Internet accessibility between developed and developing countries appears in the reflection of the countries' infrastructure and telecommunication abilities. Developing countries lack financial resources and government stability and structure to contain a sizable infrastructure. This results in low access to the internet and telephone. One third of the world's population has never made a phone call, and 63 countries have less than 1% access to the Internet.

A study was carried out in Saudi Arabia by Guernsey (1998) on Internet use by academic staff at King Saud University. The study indicated that the number of academic staff in medical and technological areas was higher than the number of academic staff in humanities and the social sciences with regard to Internet use. The results indicated that the higher the rank, the lower the use of the Internet and vice versa.

Almusaswi and Abdelraheem (2004) carried out a study that addressed the instructional uses of the Internet, and investigated the extent to which the Omani Sultan Qaboos University academic staff usage of the Internet for instructional purposes in relation to gender, college affiliation, teaching experience, and academic

rank. The questionnaire was developed by the researcher through generating a list of possible uses of Internet in instruction derived from the literature.

The population of this study included 670 academic staff representing all departments at Sultan Qaboos University who have been working for the university. It was found that there were seven most recurring uses. The two most frequent uses were in courses, and to download ready-made instructional materials. While data did not show difference in use between female and male colleagues, it showed difference in terms of college affiliation in favor of science academic staff; experience in favor of 5 to 9 years experienced academic staff; and academic rank in favor of assistant professors. The academic rank independent variable was divided into three levels: lecturers, assistant lecturers; and assistant professor, associate professor and professor.

Fusayil (2000) carried out studies towards adoption of the Internet by academic staff at Ohio University. The aim of the study was to examine faculties' use of the Internet and investigate to what extent and in which ways this academic staff uses the Internet in their professional performance. The second purpose of his study was to investigate the perceived benefits and advantages in using the internet, and the barriers against using the Internet. The findings indicated that around 98% of the respondents used the Internet to some extent, such as E-mail and the WWW were the frequently used services. It showed also that no significant differences amongst academic staff from different domains with different years of experiences in their use of the Internet in research.

### 2.13.4 Attitude Factors

According to the definition of attitude by Eagly & Chaiken (1993): Attitude is "A psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor" (p. 15). The computer attitude scale was developed by Lloyd and Gressard (1984). The researcher adopted this scale in this study due to the fact that this scale covered all the sectors towards the use of information technology in the educational process. A Likert-type instrument was used consisting of 40 items in four dimensions: computer anxiety (10 items)؛ computer liking (10 items), confidence in ability to use computers (10 items) and usefulness (10 items).

Accordingly, Abu Samak (2007) used the Computer Attitude Scale (CAS) (Lloyd & Gressard, 1986) to measure the teachers' attitudes towards computers in four areas: computer anxiety, computer liking, computer confidence, and computer use. The data was then subject to multivariate analysis. The results of the study indicated that the teachers' anxiety towards computers decreased significantly after training. In addition, the teachers' levels of confidence and liking of computers increased after the training.

In this study, attitude towards e-Learning was defined as the degree of favor or disfavor towards using information technology and the awareness of e-Learning readiness and implementation in Jordanian universities. It consists of four dimensions: anxiety, confidence, liking**,** and usefulness (Lloyd & Gressard 1984). Affective questions referred to the teacher's feelings about ICT in education; cognitive questions referred to the teacher's actual knowledge of ICT, and behavioral questions referred to the teacher's explicit use of and behavior towards ICT.

#### 2.13.4.1 Anxiety

The aim of the computer anxiety subscale is to assess the fear while dealing with computers. Yushau (2006) pointed out in a study that the teachers with less experience have more anxiety towards working with computers. The study revealed that a few faculty members used computers in their teaching. Also, age and computer experience did not show any significant influence on attitudes. Dearlove (1997) investigated the relationship among computer experience and teacher anxiety among others. Research has shown that teachers' negative attitudes towards computers change after receiving formal training about computer use. Yushau (2006) pointed out in a study that most teachers resisted the use of computers in education and learning process. "Computer anxiety" was coined and entered in the literature vocabulary due to teacher resistance to computer use. Limited computer experience has been found to be a factor that influences anxiety (Gressard & Lloyd, 1986). Sadik (2007) also found teachers to be anxious about new technology in their jobs.

#### 2.13.4.2 Confidence

Computer confidence is the ability in dealing with computers. Studies have shown a certain lack of confidence in computer usage (Gressard & Lloyd, 1986; Whitley, 1997). Yushau (2006) mentioned that computer ownership and computer experience are two very important factors that can help in mitigating fear and anxiety about computers from the minds of teachers and help them to develop their confidence. Additionally, research has also shown that they have fairly positive attitudes toward computers. A study conducted by Sadik (2007) investigated the attitude of faculty members to develop and implement e-Learning and the results revealed that faculty members possess confidence to use new technology in their work.

#### 2.13.4.3 Liking

Computer liking subscale assesses the enjoyment of dealing with computers. Yushau (2006) pointed out in a study that all academic staff has positive attitudes toward use of computer in their work. Sadik (2007) investigated the liking factor in faculty members to develop and implement e-Learning in their work and found that they have high liking towards the use of e-Learning.

#### 2.13.4.4 Usefulness

For the purpose of this research, usefulness means the perception of the proliferation of computers on future jobs. Yushau (2006) pointed out that the attitude of the academic staff of Mathematical Sciences Faculty of King Fahd University of Petroleum & Minerals in Saudi Arabia towards the implementation of information technology in their teaching did not depend on age and computer experience. In other words, these two factors did not affect their attitudes towards computers and their pedagogical usefulness. A study conducted by Sadik (2007) investigated the attitude of academic staff towards the use e-Learning in their work and he found that they have good level of usefulness.

Alajmi (2010) in his study in Kuwait reported significant differences in demographic characteristics of e-Learning adopters and non-adopters regarding age among faculty members at the College of Basic Education CBE in examining faculty members' attitudes and skills toward e-Learning readiness. Czaja and Sharit (1998) reported that computer attitudes are modifiable for people of all age groups. Akaslan and Low (2011) reported that academic staff teaching a subject in electricity in higher education institutions in Turkey have strong positive attitudes toward implementing

e-Learning in their works. Alammari (2004) investigated the attitudes and the usage teachers at public schools in Jordan have positive attitude toward the use of computer.

Aldojan (2007) found in his study that teachers' attitude towards computers is an important factor related to the teacher's role towards the effective use of computers in teaching and learning. Lloyd and Gressard (1984) revealed that age and computer experience did not affect attitudes towards using information technology.

Abu Samak (2006) compared between Jordanian and Syrian teachers. The study showed that Jordanian teachers have positive attitudes towards ICT. Jordanian teachers' perceptions of information and coumminication technology ICT from highest to lowest in mean scores were: observability, relative advantage, complexity, and compatibility. Jordanian teachers have a moderate computer competence and have high access to ICT. Jordanian teachers' access to ICT was higher than Syrian teachers. However, the location of access was different: in Jordan, school is the place where most Jordanian teachers have access while home was the place that most Syrians used ICT.

In another variable of ICT, integration in the classroom - it was found that age and experience had a negative correlation with attitudes, whereas qualification had a positive correlation with attitudes. There was a weak positive correlation between training and attitudes. Gender, teaching methods, and Grade level were found not to be significantly correlated with attitudes towards ICT. 64% of the total variance in Jordanian EFL teachers' attitudes towards ICT was explained by the four main

independent variables of the study: attributes, cultural perceptions, competence, and access (Iadat, 2004).

A study conducted by Mitchell and Honore (2006) to investigate how the attitude of individuals played a major part in virtual learning success revealed that the challenge for the first year was high in the implementation process, and attitude of this experience of e-Learning required more efforts than a conventional classroom.

The study resulted in an overall negative view by participants at the beginning. The second group also emerged from their second module with a more positive e-Learning attitude and more achievement; this shows that the result was even higher than the first cohort. The availability in the technical support leads to the positive attitude to use computer. But a study done by Aydin and Tasci (2005) showed that, the attitude was readily (positive) towards the e-Learning process.

Consequently, identification of staff attitudes toward the use of technology is also taken into account in the process of developing the e-Learning assessment instrument. This consideration is not only limited to employees but also covers identification of managers' attitudes as well, (Aydin & Tasci, 2005). According to Haney, Saintas, Palmer, Thomas, Reast, Barlow and Maillardet (2002), such studies refer to some problems facing the implementation process such as, the lack of knowledge, skills, training and the negative attitudes towards the use of information technology. These are the main reasons why the faculty resists using e-Learning materials in a university setting.

### 2.13.5 Change Factors

#### 2.13.5.1 Innovation Readiness

Limited research has been done to define innovation readiness. Innovation refers to new concepts or products that are derived from individual's ideas or from scientific research. Innovation, on the other hand, is the commercialization of the invention itself. This factor is mainly involved in the examination of past experiences towards using information technology. According to Rogers (2003), pervious experiences in using computers will provide us with a clear picture of innovation, which also affects the adoption of a new one.

> "Although innovation in e-Learning practices may bring abrupt changes in teaching and learning organizations, bridging the gap between the older school of professors and younger academics will depend on their attitude, willingness and motivation towards e-Learning practices" (Machado, 2007, p.80-81).

Experiences of staff in a workplace about an innovation in any or similar previous management procedures in a university may be influential on results of an e-Learning initiative as some of the universities have been able to easily adopt e-Learning, while others are still lacking (Sadik, 2005). Information on acceptance or rejection of this innovation in universities might be used as a prediction of readiness for e-Learning, but there are still a lot of questions about the acceptance of e-Learning in a department staff that are pertaining to the readiness of the instrument (Aydin & Tasci, 2005).

Moreover, barriers of implementation in many universities are considered under innovation factors as well. These barriers refer to internal or external, legal and/or political barriers that might influence the applicability of e-Learning. Therefore, educational considerations should always take into account these barriers which may

be faced in the implementation when planning for e-Learning in their organizations (Aydin & Tasci, 2005).

#### 2.13.5.2 Self Development Readiness

According to Khan (2005) Self-Development refers to**: "**a process you should use to enhance previously acquired skills, knowledge, and experience. Its goal is to increase your readiness and potential for positions of greater responsibility. Effective self-development focuses on aspects of your character"(p.123).

This factor is identified in assessing the organizational readiness of a university for e-Learning. Diffusion of innovation theory also shows that those universities are open to organizational and individual development. They actively seek for information about innovations to improve themselves, and those who have higher self-efficacy beliefs for the achievement can adopt innovations earlier than others (Rogers, 2003).

This implies that universities that are willing to establish a budget for organizational and individual development initiatives, whose staff believes in the power of self-development, and has positive attitudes towards developing themselves, can adopt innovations such as e-Learning easier than others who lack these essential characteristics (Aydin & Tasci, 2005). According to an ICT coordinator in 1997, as cited in Contino (2005), not all teachers find ICT a good idea in the education process. Some do not like computers, and the researcher is of the opinion that no one is capable of making everyone like them.

To enable the leader determine whether or not these characteristics are present, there are questions about self-development resources and attitudes in the tools. Aydin and Tasci (2005) in their study on the employers in Turkish companies mentioned that, employers who have ability to obtain self development based on factor analysis findings, are ready for implementation, which means that potential participants have begun to think of e-Learning readiness and its implementation as well as the achieved results concerning the high skill and ability to manage time, and the positive attitudes towards belief in self–development. These discussed e-Learning readiness factors are often cited in related literature. Many researches in this respect are still in progress where a lot of work has been published in this field, such as Aydin and Tasci (2005) and Rosenberg (2001), who conducted some critical research to determine whether we are ready or not to use e-Learning. According to Contino. (2005):

> "It was the group of teachers who realized the possibility of developing themselves and their subject by means of the computer – that is, the progressive teachers of the younger category, who wanted to learn something new. So, it was not the older teachers. It was obviously the younger ones who 'jumped that wagon" (p. 11).

Broadbent (2001) suggested three factors that contribute to e-Learning readiness of organizations: people, place and resources. Within these three areas there are some variables. For instance, in the people variable there is commitment and skill, for place there is stability and infrastructure, and under the resources there are two domains; funds and knowledge. According to Fogerson (2005), to obtain successful programs five factors should be referred to; culture, content, capability, cost, and clients. Furthermore, Aydin and Tasci (2005) stated that most of these factors may be used by any organization to assess readiness for e-Learning. The universities can

decide to implement e-Learning or determine other improvement in infrastructure in order to be able to execute a successful e-Learning implementation.

### 2.13.6 Technology Policy as Moderating Variable

The e-Learning policy is beginning to have a more significant role within the context of educational policies, besides driving change in the educational process. This system will allow information transfer between the teachers and students via WWW. The relationship between e-Learning policy and implementation consideration is very important with this policy which will integrate between readiness and application, and also support e-Learning processes (O'Neill & Singh, 2004).

Policies and programs to develop the quality of higher education in Jordan must be adopted in line with international standards to help develop regional and competitiveness of the sector (Government of Statistics, 2007). It is emphasized that policies, teaching methods and curricula should be developed to meet the needs of local, regional and global markets (Jordan Times, 2007).

The e-Learning system represents a change in teaching style, also before the implementation of e-Learning, it is required to change the policies and laws which allows for implementing this system from all users inside the university or outside it to access the university's web site and deal with all facilities in this site. Although the old policies do not reflect this change, it is clear that universities must change to these policies in order to reap e-Learning benefits (O'Neill & Singh, 2004).

National ICT policies can serve several important functions in the educational process (Khan, 2005). Strategic policies can provide a vision for how education systems might be with the introduction with ICT. The general teachers might benefit from its use in universities. These strategic policies can motivate change and coordinate disparate efforts so as to advance the teachers' overall educational goals to help them to achieve their goals. Companion operational policies can set up programs and provide resources that enable these changes in supported learning and teaching processes. Some policies focus more specifically on the impact of ICT on the educational system, (Abu Samak, 2005). On the other hand, it is difficult to generalize guidelines for e-Learning systems in all environments in the world, because these often vary considerably in all the countries, consisting of different policies and guidelines (Nada, 2005).

Mason and Wozniak (2007) mentioned one barrier for staff to easily adopt e-Learning. To get successful e-Learning, staff need to be comfortable with technology when they use it. e-Learning policies emphasize that pedagogical reforms should be aligned with ICT training that provides teachers with new pedagogical skills in their teaching and the legal potentials.

According to the Ministry of Education in Jamaica, in terms of using information technology in the education sector, some policies to implement IT are mentioned. As we seek to realize the benefits of the new technology in our lives, the ministry recognizes the risk of increasing the knowledge gap, and so the policy pays special attention to the issues of access and equity as they expand the opportunities for lifelong learning for all their citizens, anytime and anywhere (Mutula, 2002).

The use of e-Learning for teacher development provides an opportunity for policy-makers and administrators to carefully consider existing policies to determine the extent to which they support or impede the successful use of e-Learning. Policies related to accreditation, standards, budget allocations, and personnel decisions in teacher development programmers should support the use of e-Learning. Policies for merit, tenure, and promotion should reward the innovative and effective uses of e-Learning for teacher development. Policies related to the security of computer networks and the appropriate use of e-Learning tools and resources may need to be established or updated to support the implementation. Policies related to hiring practices should include guidelines describing the desired technology skills of new employees (Resta, 2006).

O'Neill & Singh (2004) called for adopting e-Learning by higher education, where institutions policy involved a significant commitment to e-Learning, supported teaching and learning practice and widened participation by offering greater flexibility for students and teachers. In order to achieve benefits of e-Learning adoption, universities followed a top-down approach. The educational management supported the necessary institutional changes across some policies which would support e-Learning implementation in higher education. Various policies of staff and learner supported the use of e-Learning services including the broad and integrated use of an off-the-shelf learning management system these policies include the integration between support staff, academic faculties at universities and the development of an integrated institutional strategy toward e-Learning implementation in better ways.

There are often huge gaps between policies and implementation in the changes in universities (Cohen & Hill, 2001). Policies are articulated but teachers are often not aware of the details of these policies or their goals, where often these policies are not effective in achieving change at the educational methods. Cohen and Hill (2001) showed that policies were most effectively implemented in the education process where teachers had extended opportunities to learn. On the other side, ICT policy implementation can be at its best when the teacher's role development is included in the specific skills and tasks of ICT into their teaching practices.

According to Abdul Karim and Hashim (2004), an educational establishment needs guidelines to help universities and higher learning institutions to implement e-Learning successfully and efficiently. Darab and Montazer (2011) found in their study that the laws and regulations are the most important indices for the implementation of e-Learning systems by the Iranian universities. Khan (2005) argues that initiating policies that encourage applying e-Learning in a university environment provides legislative decisions that allow students and academic staff to communicate with each other without need to report to the campus. In this respect, Khan further suggests some of the policies that can be applied in e-Learning: The institution has clear policies in applying e-Learning, on the other side the university rules and instructions allow offering the subjects online, the university rules and instructions allow offering assignments online, the subject presented via e-Learning is considered a complete credit subject, the policies of the university allow the staff and the students to communicate via the university site, the academic staff gets the legal support to teach online and submitting assignments online contributes to students' success.

Before adapting e-Learning the higher education establishment must recognize online learning as acceptable learning model by providing the same funding level of independent program delivery model (Gorbachev & Malchenko, 2006). This is a shift recognizing and accepting the validity of online teaching and learning environments. Universities now should have policies on using wireless technology to avoid cheating. Both the language and the tools have changed.

### 2.14 Demographic Factors

The demographic factors used in this study are considered with regard to e-Learning readiness among academic staff at Jordanian universities. These factors include experience, age, gender, rank, type of the university, and specialization:

#### 2.14.1 Experience

Teachers have many concerns about the use of computers in the professional performance. Some are skeptical about the value of computers in education (Sadik, 2005; Noor & Agboola, 2005). Actual experience with the computer can play a major role in reducing computer anxiety, which is one of the main sources of teacher resistance to integrating technology in their professional performance (Abu Samak, 2006). As Checchi (2006) has shown that positive attitudes increase computer experience.

Yuen and Ma (2002) investigated the relationship among computer experience, teacher anxiety and various demographic variables, specifically learning style, age, gender, ethnicity/culture, subject area, educational level and type of school. Research has shown that teachers' negative attitudes towards computers change after receiving formal training about computer use. Yushau (2006) found a significant correlation

between prior computer experience and attitudes towards computers, both of which [attitude, and experience] significantly affect teacher competence with computers.

Abu Samak (2007) found no computer experience differences in attitudes towards computers. Tuparova and Tuparov (2006) found that experiences lead to the successful implementation of e-Learning within companies. Furthermore, Stopsky (2000) argues that a large number of academic staff is already using the Internet in their jobs. However, he revealed that the early experiences with technology in the past show us that the first excitement turns out to be "inertia or recasting the new into a different form of the old" (p. 37). Computer experience encourages positive attitudes towards computer use, whereas negative attitudes can be attributed to a low level of confidence as a result of a lack of experience with the computer. In essence, the tendency to resist the use of ICT in the classroom reflects a vicious circle for teachers: a low level of confidence with computers results in a high level of anxiety that leads to negative attitudes and ultimately influences the learning and teaching process (Mashan, 1993).

According to Alajmi (2010), significant differences were identified among e-Learning adopters and non-adopters regarding experience difference and department discipline, both technical and non-technical. Albalawi and Badawi (2008) reported that there was a significant difference among faculty members' e-Learning perception related to their experience. Czaja and Sharit (1998) in their study revealed that there is no influence for the level of experience on determining the attitude of faculty members toward the use of new technology.

Akaslan and Low (2011) reported that academic staff have good experience to use e-Learning in their works. Yang, Mohamed, and Beyerbach (1999) investigated the relationship among computer experience and teacher anxiety and experience variables; they found significant differences between experience levels in using IT in the work place. Teachers may experience anxiety about possible technical problems, as they would have less understanding of how to avoid or solve such problems in using e-Learning (Becta, 2004; Sadik, 2005).

According to Samarawickrema and Benson (2004), teachers lack experience and are not accustomed to developing teaching resources, and think that they need to know more about production skills. Experience of some universities on development of e-Learning require significant modifications to adapt to new environment and imply not only changes in course models, but also change in staff attitudes (Baptista & Mcpherson, 2002). Mihhailova (2006) pointed out that many of the lecturers who did not have previous experience with e-Learning stressed the lack of time, motivation need, and lack of appropriate compensation system. Those who were teaching online also needed orientation in order to get skills for their own readiness to teach in the online environment (Hewett & Powers, 2005)

### 2.14.2 Age

Some studies have shown that age is not a significant factor in reference to teachers' attitudes towards computers (Alammari 2004; Abu Samak, 2007). On the other hand some studies have shown that age is a significant factor in reference to teachers' attitudes towards computers (Sadik, 2005; Noor & Agboola, 2005). Additionally, a number of studies have revealed that age plays a critical factor in relation to attitudes

towards computer (Noor & Agboola, 2005). Older teachers had more positive attitudes towards the use of computer in instruction. However, young teachers demonstrated a higher computer literacy than older ones. Alajmi (2010) found significant differences among e-Learning adopters and non-adopters regarding age difference and department discipline, both technical and non-technical.

Czaja and Sharit (1998) revealed that age has no influence over adopting a new technology. Kendel (1995) in his study found that age was a statistically significant factor for teachers' attitudes towards computers. However, in his study, the younger teachers demonstrated more positive attitudes than older teachers towards computers. Also, Aldojan (2007) showed a significant difference across age towards the use of e-Learning.

Alammari (2004) examined the correlation of age with the attitudes and usage of computers. He found that age was significantly related to some uses of computers, such as e-mails and web page development. However, the findings of the study revealed that age was not significantly correlated with attitudes towards computers. Thus, there appears to be conflicting results in the literature with respect to age as a factor related to attitudes towards computers. Age was examined in this study to ascertain the extent of the impact of this characteristic on Jordanian teachers' attitudes towards ICT.

Yang, Mohamed, and Beyerbach (1999) investigated the relationship amongst teachers' age, anxiety and experience variables. They did not find any significant difference between age levels in using IT in the work place. Spiegel (2001) investigated the use of

computers at four public schools in the Netherlands. He found that age was significantly related to some uses of computers, such as e-mails and web page development. Kendel (1995) found that age was a statistically significant factor for teachers' attitudes towards the use of computers. He also found that younger teachers demonstrated more positive attitudes than older teachers towards the use of computers.

### 2.14.3 Gender

Mashan (1993) revealed that gender was significant for the perceptions of e-learning. The difference between gender gap in computers has been the interest of sociology scholars since the early 1980s. Therefore, some various factors associated with gender differences have been explored in the education research literature. Research found that males are more experienced with and have more positive attitude towards computers than females.

Additionally, a study conducted in Malaysia by Agboola (2005) revealed that gender was significant for the perceptions of e-Learning confidence. The analysis confirmed that there was actual significant interaction between gender and e-Learning confidence.

Ong and Lai (2004) found that gender differences and users' attitudes towards e-Learning can help researchers in deciding how to take gender into consideration to develop and test e-Learning theories in the future. Moreover, managers and co-workers, can realize the same e-Learning systems may be perceived differently by gender and then improve user acceptance by enhancing the techniques of E-Learning and the processes by which they are implemented.

So and Swatman (2006) found that female variable respondents gave a more positive answer than males – it would appear that the findings of this study support the studies of Yuen and Ma (2002), and the study of Russell and Bradley (1997). Kovacic (2005) in his study on the usage of e-Learning between males and females found no significant differences between the two variables.

Some studies have found no gender differences in attitudes towards computers (Gressard & Lloyd, 1986, Sadik, 2005) while some other studies found gender differences (So & Swatman, 2006; Abu Samak, 2007). The contradictions in the findings of the aforementioned studies may be accounted for by biased sampling, inappropriate data analysis methods, or multidimensional computer attitude scales (Chen & Chen, 2006). Yang, Mohamed, and Beyerbach (1999) investigated the relationship among gender, they found no significant differences between genders in using IT in the work place.

### 2.14.4 Type of University

Some studies have shown that type of university is not a significant factor in reference to the use of information technology. Arsham (2002) found most academic members in their work place have good knowledge in using ICT in their works. Also, Sadik (2005) mentioned in his study that he didn't find any significance difference regarding the type of university.

### 2.14.5 Academic Rank

There is only a few research conducted under this term, and among them, Aldojan who (2007) found in his study that there was a significant difference across academic

ranks toward e-Learning readiness. A study conducted by Minidi & Hlapanis (2005) revealed that some teachers face obstacles when using e-Learning tools. Also Sadik (2005) found in his study no significant differences between academic rank towards the use of e-Learning.

### 2.14.6 Specialization

Agboola (2005) revealed in his study that there were no statistically significant effects of the areas of specialization on e-Learning among academic staff at International Islamic University Malaysia (IIUM). Additionally, Gurr, (1997) and Sadik (2007) revealed no significant differences between Humanities and scientific faculties towards the use e-Learning. However, they found that the number of academic staff in science specialization was higher than the number of academic staff in humanities specialization with regard to Internet use in their work. Albalawi and Badawi (2008) reported a significant difference among faculty members an e-Learning perception related to their major and experience. Faculty members of Computer Science, Engineering, Education, and Arabic were a little bit positive than the faculty members of other majors. More training in e-learning is badly needed

### 2.14.7 Higher Degree

In this study, the participants had earned their degrees from a variety of different countries. Most faculty members in science colleges are Jordanians who graduated from western educational institutions (USA and UK) (Mobaideen, 2006). Aldojan (2007) found in his study that there was significant difference between the place of study in e-Learning readiness.

## 2.15 Experiences of Some Countries in E-Learning System:

### 2.15.1 The United States of America

The USA has entered the computer education into the teaching process in the American universities at the end of the 1950s. University of Dartmoth developed the first nucleus program to use computer in learning, which later became known as computer-assisted learning (CAL).

This idea was widely accepted by students in universities such as New York University, and in government jobs. In addition, there was development of simulation software for the teaching of science in 400 schools and 600 teachers teaching science in which the number of students was 25000 (male and female students). In Stanford University in 1963, 12000 showed results with regard to the ability to use computers. The strengthening of the educational process and the process of development has led to the consolidation of technology and learning tools. In 1986, two researchers from the University of Illinois have developed a vocabulary to facilitate the programming of educational materials (Salama & Abu Ria, 2002).

The development and distribution of educational programs appeared at the University of California, in late 1981 to be implemented at a project using computer learning. The goal was also to encourage faculty members to use computer at 19 deprived universities and the project achieved widespread success, which prompted the competent authorities in the design and development of learning through computer in 1996 within the framework of the plan. The 1996 National Education Technology Plan that included Seabirds Education has the following objectives:

1. Train teachers to use computers to help students.

2. Provide modern computer to all teachers and students.
3. Provide effective software for each school.

In the application of this project the proportion of educational institutions opted on the web was estimated at about 35% of the total American schools, and at the end of 1999 it has risen to 95%, which demonstrated the feasibility of learning by computer in USA (Salama, & Abu Ria, 2002). Some developed countries, such as the USA, have implemented IT in higher education, particularly in the area of education for labor armed with technology. Studies by scholars such as Abu Samak (2006); Alammari (2004); Aldojan (2007) have shown that the goal of their research was to increase academic achievement in the use of computer learning (Nada, 2005).

### 2.15.2 Malaysia

Malaysia started the development of e-Learning phase of vision in Malaysian plan 2006-2010. Abdullah bin Haji Ahmad Badawi, Prime Minister of Malaysia mentioned that the government is interested in continuously developing the people in both public and private sectors. Also, the government will set up national lifelong learning council and all public and private higher educational institutions should establish one centre of life-long learning (Goi & Ng, 2009).

Malaysian experiment aimed to introduce a comprehensive information technology and e-Learning to the education sector. The Education Act 1996 was issued to introduce computers to connect all schools through Internet, which was expected to be completed in 2000, but the economic jolt in 1997 prevented the completion of this plan. In spite of that, the internet was linked to schools in 1999 by 90%. Malaysian

internet project was applied to most local schools and this technical smart schools, project aims to connect schools and universities through column backbone of the fiber optic network, which allows the transfer and exchange of multimedia information on the Internet (Goi & Ng, 2009). Malaysia is a fast developing country in the education sector as well as the adoption of information technology. The country is transforming itself and moving aggressively towards building an effective and successful economy. According to Watkins (2005):

> "……we are information and knowledge hungry. We need greater speed, more efficiency and effectiveness in all endeavors. For this, we need all the knowledge and information that we can get from all sources, and from around the world" (p. 59).

### 2.15.3 Australia

Australia consists of several states and separate ministries; each state is responsible for education, and discusses the use of varying technical degrees of each. The mandate was applied in Victoria plan to introduce computers in 1996 and ending in 2001 to link all educational institutions with Internet for the use in the learning process. They gave the opportunity to workers in the education sector who do not want to use the computer at early retirement resulting in the quitting of nearly 14000 teachers out of 140000. The results indicated the impressive success achieved by the process of learning by computer, which was praised by Bill Gates, in the hope to apply this technology in all Australian states.

### 2.15.4 England

In Britain the use of computer began in the late 1960s. The inception took place in universities and colleges, including the Queen Mary College and the College of Chelsea, and at the University of Edinburgh. In 1972, the state's budget was

estimated at a million sterling pounds to develop learning through computer and was extended to five years. This project was on behalf of the national development program in computer-assisted learning and the most prominent achievements of the national development program was in the sub-projects in the fields of computer-assisted learning and learning of orbit totaling seventeen projects that included: nineteen projects in higher education and continuing education, three projects in secondary education and three in military training. However, the higher education projects were of the most important achievements, including:-draft computer-assisted learning, and project engineering science, teaching physics laboratory and computer education and computer-assisted service university. The second dimension of the program was that learning computer orbit played the role of the supervisor of education and the results showed that learning gave positive signs amongst the students.

**2.15.5 Canada**

Iadat (2004) had an interest in the educational institutions. According to him, the Canadian computer science has been introduced in the early 1970s, with the emergence of centers that support this trend and the most important of which was the Ontario Institute for Studies in Education, the National Council of the Canadian research.

In addition to the Queen's University and others, Ontario Institute for Studies in Education, sponsored the most important projects in the use of computer on learning. The draft, which extended from 1980-87, claims to provide computer-assisted learning software targeted for students in first grades participating in the project with

more than 10000 students in the province of Ontario. The results showed that 90% of teachers believed that the project contributed to the development trends of the students in the use of computer and contributed to the improvement.

The project helped to increase the effectiveness towards learning, and lifting educational motivation towards learning. However, some of the problems that have prevented the participation of everyone, included: limited number of software quality, non-clarity of objectives, the difficulty of providing the necessary funds, the shortage in the preparation and training of teachers which were discussed in some research studies (Salama, & Abu Ria, 2002).

**2.16 Education in Jordan**

Jordan is a comparatively small Arab country with a demographic of roughly 5,462 million and land area of 93,000 square kilometers (Figure, 2.4). The population growth rate in 2004 was estimated at 2.8% a year, although the rate of natural increase was 2.4% a year. Roughly 38% of population is less than 15 years of age. The average age of population is 15-65 year which comprises about 58.5% and the over 65 years consists approximately about 3.5% (Department of Statistics, 2004).

Inspired by the leadership of his majesty King Abdullah Π of Jordan, the ministry of education took all the possible future plans and procedures to develop a strategy that can meet challenges facing higher education for better future progress. Towards this end, the government set up a plan with a clear timetable to upgrade the higher education sector and enhance scientific research - which is a key to reform and modernization. According to the government of Jordan, the Jordanian citizens are the

driving force behind development. Moreover, education and empowerment of citizens will continue to sustain a high degree of excellence. Therefore, the Monarch directs the government to take heed of every forum on higher education in Jordan, seeking to develop the sector and boost scientific research, as stated by the government of Jordan.

### 2.16.1 Higher Education in Jordan

The Hashemite Kingdom of Jordan is located in the heart of Middle East and the Arab World. Jordan is bordered from the north by Syria, from the east by Iraq and Saudi Arabia, from the south by Saudi Arabia and from the west by Palestine. The Gulf of Aqaba is its only sea outlet, which gives access to the Red Sea. Its western boundary is the famous Jordan River, the Dead Sea and the West Bank (Figure 2.4) and(Finger 2.5). Jordan is the crossroads of the Middle East and is within easy reach of all major European cities as well as the African continent (Abu Haija, 2001).

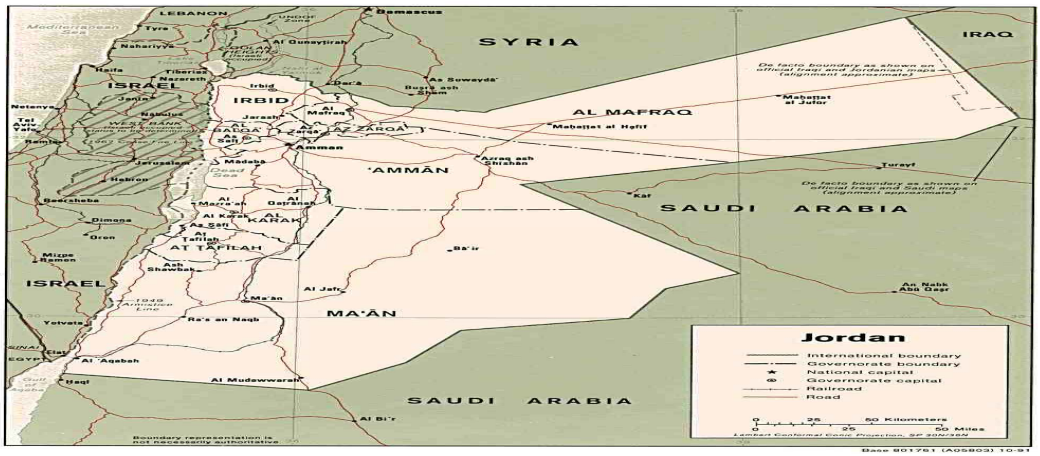


*Figure 2.4: Map of Jordan. (Jordan Times, 2007).*

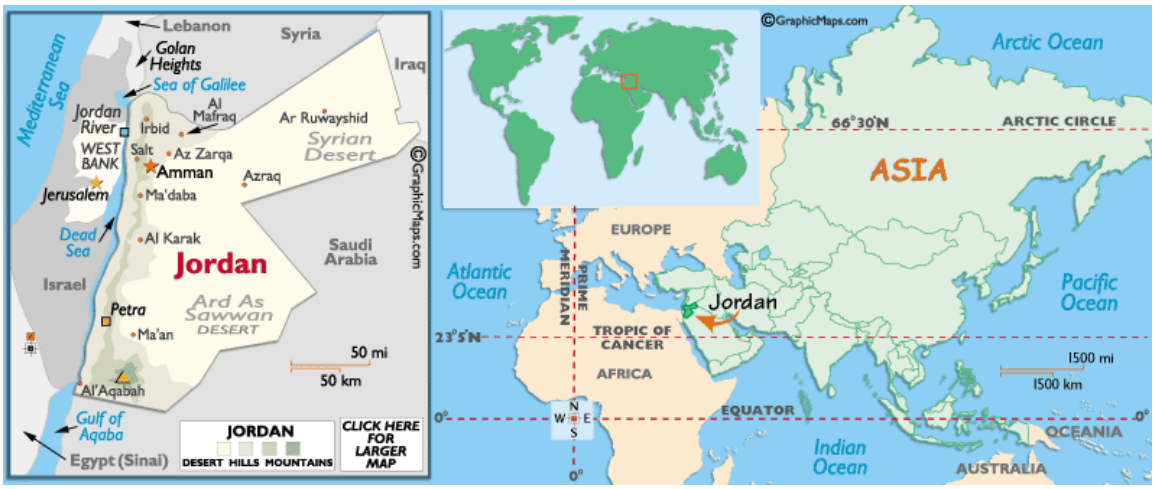


*Figure. 2.5: Location of Jordan on the World Map. (Jordan Times, 2007).*

### 2.16.2 Brief History of Higher Education in Jordan

Higher education in Jordan began with the second half of the twentieth century, namely the sixties, when numerous Teachers' Colleges were established throughout the country. Their establishment provided the necessary teaching manpower needed to meet the high demand on school education characterizing that era. The first public Jordanian university, University of Jordan, was established in 1962, followed by Yarmouk University in 1976, and six more public universities were established in different parts of the Kingdom since that date. In 1989 the Council of Higher Education endorsed the first policy document authorizing the establishment of private universities. Amman University, the first Jordanian private university, was established in 1990. An impressive number of twelve more private universities were founded since that date (Abu Haija, 2001) and the last university was Al Tafila University 2008.

Kirkman and Osoril (2003) in their study to the Center of International Development at Harvard University, showed that Jordan possesses a good rank among world

countries in information technology and ranked the first among Arab countries in internet usage in these areas, as shown in the figure (2.6):

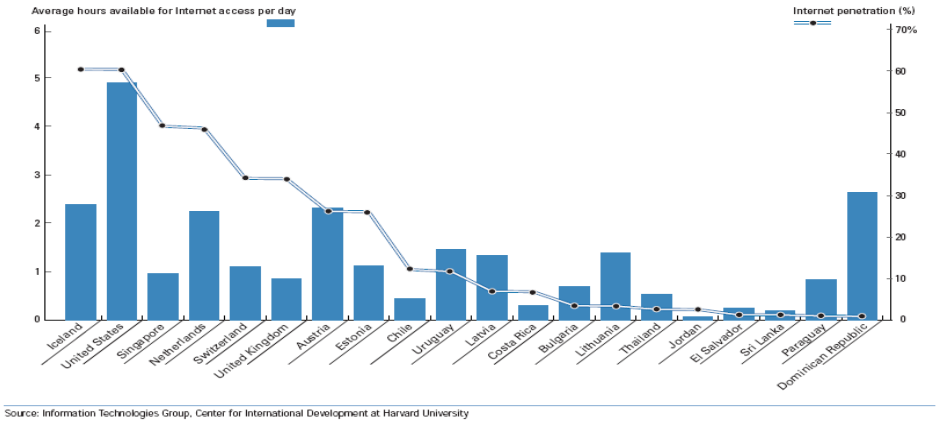


*Figure 2.6: Jordan Rank Among World Countries in Information Technology. (Kirkman & Osoril, 2003).*

### 2.16.3 E-Learning in Jordan

Jordan like most countries is an ambitious country that usually takes into account the concentration towards employing appropriate techniques in order to be educationally developed. This can be achieved only by applying the concept of Information and Communication Technology (ICT) through using different electronic and digital devices in almost all domains of life in Jordan especially at universities sector.

