



Identifying Barriers of E-learning Implementation by M.Sc. Students in Agricultural Faculty of Islamic Azad University, Ilam Branch

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Abstract

Getting advanced in communication and information technologies and their impact on all aspects of human life, the world is experiencing a new phenomenon named information society. Therefore, e-learning is a necessity to develop the quality of learning in this kind of society. The purpose of this study was to identify the barriers of e-learning implementation by M.Sc. Students in agricultural faculty of Islamic Azad University, Ilam Branch. This research was applied and a descriptive survey method was used. The population of this study included 153 M.Sc. students in the agricultural faculty of Islamic Azad University (Ilam Branch) that were studied by census method. Instrument of data gathering was questionnaire that its content validity confirmed by an expert panel. The Cronbach's alpha coefficient was used to evaluate the reliability of the questionnaire and its value was equal to 0.96. Findings of factor analyses showed that the barriers of e-learning included five categories such as: infrastructure barriers, attitudinal barriers, technical, professional barriers, human barriers and educational-skill barriers that these barriers explained 52.53% of the total variance.

Keywords:

E-learning, Higher education, Barriers

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INTRODUCTION

The development of Information Technology (IT), in the last century, has brought about significant changes in many areas including learning and teaching (Jerry, 2000). Higher education has not been an exception (Cahill, 2008). Nowadays, with the rise of Information Technology (IT), new revolution has taken place in teaching and learning process and traditional methods of education like using paper, reading texts, and doing exercises can hardly attract the young people who live in the world full of media (Rezai, 2009). E-learning is an alternative way to improve traditional approaches of education. In e-learning the net technology is used to create, enrich, present and facilitate learning at anytime and anywhere (Abdon *et al.*, 2007). E-learning is based on three standards: 1) e-learning is a net which supply continuous updating, storage and distribution of information, 2) the text message is transferred to users via standard technology using computers, 3) e-learning is a complementary training tool which can be used as along with traditional educational methods (Czerniewicz and Brown, 2009).

Using e-learning along with classroom training means using internet technology to transfer information extensively which lead to increasing the knowledge and performance. The significant point in this method is that e-learning and classroom methods get synchronous and e-learning is considered as an effective and efficient tool. E-learning makes traditional border removed and combines the inside and outside university activities and introduces some models for improving the costs (Hanna, 2000). Technology transforms the modern educational structures through presenting new methods of watching and learning for the university students, transferring knowledge for professors and new methods of organizing educational systems for managers. Yet those universities could win in this age of information that changes their structure in order to mix the distance learning courses. Those institutes that don't or can't change their structures may be ignored by education programmers

The importance of e-learning in agriculture

higher education has been emphasized by experts: 1) the variety of learning methods allows the users choose their favorite method; 2) the fellows can accomplish their educational activities whenever and wherever they want (Broadbent, 2001); 3) students can choose their courses from different universities without considering the location and employed people can enjoy the education opportunities; 4) the communication increases between the fellows and they can cooperate on curriculums and researches (Murphy and Terr, 1998); 5) e-learning presents more various learning experiences for the students and the fellows of agriculture faculty enjoy more facilities on teaching (Wilson, 2006); 6) the fellows of agriculture faculty can transfer the information in a more charming way because this type of learning is a spectrum of texts, diagrams, audible and visual pictures (Broadbent, 2001; Zhang *et al.*, 2002); 7) e-learning increases the communication between the students and professors (Asmal, 2003). Cooperation between agriculture faculties will be increased and universities will have the chance to perform more services to society and people outside the university (Anstead *et al.*, 2004).

In Iran, the number of students is growing faster than the number of public and private universities or any other institutions of higher education. The web based learning is the solution to this problem. However, the current Iranian higher education system faces so many challenges that it is very difficult to achieve the effectiveness of web based learning (Fariborzi and Abubakar, 2011). The large youth population and growing demand for acquiring higher education in Iran (Araste *et al.*, 2009; Emadzade, 2009; Ghavidel *et al.*, 2012; Iran's National Education Report, 2006; Roushan, 2009) create a condition wherein replying to the need for e-learning is not only replying to an educational need but also to a social need. A lack of classrooms, the flexibility of time and place for education, access to multi-media resources, the ease of updating information, and the growing number of applicants for higher education are reasons to increase online access to education in Iran. Studies show that acceptance of e-learning for Iranian students

in comparison to traditional learning is advancing with high speed, especially in higher education (Rabiee *et al.*, 2013).

