Factors that determine continuance intention to use e-learning system: an empirical investigation

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Abstract: The purpose of this study is to explore and investigate empirically the relationships between system quality, information quality, service quality, internet self-efficacy, perceived usefulness, intrinsic, user satisfaction, and continuous intention to use e-learning system in Jordan. This study approaches the above purpose by developing a questionnaire build on intensive literature review and consulting existing valid instruments that appeared in prior studies. The results of data analysis indicate that there is a positive relationship between system quality, information quality, service quality, internet self-efficacy, perceived usefulness, intrinsic, and user satisfaction. The results also show there are positive relationships between system quality, information quality, service quality, internet self-efficacy, perceived usefulness, intrinsic, user satisfaction, and continuous intention to use e-learning system. Finally, the results suggest that there is no difference in the evaluation of continuous intention to use e-learning systems by research respondents in terms of demographic variables such as, gender, age, and level of education.

Keywords: e-learning system, continuance intention to use, student satisfaction.

1. Introduction

Information technology has profoundly changed the way we do business during the past years. This provided many opportunities for educational organizations to develop and e-learning programs for users. According to Ozkan and Koseler (2009), e-learning refers "to the use of electronic devices for learning, including the delivery of content via electronic media such as Internet, audio or video, satellite broadcast, interactive TV, CD-ROM, and so on". E-learning depends on two major factors, technological and human factors. Technological factor includes software and hardware that are used to build e-learning system such as network and LMS. Human factor includes all non-technological components that can be influenced on e-learning system such as students and instructors. According to Ozkan and Koseler (2009), e-learning systems are multidisciplinary by nature. Therefore, the success of e-learning depends on how these factors are applied and assessed in e-learning system. E-learning is not new concept in Jordan as many universities adopted e-learning system but attitudes towards continuous improvement and using of e-learning system have not been fully studied. This research aims to develop a comprehensive long-term e-learning usage intention assessment model and an empirical evaluation of which factors are critical to affecting this intention. This model had been developed using existing literature as a base, incorporating concepts from both information systems and education disciplines.

2. Literature Survey

Many models have been developed to analyze and predict user's continuance intention toward e-learning. For example Lee (2010) has developed a model to combine three models namely ECM, TAM, and TPB. The author has examined the effects of satisfaction, perceived usefulness, attitude, flow theory, subjective norm, and perceived behavioral control on adoption and continuance intention of e-learning. Liao & Lu (2007) have investigated relationship between users' perceptions of the relative advantage and compatibility of the e-learning website and their adoption intention.

Furthermore, Shih, H. (2008) has proposed a model based on cognitive theory (SCT) to assess learner adoption intentions for Web-based learning. Wang & Wang (2009) have developed an integrated model for explaining and predicting instructor adoption of web-based learning systems in the context of higher education by incorporating the concepts of user intention/behavior, information system success, and psychology. Moreover, Wang & Chiu (2008) extended the Unified Theory of Acceptance and Use of Technology (UTAUT) by introducing components of subjective task value into a model for studying learners' continuance intentions in Web-based learning. Roca, J. & Gagne, M. (2008) proposed -based on self-determination theory (SDT) - an extended Technology Acceptance Model (TAM) in the context of e-learning service. They indicated that applying SDT to e-learning in a work setting can be useful for predicting continuance intention.

Moreover, Roca et al (2006) indicate that e-learning users are more concerned about how an e-learning system provides information and how it will make them more productive in their tasks, so they suggest that IS practitioners must improve the attributes of the target system such as (information quality, system quality and service quality). User satisfaction could be a key factor for continuance use of learning mismanagement systems. Limayem & Cheung (2008) indicated that the usage level as well as user satisfaction should be managed and enhanced for sustainable IS usage. Moreover, Ozkan & Koseler (2009) identified four dimensions that have effects on learners' satisfaction namely learner attitudes, instructor quality, system quality, and information quality. Furthermore, Sun et al (2008) defined six dimensions for e-learner satisfaction as follows: learner dimension, instructor dimension, course dimension, technology dimension, technology dimension, design dimension, and environmental dimension. Based on the results of a review of the existing e-learning systems adoption literature, a new model to examine the continuous intention to use e-learning systems has developed as shown in Figure 1. The arrows in research model represent the research presumed hypotheses that need to be tested empirically.

