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Simple and Multiple Relationships among Perceived Ease of Use and Perceived Usefulness with E-Learning Acceptance in Universities' Instructors

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Abstract
Nowadays, fast technological development has increased society's dependence on information technology. One of the technology variants is the online learning, which is one of the challenges of a higher education's institutions. The purpose of this study was to examine simple and multiple relationships among *perceived ease of use* and *perceived usefulness* with E-learning acceptance. The methodology of this study was descriptive-correlation method and conducted at the University of Mohaghegh Ardabili during the fall semester of 2014-2015. The data were collected via a questionnaire with high level of reliability (Cronbach's alpha=.86) from 146 university instructors. The sampling method was proportional and randomized. The authors used correlation and regression to analyze the simple and multiple relationships between variables. The results revealed that the perceived usefulness (Beta =.210) for predicting E-learning acceptance was statistically significant, but for the Perceived ease of use (Beta = .013), it was not statistically significant. The study found that perceived usefulness had a positive effect on e-learning acceptance. Hence, perceived usefulness is an influential factor on instructors' intention and their actual use of the systems adoption. Furthermore, Perceived ease of use didn't show a significant relation on E-learning acceptance. Thus, further research could be directed to [study] this issue.

Keywords
Perceived Ease of Use, Perceived Usefulness, E-Learning

Introduction

Recently, with changes in student's demography, increasingly large classes and a growth in part-time study, many course developers and tutors are tutoring to online media for teaching and learning [1]. Therefore, Technology acceptance issue has been occupying a central location in the literature concerning educational technology. This is mainly related to growing interest in integrating technology into classroom settings in an attempt to foster learning as well as enhancing students' problem solving skills through utilizing technology. Towards this end, policy makers have set technology integration as the crucial part of educational reforms while beholding instructors as the major vehicles of this process who will carry technology into classrooms [2]. Instructors' level of technology acceptance, therefore, has been regarded as one of the major determinants of such agenda. As Martin [3] puts it, without instructors' acceptance of technology, it is almost impossible to develop educational technology projects. In the other hand, despite the emerging trend of using web-based learning systems to facilitate teaching and learning activities, the number of users of web-based learning systems is not increasing as fast as expected [4]. Russell, Bebell, O'Dwyer, and O'Connor [5] stated that instructor use of information technologies/systems was a complex and multidirectional issue. Additionally, Pituch and Lee (2006) argued that if users lacked the sufficient motivation and intention to use web-based learning systems, the unused systems would eventually become useless [6]. So, the user acceptance of a new information system, such as online learning, is considered the essential factor that determines the success or failure of this system [7].

E-learning and web-based learning systems

In order to support e-learning, different web-based learning systems have been developed for higher education. For instance, Web Course Tools (Web CT), the Web Course Homepage System (Web CH), Blackboard Learning System and the System for Multimedia Integrated Learning (Smile), are the latest technology-based pedagogical tools that use the Internet as a delivery mechanism. Many institutions of higher education adopt such Web-based learning systems for their e-learning courses [8]. E-Learning is defined as an Internet-enabled learning process (Ngai et al., 2007) or web-based learning which utilizes web-based communication, collaboration, multimedia, knowledge transfer, and training to support learners' active learning without the time and space barriers. In this definition, active learning is an instructional method that engages students in the learning process by requiring students to do meaningful learning activities [9]. A Web-Based Learning System (WBLS) or Virtual Learning Environment (VLE) is a web-based communications platform that allows students, without limitation of time and place, to access different learning tools, such as program information, course content, teacher assistance, discussion boards, document sharing systems, and learning resources [10].

Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) which intended by Davis, Bogozzi, and Warshaw in 1989 [11], addresses the issue of how users accept and use a technology [12]. Especially, this model is widely used by researchers and practitioners to predict and explain user acceptance of information technologies [13] and is an important tool in information technology research [14]. TAM was developed from TRA (see Fig. 1). With TAM, external variables are proposed to trace the impact of external factors on two main internal beliefs, perceived usefulness and perceived ease of use, where perceived ease of use directly affects perceived usefulness. These beliefs both influence user attitude toward using IS. Attitude toward using then affects behavioral intention to use, which is the key factor for determining actual conditions of system use. Note that belief of perceived usefulness also directly affects behavioral intention to use [15].

