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CRITICAL SUCCESS FACTORS FOR E-LEARNING SATISFACTION, JORDANIAN UNIVERSITIES' EXPERIENCE

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Abstract:
Modern institution plays crucial role in motivated towards a competitive age. A university must improve and develop their teaching and learning process related to the new innovations of educational technologies. The Hashemite Kingdome of Jordan, as one of the developing countries, focuses on higher education sector as one of the most influential sectors to develop social, economic, and human growth in the country. However, the King, the government, and the leadership of higher education institutions in Jordan face many challenges to enhance the quality of the output in universities and to sustain the scientific research. Sadly, there are lack of studies and programs that measure the satisfaction of using e-learning to improve the educational process in Jordanian universities from managerial perspective. The main purpose of this study is to examine and measure the satisfaction factors by employed Information System Success Model (ISSM) related to the usage and sustain use of e-learning in Jordanian public universities. A self-administered survey was conducted on 117of academics selected as deans of faculties, academic departments' chairs, and managers of computer and e-learning centers. About 100 participants (85%) have responded. The results show that perceived usefulness, management support,self-efficacy, technical support, and training have a significant relationship with the satisfaction of the usage of e-learning system. On the other hand, the study grants a good indicator to the higher education leaderships about the quality of used e-learning in the Jordanian public universities.

***Keywords**:*
E-Learning, satisfaction, universities, Jordan
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1. INTRODUCTION

Information and Communication Technology (ICT)plays most important roles in every part of our life and it's required in every sector, including the educational sector[1]. However, educational sector has been going through some revolution and changes with the influence and improve of ICT that develop the satisfaction and sustain of the educational process [2]. These include the innovation of e-learning, emails, multimedia-based teaching materials, and also database and application systems. Definitely, e-Learning, is a teaching and learning model in which digitized the resources and materials by transmitted and communicated through the Internet [3]. Accordingly, learners have the freedom to access, control, and manage the time, location and effort in the educational process [4]. In addition, e-learning improves the level of learners' participation in learning. It allows them to organize the order topics for the study plan and learn at their own pace, thereby resulting in more independent learning[5]. Therefore, many researches have investigated the behavioral, attitudes, and motivations perceptions of learners, lecturers, and management of the institutions[6]. Since e-learning is receiving much interested nowadays, research on this sector is ongoing. It includes topics such as the information technology capabilities of e-learning [7], develop the educational process by changes to e-learning models [8], evaluation and examination of learning electronically to enhance learning efficiency[9],[10],[11], establishment of criteria to assess e-learning systems [12], and satisfaction surveys regarding e-learning [13], [14],[15],[16].

Consequently, the adoption and usage of technologies in the educational system, and Internet have provided an unprecedented opportunity for developing higher education around the world[17]. Therefore, these technologies must become more popular among developing countries which seek economic improvement [18]. In fact, the ICT is becoming more universal at an increasing rate as most organizations recognize the needs to organize the IT professionals for the global environment [19].

In an attempt to transform and realign institutions into information age, a major restructuring of computer centers and IT departments and establishing of e-learning activities has been initiated to maintain and develop the use of ICT in the educational system [20]. One of the main goals of these activities is to upgrade and improve the teaching skills and practices. In conjunction, the main responsibilities of such centers have assisted and supported university managements, academics, and students in maximizing the value of usage and sustain use the technologies [21].The globalization of the learning system is paralleled with the dramatic developing in the utilization of the Internet and technologies as supported tools[22]. Meanwhile, the developing countries are always one step behind the developed world in terms of the usage of information technology innovations [23], and it seems equally unquestioned that the developed nations can provide important guidance and supports the technologies usage initiatives of the developing nations, as part of the assistance in the accomplishment of technology-based economic development models [24]. In general, the usage of technologies are seemed as significant to the development process upon which economic prosperity depends, moreover it's considered an integral part of the education process, fundamentally transforming the nature of the educational process [25].