3. Research Method

Nine constructs of the proposed research model were adopted from existing literature and refined based on the specific topic of this study. The recommended minimum acceptable limit of reliability "alpha" for exploratory study is 0.60 (Hair et al., 2003). The results of α – values for all the research constructs [system quality, information quality, Service quality, internal efficiency, intrinsic, perceived usefulness, user satisfaction and continuous intention to use e-learning system] were above the recommended one. Data for this study was collected using a questionnaire which is distributed to students who enrolled in Web-based courses offered by Petra University (PU) in Jordan. Petra University (PU) is established in 1991 and located in Amman – Jordan. Petra University is a modern and growing private institution of higher education located in Amman, Jordan. The university was established in 1991. The university has five faculties and adopted electronic learning management system three years ago. Particularly, Blackboard is adopted as a main learning management system in the university. Blackboard is a Virtual Learning Environment (VLE) that supports online learning and teaching. It can be accessed by registered users from anywhere in the world using the Internet and web browsers.
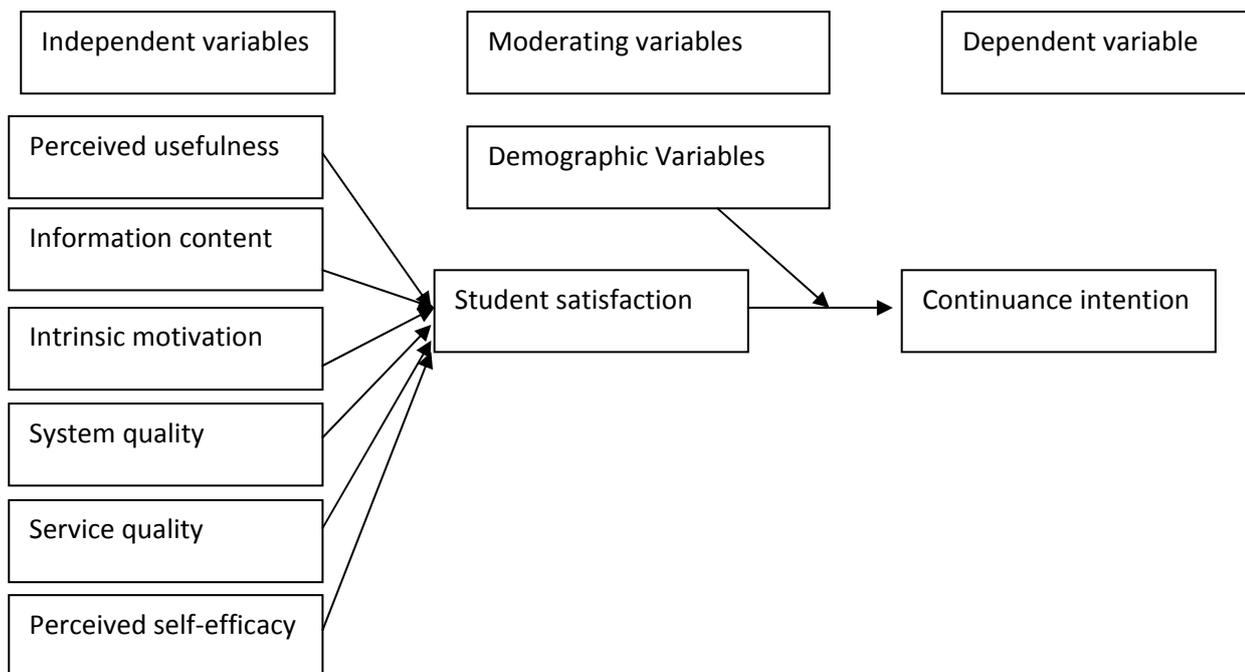
Fig. 1: Proposed Research Model for Continuous Intention to Use E-learning Systems

4. Descriptive Analysis

The research sample consisted of 118 males (63.4%) while the rest (68) were females (36.6%). Also less than (6%) of respondent have less than (1) year of experience in using computer while the majority of respondents (33%) have between (7) and (9) years of experience in using computer machine. A little less than (83%) of them have four or more years of using computer, this suggesting that they are able to use e-learning systems perhaps without difficulties. Interestingly, a significant number of respondents have (4) years and more of using internet, suggesting that our respondent aware of e-learning system services. The respondents also have a reasonable experience in using internet, nearly half (47.8%) of respondents have between 4 and 6 years of experience in using internet. This indicates that the research sample has enough experience in using internet which is necessary to use e-learning systems. The respondents' distributed in using e-learning systems as follows: the majority of respondents 36% have less than one our daily of using e-learning systems while 31.5% of respondents have less than one hour a week. This indicates that our respondents do not use the e-learning systems frequently.