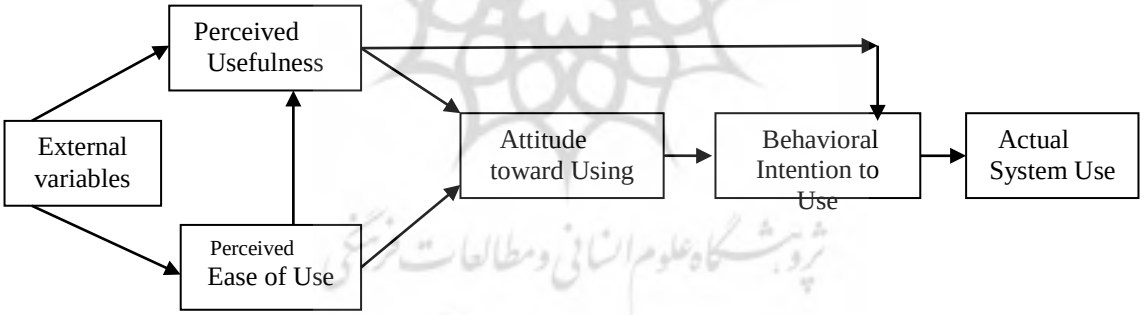

Figure 1. Structure of the TAM (Davis et al., 1989).

Perceived Ease of Use

Perceived ease of use, refers to "the degree to which a person believes that using a particular system would be free of effort. "This follows from the definition of "ease": "freedom from difficulty or great effort. "Effort is a finite resource that a person may allocate to the various activities for which he or she is responsible. All else being equal, we claim, an application perceived to be easier to use than another is more likely to be accepted by users [16].

Perceived Usefulness

Perceived usefulness is defined here as "the degree to which a person believes that using a particular system would enhance his or her job performance. "This follows from the definition of the word useful: "capable of being used advantageously within an organizational context, people are generally reinforced for good performance by raises, promotions, bonuses, and other rewards .A system high in perceived usefulness, in turn, is one for which a user believes in the existence of a positive use-performance relationship [16].

After these definition we aim to identify the relationships among factors that influence instructor adoption of web-based learning systems to help policymakers in higher education facilitate their use.

Hypothesis

The results of previous studies, alongside the literature review, were employed to develop the Following hypotheses:

H1: Perceived ease of use and Perceived usefulness has positive relationships with Instructor's acceptance of E-learning.

H2: Perceived ease of use and Perceived usefulness are predictors for E-learning acceptance.

Research Method

In this survey we aim to identify the simple and multiple relationships between perceived ease of use and perceived usefulness with instructor's acceptance of E-learning. To test the propositions, a field survey using questionnaires was conducted. The methodology applied in the study is based on the questionnaire approach. The data were collected via a questionnaire with a great level of reliability (Cronbach's alpha=.86). The study was descriptive-correlation method and conducted at the University of Mohaghegh Ardabili during fall semester of 2014-2015.

Population, Participants and Samples

The statistical population of this study included 230 university instructors of Mohaghegh Ardabili University.180 instructors were selected randomly according Krejcei-Morgan table. After collecting questionnaire 146 was ready for analyzing.

Instruments, Validity, and Reliability

In order to examine the relation between variables we use Wang and Wang (2009) questionnaire which was normalized by Motaghian and et al [17]. The questionnaire contains: Personal information, perceived usefulness, and perceived ease of use and technology acceptance. All of these have a number of questions constructed to measure these variables. To determine reliability of instrument, Cronbach alpha coefficient was calculated that was equal to 0.86.

Findings

Instructors' PU, PEU towards E- learning, were identified as the determinants of individuals' acceptance and usage of E- learning. Descriptive statistics were conducted to identify the status of these determinants between research participants. Table 1 summarizes the participants' scores based on their responses on the constructs of the questionnaire.