There is a fast progress in the education sector and computerization, in addition to a rapid spread of knowledge centers in all areas in Jordan, and the establishment of a legal environment sustaining this progress (Khatib & Maayan, 2006).

Jordan is considered to be one of the first Arab countries in the region that made use of the information technology. It provided this service in 1995 via the National Information Center. In April 1996, the private sector started using the internet

service provided by the Global One Company (Zyadat, 2000). The Jordanian government issued many regulations that specify the nature of the activities that can be offered by Internet (Abu Samak, 2006). In Jordan, the Ministry of Education endorses the International Computer Driving License (ICDL) as the optimal computer certification program for all teachers. On the other side, this system extended to all public and private universities. The program is based on seven modules, and tests the following topics:

1. Basic concepts of IT
2. Using the computer and managing files
3. Word processing
4. Spreadsheets
5. Databases
6. Presentations
7. Internet and e-mail (Khan, 2007)

During this time, the government started to train more than 65,000 teachers around Jordan from the Ministry of Education and received computer and Information communication technology (ICT) training. It was expected that, by the end of 2008, 75,000 teachers would have been trained to use ICT in their teaching, 45,000 would have obtained the international license, and 33,000 out of a total of 38,000 teachers would have been trained to use internet. 2,155 of which would have been trained to use the thinking tools program by using information technology, and 1,570 would have been trained on the World Links program. The Jordanian government seeks to implement information technology in Jordanian establishments, towards using e-Learning in the near future at all universities (Khatib & Maayan, 2006).

E-Learning has become a working life reality in many educational institutes in the developing countries (Haney, 2002). Al-Bayt University was the first University in Jordan that offered computer-based education which helped learners to acquire higher thinking skills and enabled everyone to learn at space. However, universities in Jordan are still beginners in e-Learning application (Iadat, 2004).

The importance of implementing e-Learning in higher education is based on the fact that the number of students who want to join the Jordanian universities either to obtain their degree or complete their postgraduate studies, find it difficult to be admitted. This problem composes a challenge to the Jordanian universities because they are not able to accommodate this big number of intake (Abu Samak, 2006). In this respect, many studies mentioned the importance of e-Learning in assisting universities to overcome many problems that are related to the increase of students' number, the barrier of time and place and the shortage in the number of academic staff. This system will be panacea to many problems which faced traditional teaching processes in all universities (Baptista-Nunes & Mcpherson, 2002).

In Jordan, the planning for e-Learning integration into the teaching and learning processes began before two years ago, also e-Learning infrastructure in human resources is still in the first step towards completion: it is still in the process of providing proper academic staff and rooms equipped with basic multimedia projection systems and courses using the internet. The reasons of training the academic staff was also undertaken and covered the use of presentation and word processing tools such as PowerPoint, chatting rooms, video conference. Word was

utilized to create teaching and learning materials online. The preparation and training reflected the objectives and goals of using e-Learning at all universities in Jordan. Moreover, the objectives of e-Learning and instruction are as follows:

1. Develop e-Learning materials.
2. Use the synchronous and asynchronous e-Learning materials in teaching and learning.
3. Use e-Learning materials to support conventional teaching.

e-Learning is considered vital to all Arab countries. It is a solution to many of its human development problems, but on the other hand, this solution is not as smooth as it seems to be. e-Learning is facing a lot of obstacles, barriers, and challenges in Arab countries in its application and Jordan is not exception (Almusaswi & Abdelraheem, 2006).

Jordan is trying to transform itself into an information society in the age of technology. Reforms have been formulated to be introduced in many aspects of life in the near future. This reform requires from all universities in Jordan to implement their own e-Learning platform and therefore the service will become ubiquitous in the near future, and teachers from all sectors are encouraged to integrate e-Learning in their teaching in the coming years (Education and Manpower Bureau, 2004).

The setting for this study is a small developing country with limited natural resources. It is not the only country that faces educational challenges, because it is dependent on the human element development across education. e-Learning is a major global trend and Jordan is competing in an increasingly borderless education

market. Although a small country such as New Zealand, the Ministry of Education of New Zealand attempted to face new challenges with the use of information technology, and continues to put its name in e-Learning international list as an increasingly competitive domain (Ministry of Education, 2004).

With the growing interest in the industrialized countries in the development of the means of education, Jordan has introduced the modern technology to achieve its hopes. The Arab World however is required to introduce this technology to make use of it, like other developed countries. Across the Arab states the degree of application of technology for this has been introduced to the Arab countries in the beginning of the 1980s, including the administrative aspects such as planning and budget preparation and the work of the maps. Training and support from educational leadership to academic staff is required to ensure that technology is integrated for effective and efficient use (Wilson, 2001).

The present study is considered the first of its kind in field studies related to internet usage in Jordan. For this purpose a questionnaire will be designed and distributed to a sample of 619 users. Studies referring to the use of these services provided results indicating that youth are the main users of the internet services, with 79% used international sites. This result supported the government to encourage them to use it in the education sectors at various levels (Qaddah, 2002).

Educational software, however, has been introduced in the Arab universities recently, including Jordanian universities. Given the advantages of the structure of the fabric of Jordan in the field of education between the Arab trainers, the Arab

trainer showed Jordan's experience in 1982 to the Board of Education, where he started researching on computers for the first three stages of the secondary education in 1985 and expanded the experiment to include six new schools in the three cities namely Amman, Irbid and Zarqa.

In June 1986, the Jordanian government signed an agreement with the British government to provide schools with computers in the year 2000. Further, Jordan remained an observer in this area of the expansion which was prompted however, by Minister of Higher Education implemented e-Learning technology in the teaching and learning process at the public and private educational institutions, from the beginning of 2000 until recently. However, despite the availability of this technology.

Jordan is still suffering from a lack of technical staff and preoperational training on how to qualify for the management of this program, therefore arrangements were made to give academic staff in the Jordanian universities official sessions on how to gain the necessary skills to deal with such technology in the learning process (Iadat, 2004). Every state employs information technology in developing the social, political and economic aspects of life, the outcome of all these sectors and the common denominator between them is education. Technology nowadays controls production and the computer is at the heart of this process.

The Hashemite Kingdom of Jordan, by the efforts of his Majesty's King Abdullah II, is witnessing economic reform that is strategically based on education at all levels. Despite of its scarce natural resources, Jordan relies heavily on its human resources

and that has given it the security and stability it enjoys in the whole region and the whole educational system has been over-handed entirely by investing technology in the education process. This has given rise to:

1. Improvement in methods of teaching so much, so that the class-room laboratory has been a place for active discussion and revision.
2. Increase in interaction between students and computer trainees in order to get on the sport feedback with the sensitivity on shyness of being in computer.
3. Boosting students' ability to synthesize problem-solving without loss of concentration.

Therefore, Jordanian educational institutions as well as the Ministry of Education, are seeking to adopt this new method of teaching, namely electronic learning, in the teaching and learning process. As mentioned above, e-Learning increases participation and interaction in using technology and harnesses all that is new in the education process (Qaddah, 2002).

In Jordan, for example, computer technology is a basic concept of the learning environment. Universities in Jordan, enlightened with the major importance of electronic learning (e-Learning), took the step in activating computer-based technology in the learning environment by holding many training courses for the people indulged in the realm of the learning process such as teachers, instructors, supervisors, and administrators to develop the methods and approaches of teaching through computerization (Iadat, 2004).

All of these are attempts to save time and effort as well as applying computer-based technology on teaching instead of traditional ones. In spite of the great success of e-Learning in the industrial countries, many obstacles still impede e-Learning in the third-world countries. The concept of e-Learning refers to the ideal investment of computer-based technology along with introducing academic programs in attractive and active ways. As a hot issue in the field of modern technology, Jordan has started to apply e-Learning despite all the financial, administrative, technical and technological problems that were found.

It has long been noted that the administrative obstacles are represented in the lack of basic standards to formulate the electronic content. There are many terms that stand for e-Learning such as web-based education, online education, electronic education and others (Iadat, 2004). E-Learning is a method of teaching through modern electronic means such as computers, networks, multimedia, and web pages, in a way that could enable us manage the educational process, control it, as well as a way to assess and evaluate learners' performance. This technological path will potentially enhance the learning process, but not replace the lecturer or tutor (O'Neill & Singh, 2004).

E-Learning is established upon individual participation in multi-learning activities which might create an encouraging environment of learning, as well as a desire for perusing learning. E-Learning helps the learners to facilitate what is called "learning to learn" and this would create a motivation for more positive learning and help individuals increase their potential knowledge (Alsharah & Al Souqi, 2005).

In addition to this, e-Learning helps in achieving a sustainable learning process which leads the learners for more inquisitiveness towards educating themselves in different aspects of learning. e-Learning is characterized as a flexible and easy to use device in the hands of the learners which copes with the psychological traits of the adult learners.

In Jordan there are more than twenty public and private universities. The number of students enrolled reached more than 180 thousand students, while the number of faculty members is 5696, and Jordan was ranked the third in the world after the United States of America and Sweden, for having more than 15 thousand foreign students enrolled for various university degrees. But despite these huge achievements, the universities are still suffering from the inability to absorb these numbers, leading to the enactment of the new laws. They face a permanent deficit in their budgets, they have problems with educational process and the accompanying resistances to change are some of the problems that hinder universities in thier process of modernization and development (Khatib & Maayan, 2006).

**2.17 Research Model**

This study's primary focus is on the level of e-Learning readiness. Based on the literature review and research problems, an integrative framework as presented in Figure 2.8 was developed.

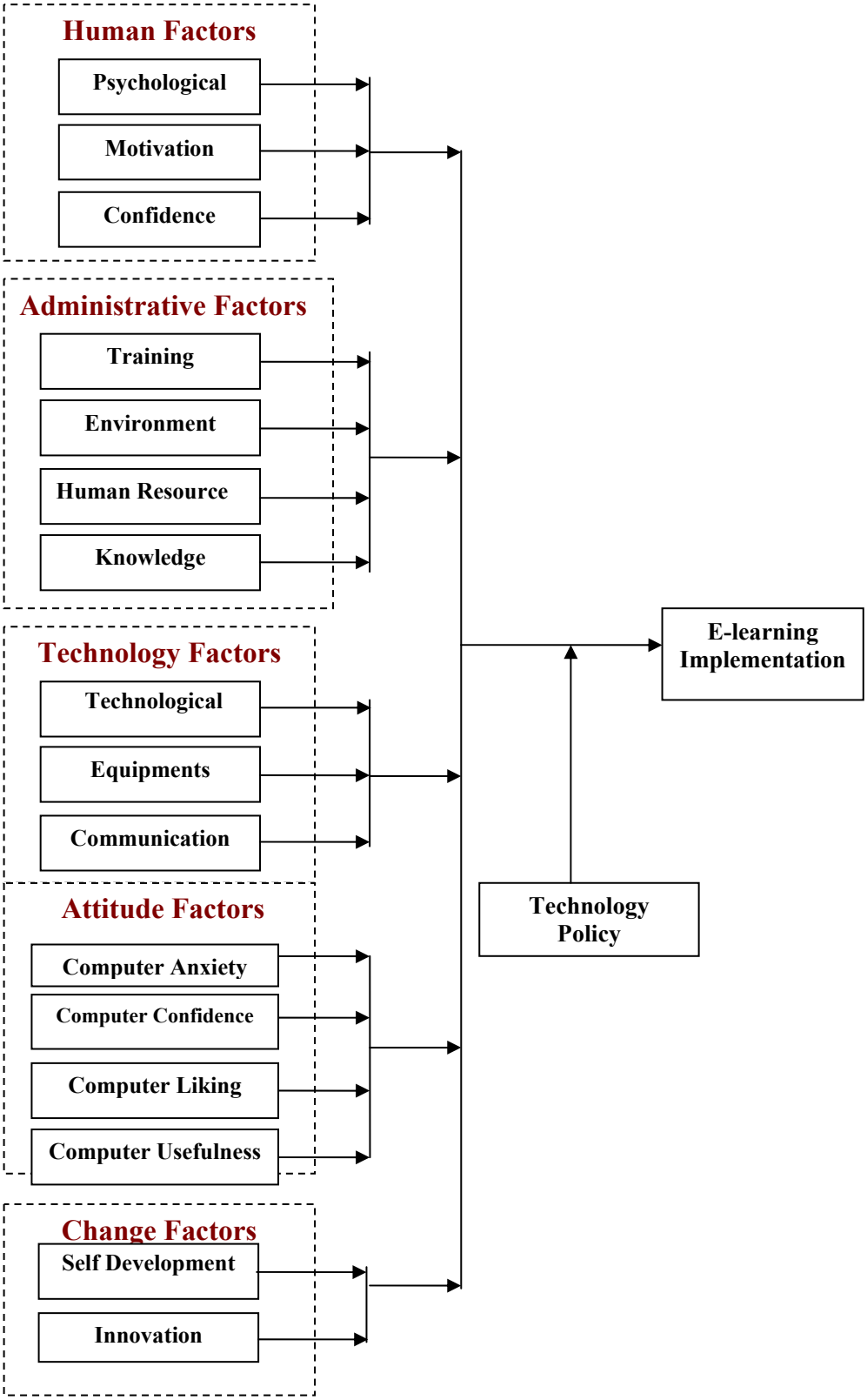


*Figure. 2.8: Research Model.*

The research model (Figure. 2.8) is derived from Chapnick (2000) model of e-Learning readiness. It is based on Innovation Decision Process Theory. The model predicts staff's ultimate readiness to use e-Learning in their teaching when they have high level of readiness with other determinants of readiness such as human factors, administrative factors, technology factors, attitude factors. Besides these four major factors, the model further noted that readiness is also influenced by a variety of variables such as personal characteristics of staff's (age, experience, gender, specialization, postgraduate place).

The researcher adopted Chapnick model, and developed her model to fit the educational environment in Jordan. The reason for that is that Chapnick's model is used in different sectors to measure the readiness factor in order to determine the levels of readiness. Some researchers have also used this model (So & Swatman, 2007; O'Neill & Singh, 2004, Khan, 2007).

## 2.18 Underpinning Theories

In the following paragraphs, the researcher presented some theories and models developed in different disciplines and used in predicting, explaining, and understanding individuals' acceptance and adoption of new technologies.

### 2.18.1 Rogers Theories

For the scope of this study, some of the diffusion elements, which were discussed, are self development and innovation that are related to individuals, groups, and organizational systems. The underlying change factor determines the extent to which an innovation is adopted. Theory describes a set of hypotheses that apply to all

instances for investigating some phenomena and help leaders in making decisions, such as philosophy and its effective implementation through practice stage. On the other hand, a theory provides an evaluation practice for any task though in turn may be adjusted by findings from practice that show how a theory is inadequate for a designed task.

The importance of leaning theory is to identify the beliefs of the values about learning. Theory provides the structure and guidance for applying a certain design methodology or a teaching strategy that should be applied based on the beliefs of how learning and new technologies occur that support innovative and access to continuous learning environments (Reigeluth, 1996).

Diffusion of information technology in this era has had impacts in all societies and it has become momentous to adopt Roger's theory, which will support this study. This theory examines some factors influencing the diffusion of Internet usage (WWW). On the other hand, process adoption refers to the stages in which a technology is selected for use by an individual or organization, and the general use and application for internet connotes a sense of acceptance, and transparency within the used environment towards using new learning on this context. Internet technology can be used in various methods like: e-mail, chat rooms, forums, databases, and education resources (Rosenberg, 2001).

Numerous studies refer to the momentous use of the theory at any study to support the project. According to Nichols (2003), e-Learning is still a theory, but some studies prefer to use adoption technology theory. This time Internet technology is

individually available to members and students who can use their own systems to their own purposes, Internet technology can be used in various methods; such as: e-mail, chat rooms, forums, databases, and education resources etc (Rosenberg, 2001).

However, Rogers (1986) in this theory (WWW) indicated that adoption has three important ways to deal with the adoption and use of information technology (e-Learning):

1. A critical mass of adopters is needed to convince the mainstream teachers of the technology's efficacy.
2. Regular and frequent use is necessary to ensure success of the diffusion effort.
3. Internet technology is a tool that can be applied in different ways and different purposes.

#### 2.18.1.1 Innovation Decision Process Theory

Rogers' theory (1986) is of great importance to understand the cultural context or the local environment in which such a technology is produced. Significantly, the concept of adoption here brings the notion that the concept of attitudes is also crucial, that is, perceptions of a technology in the local cultural environment may have a strong impact on attitudes that lead to adoption decisions. Rogers' Innovation Decision Process Theory includes (1) knowledge. (2) persuasion. (3) decision. (4) implementation. (5) confirmation and diffusion of innovation theory presented in Figure (2.9). The factors are titled as: (1) technology; (2) innovation; (3) people; and (4) self-development. It has been suggested that each factor might have three different constructs: (1) resources; (2) skills; and (3) attitudes. These theories provide a theoretical background for these factors.

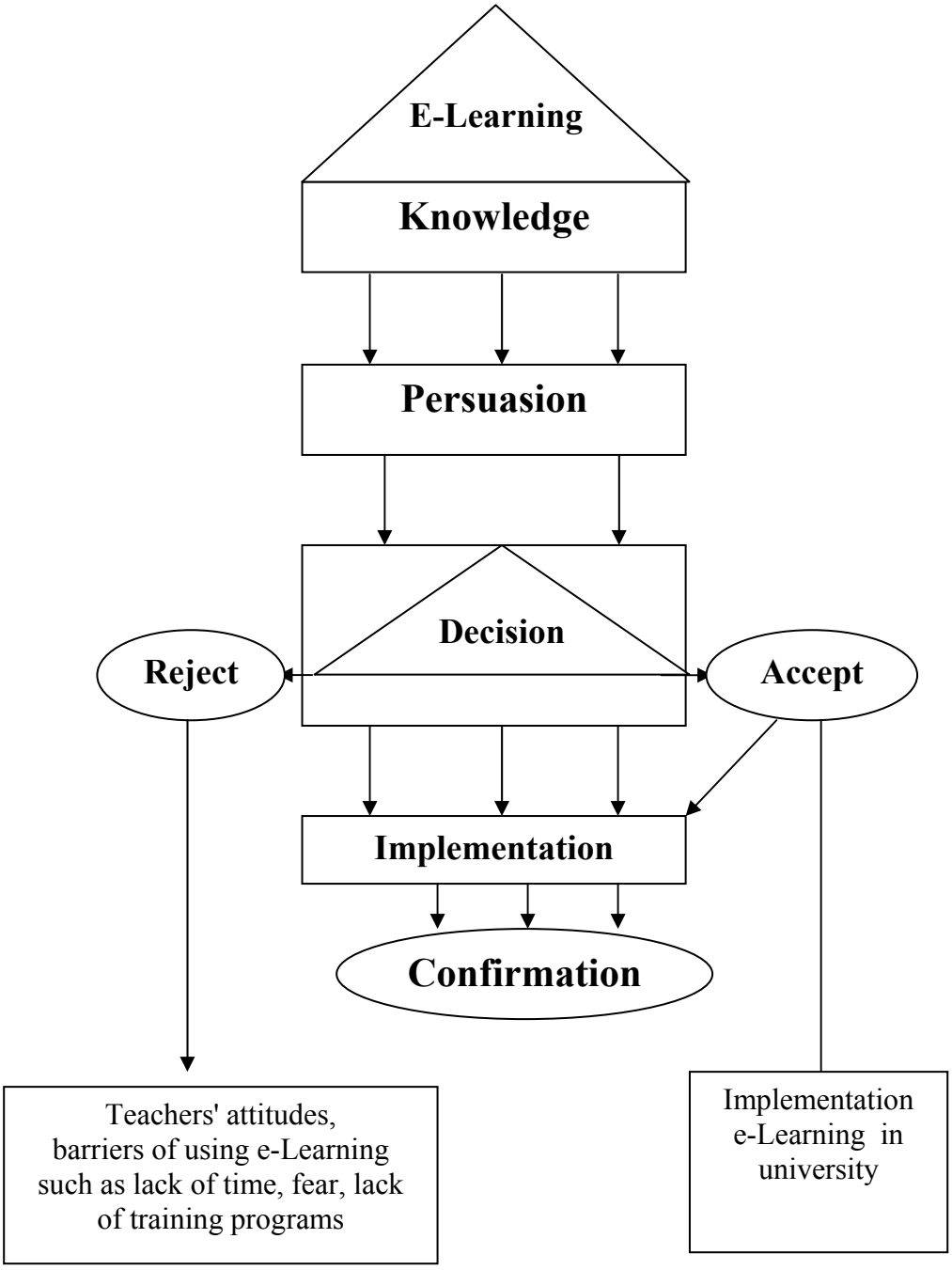


*Figure 2.9: Roger's Theory. (Rogers, 2003).*

Rogers' theory explains the innovation decision process and the factors that determine the rate of adoption. It also helps in predicting the likelihood rate of

adoption of an innovation. This theory does not provide how attitude evolves into acceptance or rejection decisions, and how innovation characteristics fit into this process. Rogers stated that rejection decision can happen at any step in the decision process and attitudes are formed consequently.

This theory is launched in five stages in the diffusion process shown in Figure 2.9, first: we must learn about the innovation (knowledge). Second: we must be persuaded of the value of the innovation (persuasion). Then we must decide to adopt it (decision). Innovation must then be implemented (implementation). Finally the decision must be rejecting or accepting this theory (confirmation). This innovation decision process used to describe the progress of the adoption process to adopter of an innovation: knowledge of an innovation. Attitude toward the innovation, decision to adopt or reject implementation of the new idea and the last one to confirmation of this decision. Three of these phases, knowledge, attitude and implementation, are the focus of this theory.

### 2.18.2 Theory of Reasoned Action (TRA)

During the early 1970s the Theory of Reasoned Action was developed and expanded by Ajzen and Fishbein. By 1980 the theory was used to study human behavior and develop appropriate interventions. This theory aimed to develop a theory that could predict, explain, and influence human behavior. Ajzen & Fishbein (1980) demonstrated that an individual's attitude towards any object can be predicted with a high degree of accuracy from the knowledge of the individual's beliefs about the attitude object and the evaluation aspect of these beliefs. More specifically, the attitude is conceived as a sum of the beliefs multiplied by their respective evaluation aspect. An example would be a person's attitude towards E-Learning. Ajzen and

Fishbein (1980) indicated that attitudes consist of three elements: affect, cognition, and behavior. The affective element refers to the individual's emotional feelings or liking of a person or an object.

According to Ajzen & Fishbien's model, attitudes consist of three elements: affect, cognition and behavior. However, the theory was limited by what is called correspondence. In order for the theory to predict specific behavior, attitude and intention must agree on action, target, context, time frame and spicifity (Sheppard et al., 1988). The greatest limitation of the theory stems from the assumption that behavior is under volitional control. That is, the theory only applies to behavior that is consciously thought out beforehand. Irrational decisions, habitual actions or any behavior, that is not consciously considered, cannot be explained by this theory. The theory can be explained by model in Figure 2.10

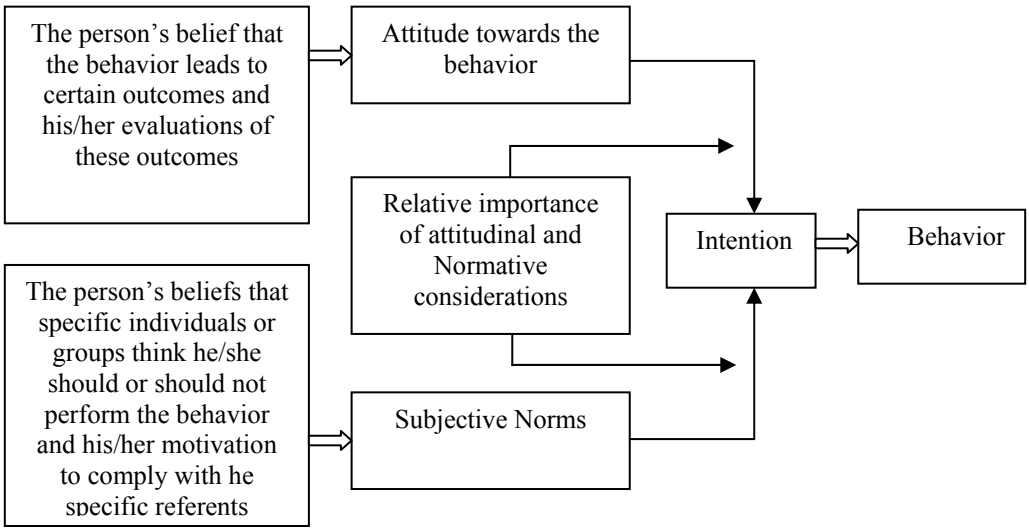


*Figure 2.10: Ajzen & Fishbien's Model. (Ajzen & Fishbein, 1980).*

This theory refers to the degree to which performance of behavior is positively or negatively valued. This means that if a person's attitude changes, his or her

behavioral intent will probably change to. The direct usage means that implementation of e-Learning to be fully understood must be studied as a social process, a change in work and learning practice influenced by e-Learning actions refer to specific goals and the mental focus of the individual at any time in a transformation process. Operations refer to conditions, which have to be present before the goal, that can be reached ; such a framework include human factors that integrate with change of behavior, limited ability, time, and environment. The affective element refers to the individual emotional feelings or liking of a person. The cognitive refer to knowledge about a person or an object. The behavioral refers to the person overt behavior towards a person or an object. In this study academic staff attitudes were measured using the above – components formulated in section four of the instrument.

### 2.18.3 Technology Acceptance Model (TAM)

Davis, Bagozzi & Warshaw (1989) introduced the technology acceptance model in figure 2.11, which described an individuals' acceptance of information technology. The goal of TAM is to provide an explanation of the determinants of computer acceptance among users.

TAM replaced TRA's attitude beliefs with the two technology acceptance measures: Perceived usefulness (PU) referring to the degree to which a person believes that using a particular system would enhance his/her job performance; and Perceived ease of use (PEOU) referring to the degree to which a person believes that using a particular system would be free from effort (Davis et al 1989). In addition the easier a technology to use, the more useful it can be.

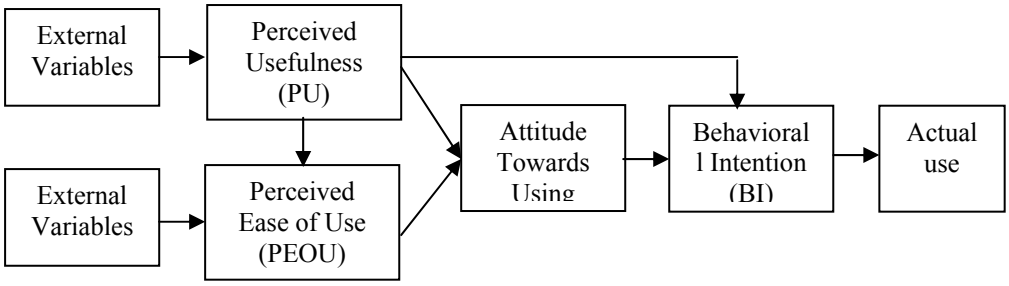


*Figure 2.11: Technology Acceptance Model (TAM) (Davis et al., 1989).*

The external variables in the model refer to a set of variables such as objective system design characteristics, training, computer self-efficacy, user involvement in design, and the nature of the implementation process (Davis & Wong, 2007). The findings of the technology acceptance model (TAM) of Davis et al. (1989), showed that users in the game –based training intervention, when compared to those in the traditional training intervention, had a more enjoyable experience during training and were more likely to perceive the system to be easier to use, which enhanced behavior intention to use the technology. They were also more strongly influenced by perceived ease of use (PEOU), compared to perceived usefulness (PU), in determining behavioral intentions. Actual Use or Behavior is usually measured by: amount of time using, frequency of use, actual number of usages and diversity of usage.

TAM was tested and adopted across a wide range of information system applications such as key office applications (e.g., Spreadsheet, Lotus 1-2-3, Word Perfect, Word, Excel); communication technologies (E-mails, voice mail, customer dialup system, and Fax); database systems; microcomputer; workstations; telemedicine

technologies; and Internet–related IS applications (e.g., www information services, online services, virtual workplace systems, digital libraries).

The theory was used to study human behavior and develop appropriate interventions, this theory indicated that attitudes consist of three elements: affect, cognition, and behavior. Davis et al. (1989) introduced the technology acceptance model. The goal of TAM is to provide an explanation of the determinants of computer acceptance among users. TAM replaced TRA's attitude beliefs with the two technology acceptance measures: Perceived usefulness (PU) and Perceived ease of use (PEOU).

The researcher has developed this model to suit the educational environment in Jordan after adding some major factors to accommodate some factors that measure e-Learning readiness in the implementation in higher education institutions.

This study adopted three theories to cover the model of this study; are Rogers (1986) Innovation Decision Process Theory, Ajzen and Fishbein (1980) and the Theory of Reasoned Action as well as Davis et al., (1989) Technology Acceptance Model. These factors that include readiness with respect to the human dimension are sub dimensions which are related to psychology, motivation, and confidence.

The second dimension is related to the measurement of administrative factors that include sub dimensions such as training, environment, human resources, and knowledge.

The third dimension is the technological factors that include hardware and software which should be possessed by the user so that he will be able to use contemporary technologies for implementing e-Learning. These sub factors are technological, equipment, and communication. The last dimension is attitude which includes sub dimensions such as anxiety, computer confidence, computer liking, and computer usefulness. Researchers have used this model in the educational sector.

## 2.19 Conclusion

This chapter outlines the problems encountered by the academic staff's readiness for e-Learning and its implementation in the educational establishments. According to the reviewed literature on e-Learning, studies varied in their aspects, perceptions, views and opinions on the e-Learning process. Despite of the numerous studies conducted by researches on this field, deep and detailed investigations are still required and called upon, and that must include new variables of e-Learning implementation.

Some countries therefore have limited potentials to apply this technology like poor countries that are reflected in our review of literature on e-Learning. But, these countries must apply this technology to avoid the encountered educational problems and provide them with appropriate solutions. Based on that, some educators suggest applying it as it is, is considered as one of the modern tools to overcome old fashioned education problems in both private and public education.

Consequently, this will encourage educational leadership to support and implement this educational tool in creative thinking and problems-solving, which will open the

door for further studies on many factors that can influence the e-Learning process and implementation. Also, this will help developmental studies in this area to include and investigate all the possible dimensions that can influence the education essential variables. The next chapter addresses the questions guiding this inquiry, as well as an explanation of the methodology to be used, including both a description of the sample and the instrument, data collection methods and data analysis techniques to be used.

# CHAPTER THREE
# RESEARCH METHODOLOGY

## 3.1 Introduction

The purpose of this chapter is to describe the design and methodology used in conducting this study. This chapter is divided into four major sections: the first section is the research design; the second is the population and the sample of the study, whereas the third section discusses the research tools. The fourth section tackles the technique of data analysis, the conceptual framework and the rational behind using the research approach adopted in this study. The outline of this chapter is as follows: Research design, population and sample of the study**,** tools and Technique of data Analysis.

## 3.2 Research Design

The research design of this study was intended to be exploratory and confirmatory. The researcher planned to explore the use of e-Learning by the academic staff in Jordanian public and private universities. The researcher collected and analyzed quantitative data obtained from the survey. This has meant that the researcher hypothesized, in advance, the existence of certain factors and then attempted to validate these factors through the use of psychometric research techniques. Such quantitative investigation helped the researcher to systematically investigate and explore the use of e-learning by the academic staff in Jordanian public and private universities.

The researcher also collected and analyzed the qualitative data that was obtained from face – to- face interviews. Thus the researcher used both qualitative and

quantitative methods. The researcher's choice of a particular research methodology depended critically on the relationship between the methodology and the research objectives (Sekaran, 2000). The purpose and research questions proposed in chapter one reveal that this study is primarily descriptive as well as exploratory. To collect as much information as possible, the researcher used a survey since it could cover different areas in Jordan and a large number of respondents can participate in this survey. In this research, traditional questionnaire methods were adopted. The approaches adopted in this research were both quantitative and qualitative.

The goal of this research is to identify the potential impact of certain variables on the university academic staff's readiness towards implementing e-Learning in their work places. Given that, the researcher adopted the scanning descriptive method to identify the cause- effect relationship amongst the dependent and the independent variables. The aim of this study called for the use of a survey study, which is considered as an effective and a professional way of gathering enough data to know the degree and status of e-learning readiness used by academic staff in Jordanian universities.

A written questionnaire and selected face interviews were used to collect the data for this study. Thus, the research went through two stages, quantitative and qualitative. In the first stage, seven research questions were addressed. However, the second stage was a follow-up interview with academic staff. Two questions were asked during the interview stage. Based on the above, the researcher found that using both approaches (quantitative and qualitative) were suitable to the size of the research sample.

### 3.3 Research Context

This study was conducted on the academic staff of both public and private universities in Jordan. There are 11 public and 9 private universities in Jordan. The heterogeneous characteristics of the Jordanian universities and the comparison between the private and the public universities added fruitful insight to the study.

### 3.4 Research Framework

The framework consisted of two parts. The first part referred to the independent variables of e-Learning readiness which include humans, administration, technology, and change factors. The second part refers to one dependent variable which was e-Learning implementation. These variables were identified after reviewing the literature as mentioned in detail in chapter two.

To achieve the main objective of the research, which was to develop and to propose a framework for e-Learning readiness in higher education environments, a survey and interviews were used. Several factors which would affect the implementation process had to be considered. The research framework is presented in figure 3.1.

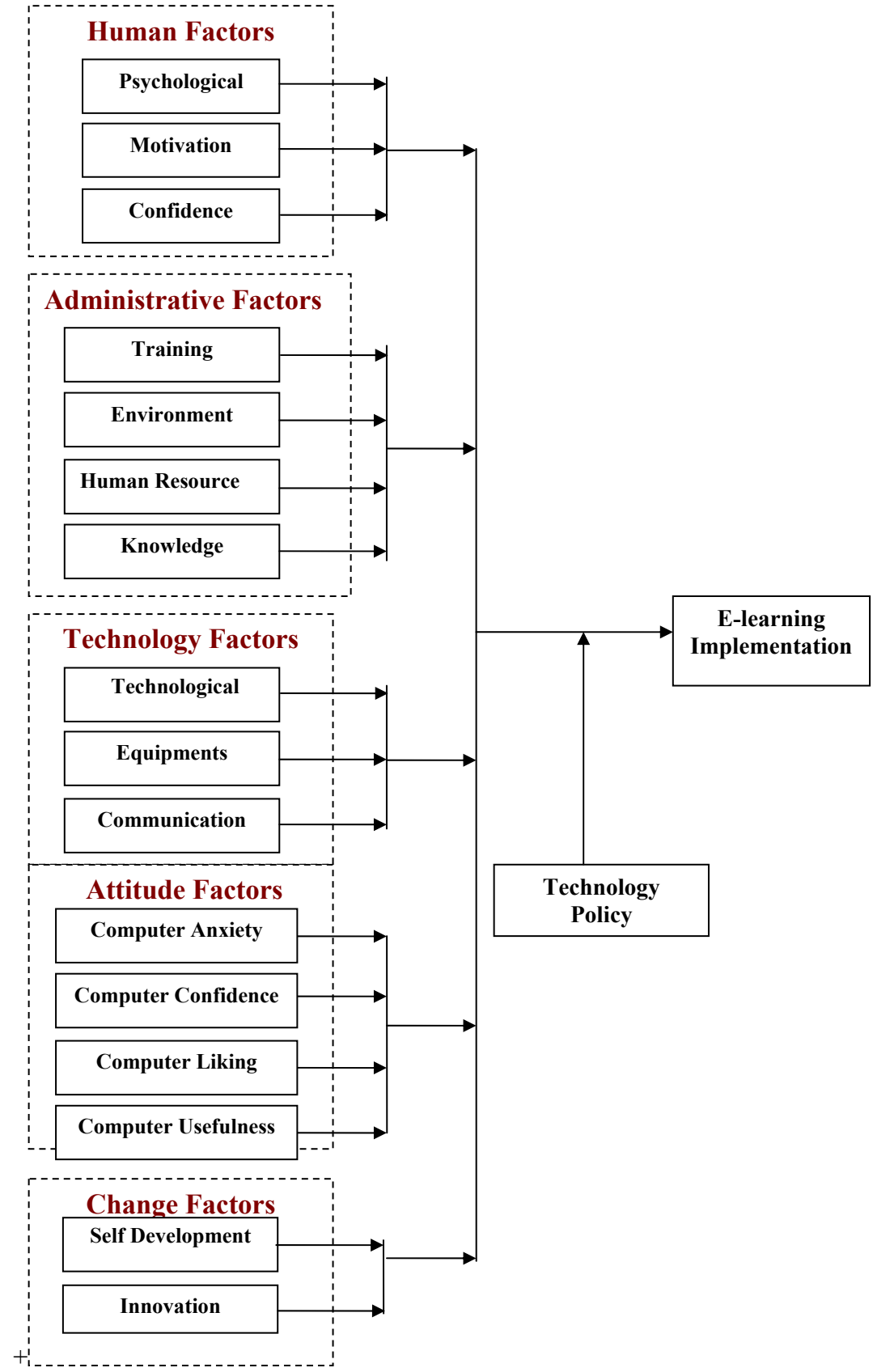


*Figure 3.1. Research Framework.*

### 3.5 Research Variables

All independent variables (IVs) and dependent variables (DV) involved in this study are listed in Table 3.1

*Table 3.1: Independent and dependent variable*

| Variable | | Content |
|---|---|---|
| **Demographic Factors** | Experience | 1-5 years 6-10 years<br>11- and more |
| | Rank | Professor<br>Associate Professor.<br>Assistant Professor |
| | Specialization | **Humanities**:<br>Faculties: Arts, Law, Sha'rea, Social Science, Education, Physical Sciences<br>**Science**:<br>Faculties: Science, Agriculture, Nursing, Medicine, Engineering |
| | University | Public Private |
| | Age | 20-30 31-40<br>41-50 above 51 |
| | Gender | Male<br>Female |
| | Higher degree | USA<br>Arabic Countries<br>Others Countries |
| **Independent Variable** (readiness) | | Human Factors, Administrative Factors, Technology Factors. Change Factors, Attitude Factors |
| **Dependent Variable** | | Implementation |
| **Moderator Variable** | | Technology policy |

### 3.6 Study Population

The population of the study included all the academic staff in both public and private universities in Jordan (Refer to Appendix I). The population of the study was 4047 academic staff holding different ranks (Professor, Associate Professor, and Assistant Professor). Table 3.2 shows the distribution of the population of the study.

