Evaluating and Adopting E-learning Systems in Al-Zaytoonah University of Jordan

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Abstract

Despite the advantages of applying e learning, a few higher education organizations do not apply e-learning comprehensively and still there exist very few researches, which provide an integrated and effective structure for the acceptance of applying e-learning methods in the Jordanian universities. Hence, it is important to comprehend the factors, which affect the acceptance of e-learning in such universities based on the evaluation of the e-learning experience at Al-Zaytoonah University of Jordan from the viewpoint of student satisfaction during a full academic year by performing online survey. The study includes many contributions represented by identifying the strengths and weaknesses in the E-learning system after it was updated a year before the implementation of the study, as the new updates included adding more interactive content with students such as; voice and video chat, file and screen sharing, broadcasting lectures or classes, and interactive games. It was necessary to measure student satisfaction with the new changes as well as providing this experience to other educational institutions, it could be an inspirational start that opening new ways for them to develop the mechanisms of e-learning education, which has become one of the most important educational

methods adopted in the present and the future, in addition, this study carried out at in the Middle East region , which considered relatively recent in the use of e-learning, and this is a clear guiding instrument for future studies based on different methods, which are related to an effective planning, implementation and development of e-learning.

Keywords: *E-learning Management, E-learning System, E-learning acceptance.*

1   Introduction

As a result of the fast development of Internet, electronic learning, computer-based and assisted learning, distance learning and E-learning are closely getting related to each other. With the advancement of data acquiring techniques and communication innovation development, E-learning turns into a model of contemporary instruction. In its simplest definition, E-learning is an electronic framework that enables learners to get access through to it, exchange and retrieve information and knowledge with no time and/or geographic restrictions, and to allow interactions for learners and instructors, and through learners only. The development of an online educational system has been supported according to many grounds. It is simpler for an enormous number of learners to effectively obtain the required contents since they reduces the cost and time a learner may spend to move physically to join traditional classes where they leave an effective impression for both the instructor and learner themselves rather than classical lectures. Additionally, it is a financially worthwhile resources, and is considered a chance for enjoying new modern trends in educational technologies [1].

Learning frameworks can effectively combine attributes that guarantee a long-term use of advancement or snippet of data innovation followed by its underlying acknowledgment. The idea of E-learning approach incorporates an assortment of uses, procedures and learning approaches. Likewise, it can be allowed to as utilizing Information and Communication Technology (ICT), which encourages educating and learning assets through online applications [2]. In fact, the paper aims at investigating the fulfillment levels of higher educated students through E-learning frameworks and at perceiving different perspectives that are related to the use and development of e-figuring.

A few studies have discussed the models of E-learning frameworks and their assessment to bridge the quality gap in E-learning provision [3]. However, an investigation on whether these models are suitable for creating learning forms or not should be carried out. As indicated by Cidral et. al. [3], the quality of E-learning frameworks possess an immediate way on the quality of E-learning itself. Moreover, fulfilling the quality in training is improved by arranging courses that involve different instructional activities that would result in good learning

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outcomes. These activities must be provided to adjust the general execution of commendable dynamic education and learning framework.

The study involves a thorough literature review on E-learning frameworks adopted by a number of Jordanian universities and obtains six factors that are considered reasonable to review the current E-learning models and systems. These frameworks comprise: P3 Course Evaluation Model [4], PDPP assessment model [5], E-learning Quality framework [6], TMLE structure [7] and E-learning Maturity model [8]. After that, a thorough E-learning framework quality assessment model from the viewpoint of student satisfaction that is appropriate for developing countries is acquired based on the evaluation of the e-learning experience at Al-Zaytoonah University of Jordan using the E-learning system that shown in "Fig. 1". In the research we focused on the factors that related to user behavior and we not focused on technical aspects since many research discussed this issue. However, they ignored the factors in our proposed model so this is a significant contribution of this study. In the future we plan to extend our model to include technical factors and find the relation between technical and usage behavior.