2. Problem Statement

The Hashemite Kingdom of Jordan is one of the highly developed Arab countries in the Middle East. The King and the government have sponsored many initiatives to encourage the diffusion of technologies in the country that not only possessing geographical

advantage, but also often seeking to develop technological workforces to increase the standard of living and economic productivity. In conjunction to, the higher education sector is in the midst of a pedagogical paradigm shift worldwide and the utilization of technologies in the educational system. Therefore, this research focuses on the success factors of evaluation, satisfaction, and sustainability of educational technologies contexts [26].

As known, there are differences between developed and developing countries in how they use information technologies that can be traced through cultural differences [27]. Therefore, using the available benchmarks from developed world for studying technologies usage in developing world is unreliable and ill-advised [28]. Accordingly, there are certain benchmarks in the developed world that would be provide as useful methods if they could be used reliably in the developing world. However, there is lake of empirical studies being conducted to measure the satisfaction and sustain of using e-learning system in the universities in the developing countries, especially in the Arab world [29].

By reviewing past literatures in the usage of technologies and satisfaction it in the information system field in general, educational technologies in particular, the research determine the problem statement as "the limitation of e-learning system evaluation and satisfaction in the Jordanian universities among the managerial perspective". The research concludes from the previous literatures that until now there is a lack of ICT usage and lack of e-learning system assessment in the universities in Jordan [30]. The adoption and usage of ICT in universities in teaching and learning process are still limited among the teaching and learning process [31]. In which they have lack of knowledge, skills, motivations, and interests in using ICT in facilitating the educational system[32].

3. E-learning in Jordanian Universities

Jordan believes that the employ of ICT affects the increase of skills, knowledge and capabilities among the society. As a response, Ministry of Higher Education and Scientific Research (MoHESR) has highlighted in its strategies and vision about the adoption and best utilization of ICT in its academic institutions. Also, the Jordanian National ICT Agenda emphasizes the adoption and usage of ICT in the higher education institutions including public and private universities to improve the educational process. In April 2014, the government assigns "The National Commission for Human Resources Development" (NCHRD), and in September 2016 His Majesty the King Abdullah II patronize its recommendations in the national conference. National ICT Agenda in higher education strategy was ratified in a national conference, and was approved by the council of the higher education in Jordan. The strategy aims to encouraging students, academics, and universities managements in employing technologies and improving their skills, knowledge, and capabilities that improving the teaching and learning system, employing ICT in managerial responsibilities, and adopting, usage of e-learning systems[33].

In the matter of fact, universities in Jordan plays a critical role in the growth of the economy because the individuals have strong needs and interests in education to improve their skills and knowledge to become competitive and skill workers in the international markets. However, universities must provide sufficient infrastructures and resources to support the employing ICT in teaching process. Accordingly, Jordan has invested a large amount of money to adopt and integrate technologies into the teaching and learning system by providing students, teaching staff, and managerial departments of universities

with good opportunities to improve their knowledge, skills, and experience related to the use of these technologies [34]. This suggests that Jordanian government and the leaderships of higher education have responsibilities not only to provide computers and ICT tools to the universities but also to foster a culture to encourage usage of ICT among teaching and learning process in universities. On the other hand, higher education institutions in Jordan have a few challenges in investing ICT in the educational process to achieve the economic prosperity to the country. Moreover, the different cultures and languages between western world and the Arab world may be considered as one of the most influential challenges faced by the universities in adopting and using ICT in their educational system [35].

4. Literature Review

User satisfaction is the extent to which the e-learning system meets their information requirements [36]. Reviews have shown that end user will use a system and then assess it on the basis of being satisfied or dissatisfied. Academics' satisfaction with e-learning systems was measured in several studies [37]. The satisfaction may lead to a variety of important outcomes that are of interest to educational leadership, administrators and academics [38]. Academics' satisfaction should be one of the key measures of education outcome as it enhances quality. In conjunction, effectiveness learning and high performance expectations influence the satisfaction of academics and students. Academics will hold positive beliefs towards e-learning if their beliefs that it would support them and enhance their educational system. Study that argued that understanding learners attitudes can support expand e-learning system activities and meet their needs [39]. When teachers and learners can see the benefits and are satisfied with the use of e-learning systems, they are more likely to retain or enhance their usage of those systems. By reviewing previous studies the theoretical factors which may affect academics' satisfaction and thus, leads to sustain adoption of the e-learning system in the future. In the other hand, the significant relationship between individuals' satisfaction and usage of technologies has been measured in past empirical studies [40]. Thus, the more satisfied one is with e-learning systems; the more likely one is to use these systems more frequently. However, satisfaction has been acknowledged as a vital factor in influencing academics to repeat using e-learning systems [41]. Consequently, the study employed DeLone and McLean's Information Success Model Theory to determine the factors that affect academics' satisfaction to use e-learning system from their managerial positions. The following sections will explore the theory and the factors that employed in this study.