E-learning in spite of having an important role, is used very rarely in Islamic Azad university of Ilam due to numerous problems. The present study was conducted to identify the main barriers of e-learning implementation by M.Sc. students. So the main question of this research is that what are the barriers of using e-learning among M.Sc. students of Islamic Azad University of Ilam Branch?

E-learning was first coined by Cross and refers to any kind of learning which is mediated through the use of the Internet and an Intranet (Atashak, 2007). Examples of e-learning are web-based teaching, web-based learning, and Internet-based teaching and advanced learning (Khan, 2005; Yaghoobi *et al.*, 2008). Cooper (2004) defines e-learning as the set of training activities employing audio, visual, computer, and networking electronic devices. Mayer (2005) views e-learning as an active kind of learning which changes teaching and learning processes dramatically and plays a significant role in developing information and communications technology. In a more comprehensive definition, Murthy and Mathur (2008) define e-learning as incorporating all educational activities that are carried out by individuals or groups working online or offline and synchronously or asynchronously via networked or standalone computers and other electronic devices. More recently, Hamdi (2007) defines e-learning as using web technology for planning and delivering lessons and providing a learning environment for monitoring teaching and learning activities. Many advantages of e-learning have been put forward by a number of scholars. Pawlowski (2006), for instance, believes e-learning can help overcome geographical and individual limitations which are typical of traditional educational systems. In other words, by providing off-site educational opportunities, e-learning offers the possibility of flexibility to accommodate the many time-constraints imposed by personal responsibilities and commitments. Accordingly, learners can study wherever they have access to a computer and the Internet. They can join the discussions

in the bulletin board threaded discussion areas at any hour, or visit with classmates and instructors remotely in chat rooms. Such flexible access to information and resources has also been acknowledged by Naidu (2006); he appreciates distance learning for giving learners, who are generally adults in full or part-time employment, the opportunity to study at a time and place that is convenient. This way, distance education frees learners from the constraints of conventional residential, educational settings since they are not required to attend lectures in locations away from where they may be living and working.

Ali and Magalhaes (2008) indicated that the key implementation barriers in Kuwait are (1) lack of management support; (2) language barriers; (3) IT problems; and (4) workload and lack of time. Of these, two are common in western countries (technology and time). The remaining two (management support and language barriers) are specific to Kuwait. Regarding the comparison between the two implementation models, the key finding was that the usual e-learning development cycle (plan–design–integrate–improve) was not followed in Kuwait. The planning, designing and improving stages was largely ignored, with the emphasis resting almost completely on integrating the e-learning tools and processes in the rest of the organization. This finding was found to be in line with barrier number one – lack of management support.

Rabiee *et al.* (2013) have concluded that socio-cultural, structural, educational, economic, and legal factor were the most prominent obstacles to web technology use; findings of quantitative phase showed that socio-cultural factors are the most influential barriers to use of the internet in the e-learning.

Frazeen (2006) has explained the relationship and impact of some main factors? He has divided them to seven factors, including organizational, educational, educator, students, technology and educational designing factors. In his research about collaborative e-learning benefits motivating the students, Panitz (2008) stated that the employed students are less interested in classroom education. In his research entitled “the impact of e-learning in a multicultural circumstances”,

Gamble (2009) has studied an e-learning course held in China and United States of America and indicated that increasing the worldwide use of technology can link the countries more and can make intercultural e-learning inevitable. In their research, Mirza and Abdulkareem (2011), studied e-learning models in the Middle East and identified barriers of e-learning. Zhai *et al.*, (2012) studied a group of electrical engineers and announced that practical and laboratory education via distance learning is impossible. So for solving this problem, they studied the new educational system in which laboratory projects have been used through distance courses.

Farajollahi (2007) has concluded that the level of student satisfaction is not desirable. What meant by support services are educational, general, media, consulting, administrative and library services. Tamajian (2008) concluded that the students have the highest level of readiness for taking part in e-learning courses mentally, but they have the lowest level of being familiar with e-learning technology. Also, university professors have the highest level of enjoying the appropriate attitude toward e-learning and have the lowest level of enjoying appropriate attitude toward motivating factors. Mohammadi (2008) studied the skill and psychological barriers, access barriers, lack of proportion between method and content, encouraging-financial, organizational, legal and cultural barriers of e-learning.