*Table 3.2: Staff Number of Public and Private Universities in Jordan*

| University | Specialization | | Professor | | Associate Professor | | Assistant Professor | |
|---|---|---|---|---|---|---|---|---|
| **Public** | S* | H** | S* | H** | S* | H** | S* | H** |
| Jordan | 489 | 339 | 180 | 126 | 116 | 94 | 193 | 119 |
| Yarmouk | 178 | 375 | 51 | 123 | 47 | 123 | 80 | 129 |
| Mu'tah | 178 | 250 | 40 | 34 | 64 | 89 | 74 | 127 |
| Al – al-Biyt | 46 | 104 | 6 | 10 | 2 | 15 | 38 | 79 |
| Hashemite | 109 | 105 | 18 | 40 | 23 | 20 | 68 | 45 |
| Technology | 462 | 24 | 81 | 2 | 139 | 5 | 242 | 17 |
| Balqa | 83 | 43 | 14 | 18 | 11 | 8 | 58 | 17 |
| Al-Hussein | 9 | 27 | 1 | 3 | 4 | 3 | 4 | 21 |
| **Total** | **1554** | **1267** | **391** | **356** | **406** | **357** | **757** | **554** |
| **Private** | | | | | | | | |
| Zarqa | 48 | 79 | 2 | 10 | 23 | 12 | 23 | 57 |
| Amman | 64 | 70 | 7 | 8 | 14 | 19 | 43 | 43 |
| Applied | 91 | 109 | 11 | 12 | 11 | 21 | 69 | 76 |
| Philadelphia | 46 | 87 | 9 | 4 | 9 | 25 | 28 | 59 |
| Petra | 49 | 71 | 9 | 11 | 10 | 25 | 30 | 35 |
| Al-Zytoonah | 69 | 101 | 5 | 18 | 13 | 24 | 51 | 59 |
| Ibid | 24 | 61 | 1 | 13 | 5 | 6 | 18 | 42 |
| Jerash | 33 | 86 | 3 | 4 | 6 | 14 | 24 | 68 |
| Al Isra'a | 44 | 94 | 8 | 9 | 8 | 24 | 28 | 61 |
| | **468** | **758** | **55** | **89** | **99** | **170** | **314** | **500** |
| | **2022** | **2025** | | | | | | |

Source: Ministry of Higher Education and Scientific Research, 2007.

### 3.7 Sample Selection

The size of the sample was chosen according to Sekaran's sampling table (2000, p.294). If the size of the population was 4000 then the appropriate random sample size should be ≥ 351.

The research choice of the sampling of this study is done in accordance with the regional distributions in Jordan. Jordan is divided into three regions; northern, middle, and southern regions. Three public and private universities were chosen from all regions. The public universities chosen were Yarmouk University from the northern region, Jordan University from the middle region, and Mu'tah University from the southern region.

The private universities chosen were Jerash University from the northern region, Applied University from the middle region, and Zytoonah University from the southern region. These universities were chosen because they had the largest number of academic staff from different areas, specializations, and ranks. The heterogeneous nature of the population in these universities allowed the researcher to stratify respondents based on their ranks (Professors, Associate Professors, and Assistant Professors) and specializations (humanities and science).

Table 3.3 shows the names of the universities and the corresponding number of samples according to ranks and specializations.

*Table 3.3: Sample of Universities in the Study*

| University | Specialization | | Professor | | Associate Professor | | Assistant Professor | |
|---|---|---|---|---|---|---|---|---|
| **Public** | S | H | S | H | S | H | S | H |
| Jordan | 489 | 339 | 180 | 126 | 116 | 94 | 193 | 119 |
| Yarmouk | 178 | 375 | 51 | 123 | 47 | 123 | 80 | 129 |
| Mu'tah | 178 | 250 | 40 | 34 | 64 | 89 | 74 | 127 |
| **Total** | **845** | **964** | **271** | **283** | **227** | **306** | **347** | **375** |
| | **1809** | | | | | | | |
| **Private** | | | | | | | | |
| Applied | 91 | 109 | 11 | 12 | 11 | 21 | 69 | 76 |
| Al-Zytoonah | 69 | 101 | 5 | 18 | 13 | 24 | 51 | 59 |
| Jerash | 33 | 86 | 3 | 4 | 6 | 14 | 24 | 68 |
| **Total** | **193** | **296** | **19** | **34** | **30** | **59** | **144** | **203** |
| | **489 +** | **1809=** | **2298** | | | | | |

The number of staff at public universities (University of Jordan, Yarmouk, and Mu'tah University) is currently 1809; of which 845 academic staff are in scientific specializations including 271 professors, 227 associate professors, and 347 assistant professors. As for the humanities, the total number is 964 including 283 professors, 306 associate professors, and 375 assistant professors. The private universities in Jordan (Applied, Zytoonah, and Jerash University), accommodate 489 academic staff of which 193 are in scientific specializations including 19 professors, 30 associate professors and 144 assistant professors. Out of the 296 in humanities there are 34 professors, 59 associate professors and 203 assistant professors. Based on Sekaran's (2000) recommendation, 367 respondents were selected as the sample group. As the academic staff population of the public universities was 78.72% of the total number of academic staff in Jordan, 289 respondents were selected from public

universities. The scientific academic staff constituted (135) or 47% of the sample and humanities academic staff percentage was53% or 154 academic staff in public universities. In addition the sample included 78 respondents or 21.28% from private universities. The percentage of science and humanities academic staff population in private universities was 31 academic staff representing 40% of the private universities sample and 47 academic staff representing 60% respectively.. Table 3.4 shows the number of respondents chosen for this study.

*Table 3.4: Number of Respondents*

| University | **Specialization** | | **Professor** | | **Associate Professor** | | **Assistant Professor** | |
|---|---|---|---|---|---|---|---|---|
| **Public** | Science | Human | Science | Human | Science | Human | Science | Human |
| Jordan | 79 | 54 | 28 | 20 | 19 | 15 | 31 | 19 |
| Yarmouk | 28 | 60 | 8 | 21 | 8 | 20 | 13 | 20 |
| Mu'tah | 28 | 40 | 6 | 5 | 10 | 14 | 12 | 20 |
| **Total** | **135** | **154** | **42** | **46** | **37** | **49** | **56** | **59** |
| | **289** | | | | | | | |
| **Private** | | | | | | | | |
| Applied | 15 | 17 | 2 | 2 | 2 | 3 | 10 | 12 |
| Zytoonah | 11 | 16 | 1 | 3 | 2 | 4 | 8 | 9 |
| Jerash | 5 | 14 | 1 | 1 | 1 | 2 | 4 | 11 |
| **Total** | **31** | **47** | **4** | **6** | **5** | **9** | **22** | **32** |
| | **78** | | | | | | | |

The researcher divided the sample of academic staff upon their specialization, rank and university sector as shown in table 3.5

*Table 3.5: Sample of the Study Divided to Different Terms: Specialization, Rank, and University*

| **University** | | | **Rank** | | | |
|---|---|---|---|---|---|---|
| | | | **Professor** | **Associate Professor** | **Assistant Professor** | **Total** |
| Private | Major | Science | 4 | 5 | 22 | 31 |
| | | Humanities | 6 | 9 | 32 | 47 |
| | | **Total** | **10** | **14** | **54** | **78** |
| Public | Major | Science | 42 | 37 | 56 | 135 |
| | | Humanities | 45 | 49 | 60 | 154 |
| | | **Total** | **87** | **86** | **116** | **289** |

### 3.8 Instrumentation

Information for this study was gathered through a written questionnaire and interviews. To determine the items of the questionnaire, more than 60 empirical studies that were conducted in different environments and countries all over the world were reviewed. The objectives of the questionnaire employed in this study were to obtain data regarding the five factors relevant directly to the questions of this research.

To measure the level of e-Learning readiness of the faculty members to implement e-Learning, a questionnaire derived from various relevant studies, was developed. Appendices D and E show the questionnaire items from the literature reviewed. The questionnaire was divided into six sections:

**Section 1: Demographic Factors**

This section includes six variables: Experience, Rank, Specialization, and Type of the university, Age, Gender, and Higher Degree. According to Table 3.1 the majority of the respondents were males. The types of universities included public universities and private universities. Specialization contains humanities and science. Rank of respondents presents three groups; Professor, Associate professor, and Assistant professor. Age is divided into four categories: 20-30 years old, 31-40 years old; 41-50 years old and over 51 years old. The Ph.D degrees of respondents were obtained from USA, Arab countries, and other countries. Experience of respondents is from 1-5 years, 6-11 and over 11 years.

**Section 2: Human Factors**

This section included three variables: psychological, motivation and confidence variable. Altogether there were 17 items in this section. These items were adopted from different studies: The psychological variable was adopted from Yun & Murad (2006) who measured this factor using the 5 point Likert scale and the alpha value was 0.84 for the items 1-8 related to this variable.

The motivation factor was adopted from Watkins & Yayn (2004) who measured this factor using the 5 point Likert scale and the alpha value was 0.82 for the items 9-11 related to this variable. The confidence factor was adopted from Sadak (2007) who measured this factor using the 5 point Likert scale and the alpha value was 0.92 for the items 12-17 related to this variable.

**Section 3: Administrative Factors**

This section included four variables: training, environment, human resource and knowledge. Altogether there were 22 items in this section. These items were adopted from different studies. The training variable was adopted from Sadik (2007) who measured this factor using the 5 point Likert scale and the alpha value was 0.86 for the items 18-22 related to this variable. The environment variable came from a study conducted by Chapnick (2000) who measured this factor using the 5 point Likert scale and the alpha value was 0.92 for the items 23-29 related to this variable.

The human resource variable was taken from Khan (2005) who measured this variable using open questions for the items 30-33 related to this variable. The knowledge variable was adopted from a study conducted by Sadak (2007) who measured this factor using the 5 point Likert scale and the alpha value was 0.92 for the items 34-39 related to this variable.

**Section 4: Technology Factors**

This section included three variables: technological, communication skills and equipment. Altogether there were 14 items in this section. These items were adopted from different studies**.** The technological variable was adopted from Aydin & Tacsi (2005) who measured this factor using the 5 point Likert scale and the alpha value was 0.92. The equipments variable was taken from Chapnick (2000) who measured this factor using the open question. The communication variable was from Khan (2005) who measured this factor using the open question.

**Section 5: Attitude Factors**

This section included four variables: anxiety, confidence, liking and usefulness. Altogether there were 35 items in this section. These items were adopted from different studies. The anxiety variable was from Llody & Gressard (1984) who measured this variable using the 5 point Likert scale and the alpha value was 0.90. The computer confidence variable was adopted from Sadik (2000), and Llody & Gressard (1984) who measured this variable using the 5 point Likert scale and the alpha value was 0.89. The computer liking variable was taken from Sadik (2000), and Llody & Gressard (1984) who measured this factor using the 5 point Likert scale and the alpha value was 0.89. The computer usefulness factor came from by Lody & Gressard (1984) who measured this factor using the 5 point Likert scale and the alpha value was 0.82.

**Section 6: Change Factors**

This section included two variables: self development and innovation. Altogether there were 14 items in this section. These items were adopted from different studies. The self development and the innovation factors were adopted from Aydin & Tacsi (2005) who measured these variables using the 5 point Likert scale and the alpha value was 0.65.

### 3.8.1 The Scales of the Questionnaire:

The researcher adopted scales to measure e-learning readiness factors, implementation factors, and technology policy factors as follows:

### 3.8.1.1 The Scale for E-Learning Readiness

To measure the staff's readiness towards e-Learning, a 5-point Likert scale was used. The questions were developed based on a review of the literature. The scale of the questionnaire is as follows:

| Strongly Disagree | Disagree | Not sure | Agree | Strongly agree |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

### 3.8.1.2 The Scale for e-Learning Implementation (Dependent Variable)

To measure the e-Learning implementation, the researcher used the following scale:

| Never | Almost never | Sometimes | Often | Very often |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

### 3.8.1.3 The scale for technology policy (Moderator)

To measure the staff's technology policy towards e-Learning implementation, 5-point Likert scale was used. The scale of the questionnaire is as follows:

| Strongly Disagree | Disagree | Not sure | Agree | Strongly Agree |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

## 3.9 Critical Level of the E-Learning Readiness

This study adopted the assessment model of the e-learning readiness of Aydin and Tasci (2005) designed to help leaders in an organization. Based on that, a clear assessment model and alternatives had to be generated and designed in such a way that it provides simple and easy assessment coding for the users. The alternatives were 1- 5, on a five-point Likert scale. Therefore, the 3.40 mean score can be

identified as the expected level of readiness with the item, while other responses enable organizations to determine the degree between higher or lower levels of e-Learning readiness. The 3.40 mean average, however, was determined after identifying the critical level: 4 intervals/5 categories = 0.8. As a result of this analysis, the levels of readiness were determined as shown in Figure 3.2.

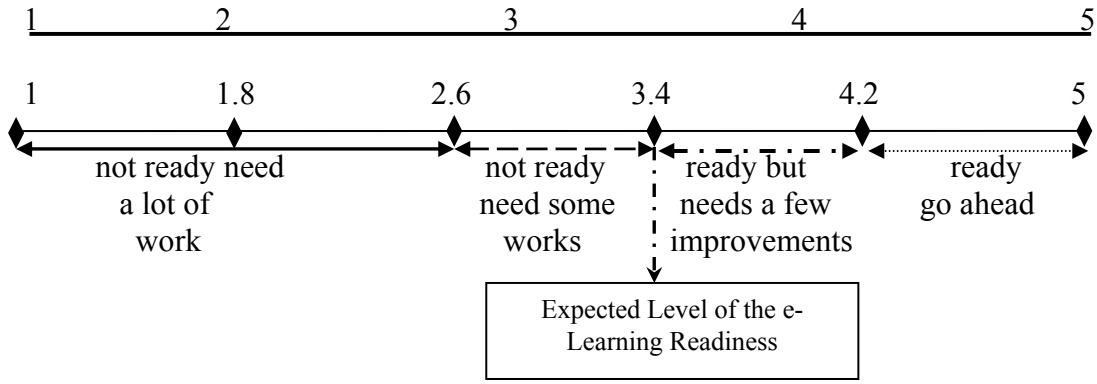


*Figure3.2.Assessment Model of the e-Learning Readiness. (Aydin and Tasci, 2005)*

### 3.10 Critical Level of the Measure Relationship of Factors

To determine the extent of relationship strength between the study's factors, Isa's (2007) measure was adopted which consists of three stages as shown below:

| Small | Medium | Large |
|---|---|---|
| .10-.29 | .30-.49 | .50-1.0 |

### 3.11 Critical level of the Measure the Moderating and Dependent Variable:

The five-point interval scales were categorized into equal-sized categories of low, moderate and high. Subsequently, the mean scores of less than 3.00 were considered low value, mean scores of 3 were considered moderate value and mean scores more than 4 were considered high, Isa's (2007) is as shown below:

| Low | Moderate | High |
|---|---|---|
| 1.00-2.99 | 300-3.99 | 4.00-5.00 |

### 3.12 The Validity of Questionnaire

To determine validity of the items of the questionnaire the following steps were carried out:

1- The questionnaire was constructed and then reviewed under the supervision of a professional committee at a Jordanian University.

2- The questionnaire was then sent to editors of English language for examination from different academic ranks at Mu'tah University. Supplement No. (12) Shows the names of the arbitration commission of the various disciplines (Appendix G).

3- A number of experts in e-learning reviewed various levels of academic paragraphs appropriate to the areas after the amendment, deletions and additions. The questionnaire was translated into Arabic language by language experts .The native language of the respondents was Arabic, the instrument was created in English and translated into Arabic language (Appendix H). The researcher, an Arab PhD holder in the faculty of Education at UUM, did the Arabic translation and a group of 12 academic staff, who teach at Mu'tah university, were given the two versions (Arabic and English version) of the instrument to compare between the two questioners and to assess the clarity of items. This process of original and back translation ensures that the translation was correct and accurately reflects the original intent of the instrument.

4- Bilingual experts reviewed both the English and Arabic versions of the survey to ensure the comparability of the instruments. The questionnaire was translated back into English language to ensure its suitability for the participants. See the first questionnaire English version. Arabic questionnaire version is shown in and the final questionnaire English version in (Appendix F).

Table 3.6 shows the questionnaire items before and after reviewing. Human factors included three variables. Out of the eleven psychological variables, three of them were omitted. From the motivation variables, one item was omitted, while from the eight confidence variables, two items were omitted. Administrative factors included four variables. The knowledge variable had 6 items; one item was omitted. From the training variable, two items were omitted. The environment variable had nine items; two items were omitted. From the human resource variable, which had five items, one item was omitted.

Technology factors included three variables. The technological variable had 7 items; one item was omitted. The communication variable had 7 items, two items were omitted. The equipment variable had six items, two items were omitted. Attitude factors included four variables, namely anxiety, computer liking, computer confidence, and computer usefulness variable. All anxiety and computer liking items are acceptable for the other two variables, one of the computer confidence items was omitted while two of the computer usefulness items were omitted.

Change factors included four variables. Two items from the innovation variable were omitted. The self development variable had two items omitted. There were fourteen

items in the implementation variable two of which were omitted. From the eleven items of the technology policy variable, two items were omitted.

*Table 3.6: Measuring the Staff Readiness to E-Learning Before and After Validity*

| Factors | Elements | Total | |
|---|---|---|---|
| | | Before | After |
| | - Psychological | 11 | 8 |
| **Human** | - Motivation | 4 | 3 |
| | - Confidence | 6 | 6 |
| | - Knowledge | 6 | 6 |
| **Administration** | - Training | 7 | 5 |
| | - Environment | 9 | 7 |
| | - Human Resources | 5 | 4 |
| | - Technological | 7 | 6 |
| **Technology** | - Communication | 7 | 5 |
| | - Equipment | 6 | 4 |
| **Attitude** | | | |
| | - Computer Anxiety | 7 | 7 |
| | - Computer Confidence | 7 | 6 |
| | - Computer Liking | 6 | 6 |
| | - Computer Usefulness’ | 9 | 7 |
| **Change** | - Innovation Readiness | 4 | 2 |
| | - Self Development | 8 | 6 |
| | **Total** | **112** | **88** |
| **Implementation** | - Application Tools | **12** | **14** |
| **Technology Policy** | | **9** | **11** |
| **Total** | | | **113** |

### 3.13 Pilot Study

The questionnaire was distributed to a sample of faculty members from outside the study sample to ensure its stability. The sample included academic staff from different disciplines and academic ranks. The piloting process enabled the researcher to determine the right question in the most effective way and whether the participants were able to answer the questions properly or not. The questionnaires were sent to 42 academic staff from different ranks, specialization, and position at Hashemite University to identify the clarity of the questionnaire's content. The Arabic version of the questionnaire was piloted with 42 Academic staff at Hashemite University to identify clarity of the questionnaire content.

### 3.14 The Reliability of Questionnaire

Reliability refers to the consistency of a test, survey, observation, or other measuring device. If they were used again, they should give the same results every time. Because this research has a quantitative trait, the reliability of the findings can be secured by ensuring the survey time scale, stability, equalization, questionnaire design and even the objectivity of the measurement instrument itself. To extract the reliability coefficient distributions were given the two weeks between the first and the second distribution, the coded questionnaires were distributed to a sample from outside the study sample (Hashemite University).

Table 3.7 shows the alpha coefficients of the instrument after alteration. The alpha coefficients of the administrative factors was.87. The alpha coefficients of the Attitude factor was.85. The alpha coefficients of the Technology factor was .84, The alpha coefficients of the change factor was .78, and the alpha coefficients of the human factor was .79. The overall coefficient was .82. In this study, the researcher

conducted a pilot study with 42 Academic staff. Cronbach's alpha was used to determine the degree of internal consistency of the items with each scale. The reliability analysis shows the statistics for Cronbach's alpha for each main scale and its respective subscale. None of the scales had a value below .70. This is an indicator that all factors were reliable (Appendix A).

*Table 3.7 : Alpha Results Between Test -retest*

| No | Factors | Alpha |
|---|---|---|
| 1 | Human | 0.79 |
| 2 | Administrative | 0.87 |
| 3 | Technology | 0.84 |
| 4 | Attitude | 0.85 |
| 5 | Change | 0.78 |
| | **Overall** | **0.82** |

**Correlation of Results between Independent Factors**

Analysis of the results showed that there was a relationship among the study variables. As shown in table 3.8. The relationship between human and administrative factors indicated a statistically significant relationship of .751(large), where the relationship between human and technology factors was .438 (Medium). The relationship between human factors and the attitude factors was .716 (large), while between the human factors and the change factors, it was .648 (Large) and between the human factors and implementation factors, it was .538 (Medium). The relationship was .447 (Medium) between the administrative and the Technology factors while it was .584 (Medium) between the administrative and the Attitude factors. The relationship was .610 (Medium) between the administrative and the

Change factors while it was .338 (Small) between the administrative and the Implementation factors. The relationship was .361 (Small) between the Technology and the Attitude factors while it was .437 (Medium) between the Technology and the Change factors. The relationship was .655 (large) between the Technology and the Implementation factors. The relationship was .684 (Large) between the Attitude and the change factors while it was .467 (Medium) between the Attitude and the implementation factors as shown. It was .477 (small) between the change factors and the Implementation tools factors.

*Table 3.8 : Correlations Results Between Factors*

| | Human | Administrative | Technology | Attitude | Chang | Implementation |
|---|---|---|---|---|---|---|
| Human | 1.000 | | | | | |
| Administrative | .751* | 1.000 | | | | |
| Technology | .438* | .447* | 1.000 | | | |
| Attitude | .716* | .584* | .361* | 1.000 | | |
| Change | .648* | .610* | .437* | .684* | 1.000 | |
| Implementation | .538* | .338* | .655* | .476* | .477* | 1.000 |

*p<05

### 3.15 Data collection Procedures

#### 3.15.1 Questionnaire

The self-administered questionnaire was sent to selected academic staff in Jordanian public and private universities, along with a cover letter explaining the purpose of the study. The following steps were taken in the process of data collection:

1. The Ministry of Education was approached for permission and facilitation.

2. The universities were officially contacted to participate in the study.
3. The questionnaire was distributed to the sample with the affirmation that the questionnaire would be used for scientific purposes only, and the data obtained would be confidential and for research usage only.
4. All questionnaires were delivered by hand, and the respondents were given two hours to complete and return the questionnaires.

### 3.15.2 Interview

In addition to the written questionnaire, follow-up interviews were conducted to collect more in-depth qualitative data. Interviews were asked 24 academic staff who were randomly selected from different levels and specializations. The follow-up interview questions were:

10. What are the obstacles facing the academic staff in using e-Learning in their teaching?
11. What is the academic staff view towards using e-Learning in teaching?

Qualitative data from follow-up interviews was used to confirm the results of the quantitative data. Additionally the goal of the follow-up interview was to investigate and specify areas where more guidance and training in e-Learning readiness and implementation tools are needed. The interviews were conducted after receiving the results of the study.

#### 3.15.2.1 Procedures of the Interview

The researcher randomly selected a sub-sample of 24 faculty members from various universities. The users who were selected for interviews were asked to provide their

names, rank, specialization and university. The cases were selected randomly. The following cases were selected**:** 27, 32, 45, 46, 47, 54, 60, 78, 82, 101, 113, 136, 177, 192, 207, 271, 292, 298, 319, 329, 331, 344, 351, and 351. Face-to-face interviews were conducted and the respondents were given 20-30 minutes to answer the questions.

### 3.16 Data Analysis

#### 3.16.1 Quantitative Data

Table 3.9 shows statistical used to answer the research questions.

*Table 3.9: Statistical Analysis Procedures used to Answer Research Questions*

| Research Question | Statistical Method |
|---|---|
| One, Two | Mean, SD. |
| Three | Independent – samples t-test, and One Way ANOVA |
| Four | Correlation |
| Five , Six, Seven | Regression |
| Eight and Nine | Interview analysis |

To answer research questions one and two, means and standard deviations were used in measuring the e-learning readiness of Jordanian public and private universities. To answer research question three, t-test and One-way ANOVA technique were used to explore the differences and similarities in responses according to different characteristic of the respondents and the One-Way (ANOVA) allowed the researcher to look at the effects of two independent variables and their mean scores

on the dependent variable. Therefore, the researcher could examine the main effects for each independent variable on the dependent variable. Also, this technique was used in testing the hypotheses, which were developed in chapter one. To answer research question four, Pearson correlation coefficient was used to explore the correlation among the study variables such as the correlation between e-Learning readiness factors (IVs). To answer research questions five six, and seven, regression analysis were used to determine the most potential independent variables that affect e-Learning readiness on implementation.

### 3.16.2 Qualitative Data

The goal is to treat the interview much like an informal conversation where respondents identify and describe issues and features that are personally important or relevant to them. Interviews lasting 30 minutes each were conducted with 24 members of the academic staff randomly selected from different faculties in private and public universities in Jordan. The staff members were from different academic ranks and specializations. During the interviews, the interviewer used written notes. After interviewing the participants, the data was classified into categories. The most important words and sentences that could be useful in this study were focused on. Finally, the data was broken into categories, and put under an appropriate theme.

## 3.17 Summary of the Chapter

Guided by the research questions, quantitative and qualitative approaches were used. The quantitative approach used a questionnaire as the main data collection tool. The items of the questionnaire were identified after reviewing the previous empirical studies. These items measured the impact of e-Learning readiness of the academic

staff in Jordanian universities. The factors were (human, administrative, technology, attitude, and change factor, on e-Learning implementation). The sample selection in this research was based on stratified random sampling to choose the type of universities. According to the three regions in Jordan (northern, middle, and southern regions) six universities were chosen as follows: two universities from the north, two from the middle, and two universities from the south. The sample in this study was based on the type of university (public and private). In addition, the random sampling method was used to determine the number of respondents for the generality of the research findings. A qualitative approach was used to interview the sample of 24 faculty members who were selected randomly from the various universities. SPSS will be used to analyze the data obtained from the questionnaire. The next chapter will address the data analysis procedures.

# CHAPTER FOUR

# FINDINGS

## 4.1 Introduction

Data analysis and results are presented in this chapter. The analysis focuses on two factors; higher order constructs and the structural model. The purpose of this chapter is to synthesize the various analyses and findings to make sense out of what all the results mean including their implications. All analyses were aimed at understanding the factors that lead to e-Learning readiness and its implementation at Jordanian Universities. The remainder of this chapter describes data analysis and the results obtained. The chapter ends with a discussion of the results.

## 4.2 Data analysis Strategy

The data analysis was organized as follows:

- Data quality.
- Exploratory factor analysis.
- Investigating the dimensionality of the items.
- Analysis of the higher model using summated scales of the dimension.
- Analysis of the structural model for e-Learning readiness factors and implementation factor.

## 4.3 The data Characteristics of Respondents

### 4.3.1 Response Rate

In the process of conducting the main study, 400 questionnaires were distributed to academic staff in Jordanian public and private universities. Out of this number,

twenty four (24) questionnaires were undelivered. The response rate was 94%. However, nine questionnaires were incomplete. They were not used for factor analyses. The total numbers of questionnaires that were included in the analyses comprised 367 items (Appendix B).

### 4.3.2 Missing Data

The data was examined for missing data and action was taken as indicated by the situation (Hair et al., 2006; Sekaran, 2000). Two types of missing data patterns were examined. The first type dealt with the number of cases that have missing data for each case, which were five cases (.013%) of all cases (5/ 362) and were considered insignificant.

The other type of missing data is based on the mean substitution imputation method. This is a procedure where missing data is replaced with the average of the data from the cases where there is complete data as recommended by Hair et al. (1998) and Sekaran, (2000).

### 4.3.3 Outliers Test

The next step after treating the missing responses is examining outliers. This study examined the outliers by using standardized residual plot (Pallant, 2001). Furthermore, outliers exist when standardized residual value is between -3.3 and +3.3. The 24 multivariate outliers are 67, 75, 79, 87, 95, 103, 136, 162, 183, 192, 201, 217, 219, 243, 247, 253, 262, 269, 272, 279, 282, 283, 302, and 345, and were deleted from the dataset, leaving a final (362-24) 338 dataset as shown in Table 4.1.

*Table 4.1: Outliers list Cases*

| Case# | Case# | Case# | Case# | Case# | Case# |
|---|---|---|---|---|---|
| 75 | 79 | 87 | 95 | 103 | 136 |
| 162 | 183 | 192 | 201 | 217 | 219 |
| 243 | 247 | 253 | 262 | 269 | 272 |
| 279 | 282 | 283 | 302 | 345 | 67 |

### 4.3.4 Normality Assessment

The outliers has been distributed and the data was the examined for normality including linearity. Normality is an assumption for many multivariate techniques such as multiple regression and Structural Equation Matrix. For factor analysis, the main concerns were outliers and linear. Kurtosis and skewness are the two main tests normally conducted for univariate normality, which refer to the shape of the distribution, and are used with interval and ratio scale data. Values for kurtosis and skewness are zero if the observed distribution is exactly normal. From the descriptive statistics shown in Appendix B, it may be mentioned that all variables were tapped on a five-point scale; the minimum limit of 1 indicates those who disagree with this item. A positive value for skewness indicates a positive skew while a positive value for kurtosis indicates a distribution that is peaked.

While negative values for skewness indicates a negative skew and flatter distribution indicates negative kurtosis values. The minimum and maximum limits show that no out-of-range entries have been made. From the results, it may be seen that the mean of all variables range above 3.53 on a five-point scale, which are above the average, indicated that most of the respondents are agreeable or have average level of e-Learning readiness. According to Hair et al. (2006) if the distribution is perfectly normal, a skewness and kurtosis value of 1_-1 is obtained. In this study the skewness value was -.407, while the kurtosis value was .399. This has shown that the skewness

and kurtosis are within the normal range. The test of normality provided the results of the kolmogorov-Smirnov statistic value of the data. According to Hair et al. (2006) if the average is more than .05, then it indicates normal distribution. The study's kolmogorov-Smirnov value was .063. These results have shown normality test for the data.

### 4.4 Exploratory Factor Analysis

The instrument items in Appendix (C) were analyzed to access dimensionality. The initial analysis was performed with exploratory factor analysis (EFA) using the Principal components method. Principal components analysis (PCA) is a factor extraction method used to form uncorrelated linear combinations of the observed variables for IVs factors, the items total (88) items for all factors of which (36) items were removed during factor analysis procedure, leaving final 88-36= 52 items dataset.

The first component has maximum variance. Successive components explain progressively smaller portions of the variance and are all uncorrelated with each other. The Principal Components Analysis is used to obtain the initial factor solution. It can be used when a correlation matrix is singular (Pallant, 2006).

#### 4.4.1 Factor Analysis Procedure

This was taken to remove items where there was a lack of evidence indicating that the items were part of a hypothesized factor. The (36) items were removed at a time using the following procedure, as recommended by most researchers (Hair et al., 2006; Sekaran, 2000; Pallant, 2006):

1. Items with a MSA (measure of sampling adequacy) < .500 in the anti-image matrix were removed. The anti-image correlation matrix contains the negatives of the partial correlation coefficients, and the anti-image covariance matrix contains the negatives of the partial covariance. In a good factor model, most of the off-diagonal elements will be small. The measure of sampling adequacy for a variable is displayed on the diagonal of the anti-image correlation matrix; the acceptable level is above .5.

2. Items that did not match with any other item were removed. For this purpose this study uses the factor matrix of loadings, or correlation between the items and factors.

3. Items that had loadings < .3 were removed. Pure items have loadings of .3 or greater on only one factor.

4. Items that double loaded were removed (complex items), as they make interpretation of output difficult. Double loading occurs when the factor score >= .500 is on more than one factor.

5. Items were removed if an item loaded on a factor where it seemed unreasonable for that item to be associated with the other items in the factor.

6. The Bartlett test of sphericity is significant and the Kaiser-Meyer-Olkin measure of sampling adequacy is far greater than .6. The Kaiser-Meyer-Olkin measure of sampling adequacy tests whether the partial correlations

among variables are small. Bartlett's test of sphericity tests whether the correlation matrix is an identity matrix, which would indicate that the factor model is inappropriate.

7. A number of steps were followed to conduct the EFA. First, Kaiser-Meyer- Olkin's (KMO) Measure of Sampling Adequacy was used to test the assumption underlying the principal component analysis. The KMO test scores range from 0 to 1; the closer the test static is to 1, the better correlation between pairs of variables can be explained by other variables. The KMO was .775, and Bartlett's test is significant that can be considered good (Hair et al., 2006). Also, the KMO index ranges from 0 to 1, according to Sekaran (2000). 6 is the minimum value for a good factor analysis.

The above process was repeated if an item was removed. Table 4.3 shows that the final solution was the result of several iterations of item analysis and evaluation. Performing the Principal Component factor analysis with Varimax rotation supported initial construct and discriminant validities. The items dropped during the process described above which are shown in table 4.2 along with the reasons why they were dropped.

Most items loaded on the appropriate factor were with loading typically above .400 (greater than the recommended .400 minimum). Table 4.2 concludes the findings of the accepted items, as the results of dropping the items.

*Table 4.2: Items Dropped During Exploratory Factor Analysis*

| Factor | Item Dropped (in Order Dropped) | Reason Dropped |
|---|---|---|
| Human | 1, 4, 6,8,11,13, 13, 14 | Loaded in wrong factor and Double loaded |
| Administration | 3,4 ,7,13,16,17,20 | Double loaded<br>Would not load (loading < .400). |
| Technology | 1,3,11,13 | Loaded in wrong factor and Double loaded |
| Attitude | 1,4 ,5, 8,10 , 12, 15, 16, 17, 18,20, 20, 22, 25 | Double loaded and Loaded in wrong factor |
| Change | 1, 4, 8 | Loaded in wrong factor and Double loaded |

#### 4.4.1.1 Factor Analysis of Independent Variables:

The 54 items of the independent variable (e-Learning tools) were subjected to the Principle Component Analysis in SPSS. The correlation matrix revealed the presence of many coefficients of .3 and above.

The Kaiser-Myer-Okllin value was .775 exceeding the recommended value of .6 (Hair, 2006) and the Barlett's test of Sphericity reached statistical significance. More details can be found in Appendix (D). New measure scales should have reliabilities of at least .60 (Pallant, 2001). In this study, the alphas overall was above .79 as seen in Table 4.3.

*Table 4.3: Alpha Value After Factors Analysis*

| No. | Factors | Alpha value |
|---|---|---|
| 1 | Human factor | 0.76 |
| 2 | Administrative factor | 0.79 |
| 3 | Technology factor | 0.84 |
| 4 | Attitude factor | 0.81 |
| 5 | Change factor | 0.77 |
| | **Overall** | **0.79** |

#### 4.4.1.2 Factor Analysis of Dependant Variable

The 14 items of the dependent variable (e-Learning tools) were subjected to the Principle Component Analysis in SPSS. The correlation matrix revealed the presence of many coefficients of .3 and above. The Kaiser-Myer-Okllin value was .85 exceeding the recommended value of .6 (Hair et al., 2006) and the Barlett's test of Sphericity reached statistical significance.

#### 4.4.1.3 Factor Analysis of Moderating Variable

The 11 items of the moderating variable (Technology policy) were subjected to the Principle Component Analysis in SPSS. The correlation matrix revealed the presence of many coefficients of .3 and above. The Kaiser-Myer-Okllin value was .71, exceeding the recommended value of .6 (Hair et al., 2006) and the Barlett's test of Sphericity reached statistical significance.

The survey instrument contained at least 5 to 14 items per variable. Thus, the reliabilities were considered acceptable. Additionally, items intended to measure the same construct exhibited prominently and distinctly higher factor loadings on a single construct than on other constructs, suggesting adequate convergent and discriminant validity (Hair et al., 2006). The observed reliability and construct validity suggested adequacy of the measurements used in the study. Technology policy and implementation were included as the study was concerned with summarizing the structure of the predicted variables.

## 4.5 Validity Testing

The reliabilities of the scales were considered acceptable, as the reliabilities were calculated using Cronbach's alpha. The validity and the reliability of the revised concept were examined. Content and face validities were addressed in Chapter 3. Construct validity, convergent validity, and statistical conclusion validity are described in this chapter.

### 4.5.1 Construct Validity

"Construct validation is concerned with validity of inferences about unobserved variables (the construct) on the basis of observed variables (their presumed indicators)" (Hair et al., 2006). Some questions to be answered are: have the correct constructs been selected to explain the phenomenon, and have the constructs been correctly operationalized to represent the constructs? Neither of these questions can be answered with absolute certainty and it may take years to find sufficient evidence to adequately support the contention that constructs are valid and have been properly operationalized.

Still a variety of procedures allow the investigation of construct validity. They include discriminant and convergent validities (Pallant, 2006). This means that support for construct validity exists if there are relatively high correlations between measures of the same construct using different methods (convergent validity) and low correlations between measures of different constructs. Based on this, the next sections will answer and discuss construct validity using convergent validity technique. Based on the findings, it was found that the 1) H1 r=.402 (moderate), 2) H2 = r.443 (moderate), 3) H3 r=.516 (large), 4) H4 r= .615 (large), 5) H5 r = .439 (moderate), and 6) H6 r= 337 (moderate). This means that there is correlation between all variables.

### 4.5.2 Convergent Validity

Convergent validity of an item can be used to assess whether individual scale items are related. Principle components for factor analysis can be used to test convergent validity. Convergent validity can be demonstrated as the data in Table 4.2 shows that all loadings from principle component factor analysis were >= .400 as recommended (Hair et al., 1998). Hence the items selected in this study have achieved convergent validity.

### 4.5.3 Statistical Conclusion Validity

For quantitative analysis, statistical conclusion validity is a statistical inference issue. It is concerned with the reasonability of the conclusions reached about relationships in the data (Pallant, 2006). The data analysis was conducted in accordance with established procedures. The results were presented and statistical conclusion validity

was supported and discussed in details in the construct validity section, using convergent and disarming validity sections.

### 4.6 Respondents' Profile

In order to get the whole picture of the respondents, a description has been provided in the respondents' profile**.** Table 4.4 shows the profile of the academic staff. Of the 367 for statistical purpose, just 338 questionnaire respondents representing 91.75% were usable. The remaining (24) were undelivered (9) missing responses (5) missing data (24) outliers. Therefore, a total of 62 questionnaires were excluded from this study 400- 62= 338.