By reviewing literature the satisfaction and the quality attributes of e-learning services comprise system quality, instructional quality and interactive quality [42]. Quality attributes cumulative satisfaction is present as a learner/teacher affective state based on an overall assessment of quality attributes [43]. In studies of determinants of user continuance intention in the e-learning system also present that satisfaction and perceived quality are significant factors of intention to use [44]. Consequently, previous study that measure whether quality variables that affect learners' intention to use e-learning system, in addition to the teacher quality to other components of IS success model and concluded that service, system, information, leaner, and instructor quality play the antecedent role and influence on the user's perceptions with regard to e-learning system [45]. Furthermore, study is measuring the students' learning satisfaction with system quality of e-learning system and carried out a study to measure the relationship between learning satisfaction and system quality which showed a significant relationship [46]. Moreover, study includes perceived system quality in the user expectation based IS model showed

that perceived usefulness, confirmation of initial expectation, and system quality significantly affected leaner satisfaction, sequentially satisfaction in addition to perceived usefulness significantly determined continuance intention towards e-learning usage [47].

5. DeLone and McLean's Information Success Model

Information System Success Model is one of the most recognized theories that facilitate used to measure of success and user satisfaction [41]. It supports a scheme to classify a variety of information system success factors and suggests a proposal relationship between categories. Consequently, there are many studies that have used this model related to information system in general, e-learning in particular [48], [49]. Since the main purpose of this study is to measure satisfaction of academics that have already adopted and used the e-learning systems. Regarding to the success model [41], the study proposed model was partly constructed based on this theory and review of the literature. Based on previous discussions, the study derived five factors from three sets (user quality, system quality, and organizational quality) that contribute the e-learning satisfaction. However, the research model argues that academics-related qualities, e-learning system-related qualities, and university-related qualities will influence the satisfaction through the usage of the educational technologies in general, e-learning system in particular. The factors are self-efficacy, perceived usefulness, management support, technical support, and training.

Self-efficacy

Unless academics believe that they are capable and have skills to implementing the technologies in their educational system, the technologies will remain intact and unused. According to Bandura [50], a self-efficacy focuses on the individual's beliefs about the ability to perform certain tasks successfully. Academics and students success in using and satisfy of e-learning systems by their ability to manage technical difficulty and a validation of their confidence in using technology to engage in learning [51].

Perceived Usefulness

Perceived usefulness is defined as the degree of enhancement after usage of a system. When academics perceive e-learning system to be useful in acquiring the skills, experience, and knowledge, they are more likely to use the system. By reviewing previous studies the perceived usefulness has a positive influence on users' satisfaction to use technologies in general, e-learning in particular [52], [53].

Management Support

Management support is considered the most important resource to encourage the adoption and usage of educational technologies in the teaching and learning process. Therefore, management in universities must create appropriate conditions to academics that can continue to develop and enhance the e-learning system. In conjunction, the university's vision must be clear to encourage the academics to usage of educational technologies and support them by motivations. Past studies have argued a significant relationship between supportive learning environment by management and satisfaction to that environment [54], [55], [56].

Training

Individuals come replete with ingrained behaviors of feelings, thoughts and actions [57]. By the way, the university must Introducing many methods which allow academics to experiment with new technologies in the educational system. Thus, if they find the new way is more helpful, they will continue with it. Therefore, trainings must be designed for

academics to consider their job's performance in their teaching and learning process needs and their job satisfaction. However, there is a large amount of training and management support to develop the academics and help them to be comfortable with the new system [58]. Thus, it will improve them to adopt, use, and sustain use the e-learning system.