Fig. 1 Al-Zaytoonah University of Jordan E-Learning Portal

2   Related Work

There is an assortment of hypothetical structures and accessible methodologies and frameworks for a proper E-learning system. Nonetheless, this investigation essentially focuses on a learner's satisfaction towards the currently available ones.

Rajab [9] investigates the productivity of E-learning, direct and personal education in Saudi Arabia based on the insightful Najran University's E-learning knowledge, which is subsequent to applying a conventional course conveyance of an instruction. The study considers the potential realistic guides by E-learning in emergency zones, such as the southern outskirt area in Saudi Arabia. Yu et al. [10] build up a fuzzy semantic scale in order to generate a satisfaction file of an E-

learning framework by developing an exhibition assessment matrix and acquiring satisfaction and impact indices to form the vertical and horizontal axes. The reason behind that is to enable assessing the methods that are related to the two indices in order to utilize them as powerful guidelines for distinguishing the things, which are considered basic to quality rapidity and effectiveness.

Jung [11] evaluates multiple factors that directly affect E-learning services, which are the support and interaction in E-learning website, quality assurance, credibility and publicity. Garcia-Gonzalez et al. [12] present the interaction tool (LODLearning) in order to leverage the linked open data cloud for improving the content of E-learning courses in the Sakai LMS. Such a model gives a new approach for using the semantic web data in E-learning platforms for the purpose of supporting different robust learning materials.

Büyüközkan et al. [13] apply an intuitive layout approach for assessing E-learning services based on the use of various standards of user interactivity and interface, and understandable and secure contents. Alkhattabi et al. [14] produce a novel quality model that is related to 14 dimensions of data quality in E-learning in order to calculate three important quality factors, which comprise; accessibility information quality, intrinsic and contextual representation. Nevertheless, linear regression is utilized to investigate the significance of every dimension within the three quality factors.

Hasan and Abuelrub [15] propose common standards for assessing the quality of any website regardless of the type of service it offers. The components of the criteria comprise the content quality, structure quality, association quality and easy to use quality. These measurements together with their complete indicators and checklist are utilized by website specialists and designers in order to make quality sites for improving the electronic administration. Kazancoglu and Aksoy in [16] present a fuzzy-based Quality Function Deployment (QFD) by conducting a questionnaire for a group of experts within the field industry. The authors use the Crisp Scores (CFCS) technique, which is converted from the fuzzy data. After that, the basic achievement components of E-learning specialist organizations are distinguished for the defuzzification of the gathered information.

Abdellatief et al. [17] use the following factors in order to evaluate the E-learning website according to developers' perceptions, system functionality and reliability, data content and applied information technology. In [18], an evaluation for the E-learning system robustness, content, effectiveness and user support availability is performed. In [19], the AHP scheme is applied in order to assess the E-learning approach's contents and services quality including the system design. Lui et al. [20] produce a platform for assessing E-learning approaches based on the adoption of six dimensions, which comprise; infrastructure, functions, specialty, learning events, customization, learning experience, user experience and customization, and learning context. In [21] the impact of three important dimensions in the E-learning system's effectiveness are investigated. Such dimensions involve; human factors,

component technology and content quality. Alla et al. [22] concentrate on the quality of the E-learning approach and investigate the important dimensions that affect it. These dimensions include the system usability, system accessibility, system reliability and system stability.

In [23], the issue of assessing the E-learning sites is demonstrated (i.e. representing the MCDM issue). Additionally, the Weighted Distance-Based Approximation (WDBA) technique is produced when assessing and choosing E-learning sites. Goi and Ng [24] examine important factors that affect E-learning systems which comprise; security, user involvement and interactive, system accessibility, content, website design, institutional commitment and instructor competency.

3   Problem Formulations or Methodology

There is a developing assortment of scholarly view into which the appropriation of innovation and technology among users is analyzed. However, very few scholars concentrate on the reception of E-learning in Jordan. Various hypothetical methods are accessible and can clarify the connection of user's dispositions and convictions for innovative usage. These models incorporate the hypothesis of the contemplated activity (TRA), hypothesis of arranged conduct (TPB), Unified Theory of Acceptance and Use (UTAUT) and innovation acknowledgment model (TAM).