Fathian and Poor-Ghahremani (2009) indicated that individual specification including individual innovations, computer stresses, individual experiences, social norms and interoperability have the highest role in accepting e-learning. Rezai (2009) has indicated that the most important barriers are infrastructure, executive-education, human and financial barriers. Farhadi (2004) has reported about e-learning method and the nature of virtual education and libraries as the foundation of an educational system which should be updated in consistent with changes and also he has written about performing new services proportional to needs of the time.

Jokar and Khasseh (2007) have studied the e-learning course, students of Shiraz University and concluded that the most e-learning students

use information sources and they have an average rate of use which differs among different ages and also between different university degrees. In other hand, their basic problem accessing the information was the absence of library with appropriate and related information. The most important reason that they didn't use these kinds of information sources was lack of time for extra reading. Mousavi *et al.* (2011) have indicated that data analysis has led to recognizing seven barriers, including the lack of proportion between method and content, lack of skill, attitude access, cultural, financial-encouraging, infrastructure, and barriers in association with modulation e-learning and traditional education.

The main goal of this research was to identify the barriers of e-learning implementation by M.S students in agricultural faculty of Islamic Azad University (Ilam Branch).

MATERIALS AND METHODS

The present research was applied and a descriptive survey method was used. The population of this study included 153 M.Sc. students in agricultural college of Islamic Azad University (Ilam Branch) that were studied by census method. Ilam Branch was located in Ilam province in west south of Iran country. This university has found as a branch of Islamic Azad University in 1999 and from the first of its formation, it has equipped with computer and low-speed internet (512kbps). Gradually IT infrastructure has improved so that now all classes are equipped with a slide projector and there are three computer workshops at this university. Now university Internet network is supported with two operators, one with 8 Mbps bandwidth and the other with 6 Mbps bandwidth. Also, this university is supported by a wireless internet network so that all classes have this network. All staff and faculty members in their office have a personal computer and internet access. Instrument of data gathering in this research was a questionnaire that developed by a literature review. The first section of the questionnaire was about individual characteristics. In second section respondents were asked to rate their viewpoints concerning about barriers of e-

learning implementation on a five-point-Likert type scale (1=very low, 2= low, 3= moderate, 4= high, 5=very high). Face and content validity of the questionnaire confirmed by an expert panel. Cronbach’s Alpha coefficient was used to evaluate the reliability of the questionnaire and its value was equal to 0.96. Data analysis was done by SPSS software. Descriptive statistical methods such as frequency, mean scores, standard deviation and coefficient of variation were used for analyzing date. Factor analysis with exploratory approach was used for categorizing barriers of e-learning

implementation.

RESULTS AND DISCUSSION

Individual and professional characteristics of respondents are shown in Table1. Findings showed that the youngest respondent was 24 years old and the oldest of them was 46 years old. The mean of age variable was 34.1 years. Other individual characteristic of responders is shown briefly in Table 1.

For categorizing barriers of e-learning implementation factor analysis was used. In order to test the appropriateness of data for factor analysis

Table 1: Some individual characteristic of responders

Variables	Group	Frequency	Percentage
Age	Oldest	46 year	-
	The youngest	24 year	-
Sex	Male	64	41.8
	Female	89	58.2
Residence	City	136	88.9
	Village	17	11.1
The level of computer skills	Under training	6	3.4
	Beginner	47	30.8
	Semi-skilled	91	59.6
	Skilled	9	5.5
Job	Student	77	50.3
	Employee	67	43.8
Access to computer	Self-employed	9	5.9
	Yes	152	99.3
Internet type (at home)	No	1	0.7
	Yes	125	81.7
Internet type (at office)	No	28	18.3
	Yes	83	54.2
Internet type (at public network)	No	70	45.8
	Yes	80	52.3
	No	73	47.7
Field of study	Agricultural management	56	36.3
	Agricultural extension and education	60	39.2
	Natural resources	37	24.5
Using computer software Excel	Yes	80	52.3
	No	73	47.7
Using computer software Power point	Yes	100	65.4
	No	53	34.6
Using computer software Word	Yes	139	90.8
	No	14	9.2

Table 2: The extracted factors, along with eigenvalues, variance percent and cumulative variance percent