Technical Support

Technical support is considered essential in adoption and usage of e-learning system [59]. Therefore, lacking technical support or knowledge from universities and computer centers, may lead to aggravation problems and among the academics in addition to the students. Technology support has been found to have great influence on academics and students to use of technology as it can boost e-learning system usage, thus support the likelihood of their ICT integration in the educational system [60].

6. Research Methodology

In order to assess the impact of the using e-learning system in the Jordanian universities, an experiment was carried out to evaluate, satisfy, sustain, and belief of using e-learning system by measuring technological factors that affects the satisfaction to use it. In the quantitative approach the research used a literature review to identify questions and variables linked to a general causal explanation or interrelationship before collecting actual data. Therefore, a questionnaire was constructed to measure the factors including in the research model. The main dependent factor in this study is the satisfaction level of using e-learning system in the Jordanian universities which was measured by five items adapted from many previous studies [61], [41].

Regarding to the independent, the self-efficacy and perceived usefulness were measured by five and six items respectively adapted from [51], [52]. Consequently, management support factor adapted from previous studies [54], [55], and measured by four items. In conjunction to, the training factor which was measured by five items and adapted from [58]. Finally, technical support factor which was measured by three items and adapted from [60]. In the other hand, the questionnaire was based on a five-point Likert type scale: 1= strongly disagree to 7= strongly agree. Statistical analysis was carried out using SPSS version 20 in order to test the research model. However, to ensure the validity of the questionnaire, experts from Jordanian universities reviewed it, and their suggestions and recommendations taken in consideration. Randomly questionnaires were distributed; about 117 questionnaires were distributed by the researcher and his colleagues in the universities. The returned 108, 8 were invalid, the total valid questionnaires were 100, which is mean 85% response rate.

7. RESEARCH MODEL AND HYPOTHESES

The previous sections explore the satisfaction of e-learning system that affects the quality of the teaching and learning process in Jordanian universities, therefore, this study attempts to build an appropriate research model. It is conducted among the academics who's have managerial responsibilities such as deans, academic department chairs, and managers of computer centers in the Jordanian public universities to identify the relations between their belief of the satisfaction by using technologies in teaching and learning process. Fig.1 presents the model of the research, in addition to the symbols of the research hypotheses, which contains the main factors that could have affected the satisfaction and sustain use of e-learning system to improve teaching system in Jordanian higher education institutions.

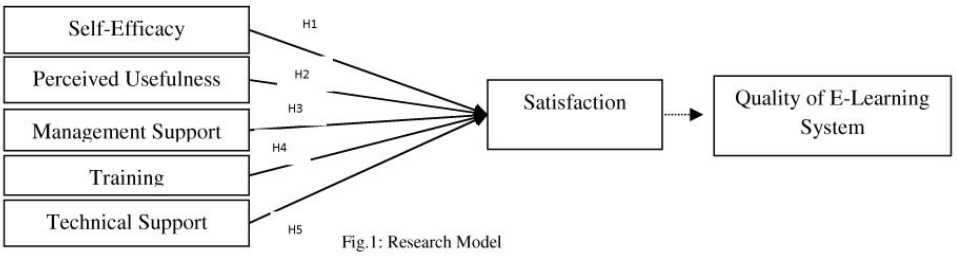

Fig.1: Research Model

There search model was building to investigate and explore the technological factors that are likely to influence the satisfaction of technologies in educational sector among managerial perspective. Consequently, the model proposes that these factors impact upon the individual's usage of e-learning to measures their quality, sustainability and satisfaction.