Due to the complicated nature process of the innovation and technology appropriation, it is important to watch more causes of E-learning reception and their use. This segment portrays the proposed acknowledgment structure for E-learning acknowledgment with regards to Jordan.

Eze et al. [25] suggest the importance of acquiring the acceptance methods that are custom-fitted to certain techniques. In fact, the researchers contend that conventional methods are insufficient in clarifying the reception and utilization of various advancement kinds including service channels where explicit highlights pertaining to the innovation can assume a significant job. Accordingly, it is imperative to incorporate other logical factors together. Identifying the particular uniqueness and nature of E-learning reception, current factors are incorporated into the method.

The paper proposes a new acceptance method for E-learning in Jordan. The model constructions include: the awareness of E-learning, perceived benefits of E-learning and perceived risks as the independent variables as shown in "Fig. 2". The model customization and selection of factors depend on the current state of E-learning in Jordan. The model constructions and hypotheses are discussed further in the following sections.

This study extend TAM model and used perceived benefits which is more accurate than perceived usefulness in e-learning area of research also perceived risk means that if the system ease to use and to learn then the risk will be very low because the student will be aware about the best and secure way to use the e-learning system .

In order to examine student acceptance of new learning management system we tested the following hypotheses:

Hypothesis 1: perceived benefit- contains a major influence on the actual usage of the E-learning system.

Hypothesis 2: E-learning awareness puts an important impact on the real use of the E-learning approach.

Hypothesis 3: perceived risk has a major effect on the actual practice of the E-learning approach.

3.1   Perceived Benefits of E-learning

Tangible advantages of E-learning can be characterized as "the degree to which an understudy accepts that the E-learning can enhance an individual's performance or learning skills" [26; 27]. E-learning is fundamentally associated with students' outcomes, which are underlying technology usage. Several acceptance models have proven that a perceived advantage represents a solid determinant of a user's acceptance, reception and usage conduct [26; 27]. In fact, a perceived advantage has been observed to be the most critical factor in technology acceptance within the working environment. Based on this discussion, the subsequent hypothesis is produced:

Hypothesis 1: perceived benefit- contains a major influence on the actual usage of the E-learning system.

3.2   Perceived Benefits of E-learning

When the E-learning approach has emerged, Anderson [28], Bean [29], Chapnick [30], Clark and Mayer [31], Gold et al. [32] advice many E-learning practitioners to be cautious during the time spent on embracing E-learning related to their institutions. The effectiveness of E-learning relates to the number of users who are using the system and high-level quality design. However, one important factor, which puts an impact on adopting the E-learning approach is the awareness of different benefits and implementations related to this approach. Alhabeeb and Rowley [33] demonstrate that the perceptions of students and academic staff regarding the E-learning approach vary widely according to the students' characteristics, educators' attributes, and support and preparation.

Additionally, there exist a connection between the E-learning awareness and its implementation. The research shows that the E-learning's consciousness increases

users' intention in implementing the E-learning approach. Accordingly, the research suggests to propose the flowing hypothesis:

Hypothesis 2: E-learning awareness puts an important impact on the real use of the E-learning approach.

3.3 Perceived Risk

Hazard is regularly characterized based on the trustee's certainty regarding the possibility of achievements and losses (Mayer et al. [34]; Warkentin et al. [35]; Pavlou et al. [36]). At the point when hazard is available, trust is required (Mayer et al. [34]; Pavlou [36]). Pavlou [36] observe that trust represents an essential antecedent of perceived risks. (Ganesan [37]; Grazioli and Jarvenpaa [38]; Featherman and Pavlou [39]). Since it is difficult to assess the hazard objectively, it is important to focus on clients' hazard recognitions. Warkentin et al. [40] clarify that an observed risk represents the student's subjective anticipation of suffering a loss towards acquiring a targeted result. In [36], Pavlou confirm that an observed risk is made out of environmental and behavioral uncertainty. Behavioral uncertainty is caused by the opportunistic behavior related to online service providers, which exploits the objective nature pertaining to the electronic environment. This is, in fact, out of the control of the student due to the unexpected nature of Internet-based technology. In e-commerce, perceived risks reduce the desires of beneficiaries to transmit information and to complete transactions [36]. In [35], Warkentin et al. declare that observed risks possess a synonymous influence on the E-learning approach. Hijazi el al. [41] state that risk factors might negatively affect the quality of the e-Learning course and/or the learning outcomes.