Factor No	Eigen value	Variance percentage	Cumulative variance percentage
1	6.53	18.26	18.26
2	6.10	12.51	30.77
3	3.49	8.03	38.80
4	3.42	7.90	46.70
5	2.83	5.83	52.53

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Table3: variables loaded to each factor and the level of the factor loading extracted from a rotation matrix

Factor	Variable	Factor loadings
Infrastructure barriers	Lack of investment and required financial for using e-learning	0.672
	Lack of investment required in developing infrastructures for using e-learning	0.625
	No opportunity for Students to experience and explore	
	Lack of special budget attribution to faculties of agriculture	0.589
	The high cost of updating required blogs and preparing educational information technology equipments	0.574
	No access to common e-learning courses with valid foreign universities	0.539
	The lowest access to software equipments and computer programs	0.460
	Lack of suitable information disseminating in universities for developing e-learning	0.417
	Lack of visual electronic classrooms relating to educational contents	0.411
Attitudinal barriers	Lack of belief in e-learning being useful	0.408
	Low self-confidence and ability to take part in e-learning	0.639
	Not sharing the information and knowledge	0.627
	Lack of public readiness for starting e-learning courses	0.528
	Lack of change in e-learning and its teaching methods	0.500
	Lack of belief in individual interests and need variables in learning process	0.494
	Low access chances for all students to e-learning circumstances	0.470
	Lack of positive attitude toward e-learning certificates validity	0.462
	Not accepting e-learning as a substitute for traditional classes by students	0.445
	Lack of interest in e-learning among the students	0.440
	Instructors preferring to traditional classes instead of e-education	0.435
	Negative attitude of faculty member and unwillingness toward e-learning	0.435
	Lack of independence and autonomy promotion in education process	0.426
	Inability to recognize the benefits of using communications, information technology in different socio-cultural dimension	0.405
Technical-expertise barriers	Low quality of used software	0.402
	The e-learning low quality of curriculum's content	0.727
	The low quality of CD and DVD and tutorial packages and etc.	0.651
	Professors' lack of skill in e-learning planning	0.629
	Lack of coordination required between the presented content volume and teaching methods	0.608
	Lack of access to different and suitable curriculum materials in e-learning	0.577
	Not using consolidating traditional and online methods in educational different courses	0.533
	Lack of codifying a successful evaluation system in e-learning constantly	0.466
	Lack of coordination between curriculums and e-learning plans	0.457
Low level of e-education quality	0.435	
Human barriers	Lack of technical consultation on using the electronic education system	0.419
	Low level of commenting and answering among students	0.604
	No access to real individuals to solve the students' problems	0.577
	Lack of online responding personnel fast and accurately for students	0.561
	Lack of supporting the development of e-learning	0.534
	Lack of administrative support for keeping e-learning equipments	0.491
Educational-skill barriers	Lack of skill among managers of education area in using computer and internet	0.476
	Lack of planning the human resource to start and protect e-learning systems	0.708
	Lack of necessary education for students with educational technology	0.594
	Inadequate fellow members on new educational technologies	0.532
	Students unfamiliarity with the English language in order to use it in cyberspace	0.504
	Not presenting e-learning courses as a classroom teaching supplement for improving teaching quality	0.413

* Factor loadings of variables lower than 0.4 have deleted from the table.

KMO (0.714) and Bartlett test (2673.227, $p < 0.01$) than 1 (Table 2). Varimax method used for rotation of factors in this study. Factors after there were five factors with eigen-value more rotation named as follows: 1) infrastructure bar-

riers, 2) attitudinal barriers, 3) technical- professional barriers, 4) human barriers and 5) skills-education barriers (Table 3). According to Table 2, the first factor was called “infrastructure barriers”. This factor had the most eigen-value (6.531) among the other factors. Also, this factor explained 18.26% of the total variance by itself. In general, these five factors explain 52.53% of the total variance.

According to Table 3, 15 variables have been loaded to the infrastructural barriers. “lack of investment and required financial for using e-learning”, “lack of investment required in developing infrastructures for using e-learning”, “no opportunity for students to experience and explore”, “lack of special budget attribution to the faculties of agriculture”, and “high cost of updating required blogs and preparing educational information technology equipments” were the most important barriers in the above mentioned factors. Findings of Farhadi (2004), Jokar and Khasseh (2007), Rabiee *et al.* (2013) and Rezai (2009) confirms these results.