5. Hypotheses Testing

The correlation analysis was used to examine the strength of the relationships between independent variables: system quality, information quality, service quality, internet-self efficacy, intrinsic, perceived usefulness, and user satisfaction. The results of correlation analysis shows that the relationships between system quality, information quality, service quality, internet-self efficacy, intrinsic, perceived usefulness, and user satisfaction are significant on .01 level of significant (P-Value=.000 < .01).Thus, further analysis becomes possible to examine the amount of variance in the dependent variables that can be explained by independent variables. Multiple regression test was carried out to test if system quality, information quality, service quality, internet-self efficacy, intrinsic, and perceived usefulness are good predictors of continuance intention to use e-learning system. The results show that system quality, information quality, service quality, internet-self efficacy, intrinsic, and perceived usefulness are able to explain nearly 73% (R=0.728 P< 0.000) from the variance in user satisfaction. Thus, we reject the null hypotheses that assumed that there are no significant relationships between system quality, information quality, service quality, internet-self efficacy, intrinsic, perceived usefulness, and user satisfaction and we accept the

alternative hypotheses. In addition, the multiple regression test was carried out to test if system quality, information quality, service quality, internet-self efficacy, intrinsic, perceived usefulness, and user satisfaction are good predictors of continuance intention to use.

The results show that system quality, information quality, service quality, internet-self efficacy, intrinsic, perceived usefulness, and user satisfaction are able to explain nearly 70% (R=0.692 P< 0.000) from the variance in continuous intention to use e-learning system. Moreover, the results show that the most significant variables that explain the variance in continuance intention are intrinsic (β=0.232, p<0.05) and perceived usefulness (β=0.452, p<0.05). The One-Way ANOVA test was carried out to analyze if there are any differences in the relationship between system quality, information quality, service quality, internet-self-efficacy, perceived usefulness, intrinsic, users satisfaction, and continuous intention to use e-learning systems can be attributed to the demographic variables (Age, Gender, Level of education, Internet experience, and computer experience). The results show that the relationship between independent variables and continuous intention to use e-learning system differs by the existence of computer experience and time of using internet (F= 3.187, with P –value= .015) and (F= 3.479, with P- value= .009, P < .05). Thus, we accept the null hypothesis that stated there are no differences in the relationship between system quality and continuous intention to use e-learning systems can be attributed to demographic variables while we reject null hypothesis that stated there is no difference in the relationship between internet self-efficacy and continuous intention to use e-learning systems can be attributed to computer experience and accept the alternative hypothesis. From the above data analysis a decision can be made toward accepting or rejecting the research hypothesis.

6. Conclusions and Recommendations

The research results show that our respondents are satisfied with the available e-learning system and are going to continue using the current system. The results also shows that there is a relationship between the system quality, information quality, service quality, perceived usefulness, intrinsic, perceived internet self-efficacy, and users' satisfaction. The results describe that to increase users satisfaction with e-learning system university has to maintain high level of system quality, information quality, service quality, perceived usefulness, intrinsic, and internet-self efficacy. In addition, there is a relationship between system quality, information quality, service quality, perceived usefulness, intrinsic, users' satisfaction, and continuous intention to use e-learning systems. Thus, in order to ensure continuous intention to use e-learning system, university has to ensure the e-learning system offers significant incentives to users that directly affect their level of satisfaction. This is not consistent with some previous research (Roca et al, 2006) which found that perceived usefulness has the most significant effect on continuous intention to use e-learning systems and this may be because of students' culture in the university. Furthermore, the results provide some insight into the moderating effect of intrinsic and internet self-efficacy on users satisfaction if some demographic variables existed.

This study like other cross sectional studies is not free of limitations. The limitations should be seen a new opportunities for future research rather than deficiencies. Future research can apply the same research model in other context to proof the validity of the research model a cross context. Future research can borrow the research model and apply longitudinal study to heal the cross section study problems. Future research can test if the research model is applicable on instructors who have to use e-learning system in universities. Based on the research results and limitations, practical recommendations can be provide as follows: 1- universities have to give more attention to the system quality, information quality, service quality, perceived usefulness, internet self-efficacy to ensure users satisfaction which is a prerequisite to continuous intention to use e-learning systems; 2- university should held more training courses to students on how to benefit from e-learning systems to ensure high level of usage. 3- Universities have to provide some incentives for students

to encourage them to use e-learning system. 4- Universities have to use e-learning system as a complement tool of learning to guarantee a complete set of user satisfaction.

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