Table1.Descriptive statistic

	Mean	**Std.Deviation**	**N**
Perceived Ease of Use	22.7671	3.34878	146
Perceived usefulness	30.0753	6.27099	146
E-learning acceptance	20.5685	1.90791	146

Pearson's correlation was conducted to find out the relationships between the instructors' scores on the measures of PU, PEU and E-learning acceptance. Table 2 illustrates the correlations between them.

Table.2. Correlation between PEU, PU and E-learning acceptance

Variable	**PEU**	**PU**	**E-learning acceptance**
PEU	---	.248**	.065**
PU	.248**	---	.213**
E-learning acceptance	.065**	.213**	---

Note. ** $p < .01$. n= 146

Correlations presented in table 2 shows positive and significant relationships between all research variables, PEU and PU (r=.248, P<0.01), PEU and E-learning acceptance (r=.065, P<0.01) and PU and -learning acceptance (r=.213, P<0.01). Therefore the first hypothesis, "Perceived ease of use and Perceived usefulness has positive relationships with Instructor's acceptance of E-learning", was supported.

Standard multiple regression analysis was conducted to explore the PEU, PU on instructors' acceptance of E-learning. The dependent variable was E-learning acceptance, whereas the independent variables were PEU and PU. Table 3 depicts the results of multiple regressions.

Table.3 Results of multiple regression analyze

Model	S.S.	Df	M. S.	*F*	Sig.
Regression	24.061	2	12.030	3.415	.036
Residual	503.754	143	3.543		
Total	527.815	145			
	Coefficients				
Model	Unstandardized coefficients B	Std. Error	Standardized coefficients Beta	*t*	Sig.
Constant	18.478	1.182		15.630	.000
Perceived Ease Of use	.007	.048	.013	.155	.877
Perceived Usefulness	.064	.026	.210	2.489	.014
$R = .214$, $R^2 = .046$, Adj. $R^2 = .032$					

Predictors: (constant), Perceived Ease Of use, and Perceived Usefulness
Dependent Variable: E-learning acceptance

As can be seen from Table 3, $R = .214$, $R^2 = .046$, adjusted $R^2 = .032$ and F (2,145) = 3.415 were statistically significant ($p < .05$). So it can be concluded that, Perceived ease of use, and Perceived usefulness predict E-learning acceptance significantly. Therefore, the second hypothesis was supported too. In other words, about 5 percent of variance for E-learning acceptance could be explained via Perceived ease of use, and Perceived usefulness. Perceived usefulness (*Beta* = .210) for predicting e-learning acceptance was statistically significant. But the Perceived ease of use (*Beta* =.013) was not statistically significant. These results emphasized the findings of Wang and Wang (2009) and Motaghian and et al (2013) and therefore instructors' PU and PEU could be used as a predictor for their attitudes towards E- learning acceptance. However, based on the values of standardized coefficient β in table 3, PU has a stronger effect than PEU did. Therefore, instructors' PU could be used as a strong predictor for E- learning acceptance.

Discussion and Conclusion

The research was conducted to identify the simple and multiple relationships between perceived ease of use and perceived usefulness with E-learning acceptance. Based on the data that was collected from the research sample, it has seen that perceived usefulness had positive effect on e-learning acceptance. Therefore, perceived usefulness was the most important effective factor on instructors' intension to use web-based learning systems and actual use of the systems. Also, Perceived ease of use didn't show a significant relation on E-learning acceptance, but according Wang & Wang (2009) it was effective on instructors' intension to use the systems. Thus, it is necessary that managers and developers of e-learning help learners confirm or increase their perception positively through e-learning. One possible solution is to develop more user-friendly and user-oriented e-learning content. This kind of system will add new perception to the previous attitude and thus bring about more satisfaction. This satisfaction in turn encourages learners to optimistically make further use of e-learning.

Although this research revealed acceptable findings for simple and multiple relationships between predictors of E-learning acceptance, possible limitations should be mentioned: First, the research samples were just instructors of Mohaghegh Ardabili University, so the population was too small. Second, there wasn't sufficient experience in E-learning system in the university, yet. These limitations may make it difficult to generalization of the findings.

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