Attitudinal barriers explain 12.51% of the total variance of the variables. “lack of belief in e-learning being useful”, “low self-confidence and ability to take part in e-learning”, “Not sharing the information and knowledge”, “lack of public readiness for starting e-learning course”, and “lack of change in e-learning and its teaching methods” were the most important barriers in this factor. These results are consistent with findings of Mohammadi (2008), Mousavi *et al.* (2011), Panitz (2008), and Tammaajiaan (2008).

The third factor that was called technical-expertise barriers explain 8.03% of the total variance. “Low quality of used software”, “the e-learning low quality of curriculum’s content”, “and the low quality of CD and DVD and tutorial packages and etc.” and “professors’ lack of skill in e-learning planning” were the most important barriers in this factor. The findings of Afyooni *et al.* (2013), Frazeeen (2006), Ghadah and Rodrigo (2008) and Soltani (2004) confirm these results.

The fourth factor that was called human barriers explain 7.90% of the total variance. “lack of technical consultation on electronic

education system”, low level of commenting and answering by students”, and “no access to real individuals to solve their problems” were the most important barriers in this factor. These results are consistent with Frazeeen (2006) and Rezai (2007).

Educational-skill barriers with 5.83% variance percent have been identified as the fifth factor of e-learning barriers. “lack of skill among managers of education area in using computer”, “lack of human resource planning to start and protect e-learning systems” and “lack of necessary education for students on educational technology” were the most important variables which were loaded to this factor. The findings of Fathian and Poor-gharemaani (2009), Frazeeen (2006), Jokar and Khasseh (2007), Miladi and Malek-Mohammadi (2010) and Rabiee *et al.* (2013) confirm these results.

RECOMMENDATIONS

According to the research results, infrastructure factor is identified as the most important barriers of e-learning implementation among the students so it is recommended that the supply of required credits for preparing facilities and tools relating to e-learning in university, including hardware and software, improving e-learning infrastructure, the development of telecommunications infrastructures and access to local information network can be performed in the faculty of agriculture. Private sector potentials and facilities can be used for improving infrastructure in the faculty of agriculture.

Also, according to research results, attitudinal barrier is identified as an e-learning barrier among students and its most important items are lack of belief in e-learning being useful and low self-confidence and ability to take part in e-learning courses. So encouraging, motivating and student’s satisfaction of e-learning education can improve their attitude to e-learning as a useful educational supplement tool and can increase their willingness to learn as well. In this regard, holding training courses for students to get familiar with e-learning is suggested in order to improve student’s attitude toward e-learning and to increase the quality of e-learning.

For better results, combining e-learning and traditional learning is suggested. Also, it is recommended to provide necessary legal arrangement for conforming the certificates of those students who have passed e-learning courses successfully so that they can trust e-learning more. Also encouraging students toward collaborative learning and bilateral communication can change their attitude toward e-learning.

According to research results, technical-expert factor is one of the barriers of e-learning among students and its most important items are low quality of used software and low quality of educational packages and tutorial CDs and DVDs. In this regard, needs assessment and suitable organizing the educational materials is recommended. Content designing should be proportional to abilities, user's previous learning experiences and learners need and it should be designed in a way that learners and teachers can measure their level of learning. This depends on technical and expert education for custodians of faculty of agriculture. To accomplish this, employing a technology expert along with other experts is recommended.

According to research results, the human factor is one of the problematic factors in e-learning among students, and its most important items or lack of technical consultation on using the electronic education system and low level of commenting and answering among students. In this regard, investing in employing the skilled, capable workforce interested in e-learning is recommended. Proper planning to empower the universities and organizations that have the custody of agriculture education to use information and communication technology in teaching and e-learning is recommended as well. To form a specialized team consisting of computer and e-learning experts for giving advice to students while using the systems is suggested.

According to research findings, educational-skill barriers one of the problematic factors in e-learning among students and its most important items are lack of skill among managers of education area in using computer and internet and lack of training the human resource to start and protect e-learning systems. So training the skilled

workforce of e-learning, necessary planning and investment in training and promoting digital literacy of education managers and fellows and students is recommended. Making the necessary changes in the classroom in order to present more flexible education, reforming and restructuring education centers (restructuring goals, content and methods) according to learners need is also suggested.

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