

Students' Perceptions of E-Learning at the University of Jordan

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Tamara Almarabeh

The University Of Jordan, Amman, Jordan

Abstract—E-learning occupies a high place in universities and academic institutes and it is given the priority by the departments in these educational institutions. What we are witnessing today of the development of information technology and communications, networks, and multimedia is pushing us in the direction of the adoption of E-learning in education. The purpose of this study is to examine students' perception of E-learning at the University of Jordan based on Technology Acceptance Model. The results of the study show that the students are highly qualified and accepting the E-learning system with the desire to use it in more advanced manner.

Index Terms—E-learning, Jordan, Technology Acceptance Model, Perceived usefulness, Perceived ease of use.

I. INTRODUCTION

The traditional teaching process changed after adopting the development of Information, multimedia technology, and using the internet as a new way of teaching [1]. Also the learning environment and scenarios changed by using electronic media such as internet, audio, videoconferencing, interactive TV and satellite as medium to conduct E-learning [2].

The development of the educational process in all countries of the world is a prominent goal and a large strive which can be achieved through development of policies, continuous programs, and substantial investments to improve the quality of education. The information and communication technology revolution is one of the largest promising catalysts for developing countries to promote their educational systems and access to the ranks of developed countries in education. It is argued that the achieved outcomes from the traditional education and training programs are quite often far from ideal [3], so the institutions have to find a new way of learning and developing a new system to manage the flow of knowledge [4].

E-learning has been defined according to the contexts and environments where it operates [5]. Multiple definitions of E-learning introduced in this paper. One of these definitions, is the use of Information and Communication Technology e.g. Internet, Computer, Mobile phone, Learning Management System (LMS), Televisions, Radios and others to enhance teaching and learning activities. Other researchers [6] defined E-learning is a unifying term used to describe the fields of online learning, web-based training and technology delivered instructions. Jenkins and Hanson indicated that E-learning facilitated and supported the learning process through information and communication technologies (ICTs) [7]. Maslin [8] used simple terms to define E-learning in "when we use infor-

mation and communication technologies (ICTs) for knowledge seeking or delivering we refer this method as E-learning".

There is a substantial growth in the use of E-learning platforms in higher education from universities around the world [9]. But, within the Middle East educational system, the E-learning system is still in its infancy phases [10].

Usually, new systems fail because the end users do not accept to use. Either because they do not see any benefits from using these systems or they see these systems too complex which cause a lot of troubles for them. E-learning system is one of these new systems that can be accepted or rejected by end users. According to Ozkan and Koseler [11], E-learning systems are multidisciplinary, where the success of E-learning depends on two factors:

- Technological factor, i.e. software and hardware that are used to build E-learning system.
- Human factor, i.e. students and instructors.

In this research paper, the researcher used TAM model to measure the student's acceptance of MOODLE as E-learning system in the University of Jordan. This paper is organized as follows: section II, E-learning in Jordan, section III, theoretical framework, section IV the research methodology with hypotheses and measures, Discussion and analysis in section V. Finally, the conclusion and future work in section VI.

II. E-LEARNING IN JORDAN

The objective of E-learning is to embed technology integration through the creation of 21st century learning environments where traditional assessment criteria and expectations are exceeded, where the learning is the key point of any strategic plan. To make this real; the technology must be available at all times and functional to support all educational objectives [12]. The demand for E-learning in Jordan is expected to rise in the next few years [13]. Large expenditure and substantial effort has been made by the Ministry of Education in Jordan to successfully implement E-learning developments in schools [14]. While the higher education system has rapidly expanded, it has not yet produced a sufficient qualitative leap [15]. Reflecting the world's University sector moving forward with E-learning, Jordanians higher education institutions are responding accordingly. E-learning offers alternative approaches to Jordanian traditional higher education institutions, encouraging them to re-evaluate the way they operate. In doing so, it provides potential to accommodate new information and communication technologies to enhance the student learning experience [13]. The Ministry

of Higher Education and Scientific Research (MoHESR) has formed an E-learning steering committee to draft a national E-learning strategy with a mission: "To support institutions of higher education in their move towards embedding eLearning appropriately using technology to transform education into a learner centric system that is internationally distinguished in its quality and impact, to foster innovation and excellence in teaching and learning, and to support employability of lifelong learning".