On the other hand, fig 1 presents the research hypotheses, by the way, these hypotheses developed to help the researcher to present and describe the relationship between the technological factors that are showed in the research model [62]. In this research, the hypotheses were building to measure the relationship between factors and determine the factors that influence academics' satisfaction of using e-learning system in their universities. However, the research presents five hypotheses, which were proposed that the greater of academics' self-efficacy, perceived usefulness, management support, training, and technical support of using e-learning, the more likely that these systems would be satisfied. Therefore, the five hypotheses were constructed to define the relationship between respondent's satisfaction to use e-learning and technological factors to use it in the educational system. Thus, by reviewing previous studies the study constructed the research hypotheses in the context of using e-learning among Jordanian academics in the educational system as follows;

Hypothesis H1: There is a significant relationship between self-efficacy of e-learning systems and the satisfaction level toward using it among academics in Jordanian public universities.
Hypothesis H2: There is a significant relationship between perceived usefulness of e-learning systems and the satisfaction level toward using it among academics in Jordanian public universities.
Hypothesis H3: There is a significant relationship between management support of e-learning systems and the satisfaction level toward using it among academics in Jordanian public universities.
Hypothesis H4: There is a significant relationship between training of e-learning systems and the satisfaction level toward using it among academics in Jordanian public universities.
Hypothesis H5: There is a significant relationship between technical support of e-learning systems and the satisfaction level toward using it among academics in Jordanian public universities.

8. Data analysis and Findings

The relationships between the satisfactions of e-learning system in the best utilization with technological factors were investigated using Pearson's product-moment correlation coefficient. In accordance, preliminary analyses were performed to ensure no violation of

the assumptions of linearity, normality, and homoscedasticity. Hence, the results of the Pearson's correlation coefficients on the five attributes with satisfaction of using e-learning system in teaching and learning process are displayed in Table 1. With reference to Table 1 there is a positive correlation between the faculty deans, the chairs of the academic departments, and the managers of ICT centers of using e-learning system satisfaction and the perceived usefulness variable (r= 0.434, p< 0.01), as well as, with respondents' satisfaction and their perceptions on the management support of using e-learning system (r =0.422, p< 0.01).

Table 1: Mean, Standard Deviation, Alpha Reliability and Zero-order Correlation (Technological Attributes Vs Satisfaction of the e-learning system)

Variables	*M*	SD	IV1	IV2	IV3	IV4	IV5	DV1
IV1- Self-Efficacy	4.13	1.10	(0.86)					
IV2- Perceived Usefulness	4.07	1.80	**0.414	(0.78)				
IV3- Management Support	5.16	2.31	**0.324	**0.336	(0.82)			
IV4- Training	4.64	1.93	**0.282	**0.302	**0.307	(0.83)		
IV5- Technical support	4.33	1.27	**0.331	**0.322	**0.416	**0.337	(0.81)	
DV1-Satisfaction	4.75	1.65	**0.399	**0.434	**0.422	**0.356	**0.387	(0.83)

Note. * P<.05, ** P<.01

Besides, the association between the respondents' satisfaction of e-learning usage and their perception of self-efficacy to use it, is also positive (r= 0.399, p< 0.01). In addition, the variable technical support is considered significant with respondents' satisfaction (r= 0.387, p< 0.01. The last variable is training, the value of this variable is also positive with the respondents' satisfaction (r= 0.356). In conjunction to the research model, the significance of the formative relationship between the perception of the respondents' satisfaction, is drawn from the stepwise multiple regression analysis. Along this line, multiple regressions were applied to examine the perception and the influence of the five extracted attributes and the respondents' satisfaction in accordance with these technological factors, in which the results of the analysis are displayed in Table 2.

Table 2: Results of Multiple Linear Regression: Technological Attribute Vs Satisfaction

Predictor Variable	Unstandardized Coefficients		Standardized Coefficients	t	Sig
	B	Std.Error	Beta		
Constant	0.304	0.432		0.716*	0.475
Perceived Usefulness	0.216	0.074	0.245	2.960*	0.004
Management Support	0.193	0.075	0.219	2.536*	0.014
Self-Efficacy	0.176	0.066	0.216	2.597*	0.011
Technical Support	0.170	0.087	0.195	2.189*	0.031
Training	0.159	0.048	0.179	2.148*	0.035
R:	0.648				
R^2	0.420				
Adjusted R^2:	0.390				

	DF	Analysis of Variance		F	Sig of F
		Sum of Squares	Mean Square		
Regression	5	19.757	4.875	13.630	0.000
Residual	94	27.508	0.392	1	
Total	99	47.265	5.267		

*P<.05

As seen in Table 2, the relevant statistical findings reveal that;

I. The regression equation is found significant ($F= 13.630$, $p< 0.05$) and the accuracy of the regression model is supported by the examination of the residuals.