According to Table 4.4, majority of the respondents were male (72.2 percent) and female 27.8 percent. IN term of the types of universities they came from, 262 (77.5 percent) were from public universities and 76 (22.5 percent) from private universities. As for the specialization of respondents, 53.6 percent was from humanities and 47.3 from the sciences. With regard to the ranks of respondents, 28.1 percent was professors, 28.4 percent associate professors and 43.5 percent assistant professors. In term of the age of respondents, 12.1 percent was in the 20-30 years old range, 38.8 percent in the 31-40 years old range, 39.0 percent in the 41-50 years old and 10.0 percent over 51 years old. As for the higher degrees of respondents, 21.6 percent hailed from USA, 43.2 percent from Arab countries and 35.2 from other countries. In terms of experiences, 20.1% had 1-5 years of experience, 44.4 percent with 6-11 years and 35.5 percent with 11 years of experience.

*Table 4.4: Academic Staff Profile*

| Profile | Number of Responses | Percent of Responses |
|---|---|---|
| **University** | | |
| Private | 76 | 22.5 |
| Public | 262 | 77.5 |
| Total | 338 | 100.0 |
| | | |
| **Specialization** | | |
| Science | 160 | 47.3 |
| Humanities | 178 | 52.7 |
| Total | 338 | 100.0 |
| | | |
| **Gander** | | |
| Male | 244 | 72.2 |
| Female | 94 | 27.8 |
| Total | 338 | 100.0 |
| | | |
| **Experience** | | |
| 1-5 years | 68 | 20.1 |
| 6-11 years | 150 | 44.4 |
| 11-Over | 120 | 35.5 |
| Total | 338 | 100.0 |
| | | |
| **Rank** | | |
| Professor | 95 | 28.1 |
| Associate Professor | 94 | 28.4 |
| Assistant Professor | 147 | 43.5 |
| Total | 338 | 100.0 |
| | | |
| **Age** | | |
| 20-30 | 41 | 12.1 |
| 31-40 | 131 | 38.8 |
| 41-50 | 132 | 39.0 |
| over 51 | 34 | 10. 1 |
| Total | 338 | 100.0 |
| | | |
| **Higher Degree** | | |
| USA | 73 | 21.6 |
| Arab Country | 146 | 43.2 |
| Other Countries | 119 | 35.2 |
| Total | 338 | 100.0 |

N = 338

## 4.7 Answering the Research Questions

According to Hair et al., (2006), by quantifying the variables to be measured, the data obtained in the study can be submitted to statistical analysis. The outcome of the analysis, in turn, enables us to make statistical statements, and such statements are the evidence needed to settle the research questions. Probabilistic statistical statements are much more accurate than an untested and unsupported belief. This explains why in this study the research questions need to be answered. In this study, regression analysis is an appropriate statistical technique to use in answering the research questions of this study, as regression analysis allows assessment of the impact of single or multiple factors as implied by the following research questions:

### 4.7.1 What is the Level of E-Learning Readiness in the Jordanian Public and Private Universities?

To answer this question, the level of e-Learning readiness in the Jordanian public and private universities needs to be investigated at factors of the study: human factors, administrative factors, technology factors, attitude factors and change factors:

#### Human Factors Results

This factor consisted of three variables. Table 4.5 shows that the mean of the overall human factors was 4.10. Based on the Aydin and Tasci (2005) model, the academic staff was ready to use e-Learning but needed a few improvements.

Table 4.5 shows that the mean of the human factors (Psychological, Motivation, Confidence) of the academic staff in private universities was mean 4.13 and SD .39.

Based on the Aydin and Tasci (2005) model, the academic staff was ready to use e-Learning but needed a few improvements, while in public universities it was mean 4.13 and SD .35. Overall the mean for adopting e-Learning in public and private universities in Jordanian universities was mean 4.13 and SD .37. Based on the Aydin and Tasci (2005) model, the academic staff was ready to use e-Learning but needed a few improvements.

*Table 4.5: Human Factor Results*

| Factor | University | Mean | Std. Deviation |
|---|---|---|---|
| Human | Private | 4.13 | .39 |
| | Public | 4.14 | .35 |
| Overall mean | | 4.13 | .37 |

**Administrative Factors Results**

Table 4.6 shows the level of readiness of the academic staff in administrative factors in adoption of e-Learning.

Table 4.6 shows that the mean of the administrative factors (training, environment, human resource and knowledge) of the faculty members in private universities was 3.74 and SD .34. Based on the Aydin and Tasci (2005) model, the academic staff was ready to use e-Learning but needed a few improvements, while in public

universities the mean was 3.74 and SD .32. Overall the mean for adopting e-Learning in public and private universities in Jordanian universities was 3.74 and SD .33. Based on the Aydin and Tasci (2005) model, the academic staff was ready to use e-Learning but needed a few improvements.

*Table 4.6: Administrative Factor Results*

| Factor | University | Mean | Std. Deviation |
|---|---|---|---|
| Administrative | Private | 3.74 | .34 |
| | Public | 3.74 | .32 |
| Overall | | 3.74 | .33 |

**Technology factors results**

Table 4.7 shows the readiness of the academic staff in Jordanian universities towards technology factors in supporting and developing e-Learning.

Table 4.7 shows that the mean of the technology factors (Technological, equipment and communication) of the faculty members in private universities was 3.84 and SD .48, while in public universities it was 3.92 and SD .48.

Based on the Aydin and Tasci (2005) model, the academic staff was ready to use e-Learning but needed a few improvements. Overall the mean for adopting e-Learning in public and private universities in Jordanian universities was 3.88 and SD.48. Based on the Aydin and Tasci (2005) model, the academic staff was ready to use e-Learning but needed a few improvements.

*Table 4.7 : Technology Factor Results*

| Factor | University | Mean | Std. Deviation |
|---|---|---|---|
| Technology | Private | 3.84 | .48 |
| | Public | 3.92 | .48 |
| Overall mean | | 3.88 | .48 |

**Attitude Factors Results**

To know the attitude of the academic staff towards supporting and developing e-Learning in universities the study included four variables.

Table 4.8 shows that the mean of the attitude factors (Anxiety, Computer confidence, computer liking and computer usefulness variable) of the academic staff in private universities was 3.81 and SD .35, while in public universities it was 3.86 and SD .35.

Based on the Aydin and Tasci (2005) model, the academic staff was ready to use e-Learning but needed a few improvements. Overall the mean for adopting e-Learning in public and private universities in Jordanian universities was 3.83 and SD.35. Based on the Aydin and Tasci (2005) model, the academic staff was ready to use e-Learning but needed a few improvements.

*Table 4.8: Attitude Factor Results*

| Factor | University | Mean | Std. Deviation |
|---|---|---|---|
| Attitude | Private | 3.81 | .35 |
| | Public | 3.86 | .35 |
| Overall | | 3.83 | .35 |

**Change Factors Results**

Table 4.9 shows that the mean of the change factors (Self development and innovation variable) of the academic staff in private universities was 4.00 and SD .37, while in public universities it was 3.98 and SD .35.

Based on the Aydin and Tasci (2005) model, the academic staff was ready to use e-Learning but needed a few improvements. The overall mean in Jordanian universities towards adopting e-Learning at public and private universities was 3.99 and SD .36. Based on the Aydin and Tasci (2005) model, the academic staff was ready to use e-Learning but required a few improvements.

*Table 4.9: Change Factor Results*

| Factor | University | Mean | Std. Deviation |
|---|---|---|---|
| Change | Private | 4.00 | .37 |
| | Public | 3.98 | .35 |
| Overall | | 3.99 | .36 |

**Summary**

A comparison was made among the means of the study variables in both public and private universities in relation to the preparedness of adopting e-Learning. Table 4.10 shows that the academic staff was ready but they needed a few improvements. Based on the criterion adopted by the researcher in this study to determine the level of preparedness of the academic staff, the mean of preparedness of the academic staff in relation to the human factor was 4.13 in private universities compared to 4.14 in public universities. Therefore, the result reflects closeness between both types of universities in the preparedness towards employing e-Learning but needed a few improvements.

The mean of the responses on the administrative factor was 3.74 in private universities compared to 3.74 in public universities. This indicates that the variables were approximately similar in both types. In relation to the technology factor, the mean of the responses was 3.85 in private universities against 3.93 in public universities. The mean of the attitudes factor was 3.81 in private universities compared to 3.86 in public universities. The change factor had a mean of 4.00 in private universities compared to 3.98 in public universities. All these responses provide clear evidence of the preparedness of the academic staff towards employing e-Learning but they needed a few improvements. The mean of the overall factors of academic staff in Jordanian universities (private and public) was 3.98. Based on Aydin and Tasci (2005) model, the academic staff was ready to use e-Learning but needed a few improvements.

*Table 4.10 : Comparison between public and private universities towards e-Learning readiness*

| **Factors** | **University** | **N** | **Mean** | **Std. D** |
|---|---|---|---|---|
| Human | Private | 72 | 4.13 | .39 |
| | Public | 266 | 4.14 | .35 |
| Administration | Private | 72 | 3.74 | .34 |
| | Public | 266 | 3.74 | .32 |
| Technology | Private | 72 | 3.85 | .48 |
| | Public | 266 | 3.93 | .48 |
| Attitude | Private | 72 | 3.81 | .35 |
| | Public | 266 | 3.86 | .36 |
| Change | Private | 72 | 4.00 | .37 |
| | Public | 266 | 3.98 | .36 |
| | Overall | 338 | 3.98 | |

### 4.7.2 What are the Most Important Tools Commonly Used in E-Learning Implementation?

The important tools that are commonly used in e-Learning implementation in Jordanian universities are shown in Table 4.11 which indicates that the faculty members at Jordanian universities used the e-Learning tools in their tasks moderately (mean 3.51 and SD .84).

Results of the study indicated that the tools used in adopting e-Learning by the academic staff in Jordan universities, were ranked as follows: the www tool was in the first rank with a mean 3.80 and SD.81. Transferring files had a mean 3.61 and SD.82. Microsoft Word tool had a mean 3.58 and SD.79. E-mail had a mean 3.56 and SD.80. Electronic journals had a mean 3.54 and SD.86. Excel tool had a mean 3.53 and SD.84.

The online services tool had a mean 3.53 and SD.85. The chat room tool had a mean 3.51 and SD.86. The electronic newspaper tool had a mean of 3.51 and SD.80. Online database had a mean 3.49 and SD .90. The PowerPoint tool had a mean 3.46 and SD.78. The discussion group tool had a mean 3.44 and SD.85. The application program tool had a mean 3.38 and SD of 0.84 and the video conference tool had a mean 3.25 and SD of 0.93.

*Table 4.11: E-Learning Implementation Tools*

| Tools | Mean | Std. D |
|---|---|---|
| www | 3.80 | .81 |
| Transferring files | 3.61 | .82 |
| Mic. Word | 3.58 | .79 |
| Email | 3.56 | .80 |
| Electronic Journals | 3.54 | .86 |
| Excel | 3.53 | .84 |
| Online Services | 3.53 | .85 |
| Chat Room | 3.51 | .86 |
| Electronic Newspaper | 3.51 | .80 |
| Online Database | 3.49 | .90 |
| Power Point | 3.46 | .87 |
| Discussion Group | 3.44 | .85 |
| Application Programs | 3.38 | .84 |
| Video Conferences | 3.25 | .93 |
| Overall | 3.51 | .84 |

### 4.7.3 What are the Differences in E-Learning Readiness in Terms of Age, Gender, Rank, Computer Experience, Specialization and Type of the University?

The aim is to answer the question by investigating the differences in terms of the readiness of studying through e-Learning at Jordanian universities.

One way ANOVA analysis (age, computer experience and rank variable) and t-test analyses (gender, specialization and type of the university) were employed on the non-parametric quantitative data to determine the significant differences between the variables of the study. T-test was used for the study variables of gender, specialization age and type of the university while one way ANOVA was used for age, rank and computer experience. The following tables show these differences and their statistical significance.

T-test was used in testing the following null hypothesis (H1, H2, H3). The results of the testing are shown in Table 4.12.

*Table 4.12 : T-Test Differences Among Gender, Specialization and Type of the University of the Respondents Toward E-Learning Readiness*

| Variables | N | M | SD | t | df |
|---|---|---|---|---|---|
| **Gender** | | | | | |
| Male | 244 | 19.64 | 1.30 | 1.62 | 336 |
| Female | 94 | 19.59 | 1.64 | | |
| **Specialization** | | | | | |
| Science | 160 | 19.57 | 1.34 | .153 | 336 |
| Humanities | 178 | 19.66 | 1.46 | | |
| **University** | | | | | |
| Private | 76 | 3.29 | .18 | 1.57 | 336 |
| Public | 262 | 3.31 | .16 | | |

$p < .05$

**Gender**

$H_0$1: There is no significant difference in e-Learning readiness among academic staff based on gender in Jordanian universities.

The null hypothesis ($H_0$1) was accepted because t – calculated (1.62) > t – tabulated. t-test analysis shows no differences e-Learning readiness between male staff in universities with mean 19.64 and SD 1.30 and female staff with mean 19.59 and SD 1.64. The t statistics (336) =1.62 was not significant at the 0.05 level, which means there are no differences among gender in using e-Learning at Jordanian universities.

**Specialization**

$H_0$2: There is no significant difference in e-Learning readiness among academic staff based on specialization in Jordanian universities.

The null hypothesis ($H_0$2) T-test analysis shows no significant differences between science categories in the universities with mean of 19.57 and SD 1.34 and humanities categories with mean 19.66 and SD 1.64. The t statistics (336) = .153 was not significant at the 0.05 level. This means this hypothesis was accepted. There are no differences in specialization among staff in using e-Learning in Jordanian universities.

**Type of the University**

$H_0$3: There is no significant difference in e-Learning readiness among academic staff based on Type of the university in Jordanian universities.

The null hypothesis ($H_0$3) was accepted because t – calculated (1.57) > t – tabulated. T-test analysis shows no significant differences between public

(mean 3.29 and SD .18) and private universities (mean 3.31 and SD .16). The t statistics (336) = 1.57 was not significant at the 0.05 level. This means this hypothesis was accepted, which means there are no differences in using e-Learning between the type of university in Jordanian universities. Analysis of Variance (ANOVA) was used in testing the hypotheses for age, rank and experience. The results are as shown in Table 4.13.

*Table 4.13: One Way ANOVA test Differences Among age, Rank, and Experience of the Respondents Toward E-Learning Readiness*

| Variable | Level | Mean | SD | F | df |
|---|---|---|---|---|---|
| Age | 20-31 | 3.33 | .14 | 1.44 | (3,337) |
| | 31-40 | 3.29 | .16 | | |
| | 41-50 | 3.31 | .17 | | |
| | 0ver 51 | 3.35 | .17 | | |
| Ranks | Professor | 3.31 | .17 | .82 | (2,337) |
| | Associate Prof. | 3.30 | .16 | | |
| | Assistant Prof. | 3.31 | .16 | | |
| Experience | 1-5 | 3.29 | .17 | 2.06 | (2,337) |
| | 6-11 | 3.32 | .16 | | |
| | 11- Over | 3.30 | .16 | | |

$p < .05$

**Age**

H6: There is no significant difference in e-Learning readiness among academic staff based on age in Jordanian universities. The null hypothesis (H6) was accepted because F. Sig = 1.44 is more than 0.05 which means no significant differences were found. The One way ANOVA test analysis shows no significant differences in e-Learning readiness between the age groups among the academic staff in universities when $F(3,337) = 1.44$; $p > 0.05$).

**Rank**

$H_0$4: There is no significant difference in e-Learning readiness among academic staff based on rank in Jordanian universities.

The null hypothesis ($H_0$4) was accepted because F. Sig = .82 is more than 0.05 which means no significant differences were found. The One way ANOVA Test analysis shows no significant differences in e-Learning readiness between the rank among the academic staff in the universities when $F(2,337) = .82$; $p > 0.05$).

**Experience**

$H_0$5 There is no significant difference in e-Learning readiness among academic staff based on computer experience in Jordanian universities. The null hypothesis ($H_0$5) was accepted because F. Sig = 2.06 is more than 0.05 which means no significant differences were found. The One way ANOVA Test analysis shows no significant differences in e-Learning readiness according to experience in universities when F (2,337) 2.06 p> 0.05).

**Summary**

The results of the analysis above indicate no significant differences among the academic staff in terms of demographic variables (age, gender, rank, specialization and type of the university**)** in e-Learning readiness**.**

### 4.7.4 What is the Relationship Between the E-Learning Readiness Factors?

The aim of this question is to find the correlation results. While the correlation could range between 1.0/-1.0, this question needs to know if there is any significant correlation found between two variables, that indicates both the direction and the strength between two variables. To answer the fourth research question, correlation matrix analyses were required to determine the relationship between the e-Learning readiness factors.

$H_0$7: There is no significant relationship between human factors and administrative factors of e-Learning readiness.

$H_0$8: There is no significant relationship between human factors and technology factors of e-Learning readiness.

$H_0$9: There is no significant relationship between human factors and attitude factors of e- learning readiness.

$H_0$10: There is no significant relationship between human factors and change factors of e-Learning readiness.

$H_0$11: There is no significant relationship between administrative factors and technology factors of e-Learning readiness.

$H_0$12: There is no significant relationship between administrative factors and attitude factors of e-Learning readiness.

$H_0$13: There is no significant relationship between administrative factors and change factors of e-Learning readiness.

$H_0$14: There is no significant relationship between technology factors and attitude factors of e-Learning readiness.

$H_0$15: There is no significant relationship between technology factors and change factors of e-Learning readiness.

$H_0$16: There is no significant relationship between attitude factors and change factors of e-Learning readiness.

Table 4.14 shows the correlations among e-Learning readiness factors. The correlation coefficient indicates significant positive relationships between the independent variables at 0.05 level. These results show that there is a relationship among the variables which are considered key factors in the preparedness of the academic staff, and basic interrelation in enhancing the adoption process effectively due to its positive and high percentages.

$H_0$7: There is no significant relationship between human factors and administrative factors of e-Learning readiness.

Results of the analysis indicated that there was a statistically significant relationship between human and administrative factors where it was .441 and $p<.05$. The relationship was moderate, this result fails to reject the null hypothesis.

$H_0$8: There is no significant relationship between human factors and administrative factors of e-Learning readiness.

Results of the analysis indicated a statistically significant relationship where it was .310 and $p<.05$. The relationship was moderate, this result fails to reject the null hypothesis.

$H_0$9: There is no significant relationship between human factors and attitude factors of e-Learning readiness.

Results of the analysis indicated a statistically significant relationship where it was .336 $p<.05$ and indicated moderate relationship between both variables, this result fails to reject the null hypothesis.

$H_0$10: There is no significant relationship between human factors and change factors of e-Learning readiness.

Results of the analysis indicated a statistically significant relationship where it was .416 $p<.05$ and indicated moderate relationship between both variables, this result fails to reject the null hypothesis.

$H_0$11: There is no significant relationship between administrative factors and technology factors of e-Learning readiness.

Results of the analysis indicated a statistically significant relationship where it was .682 p<.05 and the value indicated strength relationship between both variables, this result fails to reject the null hypothesis.

$H_0$12: There is no significant relationship between administrative factors and attitude factors of e-Learning readiness.

Results of the analysis indicated a statistically significant relationship where it was .622 p<.05. This value indicated the strength of the relationship between both variables, this result fails to reject the null hypothesis..

$H_0$13: There is no significant relationship between administrative factors and change factors of e-Learning readiness.

Results of the analysis indicated a statistically significant relationship where it was .522 p<.05. This value indicated the strength of the relationship between both variables, this result fails to reject the null hypothesis.

$H_0$14: There is no significant relationship between technology factors and attitude factors of e-Learning readiness.

The results indicated a statistically significant relationship where it was .740 p < .05. This value indicated the strength of the relationship between both variables, this result fails to reject the null hypothesis.

$H_0$15: There is no significant relationship between technology factors and change factors of e- Learning readiness.

Results of the analysis indicated a statistically significant relationship where it was .439 p<.05. This value indicated moderate relationship between both variables, this result fails to reject the null hypothesis.

$H_0$16: There is no significant relationship between attitude factors and change factors of e-Learning readiness.

Results of the analysis indicated a statistically significant relationship where it was .517 p<.05. This value indicated moderate relationship between both variables, this result fails to reject the null hypothesis.

The relationship between human and attitude factors indicated a statistically significant relationship of .336, while the relationship between human and change factors was .416, and .682 between the administrative factors and the technological factors. It also indicated .622 for the relationship between the administrative factors and the attitude factors and.522 between the administrative factors and change factors. The correlation was .740 between the technological and the attitudes factors, while it was .439 between the technology and the change factors. The last correlation was .517 between the attitudes and the change factors.

The results showed a statistically significant relationship between the factors. Such factors have a strong and interrelated influence in terms of the readiness towards applying the e-Learning process. The results showed a relationship between the study variables in terms of readiness, where such variables are key factors in the process of the e-Learning application by the academic staff in Jordanian universities,

and are considered a basic foundation in supporting such process effectively through high and positive scores as shown in Table 4.14.

*Table 4.14: Correlations Matrix Analysis Results Among Human, Attitude, Rechnology, Administration and Change Factors*

| Factors | Human | Administrative | Technology | Attitude | Change |
|---|---|---|---|---|---|
| Human | 1.000 | | | | |
| Administrative | .441* | 1.000 | | | |
| Technology | .310* | .682* | 1.000 | | |
| Attitude | .336* | .622* | .740* | 1.000 | |
| Change | .416* | .522* | .439* | .517* | 1.000 |

N= 338 *$p < .05$

### 4.7.5 Is there any Relationship between the E-Learning Readiness Factors and Implementation Factors?

Multiple Regression coefficient analysis was used. Table 4.15 illustrates the relationship between e-Learning readiness and implementation. It shows positive correlations between human, administrative, technology, attitude and change factors. There was a considerable positive relationship between respondents towards applied e-Learning.

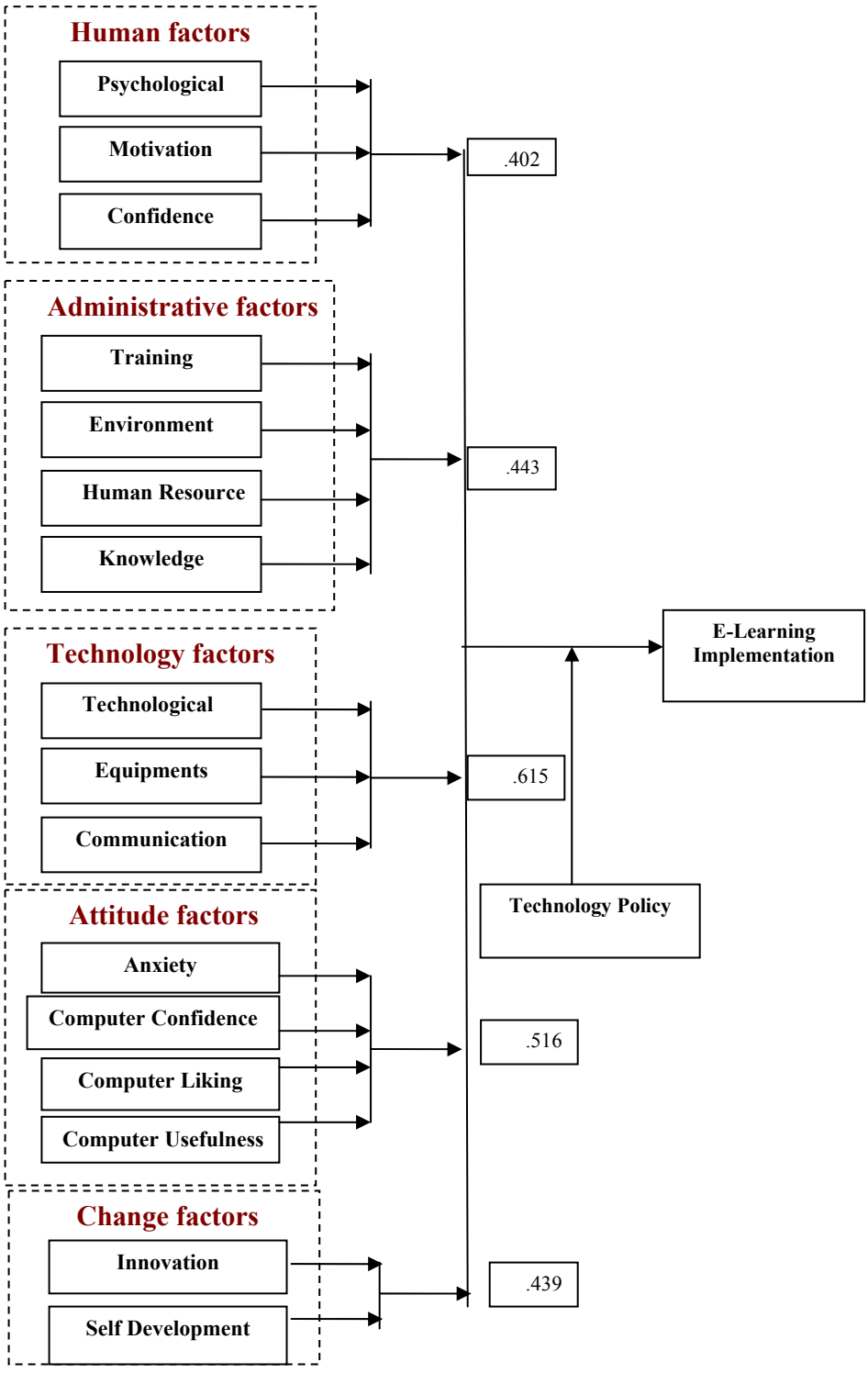


*Figure 1.4: Hypothesized model.*

In determining the relationship between the independent and dependent variables of the study, results of analysis showed that there is a statistically significant relationship (alpha<0.05) which has ranged from strong to medium and indicates that such factors are influencing the implementation of e-Learning. The results of analysis by the order of factors, showed that the most powerful factor was the technology factor with implementation where it obtained .615 scores while the second rank was attitudes with implementation which obtained .516 scores.

The third rank was the administration factor with implementation by .443 scores. The fourth rank was change factor with implementation by .439, and the fifth last rank was the human factor with implementation by .402 . In Figure 4.1, the path coefficients for the hypothesized model with the supported hypothesis are shown. The model fits the data well and all significant relationships are in the hypothesized direction, thus providing evidence for the validity of this study model.

The first hypothesis ($H_0$17) stated that there is no significant positive relationship between human factors of e-Learning readiness and implementation. The correlation coefficient was .402 (medium). As the result in Table 4.15 suggests that a significant relationship exists; therefore, this result fails to reject the null hypothesis.

The second hypothesis ($H_0$18) stated that there is no significant positive relationship between administrative factors of e-Learning readiness and implementation. The correlation coefficient was .443 (medium). As the result in table 4.15 suggests that there is a significant relationship exists; therefore, this result fails to reject the null hypothesis

The third hypothesis ($H_0$19) stated that there is no significant positive relationship between technology factors of e-Learning readiness and implementation. The correlation coefficient was .613 (large). As the result shown in table 4.15 suggests that there is a significant relationship exists; therefore, this result fails to reject the null hypothesis

The fourth hypothesis ($H_0$20) stated that there is no significant positive relationship between attitude factors of e-Learning readiness and implementation. The correlation coefficient was .516 (large). As the result shown in table 4.15 suggests that there is a significant relationship exists; therefore, this result fails to reject the null hypothesis.

The fifth hypothesis ($H_0$21) stated that there is no significant positive relationship between change factor of e-Learning readiness and implementation. The correlation coefficient was .439 (medium). As the result shown in table 4.15 suggests that there is a significant relationship exists; therefore, this result fails to reject the null hypothesis.

The sixth hypothesis ($H_0$22) stated that technology policy does not moderate the relationship between e-Learning readiness and implementation. The correlation coefficient was .337 (small). As the result shown in table 4.15 suggests that there is a significant relationship exists; therefore, this result fails to reject the null hypothesis.

All the hypothesized support for direct relationships of human factors, technology, administration, attitude, and change factors, and overall perception about e-Learning readiness to use e-Learning in future was found. Nevertheless the effect of the e-Learning readiness dimension was significant as hypothesized.

*Table 4.15: Hypothesis Testing Results*

| No | Hypothesis | Correlation |
|---|---|---|
| 1 | Human Dimension → Implementation | .402* |
| 2 | Administration → Implementation | .443* |
| 3 | Attitude → Implementation | .516* |
| 4 | Technology → Implementation | .615* |
| 5 | Change → Implementation | .439* |

*P<.05

### 4.7.6 Which Rank Factors Contribute to E-Learning Implementation in the Jordanian Universities?

Multiple Regression coefficient analysis was used, when the beta value was calculated to determine the factors that contribute more to the adoption of e-Learning, as in Table 4.16.

Results show that the factors which help more in adopting e-Learning in Jordan's universities were human, administrative, technological, attitudes and change factors. Results show that the highest Beta value for technology factors was .465 which means that without technology there will not be any use of e-Learning. Beta value was .387 for attitude factors, while Beta value was .380 for administrative factors. Beta value for human factors was .169, followed by change factors which lasted at .125. Such factors were statistically significant since they were less than 01-05 which shows the importance and integration of such factors together in order to achieve the e-Learning goals in universities as focused by the academic staff.

On the other hand, the value of technology factors ranked the first where such factors explained .465 of all factors. Attitude factors were on the second rank where they explained .387 of all factors; administrative factors ranked third where they explained .380 of all factors. Human factors got the fourth rank where they explained .169 of all factors. The last one was the change factors at .125 which was explained, along with technology, human, administrative, attitude and change factors.

Beta values indicate that technology factors is important and essential in adopting e-Learning, followed by the attitude factor in using technology and the willingness to change the teaching methods. The human factors would enable the technology tools; the administrative factors organize the necessary procedures in adopting e-Learning while the last factor which is the change factor would be useful in using technology to change the teaching style.

*Table 4.16: The Factors that Contribute to e-Learning Implementation*

| **Model** | | **Unstandardized coefficients** | | **Standardized coefficients** | **t** | ***p*** |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 2.134 | .091 | | 23.53 | .000 |
| | Human | 0.08 | .021 | .169 | 3.90 | .000 |
| | Administrative | .199 | .025 | .380 | 7.85 | .000 |
| | Technology | .163 | .018 | .465 | 9.24 | .000 |
| | Attitude | .185 | .024 | .387 | 7.84 | .000 |
| | Change | 0.06 | .019 | .125 | 3.09 | .002 |

### 4.7.7 Does Policy Moderate the Relationship Between E-Learning Readiness Factors and Implementation?

Hierarchical multiple regression which is referred to as sequential regression is used in this study.

To answer this question, it was necessary to know the technology policy that moderates the relationship between e-Learning readiness and its implementation and adoption in Jordanian universities. Table 4.17 shows overall mean (M= 3.24 = SD 0.52) that the academic staff agreed that Jordanian university policies support and develop the use of e-Learning**.**

Two steps were followed, the first step use IVs with DV as depicted in Table 4.18, and the second step use IVs and moderate with DV as displayed in Table 4.19 and Figure 4.2. The model represented 54.5% of the variance in overall e-Learning readiness factors. 545% of the variance ($R^2$) in e-Learning readiness have been significantly explained by human, administration, technology, attitude and change factor.

One model refers to all entered DV and IVs while the second one includes all the variables. The first model gives R Square values .545 per cent of the variance. The second model gives R Square values .555 per cent of the variance. This is a statistically significant contribution, as indicated by the R. Square Change. (.010) which includes Sig F. change value for this line (.000).

Table 4.17 shows overall mean (M= 3.24 = SD 0.52) that the academic staff agreed that Jordanian university policies support and develop the use of e-Learning. The following are the technology policies ranked in order according to mean. The first rank was the mean of the item in which the university provides training support to its staff at 3.35 and SD .88 which indicates that universities, in general, seek to support the academic staff with needed training for adopting e-Learning. The second item, submitting assignments on line contributes to students' success in supporting teaching with a mean of 3.33 and SD.92 indicates that it is legal not to send assignments when students attend classes since they can deliver assignments through the internet. The item the university allows provides free – access to the internet after work was third with a mean of 3.28 and SD.96 which shows that the universities are able to assist the academic staff to access (www) at any time. The item that covers topics presented via e learning is considered credible was the fourth with a mean of 3.26 and SD .89 where the university recognizes the delivery of the skills required from students through the internet.

The policies of the university allow the staff and the students to exchange information via the university site was the fifth with a mean of 3.25 and SD.87, which enhances the communication process between the students and the academic staff via internet without attending classes. The sixth item which was the institution has clear policies in applying e-Learning, with a mean of 3.22 and SD.88 shows that universities have clear regulations in adopting e-Learning. The item university rules and instructions allow offering assignments online, with a mean of 3.20 and SD.86 indicates that there were regulations and rules to enhance the process of assignment delivery via web. The item academic staff gets the legal support to teach online, was

the eighth with a mean of 3.21 and SD.88, which allows the academic staff to legally use e-Learning in education. The item university rules and instructions allow offering topics online, with a mean of 3.17 and SD .88 helps the presentation of subjects via web directly. The last item was the university which provides financial incentives to adopt e-Learning by its staff, with a mean of 3.16 and SD1.019 encourages academic staff to adopt e-Learning in their works.

It has been proven that universities have clear policies in specific areas. Besides rules assisting the open learning process, the rules allow the delivery of assignments to students through internet. Universities should consider credible methods in e-Learning when universities determine and respect the exchange of information between the academic staff and the students and among the staff themselves. University policies should provide legal support for academics to handle the e-Learning process hence recognizing it. Universities should adopt material motivations to adopt e-Learning by the academics besides training them and permitting the use of free intent outside the workplace besides using multimedia in answering the questions of students.

*Table 4.17: Moderating effect of Technology Policy*

| No. | Items | Mean | Std. Deviation | Rank |
|---|---|---|---|---|
| 1 | The institution has clear policies in applying e-Learning | 3.22 | .87 | 6 |
| 2 | University rules and regulations allow offering topics on line | 3.17 | .88 | 9 |
| 3 | University rules and regulations allow offering assignments online. | 3.20 | .86 | 7 |
| 4 | Topics presented via e-Learning are considered credible | 3.26 | .89 | 4 |
| 5 | The policies of the university allow the staff and the students to exchange information via the university site | 3.25 | .88 | 5 |
| 6 | Academic staff get the legal support to teach on line | 3.21 | .89 | 8 |
| 7 | Submitting assignments on line contributes to students' success in supporting my teaching | 3.33 | .93 | 2 |
| 8 | The University provides financial incentives to adopt e-Learning by its staff | 3.16 | 1.02 | 10 |
| 9 | The University provides training support to its staff | 3.35 | .88 | 1 |
| 10 | The university allows free – access to the internet after work | 3.28 | .96 | 3 |
| 11 | The university answers students question and queries via e-Learning tools | 3.22 | 1.01 | 6 |

Table 4.18 shows the results of the multiple regression analyses. Five e-Learning readiness factors take account for 54.5 % of the explained variance of e-Learning readiness, which is significant as indicated by the F-value. The significant value in this case, Sig. = .000 ($p < .005$) and Sig. = .00 ($p < .05$) which is less than $p < .05$ (the criterion alpha level). Therefore, the regression equation as computed statistically is significant for all factors. Multiple regression indicates significant positive relationships between the independent and the dependent variables at the 0.05 level. The regression analysis used the criteria question as the dependent variable and the five e-Learning readiness factors as the independent variable.

*Table 4.18: Results of Coefficients Multiple Regression Analysis Between IVs and DV*

| **Factors** | **Unstandardized Coefficients** | | **Standardized Coefficients** | ***P*** |
|---|---|---|---|---|
| | **B** | **Std. Error** | **Beta** | |
| (Constant) | 2.134 | .091 | | .000 |
| Human | 0.08 | .021 | .169 | .000 |
| Administrative | .199 | .025 | .380 | .000 |
| Technology | .163 | .018 | .465 | .000 |
| Attitude | .185 | .024 | .387 | .000 |
| Change | 0.06 | .019 | .125 | .002 |
| R | .738 | | | |
| R2 | .545 | | | |
| Adjusted R2 | .538 | | | |
| R.S Change | .010 | | | |

Standardized regression ($R^2$) and coefficients of correlation between two variables (r) were presented. R value is a number between -1.00 and 1.00 that indicates both the direction and the strength of the linear relationship between two variables. It has been proposed that the lower limit of substantive regression coefficients is 0.05 (Sekaran, 2000). In Figure 4.2, estimates of squared multiple correlations ($R^2$) are shown. $R^2$ values represent the amount of variance explained in the dependent variable by the predictor.