E-learning was first introduced in Jordan by the Arab Open University (AOU) [16]. The Arab Open University (AOU) - Jordan Branch (<http://www.aou.edu.jo>) was established in 2002. The E-learning system adopted by this university is blended E-learning not distance. This university uses technical media, including printed materials, radio and television broadcasts, video and audio cassettes and CDROMs, computer-based learning and multimedia labs and telecommunications. AOU uses Learning Management System (LMS) to manage and provide the learning teaching activities. The university is using MOODLE as E-learning system for online exams, student authentication to its grades, teacher authentication to its contents (such as module description, student's names, and student's grades), E-salaries, E-attendance, latest news about the courses.

The University of Jordan established in 1962. It has 19 faculties 2 deanships and 15 centers in the main campus in Amman in addition to 5 faculties in Aqaba branch. The University of Jordan (UJ) (<http://www.ju.edu.jo>) was using Blackboard as E-learning platform to provide better service to students and teachers, to facilitate accessing the required material from anywhere, and to facilitate the communication between them. Blackboard has been used in UJ mainly to design a well formed virtual learning environment (VLE) which facilitates the interaction among all parties in the teaching process, students and teachers. From the academic year 2012/2013 the UJ is starting to use MOODLE instead of Blackboard as a main learning management system LMS, but the using still in the beginning, for example: the teacher can upload the module description, assignments, latest news about the courses. The students can check these announcements, download the assignments. The LMS can be accessed by registered users from anywhere in the world using Internet and web browsers. The web-based communication tools have given the online education a new edge [17]. A study [18] reviewed the status of E-learning in Jordan in SWOT model showed that Jordan has sufficient awareness of the importance of E-learning, the factors that help in the success and the challenges of such project and explained that the implementation process is gradual and needs patience, encouragement, and continuous technical support.

III. THEORETICAL FRAMEWORK

There are many theories of technology acceptance used to appreciate the perceptions of students. One of such models is developed by Davis (1989) called the Technology Acceptance Model (TAM) as shown in Fig. 1. As indicated in many researches [19], [20]. TAM was built based on Theory of Reasoned Action (TRA) upon Fishbein and Ajzen's (1975) which posits that beliefs could influence attitudes (feelings of favorableness or unfavorableness towards using the technology), which lead to intention to use (indicates the strength on one's intentions to use the technology in the future), and finally actu-

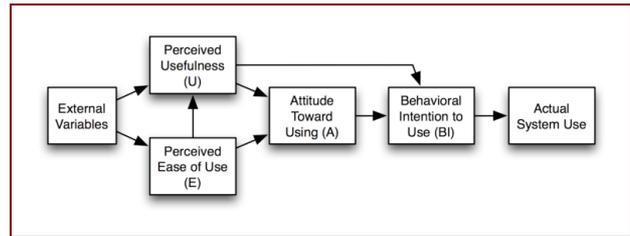


Figure 1. Original Technology Acceptance Model (TAM)

al usage behavior. TAM describes that a person's behavioral intention to use E-learning is determined by perceived usefulness and perceived ease of use [21]. The Technology Acceptance Model (TAM) has been widely used in explaining IT adoption and usage.

TAM has been applied in various studies for testing user acceptance of information technology, for example, word processors, spreadsheet applications, e-mail, web browser, telemedicine, and blackboard [22]-[27]. In this study, the MOODLE is considered an E-learning system that makes use of Internet and web technology to deliver information to and interact with the students through a computer interface.

