

E-Learning Readiness of Jordanian Universities

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Abstract:

E-learning became very important to the universities success and it considered as one of the key success factors, in which it's enhanced the competitive advantage and help in competing strongly in the market. Using Information technologies and sharing tools will add value to the educational process and by using these tools; the universities will have the power of innovation and creativity. E-learning helps in developing, managing and maintaining the students knowledge, on the other hand, it enhances the performance and learning capacity to remain innovation and competitive. This paper is measuring the readiness of the Jordanian universities for e-learning. It presents the main findings of a survey conducted to evaluate the e-learning readiness. The survey helped in analyzing three levels used for the measurement: ICT infrastructure, universities lecturers and students' readiness, and the maturity of the external environment.

Keywords: E-learning, IT infrastructure, Demand, External Environment, and HR readiness.

1. Introduction

“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.”[20], “Classrooms could not possibly work today, but centuries ago, they made sense: one literate person reading to the illiterate from what might have been the town’s only book, but technology and times have changed.”[10] These are mention in the last decade.

E-Learning Term is not new in the Educational Institutions, but it has become one of the main substrates for building this economy, many experiences emerged in relation to applying Information Technology and Telecommunications in the education field at the level of schools and universities. Each of them had points of strengths and weaknesses, where software companies targeted those educational institutions in order to provide technical solutions that it would raise its performance and increase its own competitive advantage.

Information Technology and Communications supported participatory in education and broke the limitations in the traditional education, and this raised the level of the outputs of those institutions as shown in UNESCO, BECTA statistics in a previous study. Moreover, it showed the clear impact of those outputs not only on the performance of the student, but also on the schools as well. [14]

Electronic learning defines as "a set of strategies, business processes, applications, tools and technologies linking individual students, lecturers and the university resources for the purpose of enhancing and sharing knowledge using internal and external networks".[14]

E-Learning is the future of learning worldwide because of the powerful platform of the Internet has accelerated the speed of communication. The Telecommunication Regulatory Commission (TRC) 2015 report showed that the internet penetration rate is 83%, in which this will help in enhancing the e-Learning implementation and having the advantages to the economy. E-learning is considered the preference of teachers. E-learning has become an important and critical component of the long-term planning strategies In American institutes. [22]

The digital connectivity allows multiple chains to form knowledge sharing significant potential to improve the learning process value for students. The application of information communication technology (ICT) tools is becoming increasingly important to enable universities to carry out their learning processes on-line.

Set of surveys and interviews were conducted in order to understand the depth of how each university approached e-learning. The paper studied the universities students, lecturers and learning tools.

Evaluation of e-Learning potential in Jordanian universities focused upon exploring ways that these institutions were using the Internet for education.

All universities that plan to deal with e-learning must percept the terms of readiness of eLearning connectivity issues related to infrastructure readiness, frequencies of teacher training, experiences of using the Internet for education, external environment readiness and demand of facility were examined.figure1

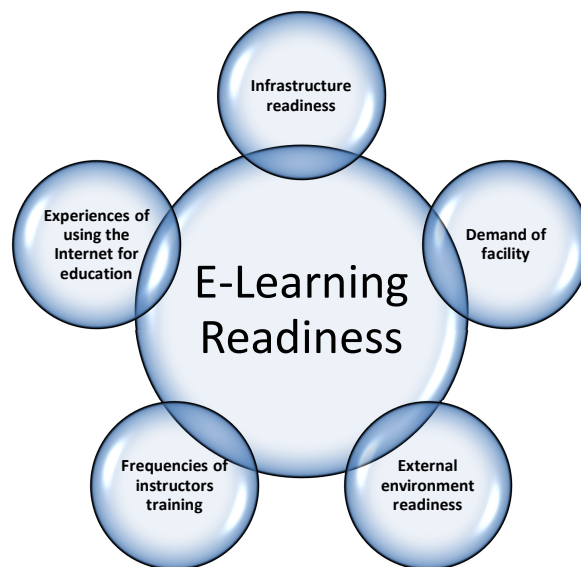


Figure 1: E-learning Readiness Components

The Hashemite Kingdom of Jordan is a developing country in the Middle East region. Despite the growth of the usage of internet and the information and communication technologies in the world, the E-learning activities are still slowly emerging.

The main purpose of the study is to identify whether the Jordanian universities are ready for the E-Learning, and to discuss the main factors affecting the model success to adopt and promote e-learning strategies to their students and lecturers.

The study will measure the readiness of teaching and knowledge sharing channels as well as communication channel between students and their lecturers. E-learning tools and infrastructure facilities such as hardware, software applications and telecommunication margins have recently decreased dramatically.