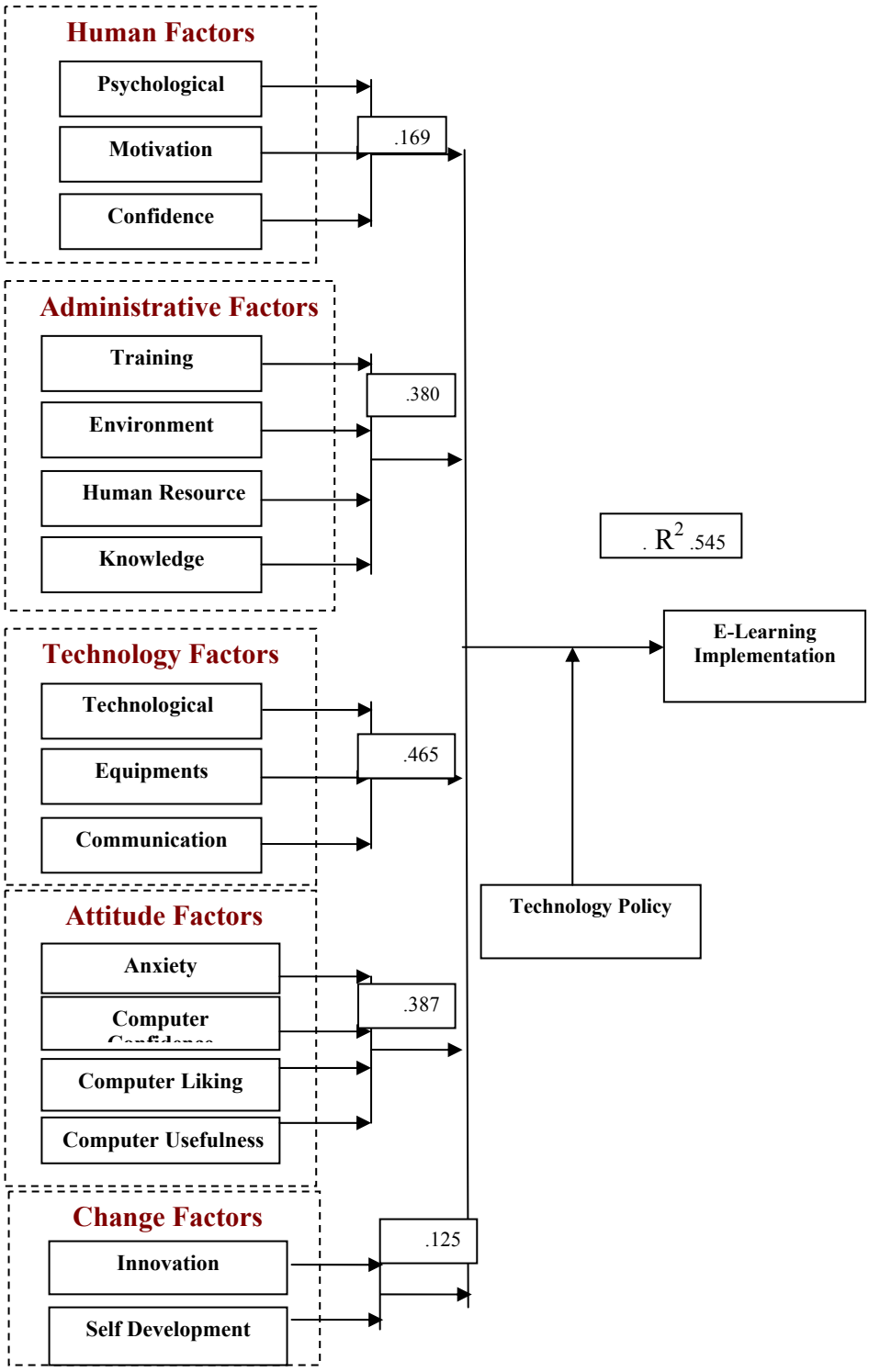


*Figure. 4.2. Explained IVs from DV with moderate factor models*

Hierarchical multiple regression was used, where the number of independent variables entered and the order of entry was determined by statistical criteria generated by the Hierarchical multiple regression procedure in Table 4.19. This procedure is found under the SPSS output heading coefficients. This section of the output showed which of the variables were statistically significant predictors of the dependent variable. This indicates that technology policies are important factors in the support of e-Learning.

*Table 4.19: Results of Multiple Regression Analysis Between IVs and DV with Technology Policy Moderate*

| | | **Unstandardized Coefficients** | | **Standardized Coefficients** | ***p*** |
|---|---|---|---|---|---|
| | **Factor** | **B** | **Std. Error** | **Beta** | |
| 2 | (Constant) | 2.001 | .101 | | .000 |
| | Human | 0.08 | .021 | .181 | .000 |
| | Administrative | .206 | .025 | .392 | .000 |
| | Technology | .161 | .018 | .458 | .000 |
| | Attitude | .185 | .023 | .386 | .000 |
| | Change | 0.06 | .019 | .124 | .002 |
| | Technology policy | 0.04 | .015 | .102 | .004 |
| | R | .745 | | | |
| | R2 | .555 | | | |
| | Adjusted R2 | .548 | | | |

**Summary**

Two models for each indicator of e-Learning readiness were estimated. Model-1 deals with the results of the overall readiness of e-Learning. Model-2 deals with the technology policy regarding e-learning. According to the results in Table 4.19

technology policies' moderation indicate that public and private universities seek to adopt e-Learning in the best way through continuous support in setting policies that enhance the adoption of e-Learning in education.

### 4.8 Qualitative Data Analysis:

To achieve the objectives of this study the researcher designed two questions to conduct an interview. The interview consisted of two questions. The following are the details of academic staff answers on the questions:

#### 4.8.1 What are the Obstacles Facing the Academic Staff in Using E-Learning in Their Teaching?

#### 4.8.2 What is the Academic Staff View Towards Using E-Learning in Teaching?

The first question refers to the most important obstacles that face academic staff in implementing e-Learning in their teachings. The researcher focused on the most important words, vocabularies and sentences that could be useful in this study. The interview data indicate that there are two themes with regard to the obstacles. Some themes emerged to implement e-Learning. These themes include equipment, technological, training and knowledge obstacles. Finally, the researcher divided the data into categories, and put them under an appropriate themes based on the research model. According to the first question, and based on literature review, the researcher created the most obstacles facing academic staff during the use of e-Learning in their teaching. Below are some of these obstacles:

| | | | |
|---|---|---|---|
| 1- | Lack of knowledge to use E-Learning | 2- | Lack of time to use e-Learning |
| 3- | Lack of support from university | 4- | Lack of infrastructure at university |
| 5- | Lack of motivation | 6- | Lack of sites design |
| 7- | Lack of confidence in using computer | 8- | Lack of training to use e-Learning |
| 9- | Resistance to change to new method in teaching | 10- | Lack of tools used in e-Learning |

The second one refers to the view of academic staff towards using e-Learning in their teaching. Both questions covered 24 academic staff members in different universities regarding ranks and specializations.

### 4.8.1 What are the Obstacles Facing the Academic Staff in Using E-Learning in Their Teaching?

This followed the researcher's interview with academic staff to determine the obstacles in the public universities in different specializations and ranks. The interview data indicated that academic staff encountered some obstacles during the implementation of e-Learning, also these obstacles referred to technology factors (equipment themes, technological themes) and administrative factors (training themes, knowledge themes).

The interview indicated various obstacles that the academic staff faced in their application of e-Learning. The interview contained respondents who mentioned they have problems with technology and administrative factors which were divided according to their specializations/ faculties scientific and humanities:

**First theme: Technology Factor:**

**First Sub Theme: Technological Variable:**

Of the concerned academic staff of humanities and sciences from different universities, nine mentioned that they have problems with technological variable, of them six from public universities and three from private universities. Below are the results of the interview:

Assistant Professor/ Humanities. Case No. (351): Ali said:"*E-Learning is considered an important source of the development of computer technology. This technology helped in the development of the teaching process because it contained all the elements to enhance the teaching process. But I face problems like lack of software programs".*

Assistant Professor/ Humanities. Case No. (45): Salam said:"*One of the most important problems that I face in the application of e-Learning is lack of practice because students need to be trained to accept e-Learning in their educational process.".*

Associate Professor/ Science. Case No. (54): Nabeel said:*"The computers are considered as one of the modern educational tools in the development of education and one of the necessities of modern life. But obstacles in the implementation of e-Learning such as lack of software programs and the difficulties that are likely to be faced by students themselves while using e-Learning are still there".*

Professor/ Science. Case No. (207): Ahmad said: *"The use of e-Learning is still new and needs more studies and practice The problems that I face is the lack of websites in Arabic and English language in particular and educational websites in general".*

Professor/ Humanities. Case No. (192): Rakan said: *"E-Learning is one of the modern teaching tools that saves effort and time. But the lack of software programs in Arabic will create difficult problems to me in applying this system despite that the diffusion of modern tools in teaching process will contribute to resolving many problems".*

Assistant Professor / Science. Case No. (177): Majed said: *"The activation of e-Learning in my teaching process requires support by the top university administrations to encounter the problem in the application especially the logistical and technical problems".*

Associate Professor/ Science. Case No. (344): Malek said: *"When talking about e-Learning I find my self in front of a technology that will help much in developing the e-Learning in universities. But some problems will emerge especially with the application tools of e-Learning due to the lack of practical practice".*

Professor/ Science Case No. (46): Jaser said: *"The digital telecommunication devices has positively affected the teaching process and helped in developing education in general. It has a great role in the teaching process especially in using the e-*

*Learning, but there are so many obstacles in the process such as the educational databases".*

Associate Professor/ Science. Case No. (78): Salman said:"*E-Learning has been a teaching tool that use advanced technology of computers and telecommunication actions, but I encounter some obstacles which prevents the full use of such system, such as lack of fully equipped class rooms".*

**Second sub theme: Equipment Variable:**

Where the academic staff of humanities and sciences from different universities were concerned, 8 academic staff mentioned they have problems with equipment variable. Five academic staff from public university reported that they have obstacles and 3 academic staff reported that they have obstacles in technological variable. Below are the results of the interview.

Professor/ Humanities. Case No. (319): Abdulhameed said:*"One of the most important problems that the faculty members face in the application of e-Learning is the lack of sufficient modern equipments and the slow programming of courses. This leads to the weak implementation of e-Learning in general".*

Assistant Professor/ Science Case No. (32): Hamad said: *"The implementation of e-Learning requires modern equipments. It is important to say that the computers available to faculty members at present are not new and need to be updated".*

Assistant Professor/ Science. Case No. (27): Nidal said:*"I think that there will be some hindrances in the application of e-Learning. These obstacles include lack of adequate equipments, students' inefficiency and the courses that take time in programming".*

Associate Professor/ Science Case No. (271): Fares said: *"I prefer to use this kind of learning especially after the development of the modern educational tools and its spread in the academic world. The problems of such kind of learning is presented in the limitation of the numbers of computers used in the universities and the old software programs used in the application.*

Assistant Professor/ Humanities. Case No. (113): Yousef said: *"One of the problems that I face in this matter is to design a website for the teaching material. I think that the space is too limited for the explanation needed and also old computers make the e-Learning less effective".*

Assistant Professor/ Humanities. Case No. (292): Abdullah said: *"The lack of availability of the programming infrastructure, database, and modern equipments are the main problems that I face in e-Learning.*

Associate Professor/ Humanities. Case No. (101): Ali said: *"I believe that most problems being encountered by me are the old computers, lack of fully equipped class rooms, besides the technical staff to help in resolving problems of application".*

Professor/ Humanities. Case No. (298): Zaid said:*"E-Learning is an educational systems that is highly effective but it still needs more preparation, replacement of old equipments and getting the teaching material ready for education".*

**Summary of the Administrative Topic**

Interview results indicated that most obstacles encountering the academic staff in terms of e-Learning techniques are the epistemological and training topics, where such obstacles are similar with regard to the type of university, rank and specialization of academic staff.

Such results emphasized the fact that the responsibility of developing the means and strategies of e-learning belongs to the governmental agencies and universities which should support the efforts of academic staff to acquire and enhance the knowledge and techniques of e-learning. These steps are needed to provide academic staff with sufficient hardware and software and other potential necessities to achieve these objectives.

According to the above results, regardless of their academic ranks, obstacles faced by the academic staff, at public and private universities, in the implementation of e-Learning are almost the similar whether in humanities or science. These obstacles include: lack of practice, inability to design programs, old software programs, and lack of adequate equipments. Five academic staff from humanities specialization and three academic staff from science specialization mentioned they have some obstacles in using the e-Learning.

**Second theme: Administrative Factor:**

The interview indicated various obstacles that the academic staff face in their application of e-Learning. The interview contained 24 academic staff 7 of which have problems with administrative factor. The staff is divided according to their specialization/ faculties scientific and humanities:

**First sub theme :Training Variable:**

Where the academic staff of humanities and sciences from different universities were concerned, seven academic staff members states that they have problems with training variable five academic staff from public university reported that they have obstacles and two academic staff reported that they have obstacles in training variable. Below are the results of the interview.

Associate Professor/ Humanities. Case No. (331): Adnan said: *"It is too difficult to specify the problems that I encounter in the application of e-Learning, I also think I need more practical training on the use of all teaching aids concerned with this kind of learning".*

Professor/ Humanities. Case No. (60): Khaled said: *"Problems that I encounter in applying e-Learning are: lack of practice on such system in my teaching process. I believe that I will overcome these problems through training courses by the university"*.

Assistant Professor/ Science. Case No. (364): Fadel said: *"Applying modern technological methods in learning process requires more support and training. But I*

*find a problem in the tools assisting e-Learning use because it requires more training and follow up to achieve its objectives effectively".*

Professor/ Science Case No. (136): Salam said: *"If E-Learning is applied in the teaching process it will achieve positive results especially when the universities adopt training programs on how to use e-Learning. Problems that may face e-Learning implementations include the upgrading of computers"*

**Second Sub Theme: Knowledge Variable:**

Where the academic staff of humanities and sciences from different universities were concerned, three academic staff mentioned that they have problems with Knowledge variable. Two academic staff from public university reported that they have obstacles and one academic staff reported that he has obstacles in Knowledge variable. Below are the results of the interview.

Associate Professor/ Humanities. Case No. (329): Mahmoud said: *"The e-Learning has been applied in the educational institutions particularly the universities in Jordan after training faculty members on the use of such programs. This step made modern means of teaching available in the universities. Problems in the application are still there because the knowledge is still new."*

Professor/ Science. Case No. (47): Salam said: *"Education at the university level is a main source for knowledge among students and the e-Learning will increase this knowledge. The problems I face in the use of e-learning is lack of knowledge, the*

*inability to design programs and the feeling that the teaching materials need more efforts in order to become ready for the learning process"*.

Associate Professor/ Humanities. Case No. (82): Nayif said: *"One of the problems that I face as a faculty member in the implementation of e-Learning is lack of knowledge in this kind of learning at the university level which will lead many people to resist the change in the present time".*

According to the above results, regardless of their academic ranks, obstacles faced by the academic staff, at public and private universities, in the implementation of e-Learning are similar in humanities or science. These obstacles include: lack of *knowledge*, and lack of adequate training. Some academic staff from humanities specialization and academic staff from science specialization mentioned that they have obstacles in using e-Learning with regards to theme.

**Summary**

These interviews show that academic staff in public and private universities, according to research model have similar obstacles under technology and administrative factor. Most interviews show the inadequacy of support from the university.

These results indicate that most problems that may occur are in the practical side of implementing the tools of e-Learning. The results also ensure the theoretical readiness and the practical weakness in the implementation of e-Learning by the academic staff members.

#### 4.8.1.1 Summary for First Question

The results show that there are similar obstacles facing academic staff towards implementing e-Learning in their teaching process in humanities and science specializations in Jordanian universities. On the other hand, if we look at the Science specialization, the study found that differences between respondents in public and private universities amongst various ranks were the same. Also, in Humanities specialization, the study indicated that differences between respondents in public and private universities amongst various ranks were the same. This indicates that academic staff in public universities have the same obstacles compared to academic staff in private universities regarding the specializations and ranks.

### 4.8.2 What is the Academic Staff View Towards Using E-Learning in Their Teaching?

Interviews consisted of 24 members in various universities according to majors and ranks. Three themes were extracted from the interview with regard to the academic staff view towards e-Learning implementation. These themes include (positive, liking, and willingness).

Data collected from academic staff, in different ranks and majors, in terms of their attitude towards applying the e-Learning indicated that they have the liking to do that. Data was classified upon three basic components. The first component was the positive attitude towards applying e-Learning, while the second one was the tendency towards using a modern educational system which depends on modern technology in implementing the e-Learning and the third component was the liking

to shift from traditional to modern learning and teaching techniques. The results were consistent with the new research in this topic.

Attitude factor was divided into three themes (positive, liking, and willingness) where interviews with most academic staff at public and private universities showed that they have attitude to use e-Learning. Interview results of twenty four academic staff from public and private universities in humanities and sciences majors from various ranks are shown below:

**First theme: Attitude Factor:**

**First Sub Theme :Liking Variable**

In an interview with 24 academic staff, four of them were in Humanities and one in science, they mentioned that they have liking to use e-Learning.

Studies showed that such component is a vital one in implementing the e-Learning and supports the individuals' behavior to adopt the use of modern tools and techniques towards the change. This component is very important since it facilitates the efforts of learning process by students. The academic staff designs the learning environment, diagnoses the levels of his students and determines the most suitable teaching materials for them. It was natural that educational institutions made efforts to exploit the advancements in this field to develop the education and achieve the educational objectives through changing the concepts and roles to comply with these developments. Interviews stressed the importance of such component and the need for more studies.

Assistant Professor/ Humanities. Case No. (351): Ali said: *"E-Learning is considered as one of the educational means which greatly helped in incorporating the computer in the domain of education. It is also a modern tool and I like to use in the field of education in the near future".*

Assistant Professor/ Humanities. Case No. (45): Salam said: *"Under the circumstances of the availability of technology and the dependence of students on computer which is the only way to make use of e-Learning I think that e-Learning is an excellent means and liking is present to integrate it in the field of education".*

Associate Professor/ Humanities. Case No. (331): Adnan said: *"E-Learning has become easy to get for all students can communicate electronically with their teachers and students, this shows the possibility of the development of the curriculum to make things easy for teachers and students in the educational process and I see in the e-Learning a new edition to the teaching process".*

Associate Professor/ Science. Case No. (78): Salman said: "*I feel that applying e-Learning is a modern style and I like using it to match the requirements of modern age especially with the fact that teaching has become undetermined by a specific time and place, where telecommunication technology enhances such system".*

Professor/ Humanities. Case No. (298): Zaid said: "*I think I feel that I like using e-Learning but I'm afraid because I did not use it before and because it depends mainly on the use of technology in the learning process".*

**Second Sub Theme: Willingness Variable**

In an interview with 24 respondents three of them were in Humanities and four academic staff were in science; they mentioned that they have willingness to use e-learning.

Associate Professor/ Science. Case No. (344): Malek said:*"I have the willingness towards applying e-Learning in the teaching process after I knew much about this program and its contribution to the improvement of the teaching process towards the benefit of university and students".*

Professor/ Humanities. Case No. (192): Rakan said: "*I have the strong willingness to match the modern developments in the teaching processes; I have the complete readiness to use the electronic teaching process".*

Professor/ Humanities. Case No. (319): Abdulhameed said: *e-Learning is an important area of teaching in this time and I have willingness to use it in educational process as a whole and I think it is necessary to deal with using this modern technology*.

Assistant Professor/ Science. Case No. (177): Majed said: *I think that the use of e-Learning goes hand in hand with the requirements of the modern age education therefore the new methods of teaching universities' students should be integrated with new era of technological revaluation I have strong willingness to use it in my work.*

Assistant Professor/ Science. Case No. (364): Fadel said: *I think if e-Learning is scientifically and effectively used the results would be shown in the educational process. This also will save time and give me the time needed to accomplish other necessary duties.* Associate Professor/ Humanities. Case No. (82): Nayif said: "*I have willingness to use E-Learning . It is a new tool and has many advantages and will enrich students with the necessary skills to deal with modern technology, it will also create a teaching environment that will be available at all times".*

Professor/ Science. Case No. (136): Salam said: *"The dedication for e-Learning in universities will give its fruit among students, I think that I have willingness to apply this system in my job especially as it will complement traditional education".*

**Third Sub Theme: Positive Variable**

Many educators have positive and high expectations on this component. That is, it will enhance the educational process, find new roles for the teachers and meanwhile they stress that such technology will help in identifying the feedback of teaching process thus increasing the effectiveness of students' participation in the process.

The success of learning techniques is tied to the users of modern technology and their willingness towards exploiting it to enhance the educational process. Such willingness will increase their awareness towards the importance of such technology. In an interview with 24 respondents, five of them were in Humanities and seven in science. They mentioned that they have a positive attitude to use e-Learning**.**

Many researchers emphasized the importance of this component as it is the basic and active drive for the proper planning and ability to implement the new methods of teaching. Thus the positive attitude is a stimulus for positive change, where the role of teachers shifted from physical (face-to- face) to virtual (computer-aided) communication system.

The rapid developments of computer and internet technologies created new situations for teaching process and supported the teacher to communicate remotely with students from different geographical zones simultaneously. The new technology emphasizes the rights of individuals to acquire knowledge everywhere and at anytime, as it is known as "open education". This type of education encourages the self initiatives of teachers and helps creating the necessary programs. Therefore most respondents stressed their willingness and positive attitude towards implementing e-Learning in their teaching process.

Professor/ Science. Case No. (46): Jaser said: *"I expect that e-Learning has become an important tool in the teaching process and it will have a great and positive role in improving teaching and interaction among students and teachers"*.

Associate Professor/ Science. Case No. (78): Salman said: "*I see that this kind of learning will have a positive effect upon students in the future. It will also develop the role of the universities to activate this kind of open-learning".*

Associate Professor/ Science. Case No. (344): Malek said: "*I have a positive view of using modern tools in the learning process; I can see that modern education will be based on the use of computers".*

Professor/ Science Case No. (46): Jaser said: "*I think that the application of e-Learning will give excellent results in the learning process and will have a positive role due to the interaction among students themselves and students with faculty members".*

Professor/ Science Case No. (136): Salam said "*I can see many positive aspects in the use of e-Learning in the learning process and that will definitely increase the interaction between the students themselves".*

Assistant Professor/ Humanities. Case No. (113): Yousef said: "*I think that e-Learning will help in developing the university teaching methods. It will have a positive impact if used in the learning process".*

Assistant Professor/ Humanities. Case No. (292): Abdullah said: "*I'm willing and have the positive attitude to use e-Learning because it saves time for teaching students and helps in facilitating the transfer of knowledge amongst students and enhances interaction amongst all teachers.*

Professor/ Humanities. Case No. (60): Khaled said: *"I believe that a variability of internet and telecom series will affect positively in accepting the e-Learning in university, personally, I prefer to apply such a new method in doing my job"*

Associate Professor/ Humanities. Case No. (101): Ali said: "*I like the adoption of e-Learning in my university especially in the teaching process; I have the positive attitude which will enhance the use of this system".*

Assistant Professor / Science. Case No. (177): Majed said: "*I think that the teaching process faces every day a new challenge. I like to improve my profession in using a new technology in the teaching process and I have a positive tendency to use e-Learning in my work".*

Assistant Professor/ Science. Case No. (364): Fadel said: "*I have the complete attitude and strong positive inclination to apply e-Learning in my teaching, I strongly support such system to replace the old methods".*

Associate Professor/ Humanities Case No. (329): Mahmoud said: *" e-Learning is an important means of teaching at present and I can see a positive role in improving the educational process as a whole and I think it is necessary to deal with it in a positive way ".*

#### 4.8.2.1 Summary for Second Question

The results show the support of academic staff in applying e-Learning in their job. Also, most academic staff have a positive attitude and willingness to change education process. Interview results show that there are positive tendencies to use e-Learning, which will support the teaching process from various ranks.

## 4.9 Conclusion

The interviews revealed the same point of view among academic majors in application of e-Learning for the favor of scientific specialties. But all majors aimed at applying e-Learning in supporting learning methods by future use of technological media, and moreover, all academic staff members in both private and public universities have the willingness and positive attitude towards applying the e-Learning in their job.

The final chapter summarizes the research, draws some conclusions, describes several limitations, and offers suggestions for further research. Five factors of e-Learning readiness determinant were found and validated; human, administration, technology, attitude and the change factor. Discriminate validity as well as other validities and reliability tests were performed to establish construct validity. Moreover, each of the factors appeared distinct and valid, as the factor analyses suggestion appeared theoretically sound. All hypotheses that were proposed in this study were supported. The variables were averaged for each factor and the averages were used as input for each construct, using multiple regression analysis to estimate the model.

# CHAPTER FIVE

# DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

## 5.1 Introduction

This chapter includes a discussion and explanation of data analysis from Chapter Four. It begins with the discussion of findings followed by the conclusion. The last section provides the recommendations and suggestions for the future research directions.

## 5.2. Quantitative Data

### 5.2.1 Discussion of First Question Results. What is the Level of E-Learning Readiness in the Jordanian Public and Private Universities?

All faculty members needed some improvements in order to be ready to use e-Learning in the teaching process where the e-Learning system would be a suitable method. They need to discuss the problem of adopting e-Learning as an interactive method among them. They found that using e-Learning in their jobs stimulated the positive motivation to use it. Besides that, participation in the design and the planning of e-Learning enhanced their use of it, and they had the chance to use modern technology (e-Learning, mic, speakers, cams…etc). In the teaching process, the distribution of responses was approximately homogeneous which increased the confidence of the results. All the faculty members had the motivation to use e-Learning even if they did not use e-Learning at home, and they felt that they would be able to use e-Learning for the purpose of their academic work all the time with added support. The confidence variable means of the tendencies of the faculty members showed that they need to increase their confidence in using e-Learning in

the teaching process, in producing active study materials, in using different supporting techniques and in developing their knowledge to use e-Learning in the teaching process confidently.

This indicates that the academic staff agreed that: a) the training programs in their jobs make them more confident in facing the problems while using e-Learning, b) sufficient training is important to use e-Learning tools in teaching, c) training programs give them more efficiency in using e-Learning instead of the traditional method of doing their tasks, d) these programs will increase their information in using e-Learning in their jobs, and e) provide them with more skills in using e-Learning. The environment variable implies that the use of e-Learning by the faculty members who have no previous related experience show their willingness to use it in order to improve and develop the teaching environment. It also indicates that the universities have a positive role in increasing the efficiency of the faculty members in using e-Learning and in accepting the changes of its use in the teaching environment. The universities make efforts to support the faculty members in using e-Learning and preparing the campus' infrastructure to adopt e-Learning in the teaching process. Amer (2005) mentioned that e-Learning uses modern technology that depends mainly on the skills needed to deal with the international information networks for interaction between students and professors electronically.

The administrative factor indicates that all respondents agreed that educational leadership in the universities has the vision to support and adopt the use of e-Learning, and that technical support assists them efficiently in such tasks and prepares human resources to assist them in using e-Learning. The knowledge

variable indicates that they: have proper knowledge on how to use e-Learning in the teaching process; could use it in educational tasks efficiently; could browse internet sites easily. Also, they have a lot of information about using e-Learning in doing their jobs and have knowledge in developing new skills of using e-Learning at anytime. In addition, they were able to access different electronic sites that contribute to the support of e-Learning. The results of this study are supported by Haverila & Barkhi (2009). Mackenzie-Robb (2004) claims that e-Learning requires a good level of knowledge, quality time, management skills, and an ongoing self motivation.

It shows that they can open their emails easily, read emails and reply easily. Also, they have suitable skills in composing and replying to emails and able to send emails with attachments to other parties. Furthermore, they are able to save students addresses in the site page to communicate with them. The technology variable indicates that they can use e-Learning easily in the teaching process at anytime and can use e-Learning to communicate with their standards offsite. It provides them with basic skills on how to use computers and tools of e-Learning and can complete their tasks using e-Learning. The equipment variable shows that they all agreed that universities have the necessary instruments for e-Learning. The equipment for the process of e-Learning in the teaching process is ready for use. The readiness of such equipment enables the adoption of e-Learning in the teaching process. Universities have high efficiency in using the internet in adopting e-Learning and keep updating and upgrading their equipments.

It shows that the faculty members feel relaxed when using e-Learning in teaching students. They accept the idea of using e-Learning in doing their jobs. It also shows that they feel that e-Learning requires a high level of motivation to complete tasks; that they have the desire to use e-Learning in carrying out the teaching process, and they feel confident in using it.

The tendency of the like factor showed that they agreed on the notion of using technology in delivering the educational assignments and that they feel relaxed when using e-Learning. They also have the desire to use modern technology to do their jobs. They can also spend more time in using e-Learning since it is enjoyable. They stated that when using e-Learning, they found it difficult to quit and they liked very much to talk with others about the topic.

The benefit factors revealed that the faculty members agreed that using e-Learning would provide new methods of teaching. They realized that learning to use the internet was an important basis that would help them do their tasks since this is a basic requirement for adopting e-Learning where the faculty staff can browse the website and obtain new information that complements their traditional methods of teaching and enhances their performance.

The extensive use of technology and internet has led to a fascinating development in the teaching process. The royal support of all educational institutions as well as the assertion of the necessity of adopting technologies in the teaching process has both clearly influenced the improvement of teacher's performance in using technology. Such wide spread technology imposed on teaching necessitates the requirement for

gaining skills of teaching design so as to be capable of designing the studying materials. The universities argued the importance of providing the academic staff with essential training skills that are necessary for using such technology in doing their jobs. This entails optimal training in the first few days. Furthermore, the universities also provided the academics that are skilled in using computer technology with motivation. Rogers (1995), in his Theory of the Diffusion of Innovations, indicated that an understanding of the environment in which a technology is introduced is a prerequisite to understanding how best to promote its adoption of e-Learning.

In the light of such development, the thesis results indicated that the preparedness of the academic staff in the Jordanian public and private universities towards adopting e-Learning approaches was high due to the use of computers for both academic and administrative purposes alongside with external support of some countries to enhance the higher education institutions. This happened through the provision of advanced computers and software to overcome the inefficiency of some academic staff in using hardware and software. Such step is the most important in adopting e-Learning in teaching and learning.

Additionally, the study results indicated that most academic staff had the high preparedness towards adopting e-Learning in the teaching process. The results showed that such training courses had primary role in skipping the computer illiteracy. All universities offered advanced courses to academic staff, besides the assistance of specialized centers that supported and enhanced the adoption process. The relationship between the student and the academic staff has become more

electronic. It encouraged the latter to obtain the computer knowledge and ICDL certificate (Almusaswi & Abdelraheem, 2004). Tuparova & Tuparov (2006) mentioned that stimulating teachers to develop themselves under some skills are considered to be the most important factor in readiness.

The results of this study also related the reasons of high preparedness to the procedures made by the Ministry of Higher Education (MOHE) to improve the teaching approaches and use the modern ones in improving the learning and teaching process. In addition, MOHE has approved the ICDL certificates in promoting academic staff. Furthermore, such procedure helped universities to hold training workshops for all academic staff members to be able to use computers in the teaching process and developing human resources in this field. As a result, the role of the academic staff has been developed from the traditional ways to the current ways of planning and organizing the teaching process. ICDL certificates consist of seven modules that assist the academic staff in optimal way to use technology and to achieve their ambitions and objectives.

The overall results of this study at Jordanian universities towards adopting e-Learning at public and private universities had a mean of 3.98 which suggests readiness to use e-learning. When comparing the unskilled academic staff who recently underwent training with others, it could be found that these training courses lead to high confidence and skill building by such academic staff in order to get promoted. The acceptance of e-Learning as a new method in the teaching process could lead to the use of computerized systems. This agrees with Aydin and Tasci's (2005) research in which they studied the employers in Turkey who were ready for

e-Learning, but they needed more improvement particularly in the human resources. Moreover, the results of the study are supported by Begicevic and Divjak (2006), Minidi and Hlapanis (2005) and Polyzou (2005) research findings. They indicated that they need to improve their skills. Similarly, the results of this study are also supported by Sadik (2007) who found that the academics were ready to use e-Learning but they needed more improvement in their skills. Likewise, Molla's (2006) research findings revealed that academic staff are ready to use e-learning in their work place. Akaslan and Low's (2011) findings also indicated the readiness of the academic staff in higher education institutions with the subject of electricity in Turkey. This seems to be sufficient towards e-learning usage. Darab and Montazer (2011) showed that the academic staff at Iranian universities are ready for the implementation of e-learning systems. On the other hand, the results of this study disagree with So & Swatman (2006) who indicated that teachers in Hong Kong were not ready to use e-Learning technologies for teaching and learning process, since they needed more training. Also, Hadjiathanasiou (2009) showed that the teachers in Cyprus's primary school need continuous professional training in order to be ready to use e-Learning.

### 5.2.2 Discussion of Second Question Results. What are the Most Important Tools that are Commonly Used in E-Learning Implementation?

The results of this study indicated that the overall level of the use of e-Learning tools was moderate because of the fewer practical applications of such tools in e-Learning. The most important tools were used by academics that had skills to use it, especially in browsing internet and searching engines to get the timely and accurate information. The second tool was the application programs. The tool of using online

database was considered as one of the basic elements to access academic information easily and efficiently. Some tools received high means in terms of use, while other tools received low means. Interestingly, these results indicated the weakness of the academic staff in general to use these tools due to incapability in determining its privileges with regard to which tools are associated with. Whereas many of the academic staff refused to apply it due to lack of training and their comfortable acquaintance with traditional techniques in addition to their lack of trust in the tools. In addition, some staff couldn't use these tools due to the lack of support from the universities and the unavailability of legislations and policies as well as due to the gap between goals and reality.

In general, the level of using e-Learning tools would affect clearly on the adoption of e-Learning policy in the near future by the academic staff in public universities, as well as in private universities. Many of the academics did not have complete confidence in such tools especially the elderly persons. Ajlouni (2001) found out that some teachers became disturbed and anxious when they used computers in teaching due to the lack of experience and efficient training. On the other hand, Bare and Meek (1998) found some problems faced by teachers when they used email since those universities did not support them in using internet in the educational process in addition to weak technical support.

Furthermore, the findings of this study were supported by the results of some previous studies (Fullan, 1990; Johnson, 1999; Aldojan, 2007) which indicated that the interest in the educational innovation in terms of development needed an implementation of such innovation and renovation and complete support. This was

to assure the good application of these tools. Furthermore, teachers' good knowledge and skill in using internet to send and receive data is necessary. Most academic staff have experience to use e-learning tools, and in addition most of the staff in Jordanian universities used e-mail in their works, followed by the World Wide Web, electronic journals, online database, list-serves, transferring files, online services, electronic newspapers, discussion groups and more tools. Also, the findings of this study were supported by the results of Samarawickrema & Benson (2004) who indicated that technical staff in the education process was positive and the members had some suggestions to improve the use of e-mail and solve problems that relate to the use of the site. Begicevic & Divjak (2006) who studied universities in Croatia revealed that the universities are currently in the first stage of strategic planning of implementing e-learning but more training of its usage is necessary. In addition, Almusaswi & Abdelraheem (2004) mentioned that the implementations of e-Learning tools helped in overcoming the existing gap in the learning processes. Fusayil (2000) indicated that academic staff at Ohio University used e-mail and the World Wide Web (WWW) more than other internet applications such as electronic newspapers, list-serves, and discussion groups.

### 5.2.3 Discussion of Third Question Results. Are There Any Differences in E-Learning Readiness in Terms of Gender, Rank, Age, Computer experience, Specialization and Type of University?

The results of the study did not indicate any differences in demographic characteristics of the study variables (age, rank, gender, experience and type of the university).

**Gender**

The findings of this study showed that there was no significant differences in e-learning readiness based on gender.

The result of this study indicates enough preparedness among the academic staff in adopting e-Learning irrespective of the gender. The results of this study was supported by Sadik (2005), Aydın and Tasci (2005), Woodrow (1992), Abu Samak (2007), So and Swatman (2006), and Abdelraheem and Al-Musawi (2004). These studies found no significant differences between male and female in e-Learning readiness. However, the results of this study was not supported by So and Keung (2005); Agboola (2005) who found that there are differences in perceived readiness between males and females toward using technology in the teaching process. Kovacic (2005) in his study on the usage of e-Learning between males and females found no statistically significant difference between the two variables. Some studies have found no gender differences in attitudes towards computers (Gressard & Lloyd, 1986, Sadik, 2005) while some other studies found gender differences (So & Swatman, 2006; Abu Samak, 2007). The contradictions in the findings of the aforementioned studies may be accounted for by biased sampling, inappropriate data analysis methods, or multidimensional computer attitude scales (Chen & Chen, 2006). Yang, Mohamed & Beyerbach (1999) investigated the relationship among gender and teacher anxiety and experience variables and found no significant relation between genders towards using IT in the work place.

**Specialization**

The findings of this study showed that there was no significant differences in e-learning readiness based on specializations.

The result of this study indicated enough preparedness among the academic staff in adopting e-Learning. The overall percentage for Humanities was 57.4 against 42.6 for scientific specializations. Ghandour (1999) and Sadik (2007) revealed that there is no significant difference between Humanities and Science towards the use of e-Learning. They found that the academic staff in science specialization was higher than the number of academic staff in humanities specialization with regard to Internet use in their work. Moreover, Agooble (2005) found no statistical significant effects between specializations. These findings confirmed the result of this study that there are no differences between specializations**.** Albalawi & Badawi (2008) reported a significant difference among faculty members' e-learning perception related to their major. Faculty members of Computer Science, Engineering, Education, and Arabic were a little bit positive than the faculty members of other majors.

**Age**

The results of this study showed that there was no significant differences in e-learning readiness based on age.

The results of this study were supported by Abu Samak (2006) who indicated that there was no significant difference among ages toward e-Learning readiness. Also Aydın & Tasci (2005) indicated that the characteristics (gender, age, education level, and computer experience) of the participant managers had no effect on their overall perception of organizational readiness. Moreover Woodrow (1992), Handler (1993) showed that age is not significant in dealing with computers. Czaja and Sharit (1998) revealed no significant differences between ages. Also, it showed that there is no

influence over adopting a new technology. The results of this study differ with Aldojan (2007) Fogerso (2005) and Czaja & Sharit's (1998) findings in this respect.

They indicated that there was a significant difference across age toward e-Learning readiness. Agboola, (2005) pointed out that there were statistically significant linear relationships between age. Alajmi (2010) found significant differences identified among e-learning adopters and non-adopters with regard to age difference and department discipline, both technical and non-technical. According to Yang, Mohamed, and Beyerbach (1999) who investigated the relationship among age and teacher anxiety and experience variables, observed that there is no significant relation between age levels towards using IT in the work place. Spiegel (2001) investigated the use of computer by teachers at four public schools in the Netherlands. He examined the correlation of age. He found that age was significantly related to some uses of computers, such as e-mails and web page development. Kendel (1995) found that age was a statistical significant factor for teachers' attitudes towards computer. In addition, he found that younger teachers demonstrated more positive attitudes than older teachers towards using computers.

**Experience**

The findings of this study showed that there was no significant differences in e-learning readiness based on experiences.

The results of this study indicated that the academic staff must have experience before using e-Learning. In this case, all the academic staff studied and trained in computer-based training programs which helped in skipping the illiteracy gap in

adoption technologies by the staff. Such programs had a positive dimension in providing users with computer knowledge and self confidence besides giving them a high level of orientation. These programs also contributed in accelerating the adoption and use of modern approaches, especially after assigning a computer for each academic staff. All academic staff had inclinations and willingness towards using e-Learning in their setting, while necessary procedures were taken by educational institutions in e-Learning adoption spurred the academic staff to obtain the ICDL certificate. They did not lead to differences among variables of the study population. These attitudes helped in speeding up the adoption process by all members of the study population. The universities formed teams to administer the e-Learning program which consisted of specialized groups that support the academic staff to maintain the system and upgrade the data bases.