The TAM model suggests that when users are presented with a new technology, a number of factors influence their decision about how and when they will use it, notably [28]:

- Perceived usefulness (PU) - This was defined by Fred Davis as "the degree to which a person believes that using a particular system would enhance his or her job performance".
- Perceived ease-of-use (PEOU) - Davis defined this as "the degree to which a person believes that using a particular system would be free from effort".

The research hypotheses based on TAM model of E-learning system are:

- H1: Perceived ease of use has a significant influence on the university of Jordan students' perceived usefulness.
- H2: Perceived ease of use has a significant influence on the university of Jordan students' attitude towards using.
- H3: Perceived usefulness has a significant influence on the university of Jordan students' attitude towards using.
- H4: Perceived usefulness has a significant influence on the university of Jordan students' behavioral intention to use.
- H5: Attitude towards using has a significant influence on the university of Jordan students' behavioral intention to use.

IV. RESEARCH METHODOLOGY

A. Sample

The data in this study was gathered via survey distributed to 180 students from different faculties (medical, scientific, and humanitarian) registered in 2 courses, Remedial Computer Skills and Computer Skills for Humanities, in the fall semester 2013/2014 at the University of Jordan. The questions divided in 2 groups, the first group contains 3 questions including the student's age, academic year,

and the faculty. The second group contains 16 questions divided to 4 questions for PEOU, 4 questions for PU, 3 questions for ATU and 5 questions for ITU. The second group questions used a 5-point Likert scale (strongly agree, agree, neutral, disagree, and strongly disagree) to measure students' response. These questions are adopted from previous information system research [8], [29] - [31]. Fig. 2 shows the research model employed in this study. It is a reduced TAM model, excluding actual system use.

B. Measures

Measurement validity in terms of reliability and construct validity was evaluated. The reliability analysis measured the internal validity and consistency of questions used for each construct by calculating Cronbach's alpha coefficient [32]. Flynn et al. [33] argued that a Cronbach's alpha of 0.6 and above was considered an effective reliability for judging a scale. The generally agreed lower limit for Cronbach's alpha may decrease to 0.60 in exploratory research [34]. In the survey used in this study, the Cronbach's alpha was higher than 0.6 as shown in Table I which implies that the instrument is reliable.

To examine construct validity of measures, a factor analysis was adopted in this study. Four factors were requested, based on the fact that the questions were designed to index four constructs: perceived ease of use (PEOU), perceived usefulness (PU), and attitude toward using (ATU) and intention to use (ITU). All factor loadings were above 0.5, showing good convergent validity [35] as shown in Table II.

The results revealed the test was an established instrument with high reliability and validity scores.

V. DISCUSSION AND RESULTS

The research model shown in Fig. 2 was tested using Minitab Software. In testing the hypotheses the researcher used a regression analyses based on 180 completed surveys collected for this study. Using a hypothesis approach, all the hypotheses are supported as shown in Table III and Table IV.

In linear regression matrix there are five parameters, R^2 (the coefficient of the correlation or the relation) which shows the strength and direction of the relationship. P-Value indicates the significant of the relationship, P must always equal or less than 0.05 for the relationship to be significant. Beta, β which is another parameter in linear regression shows the slope and the direction of the relationship, standard error of β indicates the percentage of error that can happen. The smaller the standard error of β the less likely error can happen while t statistics is the coefficient divided by its error.

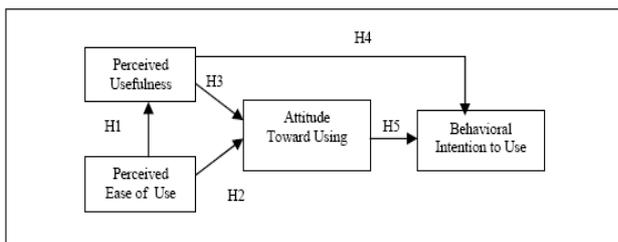


Figure 2. The research model

TABLE I.
CRONBACH'S ALPHA

Item	Number of Items	Cronbach's Alpha
Perceived Ease of Use	4	0.807
Perceived Usefulness	4	0.700
Attitudes Toward Usage	3	0.806
Intension To Use	5	0.673
Total	16	0.840