Apart from the connection between usage and risk, the paper demonstrates that risk observations minimize users' intentions to use the E-learning approach. Accordingly, the paper suggests to produce the subsequent hypothesis:

Hypothesis 3: perceived risk has a major effect on the actual practice of the E-learning approach.
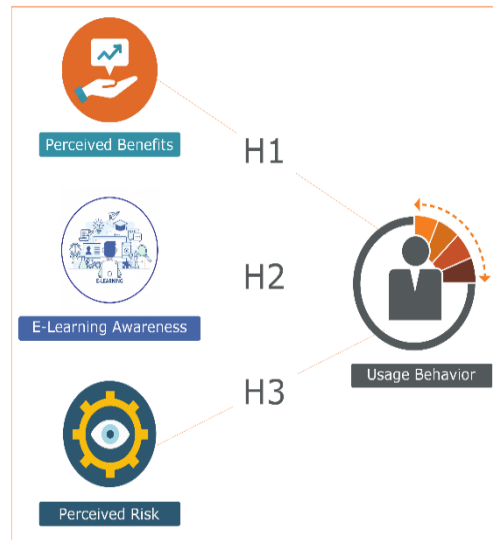
Fig. 2 The Theoretical Framework

4   The Proposed Method

Quantitative survey method is chosen in order to achieve the research objectives. Four critical constructions are adopted to evaluate the E-learning approaches' acceptance at Al-Zaytoonah University of Jordan. These constructions comprise; the awareness of the E-learning approach, E-learning usage, perceived observed benefits and risks. A questionnaire is designed to evaluate the entire constructions. The following subsections provide further details.

4.1   The Sample

In order to obtain the desired data pertaining to the survey, an online questionnaire was performed. The online questionnaire announced through the E-learning website at Al-Zaytoonah University of Jordan and was available to all students. Based on a study of Olofssion et al. in [42], several sampling methods for the selection of respondents from the population are available, such as the simple random sampling, systematic sampling, stratified sampling, and cluster and multistage sampling methods. During the implementation of the questionnaire, a simple random sampling method is selected in order to select the volunteering respondents. This is considered one of the best approaches due to the following reasons:

- It allows the researcher to select the participates randomly.
- Ease of assembling the sample.
- A fair way of selecting a sample from a specific designated community so that compliant opportunities are given for selection purposes.

- It is suitable for the entire size of the population.

A questionnaire is designed by selecting a group of 500 contemporary learners through the academic years 2018/2019. The participants in this study comprise students from different academic year levels with diversities in gender, specialization) sciences and humanities faculties), program (Bachelor/Master), and many other important factors, which include the participation in a training course on the E-learning approach by using the courses that are existing in the E-learning approach within the university, subscribing in the electronic material at least once a year and the awareness of the computer usage. The learners in the selected sample are using the E-learning platform personally within the university.

4.2   Survey Discussion

A designed questionnaire includes close-ended questions were used to interact with students to measure the effectiveness of the e-learning system during an entire academic year. The questionnaire consists of five important sections, which are comprised as follows:

- Respondents' demographic data.

- The awareness of E-learning.

- The use of the E-learning approach.

- The observed benefits of the E-learning approach.

- The observed risks of the E-learning approach.

The above-mentioned sections are designed to comprehend the constructions affecting the E-learning usage behavior. The questionnaire sections are designed to measure the proposed four constructions where each construction has a number of items that are answered by each respondent by using a five-point Likert scale with its corresponding scores.