Fusayil (2000) indicated that there were no significant differences amongst the academics with different years of experiences in their use of Internet in research, and corroborated with Yushau (2006) and Abu Samak (2006) who revealed that computer experience did not affect the attitudes towards using information technology. Noor & Agbola (2005) showed that the experience with computer could play a major role in reducing computer illiteracy. Sadik (2007) and Yildirim (2000) revealed that there was no significant correlation between the lengths of teaching experience. The homogeneity of teaching conditions helped in vanishing these differences if any. Results of this study agreed with Siding's (2003) findings who mentioned that there are no differences in experience.

The results of this study disagree with Almusawi & Abdelraheem (2004) because they found significant differences among the academic staff experience toward using e-Learning. Sadik (2007) mentioned that e-Learning knowledge, skills, and experience are vital to the eventual acceptance and implementation of e-Learning.

Alajmi (2010) identified statistical significant differences among e-learning adopters and non-adopters regarding experience differences and department disciplines, both technical and non-technical. Albalawi and Badawi (2008) reported a significant difference among faculty members' e-learning perception related to their experience. In addition, Czaja and Sharit's (1998) study showed no influence of the level of experience over adopting a new technology in the determination of attitude toward a new technology. Akaslan & Low (2011) reported that the academic staff have good experience in using e-learning in their works.

Yang, Mohamed, & Beyerbach (1999) investigated the relationship among computer experience and teacher's anxiety and experience variables and found a significant relationship between experience levels towards using IT in the work place.

**Rank**

The findings of this study showed that there was no significant differences in e-learning readiness based on rank.

The results of this study indicates that there was a great focus on training of the academic staff in using the teaching technology without bias to any category, where all ranks and specializations were under such focus. The results of this study were

supported by Sadik (2007) who indicated that there were no differences in academic ranks variable. The homogeneity of teaching conditions helped in vanishing these differences if any. The results of this study also were supported by a study conducted by Siding (2003) who mentioned there were no differences between the academic ranks. In addition Fusayil (2000) indicated that there were no significant differences amongst the academics from different domains. Similarly, Aldojan (2007) indicated that there are no differences among ranks. All these findings confirm that no significant differences was found in the e-Learning readiness based on rank.

**Type of the University**

The findings of this study showed that there was no significant differences in e-learning readiness based on types of the university.

The results of this study indicates most universities in Jordan started using information technology in education process and this refers to the flexible application of this type of technology. Also, Jordanian government started to support all universities (public or private) in replacing old methods with new methods in teaching. The results of this study were supported by Momani (2003); Arsham, (2002) where they revealed the Internet use of faculty members in some Jordanian universities whether private or public is of little significance or not at all.

### 5.2.4 Discussion of the Fourth Question Results. What is the Relationship Among the E-Learning Readiness Factors?

The results of this study indicated that there was a close relationship among the variables as all aspects were considered as important and strong factors in adopting

e-Learning and are also inter and intra related. The technology dimension had close relationship with the other factors. Hadjiathanasiou (2009) revealed that teachers in Cyprus need continuous professional development in order to: (a) become psychologically ready to move towards e-Learning and (b) to realize how pedagogical practices change in an e-Learning environment. The results of this study corroborated with Fogerso (2005) where he revealed that there is significant correlation between self-direction and age and readiness.

In the Jordanian context, assistance was offered to the academic staff through training in using computers and providing infrastructure in the teaching process. This in turn led to the acceptance of the academic staff of such technology easily and positively. Aldojan (2007) claimed that the universities should offer the academic staff technical and administrative support besides physical supplies. In terms of human dimension, the universities began gradual transition from traditional to electronic approaches of teaching through creating the satisfaction of the academic staff with the fruits of such newly-known approaches which in turn can benefit them personally.

The attitudes factor was enhanced by the universities through assisting the academic staff in the positive adoption and acceptance of the e-Learning. Yushau (2006) found that the teachers' attitude toward computers was an important factor which related to the teacher's role towards the effective use of e-Learning. Universities began to use the optional adoption and offer incentives to the skilled academic staff in using computers in the teaching process. Abu Samak (2007) indicated that the teachers' refusal attitude towards computers decreased significantly after the formal training.

All the factors in this study contributed efficiently and effectively together in enhancing the use and adoption of e-Learning. The results of this study are supported by Continuo (2005); Deepwell (2007); and Chapnick (2001). Additionally, they are also supported by Lloyd and Gressard (1984); Aldojan (2007); Abu Samak, (2006). Yun and Murad (2006) revealed that there was a strong correlation between skill readiness towards e-Learning. The findings of this study are confirmed and they revealed that the factors play an important role in using e-Learning.

### 5.2.5 Discussion of the Fifth Question results. Is There Any Relationship Between the E-Learning Readiness Factors and Implementation Factors?

The results of this study showed that there was a close relationship between dependent and independent variables. It indicated that such variables are basic and necessary to apply on e-Learning but the factors employed in the study have several applied dimensions. Many studies showed that the relationship between readiness and attitude was determined by special techniques to help apply e-Learning. Rogers (1995) said that an innovation can be defined as "an idea, a practice, or object that is perceived as new by individual or other units of adoption" (p. 11). In this study both types of variables complement each other and the relationship between them ranges from close to fair.

Some studies showed that application process needs an infrastructure which support it especially in the technological field, but the results indicated that all Jordan public and private universities seek to transit from traditional to the new style learning techniques, which encourages universities to create more incentives to academic staff to apply technology in teaching process and provide them with necessary

theoretical and practical training means and communication by using modern telecommunications means.

Efforts of government to support e-Learning in universities helped them to extend the knowhow among academic staff of various ages and majors, and bridge the gap of communications. Many international intuitions supported Jordanian universities to deploy e-Learning and provide academic staff with the necessary knowledge and experience. In addition, Karmakar (2005) suggesting the staff in educational establishments should have prepared staff with the correct environmental and other technological aspects .Various studies in chapter two showed that computer know-how and sustained support will encourage the smooth transition process. These studies stressed the importance of techno-administrative and training aspects in supporting e-Learning. This indicates that available basic information will help in the adoption and success of e-Learning.

Computer uses in teaching and learning are common today where teachers seek more support from new methods to produce better teaching process. The scientific and technological advancements led to a change in teacher's roles and development of teaching philosophy where such roles are not tied only to transfer of knowledge to students but teachers need innovative means to refresh the teaching process and employ new methods to help establish more creative teaching process. The problem of this process is found in the gap between technological advancement and educational planning, which in turn stresses the importance of strategic educational planning.

E-Learning process requires a full dedication of government and universities resources to achieve the transition from traditional to new styles of teaching and learning. The importance of the relationship between e-Learning readiness factors and implementation is further emphasized by the limited research into this phenomenon in the Arab region under this subject. The results of this study are supported by Sadik (2005); Khan (2001), Hadjiathanasiou (2009), Contino, (2005); and Haney (2002). In addition, they are also supported by Almusaswi & Abdelraheem, (2004) who suggested that e-Learning relies on the preparation and the talent of the academic staff. Such staff who deal with e-Learning should have special skills and knowledge.

### 5.2.6 Discussion of the sixth Question Results. Which Factors Contribute to E-Learning Implementation in the Jordanian Public and Private Universities?

The results indicated that there were many factors that contributed to support and application of e-Learning. The study applied several dimension of e-Learning adoption such as technology, human, administrative and attitudes and change factor that determine the most affecting ones. The results indicated that the first ranked factor was technology where it was considered as the most important in all Jordanian universities. Aldojan (2007) mentioned that Irbid which is in the northern part of Jordan holds the Guinness World Record for the most Internet cafes in a single kilometer, since the core of e-Learning depended mainly on such factors including hardware and software with the assistance of other technologies such as communications and technical aspects. Rogers (1995), in his Diffusion of Innovations Theory, indicated that an understanding of the culture and local

environment in which technology is introduced as a prerequisite to understand how best is to promote its adoption. The readiness of the universities to apply e-Learning was an affective factor in enhancing such process. Such technology has changed the role of the academic staff from a source of information to a facilitator, trainer, organizer and planner in learning process. In addition, such educational situation was made in a rich environment with information sources, technology and sophisticated communication means. The adoption of such technology to achieve the educational practical quality and skip the geographical constraints helped in the spread and adoption of e-Learning. In Malaysia, The Ministry of Education (2000) indicated that the technical readiness was one of the most important factors towards adopting e-Learning. Contino (2005) claims that the major use of information and communication technologies is to help academic staff in supporting and enhancement of learning. Technology will potentially enhance the learning process in the developing countries, and this encourages the developing countries towards the implementation of e-Learning in the education sector (O'Neill & Singh, 2004).

The primary drive of any project was the human capability and willingness to adopt new educational policies seriously through gradual transition from traditional to modern practice patterns. The traditional inner willingness to accept such technology in e-Learning and teaching was the supportive factor in the adoption process. The psychological preparedness, high willingness and efficiency in applying modern approaches are the results of the universities policies to enhance the process. Such support removed the fear and anxiety of the academic staff towards the new approach, especially the illiteracy of computer. The benefits and incentives encouraged the majority to get training to use computers in the teaching process.

Such a change could made it easy for universities to self-help learning by focusing on the research skills which in turn created positive environment that exploit variable recourse to achieve the personal and institutional goals efficiently and effectively.

The availability of knowledge, training and practicing of the computer used by the academic staff besides the software using, all led to improve their levels and remove all kinds of obstacles encountered. The adoption process has influenced the preparedness of the academic staff towards adopting the new approaches. Furthermore, the personal characteristics of the academic staff such as self confidence, cooperation and mutual benefits could enhance the problem solving that they encountered in the classroom. Such characteristics encourage a person to interact with others positively. Training teachers in using this technology in the education process is considered the first step towards the use of e-Learning (Iadat, 2004).

The attitude factors consisted of three sub variables (anxiety, computer liking and computer confidence). Such dimension was ranked last due to the process and the procedures of the universities where they focused primarily on technical and technological factors that were supported by the incentives and personal characteristics. Honore & Mitchell (2006) showed that the attitude of individuals played a major part in virtual learning success. The three dimensions created a positive attitude towards using computers since they achieved the personal goals. Sadik (2007), Griffin (1988), and Aydin & Tasci (2005) indicated that the attitudes are important factors in adopting e-Learning due to the willingness of the academic

staff to deliver assignments to the students and receive responses electronically. In the universities, the respondents had strong positive attitudes towards the development and the use of e-Learning in their teaching.

On the other hand, the results showed that the characteristics of the producers and the firms such as age, experience, and rank were not significantly related to e-Learning readiness. So & Keung (2005) mentioned that the teachers were not ready to use e-Learning if they didn't have skill and training. Hewett & Powers (2005) found that the teachers who didn't have skills and knowledge would face many problems to use this system. Karmakar & Wahid (2000) mentioned that the academic staff needed more training before using e-Learning. Teachers may understand the same thing in the training, but in the classroom, it will appear different. So, there is a small gap that exists between what the creator is thinking about the change and what the teacher does even when it looks the same (Hall & Hord, 2006).

### 5.2.7 Discussion of Seventh Question Results. Does Policy Moderate the Relationship Between E-Learning Readiness Factors and Implementation?

The results of this study indicated that there was a relationship between e-Learning implementation process and the adoption of technological policies in the implementation process. This relationship showed that such policies had an effective role in activating this system in the higher education, for example, the achievement of legal recognition of this type of learning by universities, the coverage of legal aspect in communicating among the academic staff and the students without need for face to- face setting, the delivery of assignments and exams through internet which required a legal coverage to be a complement of the traditional teaching methods and

attendance of the students in classes, lectures and exams. The adoption of such policies would generate a strong legacy and motive of the academic staff in adopting e-Learning process. This adoption permitted both students and academic staff to communicate outside the borders of university at any time. The technological polices were considered as a motive in using the modern telecommunications devices in e-Learning process. Such policies permitted using computer software in downloading, upgrading, delivery of assignments and homework electronically. These policies helped in exploiting and using telecommunication technologies in the learning process and self dependency of the students in accessing the knowledge sources from different sites. The success of such adoption would enhance the learning process as confirmed by many educational studies and researchers who revealed that the educational technology made a clear difference in teaching output quantitatively and qualitatively.

It shows that they often used the Internet to browse related topics. Sometimes they used forums for discussing academic affairs and computer applications such as the multimedia. They also used the Web to enrich the instructional materials delivered to students and exchanged information among students and colleagues via email. They used daily papers and electronic magazines to update their information. The Internet helped them to enhance the educational process, so they used email to exchange information with other students and teaching staff from other universities besides using e-conferences to discuss educational problems simultaneously with different sections. The staff used this system for explaining and illustrating information to students with details besides using it to analyze statistical data through the Excel software, and PowerPoint to present their graphics and information collectively.

To recognize the relationship between the study elements and the technology policy, results show significant and positive relationships between technology policy and all elements of the study. The result of this study is similar to the study conducted by Mobaideen (2006), Alammari (2004), O'Neill (2004), Bani Domi & Alshannag (2008), and Goi & Ng (2009) who indicated that the implementation of e-Learning requires support and policies by the universities to enhance the staff members in applying e-Learning, and the study supported the e-Learning processes and indicated that education establishment-related policies, toward adopting the ICT plan, have a significant effect on the use of ICT, and these policies supported the use of ICT in the education sector. The results of this study were supported by Alohan's (2007), and Blicno's (2004) studies. In addition, Kaminski mentioned that to implement e-Learning, one must have experience with online forums and other tools, and the results of the study are similar to Khan's study (2001) where he said the employers must have hardware and also major internet software to implement e-Learning.

Moreover, Moll (2004), Almusaswi and Abdelraheem (2004), and Wilson (2001) indicated that the technological factors has a very significant role in the success of the implementation of e-Learning. The second ranked factor was the human factor which consisted of sub variables: psychological, confidence, and motivation. Keller (1983), Chapnik (2000), Molla (2004), Mitchell and Honore (2006) indicated that human factors had significant roles in successful e-Learning. Henry (2001) and Polyzou (2005) revealed that e-Learning should be viewed by organization's wide and high management. These results were based on what the academic staff had, such as sufficient experience, information and training to use e-Learning in the

teaching process. These findings were consistent with the previous studies of Sadik (2007), Machado (2007), Almusawi & Abdelraheem (2004), Molla (2006), Aydia and Tasci (2005), Contino (2005), Haney (2002) and Kaminski (2005). They indicated that the academics had good readiness level to use e-Learning in their teaching.

### 5.3 Qualitative Data

The researcher used qualitative method to answer two research questions related to this study to know the obstacles and the point of view of academic staff towards using e-Learning in their teaching process. The interview consisted of 24 academics. The results of academics' answers are mentioned as follows:

#### 5.3.1 Discussion of the Eighth Question Results. What are the Obstacles Facing Academic Staff in Using E-Learning in Their Teaching?

Based on the results of the interview, it was found that there were two factors which were administrative factor and technology factor. Themes were divided into four variables; two variables were related to the technology factor (technological and equipment) and two variables were related to administrative factor (training and knowledge).

Most opinions were homogeneous and similar among the academics in public and private universities. The results of the interviews that were conducted with different specializations and ranks in universities indicated that there were some obstacles that were encountered by all the academics. One of the obstacles was the lack of support by universities to apply e-Learning, especially the infrastructure which were

presented as the most difficult one due to the financial crises that all universities faced. Similar observations was noted by Jones & Johnson-Yale (2005) when they mentioned that big classroom halls and lack of university support for Internet equipment limit the ability to project the technical materials. In addition, the university does not update computers and other tools for academic staff. This led to the reduction of financial allocations for applying e-Learning.

Another obstacle which was encountered by the academic staff in applying e-Learning was their lack of practical use and expertise in this concern during their teaching process. This was due to the shortage of these tools as a result of the financial crises, the above observations are supported by Sadik (2005); and Kibbi, (1995) when they suggested support to academic staff in using e-learning which will lead to more successful practice in their jobs. They also suggested support in the use of Arabic software programs and applications.

The results of this study also indicated that universities overcame such obstacles through training programs and the high desire of the academic staff to switch to using technology in development and improvement of the learning process. Karmakar, (2005) said that e-Learning implementation in the educational establishments needs the preparation of staff by providing them with correct environmental and technological aspects.

The private universities faced the most severe obstacle that was encountered in the process of e-Learning application which was the lack of infrastructures. This matter was the responsibility of the universities, whereas the academic staff appreciated the

role of their universities in supporting such process. The staff of humanities departments encountered the weakness of e-Learning usage due to their lack of sufficient experience and practice besides the shortage in the supplies of such e-learning tools. Alammari (2004) and Kibbi (1995) suggested supporting teachers' use of ICT in the classroom and to use implementation tools in the university.

Furthermore, Abdullah (1999) suggested giving more training because he found that inefficient Internet use have been attributed to lack of professional training. The training was theoretical rather than practical which led to this weakness of usage. The financial crisis was the main reason of unavailability of e-Learning tools. Aydin & Tasci (2005) pointed out that an organization might have enough resources for adopting e-Learning, but if it lacked the skills that were necessary to use these resources, the result might be failure. The result of this study was confirmed by Vooi & Dahalin (2004). Karmakar & Wahid (2005) mentioned that the negative knowledge on e-Learning is attributed to lack of training. Moreover, training is very effective and leads the staff to have the knowledge and skills they needed to comply with relevant legislation and regulations (Stockley, 2006). Knowledge had a significant impact on the efficiency of e-Learning program (Abbas & Umer, 2000). Molla (2004) and Almusaswi & Abdelraheem (2004) mentioned that technology and equipment played significant roles in the success of the implementation of e-Learning. Moreover, lack of software is the reason for these machines to be big obstacles in the implementation e-Learning (Educause Center for Applied Research, 2003). Alkhalifa, (2010) suggested the use of e-Learning tools by teachers and students in the learning process to provide more efficiency and comfort.

### 5.3.2 Discussion of Ninth Question Results. What is the Academic Staff View Towards Using E-Learning in Teaching?

The results of this study indicated that there was a positive attitude among the academic staff in different specializations and ranks in public universities in applying e-Learning in their teaching tasks. This was due to the background and experience which led to changing of mind and traditional image of transfer from traditional to technological system in the learning process. This transfer and change in using e-Learning contributed in preparing the study material in a better organized way of transferring knowledge to the students. Hence, this led to improving their personality to solve problems by themselves instead of requesting help from the teacher. E-Learning took part in adopting the planning and capability to communicate with the students which led to the decrease of the fear of using e-Learning tools. The results confirm those of previously conducted studies. Sadik, (2005) suggested inclination towards the use of computers, and showed that most Egyptian teachers perceive the use of computers as highly positive. Alammari (2004) showed positive attitudes in the use of computers by teachers and students. Significantly, the findings showed that those teachers perceive computer use as positive. Alkhalif's (2010) study indicated that most academic staff in Saudi Arabia have positive attitudes towards the use of computer in their works**.**

The results of this study indicated that the academic staff responses in private universities were similar to those in public universities in terms of positive and strong attitudes to adopt e-Learning. This was especially after the academics were supported by their universities with different workshops, training programs, and other facilities that enhanced e-Learning which were built to facilitate the role of

teachers in the class and save their time in dealing with all students. The training programs that were supported by universities have encouraged the teachers to recognize the advantages of using e-Learning that could help them in communicating with students timely and easily. While, e-Learning became essential requirement for modern societies. This result was confirmed by Sadik (2007), Kaminski (2000), and Vooi & Dahalin (2004) showed positive attitudes towards e-Learning and time management factor. Moreover, Bitner & Bitner (2002) claim that inclination towards using communication technology is a key factor in facilitating successful technology integration with traditional education. Also Yushau (2006) mentioned that attitudes towards IT play a major role in the successful use of computers in the teaching and learning process. According to Sadik (2007) the staff liked to implement e-Learning in their work. Addionally, Nyvang (2006) showed that the teachers who have positive attitude and willingness for implementation of e-Learning will enhance the quality of students learning and of their works, based on understanding of e-Learning. Honore & Mitchell (2006) conducted a study to investigate how the attitude played a major part in virtual learning success and claim that attitude towards e-Learning required more efforts than a conventional classroom.

Also, according to Young (1999), supporting professors to use technology in their jobs can be done through improving their attitude towards using it. The overall result of the interviews emphasized the above mentioned studies and was consistent with the results of the questionnaire.

The result of this study disagreed with Aldojan (2007); Abu Samak (2006) they found that most staff was uncomfortable with the new technology. They found some

Jordanian universities were not ready to use Information Superhighway and in addition, the staff members had reasons for possessing preventive attitudes in using ICT for communication; they weren't inclined to replace the implemented traditional face-to-face communication with information technology.

### 5.4 The Overall Conclusion

This study has contributed to the growing body of knowledge in the field of e-Learning, particularly in the Arab region. The study investigated the potential of applying e-Learning in Jordanian public and private universities within five scopes: human resources, administrative, technologies, attitudes and willingness to change. The study found that all public and private universities were able to implement e-Learning through supporting the academic staff with more knowledge and training. Furthermore, the study emphasized that the universities had willingness towards applying e-Learning which would enhance the technological policy in this respect. In addition, the study did not find any differences in e-Learning readiness in terms of gender, rank and specialization.

### 5.5 The Contribution of the Study

This study has given a clear picture for the leaderships at higher education towards using e-Learning to enhance the education process. This model also contributes significantly in institutional planning towards e-Learning implementation in the higher education in response to the need for educational reform. It also aims to develop Jordanian's educational infrastructure through using of e-Learning and information technology in education sector particularly in Jordanian universities. The study also showed that such implementation would contribute to the educational

process and help the educational leaders to support and enhance the process in the educational institutions to save efforts, costs and time. This is the first study of its kind in Jordan in which it measured the impacts of readiness factors on the implementation process that was supported by adopting the technological policies and are enabled by the legal aspects in the preparation and the teaching of courses and delivering lectures and assignments by electronic sites. This study is the first of its type that was conducted on the Jordanian environment to measure the degree of universities' academic staff readiness towards the applying of e-learning through variables used in this study. This study contributed to the determination of the degree of applying the e-learning instruments by the academic staff in the private and public Jordanian universities. Such instruments are considered the basic interface in using e-learning among students and teachers. To the knowledge of the researcher, this study is considered the first in determining the impact of measuring the applying of technology policies in both private and public universities by academic staff in teaching process and interactivity between teacher and student. This study is considered one of the most updated Arab studies that facilitated the efforts of other researchers in adding new variables and contributed to the theoretical literature in defining the e-learning and its importance in the teaching and learning process.

### 5.6 Recommendations

Based on the findings of this study, several suggestions and recommendations can be made concerning how to review the existing educational system and develop it in an integrated way that achieves the total development of learner. Several suggestions can also be made about how to encourage all interested people in educational process to attend the scientific conferences and organize seminars and workshops to raise the

professional level. It is also suggested to urge teachers to contribute in applying e-Learning tools, organize national and international conference and participate in introduction and learning of new approaches of e-Learning. In addition, necessary support should be given to universities in providing the academic staff with sufficient tools that assist in the adoption of e-Learning. Furthermore, it is also necessary to establish a strong legal policy to support the mechanisms of adoption of e-Learning in universities, to upgrade computers in universities to meet the increasing needs, to save time and to increase efficiency in adopting e-Learning.

Moreover, more studies should be conducted on the preparedness of the teachers, the students, and their desires and capabilities to use e-Learning instead of the traditional system, and similarly, studies should also be conducted on how the experts in the developed countries can benefit and apply e-Learning in their university settings. This (e-Learning) process requires that universities should conduct training courses for academic staff to design web sites that student can effectively use.

Government is called to launch a national campaign to interlink educational institutions with internet services to be able to use the vast data bases of variable resources. And Incentives should be made to encourage the academic staff to activate the role of computer in teaching and learning besides honoring the excellent studies.

### 5.7 Further Study

The following are suggested for further study on e-Learning implementation; numerous opportunities are available to study a wide range of topics:

1. This study should be replicated. The existing instrument indicates significant reliability. In addition, a larger sample size should be included.
2. It is recommended that this study be extended to include students and administrators in future studies.
3. The usage of a large enough population with a broad representation of academic staff to determine how the e-Learning is used by faculty in various ranks.
4. The current study is limited to examining the relationship between e-learning readiness factors and implementation. In any future study it is recommended to use other significant variables such as culture and politics to measure e-learning readiness.

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# Appendix A

## Measurement Scales and Reliabilities of e-Learning Readiness, Technology policies and Implementation

The following set of statements relate to readiness about e-Learning system. For each statement, please show the extent to which you readiness e-learning has the feature described my the statement. Do this by picking one of the five numbers next to each statement. Circling a 5 means that you strongly agree that e-learning readiness (1 means strongly disagree. 2 Disagree, 3 Not sure, 4 Agree and 5 strongly agree). All we are interested in a number that best shows your e-Learning readiness

| | | |
|---|---|---|
| This section is aimed at understanding **Human Factors**, of e-Learning readiness.<br>*Cronbach's Alpha initial*<br>**0.79** | | |
| | | **Illustrative Support for Items** |
| | **Psychological Readiness** | Chapnick, 2000**,** Yun, Murad, 2006 |
| 1) | I am ready to use e-Learning in my teaching | |
| 2) | I think that e-Learning is a suitable way for teaching | |
| 3) | I discuss issues related to e-Learning with my colleagues | |
| 4) | Using e-Learning will have a positive effect on my teaching | |
| 5) | Participating in designing and planning will motivate me to use e-Learning | |
| 6) | I have a strong desire to shift to e-Learning in my teaching | |
| 7) | I am able to use technology related to e-Learning (webcam, Mice,) | |
| 8) | I have the ability to exert more effort to apply e-Learning | |
| | **Motivation readiness** | Watkins & Rayn, 2004 |
| 9) | I have ability to remain motivated even though learners are not online at all times | |
| 10) | I will be able to complete my work even when there are online distractions | |
| 11) | I will be able to complete my work even at times when there are distractions in my home | |
| | **Confidence Readiness** | Sadak, 2007 |
| 12) | I feel confident in using e-Learning in | |

| | | |
|---|---|---|
| | my own teaching. | |
| 13) | I have confidence in creating interactive learning materials | |
| 14) | I am confident in using a variety of hardware to support e-Learning | |
| 15) | I would feel better about using technology if I knew more about it | |
| 16) | I can teach myself most of the things related to e-Learning | |
| 17) | I feel threatened when I see others using technology in their teaching | |
| | This section aimed at understanding **Administration factors**, of e-Learning readiness.<br>*Cronbach's Alpha initial*<br>**0.87** | |
| | **Training readiness** | **Illustrative Support for Items** |
| 18) | Training programs will enable me to trust e-Learning related issues with my job | Sadak, 2007 |
| 19) | Knowledge via training programs will enable me to work more effectively using e-Learning | |
| 20) | Training programs will effectively work between the e-learning responses and aspects of the traditional responses | |
| 21) | The training program will improve the e-Learning information in my teaching | |
| 22) | Training programs will gave me more energy for e-learning | |
| | **Environment readiness** | |
| 23) | External policies hinder using e-Learning in my university | Chapnick, 2000 |
| 24) | E-learning includes staff from different specializations | |
| 25) | I have desire for using e-Learning to improve my teaching | |
| 26) | The university attitude towards training the academic staff is very effective | |
| 27) | My university is ready to accept the change that will happen when e-Learning is introduced | |
| 28) | The university is currently working on training members to use e-Learning | |
| 29) | The infrastructure in my university is ready for the implementation of e-Learning | |

| | | |
|---|---|---|
| | **Human resource readiness** | |
| 30) | The leadership at my university has vision to support the use of e-Learning | Khan, 2005 |
| 31) | There are a helpdesk and tutors available to support e-Learning | |
| 32) | The application of e-Learning include training people to use e-Learning | |
| 33) | The university has adequate human resources to provide training on the new system | |
| | **knowledge Readiness** | |
| 34) | I have enough knowledge how to use e-Learning in my job | Sadak, 2007 |
| 35) | I can use the computer for straightforward activities | |
| 36) | I know how to browse/surf the Internet | |
| 37) | I have good e-learning knowledge | |
| 38) | I am confident that I can develop new skills when I using e-Learning | |
| 39) | I know where I can find a variety of e-learning resources to support my teaching | |
| | This section aimed at understanding **Technology Factors** of e-Learning readiness.<br>*Cronbach's Alpha initial*<br>**0.48** | |
| | | **Illustrative Support for Items** |
| | **Technological Readiness** | Aydin & Tacsi, 2005 |
| 40) | I can access to computers whenever I need to use e-Learning | |
| 41) | It is easy for me to have access to the Internet at my workplace | |
| 42) | I am able to have access to the Internet outside the workplace (from home, Café) | |
| 43) | I have basic computer skills (such as keyboarding, using mouse, creating, saving, editing files) | |
| 44) | I have basic Internet skills (such as e-mailing, chatting, surfing) | |
| 45) | I can follow the directions on the computer screen to accomplish a task | |
| | **Communication skill** | |
| 46) | I can open an email program without any obstacles | Khan, 2005 |
| 47) | I can read and reply to an email easily | |
| 48) | I have the suitable skills to compose a new message | |

| | | |
|---|---|---|
| 49) | I have skills to forward an email message to another person | |
| 50) | I can add any a contact to my address book | |
| | **Equipment readiness** | |
| 51) | E-learning requires special technology equipment at my job | Chapnick, 2000 |
| 52) | I think the tools for e-learning at my workplace will be implemented soon | |
| 53) | E-learning system requires good internet access | |
| 54) | My university has a plan to acquire, maintain, and upgrade equipments in e-Learning | |
| | This section is aimed at understanding **Attitude Factors** of e-Learning readiness.<br>*Cronbach's Alpha initial*<br>**0.85** | |
| | | **Illustrative Support for Items** |
| | **Attitude/ Anxiety** | Lody & Gressard, 1984, Sadik, 2007 |
| 55) | I feel comfortable with the thought of using e-learning to deliver instruction | |
| 56) | Working with a e-Learning makes me very nervous. | |
| 57) | I get a sinking feeling when I think of trying to use e-Learning for teaching students | |
| 58) | I feel hostile towards e-learning in my job. | |
| 59) | E-learning need higher levels of motivation to complete a course | |
| 60) | Assessment of e-Learning is more difficult than assessment of other learners | |
| 61) | I get a frustrated when I think of trying to use e-Learning | |
| | **Confidence** | |
| 62) | Generally I feel be able about solving a new problem on the computer | |
| 63) | I would do advanced computer work. | |
| 64) | I am sure I could do work with e-learning | |
| 65) | I am the type of person who does well with e-Learning | |
| 66) | I feel confident in my ability to use advanced e-learning in teaching | |
| 67) | Knowing how to use e-Learning | |

| | | |
|---|---|---|
| | technologies will increase my job possibilities | |
| | **Liking** | |
| 68) | I like the idea of using technology to design and deliver technology | |
| 69) | I think working with e-Learning is enjoyable and stimulating | |
| 70) | I like to try use new technologies in my teaching | |
| 71) | I can spend so much time working with e-learning and feel I enjoy it. | |
| 72) | Once I start to work with the computer, I find it hard to stop | |
| 73) | I am enjoy talking with others about e-learning | |
| | **usefulness** | |
| 74) | Using e-learning technology gets in the way of good education | |
| 75) | It is important to me to learn how to use the Internet as a learning resource | |
| 76) | It is useful to have an Internet connection in my office | |
| 77) | I can learn a lot from courses that require surfing the Internet for information | |
| 78) | It is important for staff to learn how to use e-Learning | |
| 79) | E-learning is a viable alternative to the traditional classroom | |
| 80) | I can teach as much using e-Learning as in the traditional lecture room | |
| | This section is aimed at understanding **Change Factors** of e-Learning readiness.<br>*Cronbach's Alpha initial*<br>**0.78** | |
| | | **Illustrative Support for Items** |
| | **Innovation Readiness** | Aydin & Tacsi, 2005 |
| 81) | There are some internal political that might hinder the adoption e-Learning in my university | |
| 82) | I am ready to any organizational change that has been accepted towards using e-Learning | |
| | **Self development Readiness** | Aydin & Tacsi, 2005 |
| 83) | Is it easy to learn how to use e-learning in my university? | |

| | | |
|---|---|---|
| 84) | I have voluntarily join the trainings courses toward using e-Learning | |
| 85) | I believe that self-development of staff may strengthen the position of the university in e-Learning | |
| 86) | I think my university is ready for adapting e-Learning technology | |
| 87) | I am ready for accepting e-Learning technology in my university | |
| 88) | I am able to spend a few time for improving my self during any part of the day toward use e-Learning | |
| | This section is aimed at understanding **Technology policy** of e-Learning readiness.<br>*Cronbach's Alpha initial*<br>**0.79,36** | |
| | | **Illustrative Support for Items** |
| 89) | The institution has clear policies in applying e-Learning | Khan, 2005<br><br>Momani, Hassan, A (2003). |
| 90) | University rules and instructions allow offering topics on line | |
| 91) | University rules and instructions allow offering assignments on line. | |
| 92) | Topics presented via e-Learning are considered credible | |
| 93) | The policies of the university allow the staff and the students to exchange information via the university site | |
| 94) | Academic staff get the legal support to teach on line | |
| 95) | Submitting assignments on line contributes to students' success in supporting my teaching | |
| 96) | The University provides financial incentives to adopt e-Learning by its staff | |
| 97) | The University provides training support to its staff | |
| 98) | The university allows free – access to the internet after work | |
| 99) | The university answers students question and queries via e-Learning tools | |

| **Implementation Tools**. *Cronbach's Alpha initial* **0.75,88** | | | |
|---|---|---|---|
| | | | **Illustrative Support for Items** |
| 1 | www | I use the World Wide Web to surf educational sites | Khan, 2005; Watkins et al. 2004 Momani, Hassan, A (2003). |
| 2 | Discussion group | I use forums to discuss academic and educational matters | |
| 3 | Application programs | I use technological applications (multi media) in my teaching | |
| 4 | Online database | I use electronic resources to communicate with my students | |
| 5 | Transferring files | I exchange educational information with my students and colleagues via email | |
| 6 | Electronic newspaper | I search electronic newspapers for what is new in my area | |
| 7 | Electronic Journals | I search electronic journals to improve my teaching | |
| 8 | Online services | The world wide web keeps me updated with whatever is new in my area | |
| 9 | Email | I use the email in receiving and sending my academic and administrative duties | |
| 10 | video conferences | I use video conferences in international and local discussions pertinent to educational issues | |
| 11 | Mic. word | I use this system to explain data for my students | |
| 12 | Exel | I use this system for data analysis | |
| 13 | Power Point | I use this system for presentation purposes | |
| 14 | Chat room | I use this method for group discussion | |

# Appendix B
## Quantitative Descriptive Statistics

| | N | Minimum | Maximum | Mean | Std. D. | Skewness | | Kurtosis | |
|---|---|---|---|---|---|---|---|---|---|
| | Statistic | Statistic | Statistic | Statistic | Statistic | Statistic | Std. Error | Statistic | Std. Error |
| Hum | 338 | 2 | 5 | 4.23 | .63 | -.440 | .133 | .380 | .265 |
| Hum | 338 | 2 | 5 | 4.28 | .61 | -.474 | .133 | .610 | .265 |
| Hum | 338 | 2 | 5 | 4.23 | .70 | -.554 | .133 | -.018 | .265 |
| Hum | 338 | 2 | 5 | 4.27 | .67 | -.491 | .133 | -.256 | .265 |
| Hum | 338 | 2 | 5 | 4.26 | .62 | -.312 | .133 | -.232 | .265 |
| Hum | 338 | 2 | 5 | 4.18 | .68 | -.293 | .133 | -.590 | .265 |
| Hum | 338 | 2 | 5 | 4.20 | .70 | -.619 | .133 | .393 | .265 |
| Hum | 338 | 1 | 5 | 4.03 | .77 | -.719 | .133 | .741 | .265 |
| admin | 338 | 2 | 5 | 3.96 | .73 | -.444 | .133 | .195 | .265 |
| admin | 338 | 2 | 5 | 3.97 | .79 | -.558 | .133 | .078 | .265 |
| admin | 338 | 2 | 5 | 4.00 | .72 | -.199 | .133 | -.490 | .265 |
| admin | 338 | 1 | 5 | 3.83 | .84 | -.712 | .133 | .572 | .265 |
| admin | 338 | 1 | 5 | 3.78 | .80 | -.438 | .133 | .233 | .265 |
| admin | 338 | 1 | 5 | 3.86 | .81 | -.465 | .133 | .191 | .265 |
| admin | 338 | 1 | 5 | 3.74 | .81 | -.569 | .133 | .503 | .265 |
| admin | 338 | 1 | 5 | 3.64 | .92 | -.496 | .133 | -.174 | .265 |
| admin | 338 | 1 | 5 | 3.68 | .84 | -.599 | .133 | .440 | .265 |
| admin | 338 | 1 | 5 | 3.62 | .77 | -.276 | .133 | -.045 | .265 |
| techno | 338 | 2 | 5 | 4.00 | .76 | -.556 | .133 | .191 | .265 |
| techno | 338 | 2 | 5 | 3.91 | .72 | -.460 | .133 | .339 | .265 |
| techno | 338 | 2 | 5 | 3.97 | .76 | -.436 | .133 | -.059 | .265 |
| techno | 338 | 2 | 5 | 4.04 | .78 | -.675 | .133 | .336 | .265 |
| techno | 338 | 2 | 5 | 4.10 | .82 | -.666 | .133 | -.075 | .265 |
| techno | 338 | 1 | 5 | 4.01 | .81 | -.734 | .133 | .547 | .265 |
| techno | 338 | 2 | 5 | 4.12 | .80 | -.713 | .133 | .178 | .265 |
| techno | 338 | 2 | 5 | 4.00 | .84 | -.672 | .133 | .053 | .265 |
| techno | 338 | 1 | 5 | 3.69 | .83 | -.624 | .133 | .529 | .265 |
| techno | 338 | 1 | 5 | 3.71 | .84 | -.648 | .133 | .690 | .265 |
| attitud | 338 | 1 | 5 | 3.97 | .79 | -.604 | .133 | .367 | .265 |
| attitud | 338 | 2 | 5 | 3.96 | .76 | -.434 | .133 | -.028 | .265 |
| attitud | 338 | 2 | 5 | 3.94 | .79 | -.655 | .133 | .322 | .265 |
| attitud | 338 | 2 | 5 | 4.01 | .73 | -.596 | .133 | .493 | .265 |
| attitud | 338 | 2 | 5 | 4.01 | .77 | -.551 | .133 | .101 | .265 |
| attitud | 338 | 2 | 5 | 4.02 | .75 | -.622 | .133 | .435 | .265 |
| attitud | 338 | 1 | 5 | 3.43 | .87 | -.364 | .133 | -.671 | .265 |
| attitud | 338 | 2 | 5 | 4.05 | .69 | -.668 | .133 | .580 | .265 |
| attitud | 338 | 2 | 5 | 3.99 | .72 | -.426 | .133 | .154 | .265 |
| attitud | 338 | 2 | 5 | 4.05 | .72 | -.702 | .133 | .886 | .265 |
| attitud | 338 | 2 | 5 | 3.99 | .74 | -.426 | .133 | .010 | .265 |
| attitud | 338 | 2 | 5 | 4.07 | .70 | -.403 | .133 | .023 | .265 |
| attitud | 338 | 1 | 5 | 4.05 | .75 | -.726 | .133 | .933 | .265 |
| attitud | 338 | 1 | 5 | 4.04 | .75 | -.864 | .133 | .524 | .265 |
| attitud | 338 | 2 | 5 | 4.05 | .70 | -.430 | .133 | .204 | .265 |
| attitud | 338 | 2 | 5 | 3.96 | .72 | -.577 | .133 | .600 | .265 |
| Change | 338 | 2 | 5 | 4.12 | .62 | -.536 | .133 | .533 | .265 |
| Change | 338 | 2 | 5 | 4.13 | .63 | -.394 | .133 | .618 | .265 |
| Change | 338 | 2 | 5 | 4.16 | .64 | -.359 | .133 | .295 | .265 |
| Change | 338 | 2 | 5 | 4.20 | .56 | -.064 | .133 | .349 | .265 |
| Change | 338 | 2 | 5 | 4.18 | .58 | -.126 | .133 | .180 | .265 |
| Change | 338 | 3 | 5 | 4.28 | .64 | -.323 | .133 | -.690 | .265 |
| Valid N (listwise) | 338 | | | | | | | | |