2. Literature review

E-learning has many features such as, learning is self-paced and gives students a chance to speed up or slow down as necessary, learning is self-directed, allowing students to choose content and tools appropriate to their differing interests, needs, and skill levels. Accommodates multiple learning styles using a variety of delivery methods geared to different learners; more effective for certain learners. Designed around the learner. Geographical barriers are eliminated, opening up broader education options. 24/7 accessibility makes scheduling easy and allows a greater number of people to attend classes. On-demand access means learning can happen precisely when needed. Travel time and associated costs (parking, fuel, and vehicle maintenance) are reduced or eliminated. Overall student costs are frequently less (tuition, residence, food, childcare). Potentially lower costs for companies needing training, and for the providers. Fosters greater student interaction and collaboration. Fosters greater student/instructor contact. Enhances computer and Internet skills. Draws upon hundreds of years of established pedagogical principles. Has the attention of every major university in the world, most with their own online degrees, certificates, and individual courses [18].

The training of instructors and teachers in using information technology tools has become one of the most important factors which influence eLearning development [9]. In order to adopt e-learning and readiness training is considered the best predictor which is statistically significant [1]. E-learning development involves policy development and well planned implementation strategies. There are many significant advantages for the student who learns online like Convenience and Portability of learning, Cost and Selection, Flexibility, Higher Retention, Greater Collaboration, and Global Opportunities. [13]

In a research for Ahmed and others that was based on studying the challenges and problems that are facing the E-Learning in the public universities in Iraq, where this study proved that the higher education in Iraq is still lagging behind the developments in ICT and the researchers had divided the challenges into internal challenges such as (knowing how to use E-Learning and the lack of incentives and awareness), and external challenges such as (internet quality, lack of financial and technical support and bad infrastructure of ICT). [3]

The researchers Al Zawi and Wadi explicated that Libya is one of the Arab Countries that has many challenges and obstacles that resulted in backwardness in adopting E-Learning such as the culture of the community, high internet expenses, low internet quality and very little skills of the citizens in using the internet.

[7]

Mohammed Al Shaikhi specified in his study about the E-Learning in Saudi Arabia a set of factors that are affecting the readiness of the educational institutions to adopt the E-Learning, which are the available facilities, the society impact, individual attitude, motivation, performance expectations and the expected effort. [17]

As for the studies in relation to the subject of the research; Fadi suggested a module to measure the readiness of the Higher Education Ministry in Jordan for E-Learning through two main elements which are the Electronic Website of the Ministry and the Environmental factor which is divided into the electronic infrastructure and culture. Fadi focused on a small part of the E-Learning which is Delivering Information, where he studied the electronic website of the Ministry as it is a gate for the E-Learning and proved its capability to provide the visitor with the required information about the higher education in Jordan. (Fadi 2014). [8]

In a study for Al Shboul, about the measurement of the Jordanian society awareness of the E-Learning, it appeared that despite the spread of internet service in Jordan, there is no support and encouragement from private or governmental parties to support the E-Learning. Also there is no training and rehabilitation for the E-Learning Process parties in order to assist in spreading this kind of education and to be adopted by the society. (Shboul from Ahmed research 2013). [2]

The Hashemite Kingdom of Jordan was positioned as 44th in the 2014 Global Information technology Report rankings from the world's 148 economies [16]. The report was designed to measure the networked and electronic readiness of the countries. The report included a sampling of 148 countries in the rank.

e-learning can provide many benefits including what learners needs, faster delivery of information and knowledge, lower costs, more effective learning and lower environmental impact. As for the students, the courses are accessible on schedule, online learning does not require physical attendance, learning is self-paced (not too slow, not too fast), courses are available 24/7, study at home, work, or on the road and read materials online or download them for reading later feature is available [18].

Internet and information technology resources also influence e-learning both in theory and in practice. Telecommunication regulatory commission in the kingdom is conducting a study in a yearly basis showing the penetration rate of internet and mobile users. Penetration rate was recalculated based on the actual number of population issued by the Department of Statistics by the end of 2015 amounting to 9,5 million people. As for the penetration rate for the previous years was calculated based on estimates of Jordan's population. [22].

Active Mobile Phone indicators during the Period (2010-2015)

| Year | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|----------------------------------|------|------|------|-------|-------|-------|
| No. of subscriptions (thousands) | 6620 | 7483 | 8984 | 10314 | 11120 | 13798 |
| Penetration rate (%) | 108 | 120 | 140 | 142 | 147 | 145 |

Internet Users during the period (2010-2015)

| Year | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|-------------------------|------|------|------|------|------|------|
| No. of users (Millions) | 2.3 | 3.1 | 4.3 | 5.3 | 5.7 | 7.9 |
| Penetration rate (%) | 38 | 51 | 67 | 73 | 75 | 83 |

3. Problem statement

The researchers are proposing that Jordanian universities must be ready for the e-learning as well as the students and the lecturers, to increase the performance rate and knowledge of the students. The increasing demand of implementing e-learning methodologies recommended to always taken into account the infrastructure readiness, demand of faculty, external environment readiness, instructors training and experience in using technology and internet. This study is testing the readiness of the Jordanian universities for e-learning and to answer the following question: Are the Jordanian universities including students and instructors ready for using information technology as a tool for e-learning?