4.3   Pilot Test

The pilot study involves five basic steps as described below in "Fig. 3", and explained in details in this section. This stage corresponds to Lee's first level

understanding and aims in order to gain a deep personal understanding of the research topic.

Fig. 3 Methodology

Step 1: Preliminary Literature Review; A literature review is conducted to understand the previous research performances in the context of the E-learning approach's acceptance. The review mainly aims at providing the necessary guidance for the creation of data collection tools including the significant guidance in avoiding the risk of overloading initial data collection stages pertaining to the project Gelman et al. [43].

Step 2: The Development of the Data Collection; In [43], Gelman et al. declare that an initial questionnaire is designed based on the use of different insights that are gained from reviewing the literature. This tool is used to collect the data, which is related to the E-learning application practices among the universities in Jordan.

Step 3: Questionnaire Administration; Responses are collected from 30 university lecturers via email where such lecturers are randomly selected from over a number of Jordanian universities. Subsequently, the collected data related to the experimental research are analyzed [44].

Step 4: The Pilot Data Analysis and Interpretations; The results pertaining to the experimental research are analyzed through different comparisons in order to identify the similarities, differences and data patterns. Ideas that are collected from preliminary results are used to improve the questionnaire itself [44].

Step 5: A Revision of the Data Collection Instrument; According to the implementation of the research findings, the questionnaire is modified so that the data could be collected during the survey by using the acquired insights. Furthermore, the questionnaire is improved to avoid ambiguity and misunderstanding [44].

One of the restrictions in this survey represents the difficulty, which affects a few number of respondents in comprehending the E-learning terminology that is used in the questionnaire.

4.4   Results and Findings

It is important in any research to consider the validity and reliability of data and the methods used for its collection and analysis. Validity refers to the type of experiential measure, which influences the meaning of the concept being studied. Reliability refers to the same results that are obtained when measures are applied repeatedly to the same concept [45]. One way to minimize problems related to validity and reliability in a research is to use instruments and constructs that are previously demonstrated to be valid and reliable.

In this study, the survey instrument is based on a combination of valid instruments and constructs used in recent models for assessing the adoption of technology and m-Government services.

Table 1 presents the results of alpha coefficients for every construction including its reliability in analysis. The findings of the reliability analysis are obtained as shown in Table 1. The values pertaining to the Conbach's alpha of every construction range from 0.71 to 0.90, representing a level that exceeds 0.70, which demonstrates the threshold that is declared by Nunnally et al. in [45]. Most of these values are even above 0.7 where this demonstrates an efficient internal consistency related to the questionnaire items.

Table 1: The reliability testing (alpha coefficients)

Construction	Alpha coefficients
USE	0.846
AW	0.750
PB	0.881
PR	0.827

The number of responses reached to 485 responses, which represent E-learning users spread over different faculties. The entire responses are made voluntary to respondents. Additionally, they are entirely, upon their consents, free to fill in the whole questions related to the questionnaire. The demographic distribution demonstrates that 50.9% of respondents represent female respondents, while the remaining 49.1% represent male respondents. According to the type of faculty the majority of respondents who represent 79.0% belongs to sciences faculties. With regards to educational level, most of them are in the bachelor degree level representing 97.8% and the majority of respondents who represent89.7% have are untrained on how to use the E-learning system. However, 76.2% of students use the E-learning system for at least a single course In terms of the ability and expertise in using online courses, 56.1% of respondents are extremely skilled in using this

technology and 36.9% are highly-skilled respondents. It is obvious that respondents' skills in the E-learning system are mostly above average and advanced.

The elements that make up tool scales are investigated and examined in order to confirm that they represent robust units and demonstrate acceptable measuring features (construction reliability and validity [46]. Since the search model includes a single dependent variable, hypotheses are examined based on the use of the linear regression analysis.