# Appendix C

## Factors Analysis Step 1

| | Component | | | | |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| Hum1 | | .546 | | | |
| Hum2 | | | | | .519 |
| Hum3 | | | | | .687 |
| Hum4 | | | .458 | | |
| Hum5 | | | | | .424 |
| Hum6 | .411 | | | | |
| Hum7 | | | | | .544 |
| Hum8 | | | | .452 | .433 |
| Hum9 | | | | | .675 |
| Hum10 | | | | | .565 |
| Hum11 | | | .421 | | |
| hum12 | | | | | .553 |
| Hum13 | .433 | | | | |
| Hum14 | | | .435 | | .543 |
| Hum15 | | | | | .654 |
| Hum16 | | | | | .543 |
| Hum17 | | | | | .432 |
| Admin1 | | | .567 | | |
| Admin2 | | | .456 | .343 | |
| Admin3 | .432 | | | | |
| Admin4 | | .418 | | | |
| Admin5 | | | .453 | | |
| Admin6 | | .419 | | | |
| Admin7 | | .412 | | | |
| admin8 | | | .563 | | |
| Admin9 | | | .546 | .435 | |
| admin10 | | | .563 | .345 | |
| admin11 | | | .565 | .453 | |
| Admin12 | | | .654 | | |
| Admin13 | | .432 | | | |
| admin14 | | | .562 | | |
| admin15 | | | .548 | | |
| admin16 | | | .574 | | |
| admin17 | | | | .433 | |
| Admin18 | | | .453 | | |
| Admin19 | | | .463 | | |
| Admin21 | | | .456 | | |
| Admin22 | | | .543 | | |
| Techno1 | | | .452 | | |
| Techno2 | | .456 | | | |
| Techno3 | | .427 | .476 | | |
| Techno4 | | .546 | | | |
| Techno5 | | .453 | | | |

| | | | | | |
|---|---|---|---|---|---|
| Teachno6 | | .567 | | | |
| Teachno7 | | .546 | | | |
| Teachno8 | | .564 | | | |
| Teachno9 | | .563 | | | |
| Teachno10 | | .543 | | | |
| Teachno11 | .487 | | | | |
| Teachn12 | | .456 | | | |
| Teachn13 | .422 | | | | |
| Teachn14 | | .567 | | | |
| Teachn15 | | .545 | | | |
| Attitud1 | | | .543 | | |
| Attitud2 | | | | .465 | |
| Attitud3 | | | | .546 | |
| Attitud4 | | | .452 | | |
| Attitud5 | | | .413 | | |
| Attitud6 | | . | | .453 | |
| Attitud7 | | | | .456 | |
| Attitud8 | | .423 | | .428 | |
| Attitud9 | | | | .563 | |
| Attitud10 | | .487 | | | |
| Attitud11 | | | | .457 | |
| Attitud12 | | | .419 | | |
| Attitud13 | | | | .547 | |
| Attitud14 | | | | .541 | |
| Attitud15 | | | .411 | .455 | |
| Attitud16 | | | | | .433 |
| Attitud17 | | | | .567 | |
| Attitud18 | | | | | .446 |
| Attitud19 | | | | .543 | |
| Attitud20 | | | | .467 | .416 |
| Attitud21 | | | | .457 | |
| Attitud22 | | .431 | | | |
| Attitud23 | | | | .654 | |
| Attitud24 | | | | .468 | |
| Attitud25 | | | .464 | | |
| Innovation 1 | | .432 | | | |
| Innovation 2 | .546 | | | | |
| Self development3 | .436 | | | | |
| Self development5 | .435 | | | | |
| Self development6 | .523 | | | | |
| Self development7 | .453 | | | | |

**Factors analysis Step 2**
**Rotated Component Matrix(a) 2**

| | Component | | | | |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| Hum2 | | | | | .526 |
| Hum3 | | | | | .583 |
| Hum5 | | | | | .582 |
| Hum7 | | | | | .487 |
| Hum9 | | | | | .500 |
| Hum10 | | | | | .541 |
| hum12 | | | | | .557 |
| hum15 | | | | | .502 |
| Hum16 | | | | | |
| Hum17 | | | | | |
| Admin1 | | | .532 | | |
| Admin2 | | | .445 | .353 | |
| Admin5 | | | .653 | | |
| admin8 | | | .432 | | |
| Admin9 | | | .542 | | |
| admin10 | | | .653 | | |
| admin11 | | | .543 | | |
| Admin12 | | | .543 | | |
| admin14 | | | .543 | | |
| admin15 | | | .546 | | |
| admin16 | | | .543 | | |
| Admin18 | | | .456 | | |
| Admin19 | | | .543 | | |
| Admin21 | | | .435 | | |
| Admin22 | | | .454 | | |
| Techno2 | | .432 | | | |
| Techno4 | | .532 | | | |
| Techno5 | | .523 | | | |
| Teachno6 | | .456 | | | |

| | | | | | |
|---|---|---|---|---|---|
| Teachno7 | | .653 | | | |
| Teachno8 | | .543 | | | |
| Teachno9 | | .543 | | | |
| Teachno10 | | .621 | | | |
| Teachn12 | | .543 | | | |
| Teachn14 | | .543 | | | |
| Teachn15 | | .537 | | | |
| Attitud2 | | | | .453 | |
| Attitud3 | | | | .536 | |
| Attitud6 | | .435 | | .453 | |
| Attitud7 | | | | .546 | |
| Attitud9 | | | | .458 | |
| Attitud11 | | | | .563 | |
| Attitud13 | | | | .457 | |
| Attitud14 | | | | .652 | |
| Attitud17 | | | | .568 | |
| Attitud19 | | | | .546 | |
| Attitud21 | | | | .467 | |
| Attitud23 | | | | .436 | |
| Attitud24 | | | | .546 | |
| Innovation 2 | .546 | | | | |
| Self development3 | .467 | | 433 | | |
| Self development5 | .435 | | | | |
| Self development6 | .523 | | | | |
| Self development7 | .453 | | | | |

## Factors analysis Step 3

## Rotated Component Matrix(a)3

| | Component | | | | |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| Hum2 | | | | | .539 |
| Hum3 | | | | | .589 |
| Hum5 | | | | | .590 |
| Hum7 | | | | | .498 |
| Hum9 | | | | | .508 |
| Hum10 | | | | | .536 |
| hum12 | | | | | .564 |
| hum15 | | | | | .483 |
| Hum16 | | | | | .476 |
| Hum17 | | | | | .634 |
| Admin1 | | | | .532 | |
| Admin2 | | | | .567 | |
| Admin5 | | | | .653 | |
| admin8 | | | | .458 | |
| Admin9 | | | | .458 | |
| admin10 | | | | .564 | |
| admin11 | | | | .653 | |
| Admin12 | | | | .543 | |
| admin14 | | | | .456 | |
| admin15 | | | | .546 | |
| Admin18 | | | | .453 | |
| Admin19 | | | | .543 | |
| Admin21 | | | | .476 | |
| Admin22 | | | | .456 | |
| Techno2 | | | .543 | | |
| Techno4 | | | .456 | | |
| Techno5 | | | .456 | | |

| | | | | | |
|---|---|---|---|---|---|
| Teachno6 | | | .438 | | |
| Teachno7 | | | .547 | | |
| Teachno8 | | | .546 | | |
| Teachno9 | | | .547 | | |
| Teachno10 | | | .564 | | |
| Teachn12 | | | .568 | | |
| Teachn14 | | | .543 | | |
| Teachn15 | | | .456 | | |
| Attitud2 | | .452 | | | |
| Attitud3 | | .456 | | | |
| Attitud6 | | .547 | | | |
| Attitud7 | | .542 | | | |
| Attitud9 | | .457 | | | |
| Attitud11 | | .546 | | | |
| Attitud13 | | .546 | | | |
| Attitud14 | | .435 | | | |
| Attitud19 | | .765 | | | |
| Attitud21 | | .546 | | | |
| Attitud23 | | .458 | | | |
| Attitud24 | | .654 | | | |
| Innovation 2 | .554 | | | | |
| Self development3 | .624 | | | | |
| Self development5 | .497 | | | | |
| Self development6 | .702 | | | | |
| Self development7 | .684 | | | | |

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

**KMO and Bartlett's Test**

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .775 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 12258.682 |
| | Df | 3828 |
| | Sig. | .000 |

# Appendix D

## Questionnaire Items from Reviewed Literature

| | **Article Title** | **Reliability coefficient** | **Researcher/Reserchers** |
|---|---|---|---|
| 1 | Tools of E-learning implementation: www. Chat room, mic. Word, PowerPoint, Exile, email...etc. | 0.82 | Khan, 2005; Watkins et al. 2004 |
| 2 | Internet use for academic work | 0.88 | Momani, Hassan, A (2003). |
| 3 | How to use the Internet | 0.82 | Watkins & Rayn, 2004, Musalam, F. O. (1999). |
| 4 | Physiology readiness | 0.84. | Chapnick, 2000**,** Yun, Murad, 2006 |
| 5 | Confidence | 0.92 | Sadak, 2007 |
| 6 | Motivation | 0.82 | Watkins & Rayn, 2004 |
| 7 | Environment | 0.92 | Chapnick, 2000 |
| 8 | Training | 0.86 | Sadak, 2007 |
| 9 | Knowledge | 0.92 | Sadak, 2007 |
| 10 | Technology | 0.92 | Aydin & Tacsi, 2005 |
| 11 | Communication | -- | Khan, 2005 |
| 12 | Equipment | -- | Chapnick, 2000 |
| 13 | Self development | 0.92 | Aydin & Tacsi, 2005 |
| 14 | Innovation | 0.92 | Aydin & Tacsi, 2005 |
| 15 | Human Recourse | 0.92 | Aydin & Tacsi, 2005 |
| 16 | Policies | -- | Khan, 2005 |
| 17 | Computer anxiety<br>Computer confidence<br>Computer liking<br>Computer usefulness’ | 0.90<br>0.89<br>0.89<br>0.82 | Lody & Gressard, 1984, Sadik, 2007 |

## Appendix E
## Initially questionnaire

**Dear Resopnden,**

The researcher intends to study the academic staff readiness towards the implementation of e-learning at Jordanian universities. To Achieve the purpose of the study, the researcher designed the attached questionnaire, As acknowledge able persone, please try to judge the items at the questionnaire interms of the appropriarcy of the items. Your experience in the online environment is a rich source for this endeavor respond to this questionnaire regarding your readiness to use e-learning in your teaching.

your answers will be completely confidential. Only totals for all the collected data will be reported; individual scores will not be singled out. If you choose, you do not need to identify yourself in any way. However, you will be asked to provide your e-mail address as a means to determine who has completed the survey. Your name or e-mail address will not in any way be identified with your responses.

If you wish to have a copy of the results e-mailed to you, please contact me at qazaqmah@yahoo.com . Thank you for you cooperation.

The researcher
Mahmoud Qazaq
Utara University Malaysia (UUM)

**Demographic Factors**

**Name** :_____

**University**: O Public O Private

**Gender** O Male O Female

**Specialization** O Humanities: O Science:

**Rank** O Professor O Associate Professor

O Assistants Professor

**Experience** O 1-5 O 6-10

O 11- and more

**Age** O 20-30 O 31-40

O 41 – 50 O Above 51

**Origin of PhD Degree** O USA OArabic countries

O Others countries

**Part1 1: E-Learning Readiness**

**To change the items of the questionnaire, the researcher used a five point likert type scale item. Please tick apporopriate response ( √ )**

| **Section One: Human Factors:** | | | | | | |
|---|---|---|---|---|---|---|
| **A1** | **Psychological Readiness** | | | | | |
| **No.** | **Items** | Strongly Disagree | Disagree | Not Sure | Agree | Strongly Agree |
| 1. | I am ready to use e-Learning in my teaching | 1 | 2 | 3 | 4 | 5 |
| 2. | I think that e-Learning is suitable way for teaching | 1 | 2 | 3 | 4 | 5 |
| 3. | I discuss issues related to e-Learning with my colleagues | 1 | 2 | 3 | 4 | 5 |
| 4. | Using e-Learning will have a positive effect on my teaching | 1 | 2 | 3 | 4 | 5 |
| 5. | Participating in designing and planning will motivation me to use e-Learning | 1 | 2 | 3 | 4 | 5 |
| 6. | I have a strong desire to shift to e-Learning in my teaching | 1 | 2 | 3 | 4 | 5 |
| 7. | I am able to use technologies related to e-Learning (Webcam, Mice,..etc.) | 1 | 2 | 3 | 4 | 5 |
| 8. | I have the ability to exert more effort to apply e-Learning | 1 | 2 | 3 | 4 | 5 |
| 9. | I would like to use e-Learning at my work place | 1 | 2 | 3 | 4 | 5 |
| 10. | I can share my information with my colleagues in my work palce | 1 | 2 | 3 | 4 | 5 |
| 11. | I can use information technology in my works | 1 | 2 | 3 | 4 | 5 |
| **B1** | **Motivation readiness** | | | | | |
| 12. | I have ability to remain motivated even though learners are off line all times | 1 | 2 | 3 | 4 | 5 |
| 13. | I will be able to complete | 1 | 2 | 3 | 4 | 5 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | my work even when there are online distractions | | | | | |
| 14. | I will be able to complete my work even at times when there are distractions in my home | 1 | 2 | 3 | 4 | 5 |
| 15. | I am able to work in my place in any time I need | 1 | 2 | 3 | 4 | 5 |
| C1 | **Confidence Readiness** | | | | | |
| 16. | I feel confident in using e-Learning in my own teaching. | 1 | 2 | 3 | 4 | 5 |
| 17. | I have confident in creating interactive learning materials | 1 | 2 | 3 | 4 | 5 |
| 18. | I am confident in using a variety of hardware to support e-Learning | 1 | 2 | 3 | 4 | 5 |
| 19. | I would feel better about using technology if I knew more about it | 1 | 2 | 3 | 4 | 5 |
| 20. | I can teach myself most of the tasks related to e-Learning | 1 | 2 | 3 | 4 | 5 |
| 21. | I feel comfortable when I see others using technology in their teaching | 1 | 2 | 3 | 4 | 5 |
| **Section Two: Administration Factors** | | | | | | |
| **A2** | **Training Readiness** | | | | | |
| 22. | Training programs will enable me to trust e-Learning related issues with my job | 1 | 2 | 3 | 4 | 5 |
| 23. | Knowledge via training programs will enable me to work more effectively using e-Learning | 1 | 2 | 3 | 4 | 5 |
| 24. | The training prepared me well enough for e-Learning application | 1 | 2 | 3 | 4 | 5 |
| 25. | The traning will effectiveily work between the e- | 1 | 2 | 3 | 4 | 5 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Learning responses and aspects of the traditional responses | | | | | |
| 26. | Training program will improve the e-Learning information in my teaching | 1 | 2 | 3 | 4 | 5 |
| 27. | Training program will support my works to use e-Learning | 1 | 2 | 3 | 4 | 5 |
| 28. | Training programs will give me more energy for e-Learning | 1 | 2 | 3 | 4 | 5 |
| **B2** | **Environment Readiness** | | | | | |
| 29. | External policies hinder using e-Learning in my university | 1 | 2 | 3 | 4 | 5 |
| 30. | E-learning includes staff from different specializations | 1 | 2 | 3 | 4 | 5 |
| 31. | I have desire for using e-Learning to improve my teaching | 1 | 2 | 3 | 4 | 5 |
| 32. | My is ready to accept the change that will happen when e-Learning is introduced | 1 | 2 | 3 | 4 | 5 |
| 33. | The university motivates the academic staff to use e-Learning efficiency | 1 | 2 | 3 | 4 | 5 |
| 34. | The academis staff they ready to use e-Learning. | 1 | 2 | 3 | 4 | 5 |
| 35. | I am willing to change my teaching method using e-Learning activities | 1 | 2 | 3 | 4 | 5 |
| 36. | The university is currently working on training members to use e-Learning | 1 | 2 | 3 | 4 | 5 |
| 37. | The infrastructure in my university is ready for the implementation of e-Learning | 1 | 2 | 3 | 4 | 5 |
| **C2** | **Human Resource Readiness** | | | | | |
| 38. | The leadership's at my university has vision to support to use e-Learning | 1 | 2 | 3 | 4 | 5 |
| 39. | There are a helpdesk available to support e-Learning in my work place | 1 | 2 | 3 | 4 | 5 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 40. | The application of e-Learning include training people to use e-learning | 1 | 2 | 3 | 4 | 5 |
| 41. | The university has adequate human resources to provide training on managing e-Learning | 1 | 2 | 3 | 4 | 5 |
| 42. | The uiveristy have team to support academic staff to use e-Learning | 1 | 2 | 3 | 4 | 5 |
| **D2** | **Knowledge Readiness** | | | | | |
| 43. | I have enough knowledge on how to use e-Learning in my job | 1 | 2 | 3 | 4 | 5 |
| 44. | I can use the computer for straightforward activities | 1 | 2 | 3 | 4 | 5 |
| 45. | I know how to browse/surf the Internet | 1 | 2 | 3 | 4 | 5 |
| 46. | I have good e-Learning knowledge | 1 | 2 | 3 | 4 | 5 |
| 47. | I am confident that I can develop new skills when using e-Learning | 1 | 2 | 3 | 4 | 5 |
| 48. | I know where I can find a variety of e-Learning resources to support my teaching | 1 | 2 | 3 | 4 | 5 |
| | | | | | | |
| **Section Three: Technology Factors** | | | | | | |
| **A3** | **Technological Readiness** | | | | | |
| 49. | I can access to computers whenever I need to use e-Learning | 1 | 2 | 3 | 4 | 5 |
| 50. | It is easy for me to have access to the Internet at my workplace | 1 | 2 | 3 | 4 | 5 |
| 51. | I am able to have access to the Internet outside the workplace (from home, Café) | 1 | 2 | 3 | 4 | 5 |
| 52. | I have basic computer skills (such as keyboarding, using mouse, creating, saving, editing files) | 1 | 2 | 3 | 4 | 5 |
| 53. | The university have tools for e-Learning. | | | | | |
| 54. | I have basic Internet skills | 1 | 2 | 3 | 4 | 5 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | (such as e-mailing, chatting, surfing) | | | | | |
| 55. | I can follow the directions on the computer screen to accomplish a task | 1 | 2 | 3 | 4 | 5 |
| **B3** | **Communication Skill** | | | | | |
| 56. | I can open an email program without any obstacles | 1 | 2 | 3 | 4 | 5 |
| 57. | I can read and reply to an e-mail easily | 1 | 2 | 3 | 4 | 5 |
| 58. | I have the suitable skills to compose a new message | 1 | 2 | 3 | 4 | 5 |
| 59. | I can use internet tools for my works | 1 | 2 | 3 | 4 | 5 |
| 60. | I have skills to forward an e-mail message to another person | 1 | 2 | 3 | 4 | 5 |
| 61. | I can check my email at any time I need. | 1 | 2 | 3 | 4 | 5 |
| **C3** | **Equipment Readiness** | | | | | |
| 62. | E-learning requires special technological equipments at my job | 1 | 2 | 3 | 4 | 5 |
| 63. | The tools for E-learning at my workplace will be implemented soon | 1 | 2 | 3 | 4 | 5 |
| 64. | The university have methods to support use e-Learning | 1 | 2 | 3 | 4 | 5 |
| 65. | E-learning system requires good internet access | 1 | 2 | 3 | 4 | 5 |
| 66. | All tools for e-Learning avaialbe to use. | 1 | 2 | 3 | 4 | 5 |
| 67. | My university has a plan to acquire, maintain, and upgrade equipments in e-Learning | 1 | 2 | 3 | 4 | 5 |
| 68. | | | | | | |
| **Section Four: Attitude Factors** | | | | | | |
| **A4** | **Attitude/ Anxiety** | | | | | |
| 69. | I feel comfortable with the thought of using e-Learning to deliver instruction | 1 | 2 | 3 | 4 | 5 |
| 70. | Working with e-Learning makes me very comfortable | 1 | 2 | 3 | 4 | 5 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 71. | I feel optimistic when I use e-Learning for teaching students | 1 | 2 | 3 | 4 | 5 |
| 72. | I feel hostile towards e-Learning in my job | 1 | 2 | 3 | 4 | 5 |
| 73. | E-learning requires highly motivated academic staff to complete a course | 1 | 2 | 3 | 4 | 5 |
| 74. | Assessment of e-learners is more difficult than assessment of other learners | 1 | 2 | 3 | 4 | 5 |
| 75. | I get frustrated when I think of trying to use e-Learning | 1 | 2 | 3 | 4 | 5 |
| **B4** | **Confidence** | | | | | |
| 76. | I am capable of solving prospective problems on using E-learning | 1 | 2 | 3 | 4 | 5 |
| 77. | I would do advanced computer work when using e-Learning | 1 | 2 | 3 | 4 | 5 |
| 78. | I am sure I could do work with e-Learning | 1 | 2 | 3 | 4 | 5 |
| 79. | The university does help me to do work with e-Learning. | 1 | 2 | 3 | 4 | 5 |
| 80. | I feel comfortable when I use e-Learning | | | | | |
| 81. | I feel confident in my ability to use advanced e-Learning in teaching | 1 | 2 | 3 | 4 | 5 |
| 82. | Mastering how to use e-Learning technologies will increase my job possibilities | 1 | 2 | 3 | 4 | 5 |
| **C4** | **Liking** | | | | | |
| 83. | I like the idea of using technology to design and deliver technology | 1 | 2 | 3 | 4 | 5 |
| 84. | I think working with e-Learning is enjoyable and stimulating | 1 | 2 | 3 | 4 | 5 |
| 85. | I try to use new technologies in my teaching | 1 | 2 | 3 | 4 | 5 |
| 86. | I spend so much time working with e-Learning and feel I enjoy it. | 1 | 2 | 3 | 4 | 5 |
| 87. | Once I start to work with the computer, I find it hard to stop | 1 | 2 | 3 | 4 | 5 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 88. | I enjoy talking with others about e-Learning | 1 | 2 | 3 | 4 | 5 |
| **D4** | **Usefulness** | | | | | |
| 89. | Using e-Learning technology gets in the way of good education | 1 | 2 | 3 | 4 | 5 |
| 90. | I find it important to learn how to use the Internet as a learning resource | 1 | 2 | 3 | 4 | 5 |
| 91. | Using e-learning gives me more fliexable in my works | 1 | 2 | 3 | 4 | 5 |
| 92. | It is useful to have an Internet connection in my office | 1 | 2 | 3 | 4 | 5 |
| 93. | Using e-Learning will save me more time | 1 | 2 | 3 | 4 | 5 |
| 94. | I learn a lot from surfing the Internet for information | 1 | 2 | 3 | 4 | 5 |
| 95. | It is important for staff to learn how to use e-Learning | 1 | 2 | 3 | 4 | 5 |
| 96. | E-learning is a viable alternative to the traditional classroom | 1 | 2 | 3 | 4 | 5 |
| 97. | I think I can teach via e-Learning better than traditional methods | 1 | 2 | 3 | 4 | 5 |
| **Section Five: Change Factor** | | | | | | |
| **A5** | **Innovation Readiness** | | | | | |
| 98. | There are internal political support for adoption of e-Learning in my university | 1 | 2 | 3 | 4 | 5 |
| 99. | My university will support me to use infomnation teachgnolgy in my work palce | 1 | 2 | 3 | 4 | 5 |
| 100. | I am capable to accept any technoligcal change as a method in my teaching | 1 | 2 | 3 | 4 | 5 |
| 101. | I can support my works during use e-Learning | 1 | 2 | 3 | 4 | 5 |
| **B5** | **Self Development Readiness** | | | | | |
| 102. | It is easy to learn how to use e-Learning at my university | 1 | 2 | 3 | 4 | 5 |
| 103. | I have voluntarily join the training courses on using e- | 1 | 2 | 3 | 4 | 5 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Learning | | | | | |
| 104. | I believe that self-development of staff may strengthen the position of the university in e-Learning | 1 | 2 | 3 | 4 | 5 |
| 105. | I think my university is ready for adapting e-Learning technology | 1 | 2 | 3 | 4 | 5 |
| 106. | My university always support saff for use e-Learning | 1 | 2 | 3 | 4 | 5 |
| 107. | I am ready for using e-Learning technology at my university | 1 | 2 | 3 | 4 | 5 |
| 108. | I can develop my classes when I use e-Learning | 1 | 2 | 3 | 4 | 5 |
| 109. | I am able to spend my time to improve my self during any part of the day on using e-Learning | 1 | 2 | 3 | 4 | 5 |

**Part 2: Implementation Factor**

The following questions are designed to find out to what extent e-learning is used for academic purposes. Check to which extent do you agree with the following statements with regard to the implementation of e-learning in your professional performance?

| No | Tools | Items | Never | Almost Never | Sometimes | Often | Very Often |
|---|---|---|---|---|---|---|---|
| 1 | www | I use the World Wide Web to surf educational sites | 1 | 2 | 3 | 4 | 5 |
| 2 | Discussion Group | I use forums to discuss academic and educational matters | 1 | 2 | 3 | 4 | 5 |
| 3 | Application Programs | I use technological applications (multi media) in my teaching | 1 | 2 | 3 | 4 | 5 |
| 4 | Online Database | I use electronic resources to communicate with my students | 1 | 2 | 3 | 4 | 5 |
| 5 | Transferring Files | I exchange educational information with my students and colleagues via email | 1 | 2 | 3 | 4 | 5 |
| 6 | Electronic Newspaper | I search electronic newspapers for what is new in my area | 1 | 2 | 3 | 4 | 5 |
| 7 | Electronic Journals | I search electronic journals to improve my teaching | 1 | 2 | 3 | 4 | 5 |
| 8 | E-mail | I use the email in receiving and sending my academic and administrative duties | 1 | 2 | 3 | 4 | 5 |
| 9 | Video Conferences | I use video conferences in international and local discussions pertinent to educational issues | 1 | 2 | 3 | 4 | 5 |
| 10 | Mic. word | I use this method to explain data for my students | 1 | 2 | 3 | 4 | 5 |
| 11 | Mic. Exel | I use this method for data analysis | 1 | 2 | 3 | 4 | 5 |
| 12 | Power Point | I use this method for presentation purposes | 1 | 2 | 3 | 4 | 5 |

**Part 3: Technology Policies**

| No | Items | Strongly Disagree | Disagree | Not sure | Agree | Strongly agree |
|---|---|---|---|---|---|---|
| 1 | The institution has clear policies in applying e-Learning | 1 | 2 | 3 | 4 | 5 |
| 2 | University rules and instructions encourage offering topics on line | 1 | 2 | 3 | 4 | 5 |
| 3 | University rules and instructions allow offering assignments on line. | 1 | 2 | 3 | 4 | 5 |
| 4 | Topics presented via e-Learning are considered credible | 1 | 2 | 3 | 4 | 5 |
| 5 | The policies of the university allow the staff and the students to exchange information via the university site | 1 | 2 | 3 | 4 | 5 |
| 6 | Academic staff get the legal support to teach on line | 1 | 2 | 3 | 4 | 5 |
| 7 | Submitting assignments on line contributes to students' success in supporting my teaching | 1 | 2 | 3 | 4 | 5 |
| 8 | The University provides financial incentives to adopt e-learning by its staff | 1 | 2 | 3 | 4 | 5 |
| 9 | The University provides training support to its staff | 1 | 2 | 3 | 4 | 5 |
| 10 | The university allows free – access to the internet after work | 1 | 2 | 3 | 4 | 5 |
| 11 | The university answers students' questions and queries via e-learning tools | 1 | 2 | 3 | 4 | 5 |

**What are the most obstacles face Academic toward using e-learning?**

**What is the view toward using e-learning in teaching?**

# Appendix F

## Finally Questionnaire

**Dear Resopnden,**

The researcher intends to study the academic staff readiness towards the implementation of e-learning at Jordanian universities. To Achieve the purpose of the study, the researcher designed the attached questionnaire, As acknowledge able persone, please try to judge the items at the questionnaire interms of the appropriarcy of the items. Your experience in the online environment is a rich source for this endeavor respond to this questionnaire regarding your readiness to use e-learning in your teaching.

your answers will be completely confidential. Only totals for all the collected data will be reported; individual scores will not be singled out. If you choose, you do not need to identify yourself in any way. However, you will be asked to provide your e-mail address as a means to determine who has completed the survey. Your name or e-mail address will not in any way be identified with your responses.

If you wish to have a copy of the results e-mailed to you, please contact me at qazaqmah@yahoo.com . Thank you for you cooperation.

The researcher
Mahmoud Qazaq
Utara University Malaysia (UUM)

**Demographic Factors**

**Name** :_____

**University**: O Public O Private

**Gender** O Male O Female

**Specialization** O Humanities: O Science:

**Rank** O Professor O Associate Professor

O Assistants Professor

**Experience** O 1-5 O 6-10

O 11- and more

**Age** O 20-30 O 31-40

O 41 – 50 O Above 51

**Origin of PhD Degree** O USA OArabic countries

O Others countries

**Part1 1: E-Learning Readiness**

**To change the items of the questionnaire, the researcher used a five point likert type scale item. Please tick apporopriate response ( √ )**

| **Section One: Human Factors:** | | | | | | |
|---|---|---|---|---|---|---|
| **A 1** | **Psychological Readiness** | | | | | |
| No. | Items | Strongly Disagree | Disagree | Not Sure | Agree | Strongly Agree |
| | I am ready to use e-Learning in my teaching | 1 | 2 | 3 | 4 | 5 |
| 2. | I think that e-Learning is suitable for teaching | 1 | 2 | 3 | 4 | 5 |
| 3. | I discuss issues related to e-Learning with my colleagues | 1 | 2 | 3 | 4 | 5 |
| 4. | Using E-learning effects my teaching postively | 1 | 2 | 3 | 4 | 5 |
| 5. | Participating in designing and planning arouses my motivation to use e-Learning | 1 | 2 | 3 | 4 | 5 |
| 6. | I have strong desire to shift to E-learning in my teaching | 1 | 2 | 3 | 4 | 5 |
| 7. | I am able to use technologies related to e-Learning(Webcam, Mice,..etc.) | 1 | 2 | 3 | 4 | 5 |
| 8. | I have the ability to exert more effort to apply e-Learning | 1 | 2 | 3 | 4 | 5 |
| **B1** | **Motivation readiness** | | | | | |
| 9. | I have ability to remain motivated even though learners are off line all times | 1 | 2 | 3 | 4 | 5 |
| 10. | I am able to complete my work even when there are online distractions | 1 | 2 | 3 | 4 | 5 |
| 11. | I will be able to complete my work even at times when there are distractions in my home | 1 | 2 | 3 | 4 | 5 |

| | | | | | | |
|---|---|---|---|---|---|---|
| C1 | **Confidence Readiness** | | | | | |
| 12. | I feel confident of using e-Learning in my own teaching. | 1 | 2 | 3 | 4 | 5 |
| 13. | I am confident of creating interactive learning materials | 1 | 2 | 3 | 4 | 5 |
| 14. | I am confident of using a variety of hardware to support e-Learning | 1 | 2 | 3 | 4 | 5 |
| 15. | I would feel better about using technology if I knew more about it | 1 | 2 | 3 | 4 | 5 |
| 16. | I can teach myself most of the tasks related to e-Learning | 1 | 2 | 3 | 4 | 5 |
| 17. | I feel comfortable when I see others using technology in their teaching | 1 | 2 | 3 | 4 | 5 |
| **Section Two: Administration Factors** | | | | | | |
| **A2** | **Training Readiness** | | | | | |
| 18. | Training programs will enable me to trust e-Learning related issues with my job | 1 | 2 | 3 | 4 | 5 |
| 19. | Knowledge via training programs will enable me to work more effectively using e-Learning | 1 | 2 | 3 | 4 | 5 |
| 20. | My training prepared me well enough for e-Learning application | 1 | 2 | 3 | 4 | 5 |
| 21. | Training program will improve the e-Learning information in my teaching | 1 | 2 | 3 | 4 | 5 |
| 22. | Training programs will give me more practice for e-Learning | 1 | 2 | 3 | 4 | 5 |
| **B2** | **Environment Readiness** | | | | | |
| 23. | External policies help to using e-learning at my university | 1 | 2 | 3 | 4 | 5 |
| 24. | E-learning includes staff from different specializations | 1 | 2 | 3 | 4 | 5 |
| 25. | I have the desire for using | 1 | 2 | 3 | 4 | 5 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | E-learning to improve my teaching | | | | | |
| 26. | The university motivates the academic staff to use e-Learning efficiency | 1 | 2 | 3 | 4 | 5 |
| 27. | I am willing to change my teaching method using e-Learning activities | 1 | 2 | 3 | 4 | 5 |
| 28. | The university is currently working on training members to use e-Learning | 1 | 2 | 3 | 4 | 5 |
| 29. | The infrastructure in my university is ready for the implementation of e-Learning | 1 | 2 | 3 | 4 | 5 |
| **C2** | **Human Resource Readiness** | | | | | |
| 30. | The leadership's vision at my university is to use e-Learning | 1 | 2 | 3 | 4 | 5 |
| 31. | There are a helpdesk available to support e-Learning | 1 | 2 | 3 | 4 | 5 |
| 32. | The application of e-Learning include training people to use e-learning | 1 | 2 | 3 | 4 | 5 |
| 33. | The university has adequate human resources to provide training on managing e-Learning | 1 | 2 | 3 | 4 | 5 |
| **D2** | **Knowledge Readiness** | | | | | |
| 34. | I have enough knowledge on how to use e-Learning in my job | 1 | 2 | 3 | 4 | 5 |
| 35. | I can use the computer for straightforward activities | 1 | 2 | 3 | 4 | 5 |
| 36. | I know how to browse/surf the Internet | 1 | 2 | 3 | 4 | 5 |
| 37. | I have good e-Learning knowledge | 1 | 2 | 3 | 4 | 5 |
| 38. | I am confident that I can develop new skills when using E-learning | 1 | 2 | 3 | 4 | 5 |
| 39. | I know where I can find a variety of e-Learning resources to support my teaching | 1 | 2 | 3 | 4 | 5 |
| | | | | | | |

| Section Three: Technology Factors | | | | | | |
|---|---|---|---|---|---|---|
| **A3** | **Technological Readiness** | | | | | |
| 40. | I can access to computers whenever I need to use e-Learning | 1 | 2 | 3 | 4 | 5 |
| 41. | It is easy for me to have access to the Internet at my workplace | 1 | 2 | 3 | 4 | 5 |
| 42. | I am able to have access to the Internet outside the workplace (from home, Café) | 1 | 2 | 3 | 4 | 5 |
| 43. | I have basic computer skills (such as keyboarding, using mouse, creating, saving, editing files) | 1 | 2 | 3 | 4 | 5 |
| 44. | I have basic Internet skills (such as e-mailing, chatting, surfing) | 1 | 2 | 3 | 4 | 5 |
| 45. | I can follow the directions on the computer screen to accomplish a task | 1 | 2 | 3 | 4 | 5 |
| **B3** | **Communication Skill** | | | | | |
| 46. | I can open an email program without any obstacles | 1 | 2 | 3 | 4 | 5 |
| 47. | I can read and reply to an e-mail easily | 1 | 2 | 3 | 4 | 5 |
| 48. | I have the suitable skills to compose a new message | 1 | 2 | 3 | 4 | 5 |
| 49. | I have skills to forward an e-mail message to another person | 1 | 2 | 3 | 4 | 5 |
| 50. | I can add any contact to my address book | 1 | 2 | 3 | 4 | 5 |
| **C3** | **Equipment Readiness** | | | | | |
| 51. | E-learning requires special technological equipments at my job | 1 | 2 | 3 | 4 | 5 |
| 52. | The tools for e-Learning at my workplace will be implemented soon | 1 | 2 | 3 | 4 | 5 |
| 53. | E-learning system requires good internet access | 1 | 2 | 3 | 4 | 5 |
| 54. | My university has a plan to acquire, maintain, and | 1 | 2 | 3 | 4 | 5 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | upgrade equipments in e-Learning | | | | | |
| **Section Four: Attitude Factors** | | | | | | |
| **A4** | **Attitude/ Anxiety** | | | | | |
| 55. | I feel comfortable with the thought of using e-learning to deliver instruction | 1 | 2 | 3 | 4 | 5 |
| 56. | Working with e-Learning makes me very comfortable | 1 | 2 | 3 | 4 | 5 |
| 57. | I feel optimistic when I use e-Learning for teaching students | 1 | 2 | 3 | 4 | 5 |
| 58. | I feel hostile towards e-learning in my job | 1 | 2 | 3 | 4 | 5 |
| 59. | E-learning requires highly motivated academic staff to complete a course | 1 | 2 | 3 | 4 | 5 |
| 60. | Assessment of e-learners is more difficult than assessment of other learners | 1 | 2 | 3 | 4 | 5 |
| 61. | I get frustrated when I think of trying to use e-Learning | 1 | 2 | 3 | 4 | 5 |
| **B4** | **Confidence** | | | | | |
| 62. | I am capable of solving prospective problems on using e-Learning | 1 | 2 | 3 | 4 | 5 |
| 63. | I would do advanced computer work when using e-Learning | 1 | 2 | 3 | 4 | 5 |
| 64. | I am sure I could do work with e-learning | 1 | 2 | 3 | 4 | 5 |
| 65. | The university does help me to do work with E-learning. | 1 | 2 | 3 | 4 | 5 |
| 66. | I feel confident in my ability to use advanced e-Learning in teaching | 1 | 2 | 3 | 4 | 5 |
| 67. | Mastering how to use e-learning technologies will increase my job possibilities | 1 | 2 | 3 | 4 | 5 |
| **C4** | **Liking** | | | | | |
| 68. | I like the idea of using technology to design and deliver technology | 1 | 2 | 3 | 4 | 5 |
| 69. | I think working with e-Learning is enjoyable and | 1 | 2 | 3 | 4 | 5 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | stimulating | | | | | |
| 70. | I try to use new technologies in my teaching | 1 | 2 | 3 | 4 | 5 |
| 71. | I spend so much time working with e-Learning and feel I enjoy it. | 1 | 2 | 3 | 4 | 5 |
| 72. | Once I start to work with the computer, I find it hard to stop | 1 | 2 | 3 | 4 | 5 |
| 73. | I enjoy talking with others about e-Learning | 1 | 2 | 3 | 4 | 5 |
| **D4** | **Usefulness** | | | | | |
| 74. | Using e-learning technology gets in the way of good education | 1 | 2 | 3 | 4 | 5 |
| 75. | I find it important to learn how to use the Internet as a learning resource | 1 | 2 | 3 | 4 | 5 |
| 76. | It is useful to have an Internet connection in my office | 1 | 2 | 3 | 4 | 5 |
| 77. | I learn a lot from surfing the Internet for information | 1 | 2 | 3 | 4 | 5 |
| 78. | It is important for staff to learn how to use e-learning | 1 | 2 | 3 | 4 | 5 |
| 79. | E-learning is a viable alternative to the traditional classroom | 1 | 2 | 3 | 4 | 5 |
| 80. | I think I can teach via e-Learning better than traditional methods | 1 | 2 | 3 | 4 | 5 |
| **Section Five: Change Factor** | | | | | | |
| **A5** | **Innovation Readiness** | | | | | |
| 81. | There are internal political support for adoption of e-Learning in my university | 1 | 2 | 3 | 4 | 5 |
| 82. | I am capable to accept any technoligcal change as a method in my teaching | 1 | 2 | 3 | 4 | 5 |
| **B5** | **Self Development Readiness** | | | | | |
| 83. | It is easy to learn how to use e-Learning at my university. | 1 | 2 | 3 | 4 | 5 |
| 84. | I have voluntarily join the training courses on using e-Learning | 1 | 2 | 3 | 4 | 5 |
| 85. | I believe that self- | 1 | 2 | 3 | 4 | 5 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | development of staff may strengthen the position of the university in e-Learning | | | | | |
| 86. | I think my university is ready for adapting e-Learning technology | 1 | 2 | 3 | 4 | 5 |
| 87. | I am ready for using e-Learning technology at my university | 1 | 2 | 3 | 4 | 5 |
| 88. | I am able to spend my time to improve my self during any part of the day on using e-Learning | 1 | 2 | 3 | 4 | 5 |