4. Methodology

The study relies on quantitative approach of collecting data from instructors, students and the employees in the educational market in Jordan. The surveys were distributed including list of questions related to the research problem and the objectives of the study. The data were collected and analyzed using the SPSS 16 and AMOS 16. Different types of national; and international universities in Jordan were used as database to start the study. The collected data includes questionnaires and reports of the universities involved.

The sample was mainly from the private and public Jordanian universities, the selection and number of distributed surveys were based on the following attributes:

1. Awareness of the universities members.
2. Willingness to participate in the study.
3. Size of the university.

The population will be instructors, students and managers who work or study in the universities in Jordan, a

total of 15 universities and a total of 200 surveys were distributed.

The data collection tool is the designed questionnaire, which is consisted of multiple questions. The collection was through questions of close ended type. These types of questions will try to analyze the readiness of Jordanian universities. Questionnaires allow the researcher to collect a large volume of information on a limited budget and in a short time [5]. The questionnaires were handed and also sent by e-mail, later forwarding the completed questionnaires to the researcher by hand. The personal data which was collected through the questionnaire will be kept confidential. In fact, the participants were assured in the questionnaire that personal identifying information will not be revealed at all, except as part of the study's results. The questionnaire was sent to an evaluator for having a consultant opinion before the distribution. After that a pilot test was conducted by sending the questionnaire to a sample of five persons in the Jordanian universities.

The main goal of the Universities survey was to find out information that would contribute toward the evaluation of the e-learning readiness of the universities in the Hashemite Kingdom of Jordan. This evaluation will help in the design, development, and delivery of training materials for the universities instructors and students. The questionnaire and the sampling methodology were designed to provide a broad view of Jordanian universities situations by assessing the working environment and the extent of the ICT and e-learning tools adoption, attitudes toward the implementation of e-solutions, needs in competencies and difficulties.

The quality of the research is dependent on Validity and Reliability measures [21]. The quantitative research second measurement is the reliability that measures the degree in which a group of variables is consistent in what their intended to measure [19].- Cornbach's Alpha: which is a measurement used for the internal consistency to assess the reliability of the measurement scale for each construct of the study. The recommended minimum acceptable limit of alpha is 0.6, [12].

Hypotheses

Through the previous studies, the researcher concluded a set of components of readiness for e-learning, which is a challenge for everyone who wants to apply e-learning: IT infrastructure, demand of the universities in implementing e-learning, external environment, HR readiness.

Based on these components, the researcher hypothesized the following hypotheses:

H1: Information technology infrastructure is ready for implementing e-learning including networking, applications, security, and hardware.

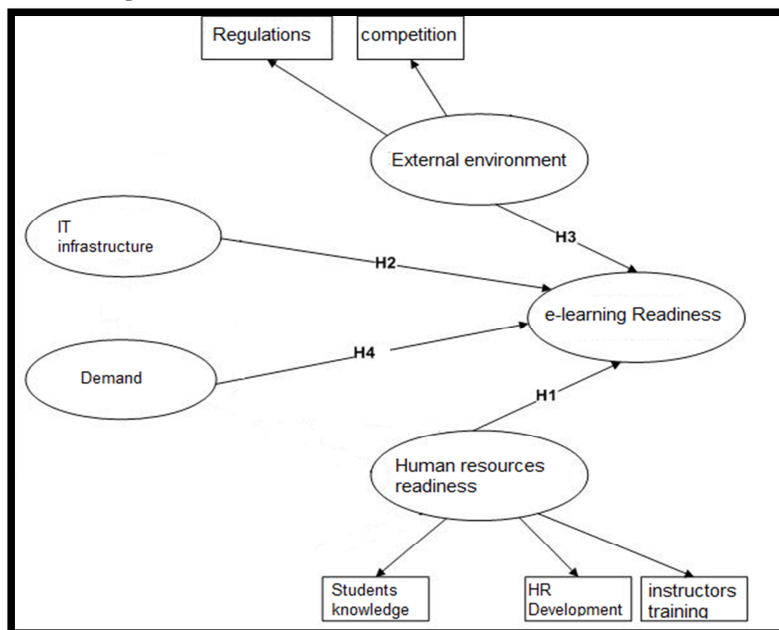
H2: There is a demand of the universities in implementing e-learning.

H3: The external environment including regulations is supporting the implementation of e-learning methodology.