TABLE II.
FACTOR ANALYSIS

Item	Factor 1	Factor 2	Factor 3	Factor 4
PEOU1	0.838			
PEOU2	0.824			
PEOU3	0.764			
PEOU4	0.764			
PU1		0.682		
PU2		0.731		
PU3		0.722		
PU4		0.812		
ATU1			0.811	
ATU2			0.860	
ATU3			0.855	
ITU1				0.740
ITU2				0.766
ITU3				0.779
ITU4				0.589
ITU5				0.540

Factor 1: Perceived Ease of Use (PEOU), Factor 2: Perceived Usefulness (PU), Factor 3: Attitude towards Using (ATU), and Factor 4: Behavior Intention to Use (ITU)

TABLE III.
REGRESSION RESULTS FOR THE HYPOTHESES

Independent Variable	β	SE	T	P	R^2	Dependent Variable
perceived ease of use	0.462	0.06	7.37	0.000	0.23	perceived usefulness
perceived ease of use	0.283	0.06	5.00	0.000	0.12	attitude towards using
perceived usefulness	0.409	0.06	7.36	0.000	0.23	attitude towards using
perceived usefulness	0.302	0.09	3.40	0.001	0.06	behavioral intention to use
attitude towards using	0.645	0.10	6.66	0.000	0.20	behavioral intention to use

TABLE IV.
SUMMARY OF HYPOTHESES TESTING

Hypothesis	Relationship Tested	Results
H1	Perceived ease of use has a significant influence on the university of Jordan students' perceived usefulness.	Supported
H2	Perceived ease of use has a significant influence on the university of Jordan students' attitude towards using.	Supported
H3	Perceived usefulness has a significant influence on the university of Jordan students' attitude towards using.	Supported
H4	Perceived usefulness has a significant influence on the university of Jordan students' behavioral intention to use.	Supported
H5	Attitude towards using has a significant influence on the university of Jordan students' behavioral intention to use.	Supported

As you see in Table III and Table IV, the perceived usefulness (PU) and attitude towards using (ATU) are influenced by perceived ease of use (PEOU) ($R^2 = 0.23$, $\beta = 0.462$), ($R^2 = 0.12$, $\beta = 0.283$) same as in other studies [22], [36]. The perceived usefulness (PU) has a significant influence ($R^2 = 0.23$, $\beta = 0.409$) on the attitudes towards using (ATU) better than its influence on behavioral intention to use (ITU). This may be due to the fact that students are willing to adopt E-learning systems, while focusing on its benefits. Some researchers [37], [38] found that an attitude towards using (ATU) is a direct determinant of behavioral intention to use (ITU) and this is what the researcher found it in this study.

VI. CONCLUSION AND FUTURE WORK

This work indicated that TAM can be employed as a useful theoretical base to predict and understand users' intentions to use E-learning. The findings of this study demonstrate some interesting issues. First, the students of the University of Jordan are highly qualified to use E-learning system and have sufficient awareness of benefits of this system. Second, the results revealed that the perceived usefulness and perceived ease of use are factors that directly affect students' attitudes toward using E-learning system, whereas the perceived usefulness is the strongest and most significant determinant of students' attitude towards using.

The author suggests some recommendations for future work. First, the study didn't test a full TAM, where the actual technology use wasn't included in the research model, so the researcher will add the actual use to examine the whole TAM model. Second, the researcher will examine the TAM model with the teachers from the University of Jordan to get more comprehensive view of perception the E-learning system.

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PAPER
STUDENTS' PERCEPTIONS OF E-LEARNING AT THE UNIVERSITY OF JORDAN

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AUTHOR

Tamara Almarabeh received the master degree in computer science from the University of Jordan. Currently, is working as teacher with the Department of Computer Information Systems, The University of Jordan, Amman, CO 11942 Jordan (e-mail: t.almaraabeh@ju.edu.jo). Her research interests include E-business, E-government, and E-learning.

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