**Part 2: Implementation Factor**

The following questions are designed to find out to what extent e-learning is used for academic purposes. Check to which extent do you agree with the following statements with regard to the implementation of e-learning in your professional performance?

| No | Tools | Items | Never | Almost Never | Sometimes | Often | Very Often |
|---|---|---|---|---|---|---|---|
| 1 | www | I use the World Wide Web to surf educational sites | 1 | 2 | 3 | 4 | 5 |
| 2 | Discussion Group | I use forums to discuss academic and educational matters | 1 | 2 | 3 | 4 | 5 |
| 3 | Application Programs | I use technological applications (multi media) in my teaching | 1 | 2 | 3 | 4 | 5 |
| 4 | Online Database | I use electronic resources to communicate with my students | 1 | 2 | 3 | 4 | 5 |
| 5 | Transferring Files | I exchange educational information with my students and colleagues via email | 1 | 2 | 3 | 4 | 5 |
| 6 | Electronic Newspaper | I search electronic newspapers for what is new in my area | 1 | 2 | 3 | 4 | 5 |
| 7 | Electronic Journals | I search electronic journals to improve my teaching | 1 | 2 | 3 | 4 | 5 |
| 8 | Online Services | The world wide web keeps me updated with whatever is new in my area | 1 | 2 | 3 | 4 | 5 |
| 9 | E-mail | I use the email in receiving and sending my academic and administrative duties | 1 | 2 | 3 | 4 | 5 |
| 10 | Video Conferences | I use video conferences in international and local discussions pertinent to educational issues | 1 | 2 | 3 | 4 | 5 |
| 11 | Mic. word | I use this method to explain data for my students | 1 | 2 | 3 | 4 | 5 |
| 12 | Mic. Exel | I use this method for data analysis | 1 | 2 | 3 | 4 | 5 |
| 13 | Power Point | I use this method for presentation purposes | 1 | 2 | 3 | 4 | 5 |
| 14 | Chat Room | I use this method for group discussion | 1 | 2 | 3 | 4 | 5 |

**Part 3: Technology Policies**

| No. | Items | Strongly Disagree | Disagree | Not sure | Agree | Strongly agree |
|---|---|---|---|---|---|---|
| 1 | The institution has clear policies in applying e-Learning | 1 | 2 | 3 | 4 | 5 |
| 2 | University rules and instructions encourage offering topics on line | 1 | 2 | 3 | 4 | 5 |
| 3 | University rules and instructions allow offering assignments on line. | 1 | 2 | 3 | 4 | 5 |
| 4 | Topics presented via e-Learning are considered credible | 1 | 2 | 3 | 4 | 5 |
| 5 | The policies of the university allow the staff and the students to exchange information via the university site | 1 | 2 | 3 | 4 | 5 |
| 6 | Academic staff get the legal support to teach on line | 1 | 2 | 3 | 4 | 5 |
| 7 | Submitting assignments on line contributes to students' success in supporting my teaching | 1 | 2 | 3 | 4 | 5 |
| 8 | The University provides financial incentives to adopt e-learning by its staff | 1 | 2 | 3 | 4 | 5 |
| 9 | The University provides training support to its staff | 1 | 2 | 3 | 4 | 5 |
| 10 | The university allows free – access to the internet after work | 1 | 2 | 3 | 4 | 5 |
| 11 | The university answers students' questions and queries via e-Learning tools | 1 | 2 | 3 | 4 | 5 |

**What are the most obstacles face Academic toward using e-learning?**

**What is the view toward using e-learning in teaching?**

## Appendix G

## Editorial Staff

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# Appendix H
# Arabic Questionnaire

**استبانة لدراسة مدى استعداد أعضاء هيئة التدريس في تطبيق التعلم الالكتروني في الجامعات الأردنية الحكومية والخاصة من وجهة نظرهم**

**تحية طيبة وبعد:**

**فيقوم الباحث باعداد رسالة دكتوراه في تكنولوجيا التعليم في جامعة اوتارا الماليزية بهدف معرفة مدى استعداد أعضاء هيئة التدريس في الجامعات الحكومية والخاصة الأردنية في تطبيق التعلم الالكتروني ومن وجهة نظرهم. سوف تسهم إجابتك على فقرات الاستبانة المرفقة بإثراء الدراسة.**

**تحتوي الاستبانة على ثلاثة أجزاء رئيسة ، مكونة من عدة فقرات حسب الأجزاء المرفقة أدناه. الرجاء الإجابة عليها بوضع إشارة (X) في المربع المخصص للإجابة علماً بأن كل الأسئلة صممت وفق نظام ليكرت الخماسي. إذا أردت الحصول على نسخة الكترونية تستطيع التواصل مع الباحث عبر البريد الالكتروني qazaqmah@yahoo.com**

**وتفضلوا بقبول فائق الاحترام،،،**

**أشكركم لحسن تعاونكم**
**محمود نايف قزق**
**جامعة أوتارا الماليزية**

**الخصائص الديمغرافية:**

**الاسم :** _____

**الجامعة**: 1- خاصة 2- حكومية

**التخصص**: 1- علمي 2- انساني

**الجنس**: 1- ذكر 2- انثى

**الخبرة**: 1- 1-5 2- 6- 11

3- 11- فأكثر

**الرتبة**: 1- أستاذ 2- أستاذ مشارك 3- أستاذ مساعد

**مصدر الدكتوراه** 1- امريكا 2- الدول العربية 3- دول أخرى

**العمر**: 1- 20-30 2- 31-40 3- 40-50

4- 51 فما فوق

**تتكون أداة الدراسة من ثلاثة أجزاء:**

- **الجزء الأول: يقيس مدى استعداد عضو هيئة التدريس لتطبيق التعلم الالكتروني .**
- **الجزء الثاني يقيس مدى تطبيق عضو هيئة التدريس لأدوات التعلم الالكتروني.**
- **الجزء الثالث: يقيس دور الجامعات في دعم وتطوير التعلم الالكتروني.**

**الجزء الأول:** يمثل **عناصر عملية الاستعداد لتطبيق التعلم الالكتروني:**

| الرقم | البيان | موافق بشده | موافق | غير متأكد | غير موافق | غير موافق بشده |
|---|---|---|---|---|---|---|
| | **العوامل الشخصية/ الاستعداد النفسي** | | | | | |
| 1 | لدي الاستعداد التام في استخدام التعلم الالكتروني في ممارسة عملية التعلم | | | | | |
| 2 | نظام التعلم الالكتروني سيكون طريقة مناسبة في أداء عملية التعلم | | | | | |
| 3 | أتناقش في القضايا والمشاكل التي تواجه تطبيقي للتعلم الالكتروني مع زملائي في العمل | | | | | |
| 4 | استخدام التعلم الالكتروني في أداء عملي يعطني الدافعية الايجابية لاستخدامه | | | | | |
| 5 | مشاركتي في التصميم والتخطيط في تطبيق التعلم الالكتروني يدفعني إلى استخدامه في عملي | | | | | |
| 6 | لدي الرغبة القوية في التغيير نحو استخدام التعلم الالكتروني في عملية التعليم | | | | | |
| 7 | أمتلك القدرة على استخدام التكنولوجيا الحديثة (التعلم الالكتروني، الميكرفون، السماعات، الكاميرا) في عملية التعليم | | | | | |
| 8 | لدي القدرة على زيادة فعالية تطبيق التعلم الالكتروني في عملي | | | | | |
| | **استعداد الدافعية** | | | | | |
| 9 | لدي الدافعية في استخدام التعلم الالكتروني حتى وان لم يكن المتعلمون غير مؤهلين لاستخدامه | | | | | |
| 10 | لدي الدافعية في استخدام التعلم الالكتروني في إتمام عملي في البيت مع وجود أعمال الأخرى | | | | | |
| 11 | سوف أكون قادرا على استخدام التعلم الالكتروني في إنجاز الأعمال الأكاديمية في كل الأوقات | | | | | |
| | **استعداد الثقة** | | | | | |
| 12 | أشعر بالثقة التامة في استخدام التعلم الالكتروني في عملية التعليم | | | | | |
| 13 | لدي الثقة في خلق مواد دراسية فعاله في استخدام التعلم الالكتروني | | | | | |
| 14 | لدي الثقة في استخدام مختلف الوسائل في دعم تطبيق التعلم الالكتروني | | | | | |
| 15 | لدي الثقة في تطوير معرفتي في استخدام التعلم الالكتروني | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | في أدائي لعملي | | | | | |
| 16 | أستطيع تعليم نفسي من مصادر متعددة عن أهمية استخدام التعلم الالكتروني في العملية التعليمية | | | | | |
| 17 | لا اشعر بأي اضطراب عندما أرى زملائي يستخدمون التعلم الالكتروني في تعليمهم | | | | | |
| | **العوامل الإدارية_ التدريب** | | | | | |
| 18 | برامج التدريب في مجال عملي تجعلني أكثر ثقة في معالجة المشاكل في استخدام التعلم الالكتروني | | | | | |
| 19 | لدي التدريب الكافي في مجال عملي في استخدام أدوات التعلم الالكتروني في عملية التعليم | | | | | |
| 20 | البرامج التدريبية تعطيني فعالية أكثر في استخدام التعلم الالكتروني بدلاً من الطرق التقليدية في أداء عملي | | | | | |
| 21 | البرامج التدريبية سوف تحسن من معلوماتي في مجال استخدام التعلم الالكتروني في عملي | | | | | |
| 22 | البرامج التدريبية تعطيني المزيد من المهارات في استخدام التعلم الالكتروني | | | | | |
| | **استعداد البيئة الجامعية** | | | | | |
| 23 | السياسات التكنولوجية الداخلية للجامعة تدعم استخدام التعلم الالكتروني في عملي | | | | | |
| 24 | يتضمن استخدام التعلم الالكتروني من قبل أعضاء هيئة التدريس من ليس لهم خبرة باستخدام التكنولوجيا | | | | | |
| 25 | لدي الرغبة في استخدام التعلم الالكتروني في تحسين البيئة التعليمية وتطويرها | | | | | |
| 26 | لدى الجامعة التوجه في زيادة تطوير فعالية أعضاء هيئة التدريس في استخدام التعلم الالكتروني | | | | | |
| 27 | لدى الجامعة الاستعداد في قبول التغييرات في استخدام التعلم الالكتروني في البيئة التعليمية | | | | | |
| 28 | تعمل الجامعة حالياً على دعم أعضاء هيئة التدريس في استخدام التعلم الالكتروني | | | | | |
| 29 | تعد البنية التحتية في مكان عملي جاهزة لتطبيق التعلم الالكتروني في عملية التعليم | | | | | |
| | **الموارد البشرية** | | | | | |
| 30 | القيادة التربوية في الجامعة عِندها رؤيةٌ لدعم تطبيق التعلّم الالكتروني | | | | | |
| 31 | مركز الدعم الفني في الجامعة يعمل بصورة عالية في مساعدتي في تطبيق التعلم الالكتروني | | | | | |
| 32 | تعد الكوادر البشرية المساعدة في تطبيق التعلم الالكتروني مؤهلة على كيفية استخدامه وتصميم البرامج اللازمة لعملية | | | | | |

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|---|---|---|---|---|---|---|
| | التعليم | | | | | |
| 33 | كادر التدريب في الجامعة قادر على تدريب أعضاء هيئة التدريس في تطبيق التعلم الالكتروني | | | | | |
| | **الاستعداد المعرفي** | | | | | |
| 34 | لدي المعرفة الكافية في كيفية استخدام التعلم الالكتروني في أداء عملية التعليم | | | | | |
| 35 | أستطيع استخدام التعلم الالكتروني في المهمات التعليمية كافة بفعالية | | | | | |
| 36 | أستطيع تصفح مواقع الانترنت بكل سهولة ويسر | | | | | |
| 37 | امتلك الكثير من المعلومات عن استخدامات التعلم الالكتروني في عملي | | | | | |
| 38 | امتلك المعرفة في تطوير مهارات جديدة في استخدام التعلم الالكتروني في أي وقت أريده | | | | | |
| 39 | أمتلك الدراية في الدخول إلى المواقع الالكترونية المختلفة التي تساهم في دعم تطبيقي للتعلم الالكتروني | | | | | |
| | **عوامل التكنولوجيا** | | | | | |
| 40 | أستطيع استخدام التعلم الالكتروني في عملية التعليم في أي وقت أريده | | | | | |
| 41 | أجد سهولك في استخدام التعلم الالكتروني في عملية التعليم | | | | | |
| 42 | باستخدام التعلم الالكتروني أستطيع التواصل مع طلابي خارج مكان عملي | | | | | |
| 43 | لدي المهارات الأساسية واللازمة في استخدام الحاسوب في أداء عملي | | | | | |
| 44 | امتلك المهارات الأساسية في التعامل مع أدوات التعلم الالكتروني في عملي | | | | | |
| 45 | أستطيع من خلال استخدام التعلم الالكتروني من إتمام المهام التعليمية كافة المطلوبة في عملي | | | | | |
| | **استعداد الاتصال** | | | | | |
| 46 | أستطيع فتح البريد الالكتروني الخاص بدون أي معيقات | | | | | |
| 47 | أستطـيع قراءة الرسـائل الالكـترونية والرد عليها بسـهولة | | | | | |
| 48 | امتلك المهارات المناسبة في إعداد رسالة الكترونية رداً على رسالة أرسلت لي | | | | | |
| 49 | امتلك القدرة على إرسال رسالة تحتوى على مرفقات إلى الطرف الآخر | | | | | |
| 50 | امتلك القدرة على حفظ عناوين الطلبة في مكان الحفظ على صفحة الموقع للتواصل معهم | | | | | |
| | **الأجهزة** | | | | | |

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|---|---|---|---|---|---|---|
| 51 | يتوفر لدى الجامعة الأدوات اللازمة في تطبيق التعلم الالكتروني | | | | | |
| 52 | توفر الجاهزية في الأجهزة يجعل عملية تطبيق التعلم الالكتروني في عملية التعليم جاهزة للتطبيق | | | | | |
| 53 | تمتلك الجامعة كفاءة عالية في خدمة الانترنت لتطبيق التعلم الالكتروني | | | | | |
| 54 | تطبيق الجامعة للتعلم الالكتروني يدفعها دائما على تحديث المعدات الموجودة لديها في عملية التطبيق | | | | | |
| | **عوامل الاتجاهات** | | | | | |
| | **- الخوف** | | | | | |
| 55 | اشعر بالارتياح عند استخدام التعلم الالكتروني في تسليم المهمات للطلبة | | | | | |
| 56 | استخدم التعلم الالكتروني في عملي لا يجعلني عصبياً | | | | | |
| 57 | أشعر بالتفائل عندما أفكر بأنني سوف استخدم التعلم الالكتروني في تعليم الطلبة | | | | | |
| 58 | اشعر بالقبول في استخدام التعلم الالكتروني في أدائي لعملي في عملية التعليم | | | | | |
| 59 | التعليم الالكتروني يحتاج إلى مستوى عالٍ في الدافعية في إنهاء الواجبات | | | | | |
| 60 | لدي الرغبة في استخدام التعلم الالكتروني في ممارسة عملية التعليم | | | | | |
| 61 | لا اشعر بتوتر عندما أفكر في استخدام التعلم الالكتروني في أدائي لعملي في عملية التعليم | | | | | |
| | **- عامل الثقة** | | | | | |
| 62 | لدي الثقة في حل المشكلات التي تواجهني في عملي في استخدام التعلم الالكتروني | | | | | |
| 63 | أنا ارغب في زيادة تقدمي في عملي باستخدام التعلم الالكتروني | | | | | |
| 64 | أنا امتلك الثقة العالية في استخدام التعلم الالكتروني في إنهاء عملي | | | | | |
| 65 | تعمل الجامعة على دعمي في استخدام التعلم الالكتروني في أداء عملي بيسر | | | | | |
| 66 | لدي الاستعداد الكبير في تعلم استخدام اللغات الحاسوبية في تطبيق التعلم الالكتروني | | | | | |
| 67 | أتردد في استخدام التعلم الالكتروني في عملي لخوفي من ارتكاب الكثير من الأخطاء | | | | | |
| | **- عامل الميل** | | | | | |
| 68 | أحب فكرة استخدام التكنولوجيا في تسليم المهمات التعليمية | | | | | |

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|---|---|---|---|---|---|---|
| | في أدائي لعملي في عملية التعليم | | | | | |
| 69 | يتملكني الشعور المريح عند استخدام التعلم الالكتروني في أداء عملي | | | | | |
| 70 | أحب المحاولة في استخدام التكنولوجيا الحديثة في أداء عملي | | | | | |
| 71 | استطيع قضاء الكثير من الوقت في استخدام التعليم الالكتروني لأنه ممتع في عملي | | | | | |
| 72 | عند البدء في استخدام التعلم الالكتروني أجد صعوبة في إنهاء عملي | | | | | |
| 73 | لدي الاستمتاع الكبير في التحدث عن استخدامات التعلم الالكتروني مع الأخيرين | | | | | |
| | **الفائدة** | | | | | |
| 74 | اعتقد بأن استخدام التعلم الالكتروني سوف يوفر طرق جديدة في التعليم | | | | | |
| 75 | التعلم على كيفية استخدام الانترنت يعد مصدرا مهما في ادائي | | | | | |
| 76 | من المتطلبات الأساسية في تطبيق التعلم الالكتروني وجود خدمة الانترنت في مكتبي | | | | | |
| 77 | استخدامي لتصفح الانترنت يوفر لي الكثير من المعلومات التي أريدها في أدائي لعملي | | | | | |
| 78 | اعتقد بأن تطبيق التعلم الالكتروني يوفر لي استفادة كبيرة في خلق مواد وطرق جديدة في أدائي لعملي في عملية التعليم | | | | | |
| 79 | يعد التعلم الالكتروني مكمل في استخدامه للتعليم التقليدي في ادائي لعملي في عملية التعليم | | | | | |
| 80 | أستطيع العمل أكثر من خلال استخدامي للتعلم الالكتروني | | | | | |
| | **عوامل التغيير- الاستعداد نحو الإبداع** | | | | | |
| 81 | تدعم السياسات الداخلية والقانونية عملية الإبداع في تبني التعلم الالكتروني في العملية التعليمية في الجامعة | | | | | |
| 82 | لدى الإبداع في التوجه نحو التغيير في إجراءات التعليم اليومية في الجامعة في استخدام التعلم الالكتروني | | | | | |
| | **استعداد التطوير الذا**تي | | | | | |
| 83 | استخدامي للتعلم الالكتروني في عملي يزيد من رغبتي في تطوير أدائي لعملي في عملية التعلم | | | | | |
| 84 | تعمل الكوادر البشرية في الجامعة على تسهيل عملي في تطوير استخدامي للتعلم الالكتروني في الجامعة | | | | | |
| 85 | أمتلك الرغبة في التعلم كيفية تطبيق التعلم الالكتروني في جامعتي وتطوير مهاراتي | | | | | |
| 86 | لدي الرغبة في الانضمام إلى فصول التدريب طوعاً نحو استعمال التعلّم الإلكتروني | | | | | |

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|---|---|---|---|---|---|---|
| 87 | لدي الرغبة في تدريب نفسي في أي مكان يدعم عملي على تطبيق التعلم الالكتروني | | | | | |
| 88 | تدريبي الذاتي في كيفية استخدام التعلم الالكتروني سوف يدعم عملي بقوة في تطبيق التعلم الالكتروني | | | | | |

**القسم الثاني: قياس الأدوات الخاصة في تطبيق التعلم الالكتروني**

صممت هذه الأداة لقياس معرفة أعضاء هيئة التدريس في الجامعات الأردنية الرسمية والخاصة في استخدام أهم الأدوات الخاصة في تطبيق التعلم الالكتروني ومدى ممارستهم لها. الرجاء الإجابة عن درجة استخدام هذه الأداة في عملك. تتكون الاستبانة من (14 ) أداة تستخدم في تطبيق التعلم الالكتروني:

| الرقم | الأداة | البيان | دائماً | غالباً | أحياناً | تقريباً | ابداً |
|---|---|---|---|---|---|---|---|
| 1 | الشبكة العنكبوتية | استخدم الشبكة العنكبوتية في تصفح كل ما يتعلق في مجال عملي | | | | | |
| 2 | المناقشات الجماعية | استخدم المنتديات في المناقشات الجماعية فيما يتعلق بالأمور الأكاديمية | | | | | |
| 3 | التطبيقات الحاسوبية | استخدم التطبيقات الحاسوبية (الوسائط المتعددة) في عملي الأكاديمي | | | | | |
| 4 | المعلومات المتاحة | استخدم البيانات المتاحة على الشبكة العنقودية في إثراء المادة التعليمية للطلبة | | | | | |
| 5 | تبادل المعلومات | أتبادل المعلومات ما بين الطلبة وزملائي في العمل بواسطة البريد الالكتروني | | | | | |
| 6 | الجرائد الالكترونية | استخدم الجرائد الرسمية في الإطلاع والبحث عن كل ما هو جديد في أداء عملي | | | | | |
| 7 | المجلات الالكترونية | تصفح المجلات الالكترونية للإطلاع على كل ما هو جديد في عملي | | | | | |
| 8 | الشبكة العنكبوتية | تساعدني الشبكة العنكبوتية على تحديد معلومات في تعزيز العملية التعليمية | | | | | |
| 9 | البريد الالكتروني | استخدم البريد الالكتروني في التواصل ما بين الطلبة وبين الزملاء الآخرين من مختلف الجامعات في تبادل المعلومات | | | | | |
| 10 | مؤتمرات بوساطة الفيديو | استخدم المؤتمرات الالكترونية في مناقشة المشاكل التربوية مع أكثر من جهة في نفس الوقت ومن مختلف المناطق | | | | | |
| 11 | مايكرسوف | استخدم هذا النظام في شرح المعلومات | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | وورد | وتوضيحها للطلبة مع كافة التفاصيل | | | | | |
| 12 | برنامج الأكسل | احلل البيانات الإحصائية مستخدما برنامج الأكسل في معرفة النتائج التي توصل إليها البحث | | | | | |
| 13 | برنامج الرسوم البيانية | استخدم برنامج الرسوم البيانية بهدف عرض البيانات التي أريد توضيحها للطلبة | | | | | |
| 14 | غرف المحادثة | استخدم هذه الوسيلة في المناقشات الجماعية ما بيني وبين الطلبة | | | | | |

**القسم الثالث: يشير إلى مدى دعم الجامعة في توفير السياسات التكنولوجية في تطبيق التعلم الالكتروني في الجامعة، الرجاء الإجابة على تلك البنود حسب ما تراه مناسباً:**

| الرقم | البيان | موافق بشده | موافق | غير متأكد | غير موافق | غير موافق بشده |
|---|---|---|---|---|---|---|
| 1 | لدى الجامعة سياسات واضحة نحو تطبيق التعلم الالكتروني في العملية التعليمية | | | | | |
| 2 | لدى الجامعة قواعد تسمح في تدعيم عملية التعليم المفتوح | | | | | |
| 3 | تسمح قواعد الجامعة في تسليم المقررات والمهمات من الطلبة عن طريق الشبكة العنقودية | | | | | |
| 4 | تعد عرض الموضوعات عن طريق التعلم الالكتروني موثقة ومؤكدة من قبل الجامعة | | | | | |
| 5 | تعترف سياسة الجامعة في تبادل المعلومات بين أعضاء هيئة التدريس والطلبة عن طريق التعلم الالكتروني | | | | | |
| 6 | تدعم سياسة الجامعة في تطبيق التعلم الالكتروني في توفير الدعم القانوني لأعضاء هيئة التدريس في استخدام التعلم الالكتروني | | | | | |
| 7 | تدعم سياسية الجامعة التكنولوجية في الاعتراف في تسليم الطلبة للمهمات المطلوبة منهم عبر استخدام التعلم الالكتروني | | | | | |
| 8 | تقدم المؤسسة الحوافز المادية لتبني التعلم الالكتروني من قبل أعضاء هيئة التدريس | | | | | |
| 9 | تدعم سياسية الجامعة في تدريب أعضاء هيئة التدريس في استخدام التعلم الالكتروني | | | | | |
| 10 | تدعم المؤسسة أعضاء هيئة التدريس في استخدام | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | الانترنت خارج أوقات العمل بدون أي رسوم | | | | | |
| 11 | تدعم سياسة التعلم الالكتروني في استخدم الوسائط المتعددة للتعلم الالكتروني في الإجابة على أسئلة الطلبة | | | | | |

1س: ما هي أهم المعوقات التي تواجهك في استخدام التعلم الالكتروني؟

2س: ما هي وجهة نظرك نحو تطبيق التعلم الالكتروني في أدائك التعليمي؟

## Appendex I

## Names of University and locations

| University Public | Specialization S* | H** | Area |
|---|---|---|---|
| Jordan | 489 | 339 | Middle |
| Yarmouk | 178 | 375 | North |
| Mutah | 178 | 250 | South |
| Al – al-biyt | 46 | 104 | North |
| Hashemite | 109 | 105 | Middle |
| Technology | 462 | 24 | North |
| Balqa | 83 | 43 | Middle |
| Al-Hssein | 9 | 27 | South |
| **Total** | **1554** | **1267** | |
| **Private** | | | |
| Zarqa | 48 | 79 | Middle |
| Amman | 64 | 70 | Middle |
| Applied | 91 | 109 | Middle |
| Philadelphia | 46 | 87 | Middle |
| Petra | 49 | 71 | Middle |
| Al-Zytoonah | 69 | 101 | North |
| Ibid | 24 | 61 | North |
| Jerash | 33 | 86 | North |
| Al sra'a | 44 | 94 | North |
| | **468** | **758** | |

**Multiple Comparisons**

Dependent Variable: newimple

Tukey HSD

| (I) age | (J) age | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval | |
|---|---|---|---|---|---|---|
| | | | | | Lower Bound | Upper Bound |
| 20-30 | 31-40 | .04011 | .02849 | .495 | -.0334 | .1137 |
| | 41-50 | .01759 | .02843 | .926 | -.0558 | .0910 |
| | over 51 | -.01714 | .03819 | .970 | -.1157 | .0815 |
| 31-40 | 20-30 | -.04011 | .02849 | .495 | -.1137 | .0334 |
| | 41-50 | -.02252 | .01995 | .672 | -.0740 | .0290 |
| | over 51 | -.05725 | .03237 | .290 | -.1408 | .0263 |
| 41-50 | 20-30 | -.01759 | .02843 | .926 | -.0910 | .0558 |
| | 31-40 | .02252 | .01995 | .672 | -.0290 | .0740 |
| | over 51 | -.03473 | .03233 | .705 | -.1182 | .0487 |
| over 51 | 20-30 | .01714 | .03819 | .970 | -.0815 | .1157 |
| | 31-40 | .05725 | .03237 | .290 | -.0263 | .1408 |
| | 41-50 | .03473 | .03233 | .705 | -.0487 | .1182 |

**Multiple Comparisons**

Dependent Variable: newimple

Tukey HSD

| (I) rank | (J) rank | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval | |
|---|---|---|---|---|---|---|
| | | | | | Lower Bound | Upper Bound |
| professor | associated | .01007 | .02473 | .913 | -.0481 | .0683 |
| | assistant | .00405 | .02202 | .981 | -.0478 | .0559 |
| associated | professor | -.01007 | .02473 | .913 | -.0683 | .0481 |
| | assistant | -.00602 | .02121 | .957 | -.0560 | .0439 |
| assistant | professor | -.00405 | .02202 | .981 | -.0559 | .0478 |
| | associated | .00602 | .02121 | .957 | -.0439 | .0560 |

**Multiple Comparisons**

Dependent Variable: newimple

Tukey HSD

| (I) experice | (J) experice | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval | |
|---|---|---|---|---|---|---|
| | | | | | Lower Bound | Upper Bound |
| 1-5 years | 6-11 years | -.02718 | .02364 | .484 | -.0828 | .0285 |
| | 11-Over | -.01265 | .02459 | .864 | -.0706 | .0452 |
| 6-11 years | 1-5 years | .02718 | .02364 | .484 | -.0285 | .0828 |
| | 11-Over | .01453 | .01995 | .747 | -.0324 | .0615 |
| 11-Over | 1-5 years | .01265 | .02459 | .864 | -.0452 | .0706 |
| | 6-11 years | -.01453 | .01995 | .747 | -.0615 | .0324 |

***Results of coefficients multiple regression analysis between IVs and DV***

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | *p* |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 2.134 | .091 | | 23.53 | .000 |
| | Human | 0.08 | .021 | .169 | 3.90 | .000 |
| | Administrative | .199 | .025 | .380 | 7.85 | .000 |
| | Technology | .163 | .018 | .465 | 9.24 | .000 |
| | Attitude | .185 | .024 | .387 | 7.84 | .000 |
| | Change | 0.06 | .019 | .125 | 3.09 | .002 |

a Dependent Variable: Implementation

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .738 | .545 | .538 | .1151 |

a Predictors: (Constant), Human, Administrative, Technology, Attitude, Chan

***Results of multiple regression analysis between IVs and DV with technology policy***

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | *p* |
|---|---|---|---|---|---|---|
| | Factor | B | Std. Error | Beta | | |
| 1 | (Constant) | 2.001 | .101 | | 19.83 | .000 |
| | Human | 0.08 | .021 | .181 | 4.19 | .000 |
| | Administrative | .206 | .025 | .392 | 8.15 | .000 |
| | Technology | .161 | .018 | .458 | 9.17 | .000 |
| | Attitude | .185 | .023 | .386 | 7.90 | .000 |
| | Change | 0.06 | .019 | .124 | 3.08 | .002 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Technology policy | 0.04 | .015 | .102 | 2.88 | .004 |

a Dependent Variable: Implementation.

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .745 | .555 | .548 | .1140 |

a Predictors: Human, Administrative, Technology, Attitude, Change, Technology policy.

## Hieracil Regreassion

**Model Summary(c)**

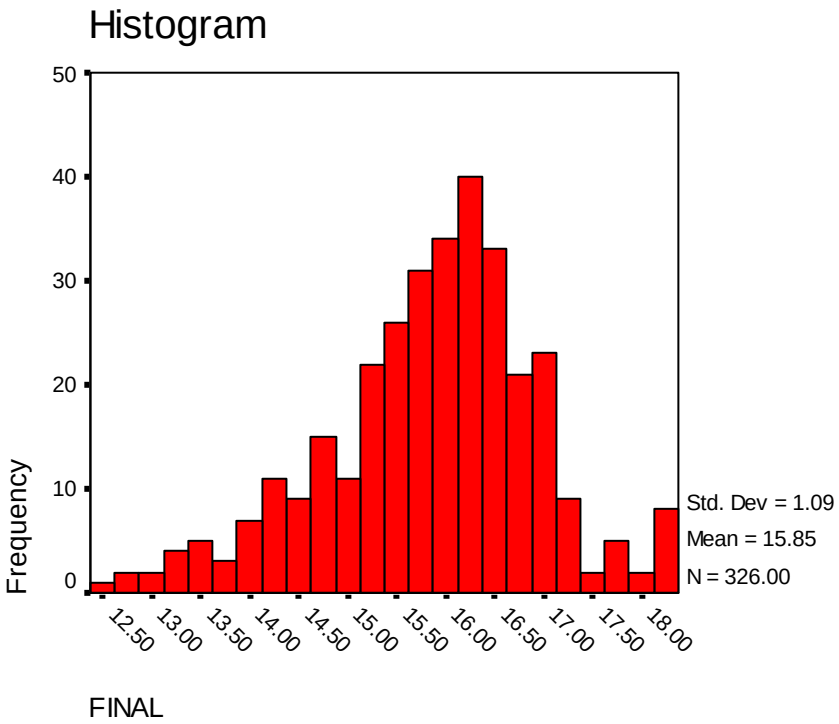
| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .748(a) | .545 | .553 | .11333 | .545 | 91.490 | 5 | 337 | .000 |
| 2 | .754(b) | .555 | .562 | .11219 | .010 | 8.384 | 1 | 337 | .004 |

a Predictors: (Constant), newchang, newhum, newtechn, newadmin, newattit
b Predictors: (Constant), newchang, newhum, newtechn, newadmin, newattit, newplice
c Dependent Variable: newimple

**ANOVA(c)**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 5.876 | 5 | 1.175 | 91.490 | .000(a) |
| | Residual | 4.637 | 332 | .013 | | |
| | Total | 10.513 | 337 | | | |
| 2 | Regression | 5.981 | 6 | .997 | 79.198 | .000(b) |
| | Residual | 4.531 | 331 | .013 | | |
| | Total | 10.513 | 337 | | | |

a Predictors: (Constant), newchang, newhum, newtechn, newadmin, newattit
b Predictors: (Constant), newchang, newhum, newtechn, newadmin, newattit, newplice
c Dependent Variable: newimple




**Tests of Normality**

| | Kolmogorov-Smirnov | | |
|---|---|---|---|
| | Statistic | df | Sig. |
| FINAL | .063 | 337 | .003 |

a Lilliefors Significance Correction

**Descriptives**

| | | Statistic | Std. Error |
|---|---|---|---|
| FINAL | Mean | 15.8538 | 6.028E-02 |

| | | | |
|---|---|---|---|
| 95% Confidence Interval for Mean | Lower Bound | 15.7352 | |
| | Upper Bound | 15.9723 | |
| 5% Trimmed Mean | | 15.8744 | |
| Median | | 15.9919 | |
| Variance | | 1.184 | |
| Std. Deviation | | .8883 | |
| Minimum | | 12.53 | |
| Maximum | | 18.37 | |
| Range | | 5.85 | |
| Interquartile Range | | 1.2702 | |
| Skewness | | -.407 | .135 |
| Kurtosis | | .399 | .269 |

Group Statistics

| | sex | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| NEWIMPLE | male | 244 | 3.3208 | .1667 | 1.034E-02 |
| | female | 94 | 3.2892 | .1748 | 1.690E-02 |

Independent Samples Test

| | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | F | Sig. | t | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | 95% Confidence Interval of the Difference | |
| | | | | | | | | Lower | Upper |
| NEWIMPLE | .548 | .290 | 1.628 | 336 | .104 | 3.163E-02 | 1.942E-02 | -6.5664E-03 | 6.982E-02 |
| Equal variances assumed | | | 1.597 | 189.369 | .112 | 3.163E-02 | 1.981E-02 | -7.4489E-03 | 7.070E-02 |
| Equal variances not assumed | | | | | | | | | |