H4: Instructors are having training in the latest methodologies of e-learning frequently.

H4.1: Students and instructors have the experience in using internet in education.

Below the researcher proposed the model that will measure the universities e-learning readiness and the hypothesis mentioned in the previous section



5. Statistical tools

Chi-Square was used in order to specify if the model is fitting the empirical data. Chi-square provides a quantitative measure of the relationship between two variables, by determining what the distribution of observations would look like if no relationship existed and also by quantifying the extent to which the observed distribution differs from that determined in the first step. When the data indicate that no relationship exists between these variables, the values of observed and expected frequencies must be identical. Also, the greater is the relationship, the greater is the difference between the observed and expected frequencies [9]. It is recommended by some of the researchers to assess the Regression coefficient statistic relative to the Significant Level in order to avoid evaluation of hypotheses, [12].

Root Mean Square Error of Approximation (RMSEA) was used for measuring approximate fit rather than total fit in the population measures of absolute fit [4]. A good fit will be considered if the value of (RMSEA) is less than 0.05 and if it's between 0.05 and 0.08 then the fit will be considered adequate. The Goodness to Fit Index (GFI) was used in order to test to which degree the model is predicting the observed correlation matrix, [15]. The (GFI) should be between zero and one and the index must proximity to one to indicate a better fit, [15]. The Comparative Fit Index (CFI) was used to test the fit of the model based on a comparison between the model of interest and some baseline model. Reliability was calculated based on Cronbach's Alpha which is widely used to demonstrate reliability by internal consistency called inter-item reliability, George and Mallery (2003) provide the following rules: > 0.9 Excellent, > 0.8 Good, > 0.7 Acceptable, > 0.6 Questionable, > 0.5 Poor, and < 0.5 Unacceptable.[11]

Confirmatory factor analysis and Cronbach Alpha

This table provide indicates that the measurement model each variables are a good fit and good instruments to measure variables.

| Hypotheses | df | RMSEA | CFI | GFI | Regression coefficient |
|---------------------------------|-------|-------|-------|-------|------------------------|
| <i>Acceptable level</i> | 3< | 0.08< | 0.9> | 0.9> | 0.0> |
| H1:IT infrastructure | 2.033 | 0.064 | 0.92 | 0.901 | 0.455 |
| H2: Demand | 1.948 | 0.054 | 0.97 | 0.959 | 0.539 |
| H3: External Environment | 2.175 | 0.059 | 0.954 | 0.93 | 0.462 |
| H4: HR readiness | 1.873 | 0.061 | 0.917 | 0.942 | 0.613 |

The results shows that all indicators structural model of the relationship between variables is an acceptable level, it suggests that the structural model fit to assess relationships between variables has enjoyed high reputation. Then, to examine the hypothesis using the regression coefficients, the values shows the relationship between variables, (IT infrastructure, Demand, External Environment, and HR readiness) play an important role in the establishment of e-learning in the Jordanian universities.

Cronbach's Alpha is a coefficient of reliability and consistency and it measures the internal consistency of the model. In other words it measures how well a set of indicators explain a single latent construct. The Cronbach Alpha score should be above 0.70 [6].

| Field Number | Field | Number of questions | Value of (α) |
|--------------|----------------------|---------------------|-----------------------|
| 1 | IT infrastructure | 10 | 0.74 |
| 2 | Demand | 5 | 0.77 |
| 3 | External Environment | 8 | 0.71 |
| 4 | HR readiness | 7 | 0.86 |
| | Total | 30 | 0.88 |

Conclusion

e-learning is a very important subject and most of the research in this field has focused on the critical success and failure factors. The purpose of this study was the investigation of the key factors affecting the readiness of this sector in Jordan and focusing on the human factor and the effect of the instructors and students as well as the IT infrastructure and external environment factors. Upon investigating the stated, with specific focus on the Jordanian universities, the researcher found a classification to the factors affecting e-learning implementation in four kinds which are the IT infrastructure, external environment, HR readiness and demand. The research extracts an immediate relationship between the four kinds, thereby confirming earlier studies on the topic. That is, there are a set of key factors for the successful implementing e-learning, if managed, can ensure that enhancement learning success rates in the education sector.

The Jordanian educational sector is ready for the e-learning with a need of some development in the human resources including the instructors and students. Also the sector needs some modification in the laws and

regulations in order to encourage universities to apply and implement the e-learning methodologies. There are a high demand for e-learning between the students, this will maximize the number of students and help them in their time management.

This study is recommended to make modifications on the laws and regulations affecting the improvements and development of the e-learning in Jordan. On the other hand, the universities should assign a special budget for developing the human resources and investing more in training and the new tools that can help in enhancing the instructors knowledge on using IT and e-learning tools.

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