The Linear regression analysis is run for hypotheses H1, H2 and H3. E-learning Usage (USE) denotes the dependent variable, AW denotes the awareness of E-learning, PB denotes the perceived benefits and PR denotes the perceived risk. In fact, these variables are independent variables. The (R^2) variable, which represents the coefficient of determination attempts at measuring the variance's proportion pertaining to the dependent variable based on the predictor or independent variables [47]. The greater the (R^2) value, the greater the explanatory power related to the regression method. The R^2 value of the dependent variable E-learning Usage (USE) represents 0.531 where this implies that 53.1% of the existing variance in E-learning Usage (USE) is illustrated based on the regression method. Additionally, this value is demonstrates a high value, and therefore, the power pertaining to the regression method is extremely efficient. The method is statistically significant (F=170.920, p<.001). The values related to the regression coefficients along with their significance values identify different variables as shown in Table 2.

Table 2: The Regression method

Method	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
AW	0.236	0.047	0.241	5.551	0.0
PB	0.521	0.042	0.535	12.342	0.0
PR	0.105	0.029	0.116	3.620	0.0

Dependent Variable: USE (F=170. 920, P<=0.001, R=0.729, R Square=0.531, Estimated R Square=0.528)
The most effective Predictor: PB (Beta =-0.535, P<0.001)

It is found from the obtained results that the entire determinants of USE – **AW**, **PB** and **PR** – are significant in estimating the observed USE that is related to the E-learning system.

The analysis of the regression methods show that the AW, PB and PR, respectively, have a positive effect. Among these three factors, the PB have the largest effect on

the USE. However, the entire hypotheses (H1, H2 and H3) in this study are supported as shown in Table 3.

Table 3: Hypothesis Analysis

Hypothesis	Result
H 1: perceived benefits possess a significant influence on the real E-learning system usage.	Supported
H 2: The E-learning awareness possess a significant influence on the real E-learning system usage.	Supported
H 3: perceived risk possess a significant influence on the real E-learning system usage.	Supported

Based on current technology acceptance theories, the paper produces a research perspective, which describes students' use of E-learning. In particular, the produced method is applied based on the use of 458 possible respondents. The results of the research are significant and possess several implications that are important for both practitioners and researchers. To the best of the researchers' knowledge, no study has been conducted to examine the use of student interaction and interaction with E-learning in Jordanian universities. Accordingly, this study provides a theoretical basis for researchers so that they can be able to develop profound future studies in this important topic. As for practitioners, comprehending the infrastructure of the produced method is critical to the layout and improvement of an E-learning system that is acceptable and desirable to students.

6   Conclusion

The findings of this study clearly provide an evidence, which demonstrates that the vast majority of contemporary learners show positive satisfaction of using the E-learning system at Al-Zaytoonah University of Jordan. Additionally, it is seen that most of them are comfortable and interactive in using the Internet for different learning purposes.

Furthermore, the findings demonstrate that the vast majority of beneficiaries assess their E-learning experience at Al-Zaytoonah University of Jordan based on vital and fundamental factors for the E-learning system's success; demographic data on respondents, awareness of E-learning, use of E-learning, observed benefits of E-learning and perceived risks of E-learning These important factors including the skills and abilities of E-learning and the benefits of E-learning are unclearly known to course developers and learners at the University.

With the ever increasing phenomenon of E-learning intrusions in our daily lives (e.g. learning providers and multicultural learners, and educational levels or educational tendencies), learners' satisfaction with E-learning is the key to its success. Therefore, the bellow suggestions are concluded to further improve the E-learning experiences, which are derived from the obtained findings of the research:

- Learners' assessment of their needs and objectives should be initiated before starting the E-learning course since the presentation of the course content should be compatible with the learners' needs, objectives and learning styles.

- Learners' assessment of their overall satisfaction should be initiated after completing the course, and the conducted results should be reflected in the courses of the next cycles.

- Learners' personal favorites have to be considered individually for customizing their own E-learning experience.

Finally, it is a critical issue to identify E-learning requirements, purposes, content and evaluation to suit learners' different requirements in making their learning experience satisfying and compatible for the desired learning outcomes.

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