II. The standardized coefficient values for self-efficacy factor is $\beta= 0.216$ which is positive and significant at $p< 0.05$. Therefore, this factor is supported in the research model.

III. The standardized coefficient value for perceived usefulness factor is $\beta= 0.245$. It is positive and significant at $p< 0.05$, so the result of this factor is supported for the research model.

IV. The standardized coefficients $\beta= 0.219$ value for management support factor is positive and significant at $p< 0.05$. As a result, this factor is supported in the research model.

V. The standardized coefficients $\beta= 0.179$ value for training factor which is positive at $p< 0.05$. Therefore, this factor is supported in the research model

VI. The standardized coefficients $\beta= 0.195$ value for technical support is positive and significant at $p< 0.05$, and therefore, it is supported in the model.

9. Discussion the research results

This study has measured the factors that affected the satisfaction of using e-learning systems from managerial perspective by faculties' deans, chairs of academic departments, and the managers of computer centers in the Jordanian universities. The results showed that perceived usefulness has been significantly and positively influencing with the academics' satisfaction to sustain use of e-learning systems in the educational system in Jordanian universities. This result is also consistent with the previous studies [52], [53]. This result means that the respondents will intend to sustain use of e-learning system if they found it useful for them and helps them to perform their educational activities. In addition of, the management support of the e-learning systems is found significant and positively influencing with the academics that have managerial positions with their satisfaction to use these systems. Many researches were suitable with this result [54], [55], [56]. Sequentially, the results found a positive significant affect of the academics' self-efficacy with their satisfaction to use e-learning system. However, the result is appropriate with the previous studies [51]. Additionally, the results of this study are also consistent with the previous literature regarding the positively significant influence of the technical support factor by respondents to satisfy and sustain using e-learning systems in teaching and learning process [60]. Moreover, the result showed influence and significant relationship between the training courses of the e-learning systems and the respondents' satisfaction of these systems, this result also suitable with previous studies [58].

Based on the previous discussions, all the factors included in the research model were positively and significantly influence on the academics' satisfaction to use e-learning in the educational system. These factors could contribute in guiding the evaluation of e-learning to sustain and develop use it in Jordanian universities. Consequently, the study supplied the leadership of the higher education institutions a full image about the current status of e-learning system. In conjunction, it helps the decision makers to determine which factors need support and which need treatment to encourage the usage and sustain use of technologies in the educational system.

10. Conclusion

Concerning the model, the inspection of beta values for the five independent variables were positive. In response to this, Table 2 also exhibits that the entire model, combining the most variables, has a significant influence on the satisfaction, therefore, the findings supported the research model. With regards to the indirect factors which are used in this study and derived from the information system success model that use ICT in the educational system. Concerning the findings of these factors in the Jordanian higher institutions (Table 1), it was in similarity with previous studies of e-learning satisfaction and quality. Consequently, the study found that perceived usefulness is one of the best predictors, and has a significant influence on the e-learning system quality and satisfaction. The management support is ranked second; which show that it has a significant positive relationship with the satisfaction and the quality of the e-learning system. Consequently, academics' self-efficacy attribute shows that it has positive relationship with dependent factors. In respect to technical support, findings of this study reveal that has a significant positive relationship with the satisfaction of e-learning system. Finally, the training system attribute has a lower rank in the influences of e-learning satisfaction and the quality of used it. This is means that all factors support the research model to satisfy the e-learning system that conclude to sustain using of e-learning system in Jordanian higher education institutions. As shown the results are similarity with many studies were conducted in developed and developing countries in the field of information system in general and e-learning in particular. For clarification, the study conducted on Jordanian higher education institutions which have a special case in the developing countries in general, Arab world in particular. In addition, Jordan is considered as one of the highly developed Arab countries in the Middle East. Moreover, Jordanian is one of the best educated and academically qualified commonly in the Arab world, and there are many cooperation agreements and activities between Jordanian universities and universities in Europe and United State of America.

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