

Identifying Factors Influencing the Application of E-learning Technology by Agricultural Extension and Education Students of Razi University

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Abstract

The major purpose of this research was to examine the feasibility of applying the E-learning for agricultural extension and education students at the Razi University of Kermanshah. Target population included 250 master students majoring agricultural extension and education. The main instrument for data collectin was a questinnaure(portocol). A questionnaire was developed to collect data and its content and face validity of the instrument were measured by the faculty members of agricultural extension and education department at Islamic Azad University, Science and Research Branch. A Cronbach's alpha reliability coefficient of 85% was achieved for the instrument. Based on the result, Infrastructural factors, educational factors and technical factors were found significant determinants for the application of e-learning technology by students. In other words, students' application of e-learning technology can be influenced to a high extent by physical and educational resources such as infrastructure, accessing the amount of web-based resources and also, networking and sharing information to provide problem solving skills for students.

Keywords: *E-learning, Application, Agriculture, Iran, Razi University*

1. Introduction

Knowledge management (KM) can be described as an effort to capture factually explicit information, information and tacit knowledge, or information stemming from employees that will help the organization to achieve its goals (Becerra-Fernandez & Sabherwal, 2010). Jennex (2005) defines KM as a process for selecting knowledge based on past decisions in order to assist in the decision-making process and thus improve the organization's effectiveness.

Over the last decades global information society is emerged. Accelerating information flow, communication and the rapid development of technology is provided a new phenomenon that named Information and Communication Technologies (ICT) (Koutsouris,2010).It affect different fields such as medicine, education, agriculture and business and provided competitive, social and political opportunities for users(Usuel *et al.*,2008) and also note the persistence of the so-called „digital divide“ (UN, 2006). It is readily accepted that increased information flow has a positive effect on the agricultural sector (Adamides *et al.*, 2013). Investment in education plays a significant role in the process of socio - economic development of communities and there is a direct correlation between enhancing human capital and improving overall development in a country (Office of Rural and Nomadic Women, 2001, quoting Yaghobi, 2008).



Higher education achieved an international recognition due to globalization. By globalization, rapid technological changes became important in the process of education-training in higher education. The rapid technological transformation in the university systems has brought about new expectations (Yilmaz et al, 2010). However, collecting and disseminating information is often difficult and costly. Information technologies (IT) offer the ability to increase the amount of information provided to all participants in the agricultural sector and to decrease the cost of disseminating the information (Cragg, 1996).

Traditional methods of teaching have not fulfilled the expectation and educational institutions have developed new and flexible methods in order to cover a large portion of society (Yaghobi, 2008). On-line's learning as new forms of learning have attracted attentions in the world (Haddad & Draxler, 2002). Information and knowledge through communication technologies are found in e-learning and information-based technologies. Majority of factors affecting development of ICTs in higher education are different. Physical factors include Internet connectivity, electrical power, and infrastructure can affect the implementation of successful e-learning programs. These environmental and technical problems are often a common cause of the frailty of technologies in schools (Olson et al, 2011). Negative attitudes toward computers become a main barrier in application of e-learning initiatives in educational sector (Irvin, 2003; Hairston, 2007). Researchers and policymaker have encouraged higher educational institution to look for e-learning to improve and increase efficiency of the educational system (Bates, 1995; Dasher-Aleston & Patton, 1998; Trower; Austin & Sorcinelli, 2002; Chail, 2008).

Higher education must confront these changes and capitalize on emerging possibilities that allow for new types of learning engagement that is free from time and space limitation in order to create a compelling vision for its future in the next millennium (Duderstadt, 2001; Cahill, 2008).

Considering the importance of e-learning to address issue and problems in public education systems, but according to e-learning components and decent is not enough and its dimensions remains unknown. Development in the field of information and communications technologies had a significant effect on various aspects of human life so far led to the emergence of a new type of learning called e-learning. E-learning as a new paradigm, has been able to respond to large volumes of demand for education (Farhadi, 2005). Kulik (2003) founded that e-learning had direct impact on the learning achievement of students.

The use of e-learning offers the learner many opportunities to control and make decisions on his own, anytime or anywhere, affording a much more flexible training schedule (Hairston, 2007). As the world becomes more globally connected and the use of technology increases, it is inevitable that e-learning must be done in an intercultural training context (Gamble, 2009). The major purpose of this study was to determine the feasibility of e-learning application among agricultural extension and education students in Razi University of Iran.

2. Materials and Methods

This is applied type research and descriptive/correlative method was used. The random sampling method was used to provide context for generalizing data. The target population for this research was students who participated in e-learning courses were held by Razi University in 2005-2007 (n=250). The reliability was measured by using Cronbach Alfa and it was calculated to be 85%. A questionnaire based on Likert scale was designed to collect data. Content and face validity of the instrument were measured by the faculty members of agricultural extension and education department of Islamic Azad University, Science and Research branch. The data was analyzed by using Spearman correlation coefficient and multiple regressions.

Infrastructural factors as an independent variable consisted 10 items was measured by Likert scale (from 1: Very Little, 5=Very Much). Technical factors as the second independent variable included 7 items was measured by using the Likert scale (from 1: Very Little, 5=Very Much). Educational factors included 7 items was measured and using the Likert scale (1=Very Little, 5=Very Much). Students' attitudes about e-learning as an independent variable was measured by using the Likert scale (1=the least important, 5=the most important) that included 8 items. Dependent variable was measured by 10 items about students' application and capabilities of e-learning technology and using the Likert scale (1=Very Little, 5=Very Much).

The analyses statistically it is justified to use the analytical methods and tests for semi quantitative variables as similar to quantitative variables. Also the different correlation analyses along with the multiple regression with stepwise method were used for each variable couples depending on the type of data (Kalantari, 2012). Content and face validity were conducted by panels of development communication and agricultural experts who supplied some structuring revisions on the instrument. A pretest was conducted on 30 agricultural students of other universities to determine the reliability of the questionnaire. The data was analyzed by SpssWin16 software.

3. Results

3-1-Descriptive data:

The results of the study show that 30 percent of respondents were employed while 70 percent were unemployed. Majority of the respondent were 20 years old. It should be noted that 42 percent of respondents were male and 58 percent of respondents were female. Also 36.8 percent of respondents participated in e-learning courses. Table 1 presents the descriptive statistics of students' application and capabilities of e-learning technology. The highest mean refers to their ability to use e- mail list (M=3.63) and the lowest mean was to their ability in participate in internet discussion (M=2.37).

Table 1:
Descriptive statistics of students' application and capabilities of e-learning technology (1=Very Little, 5=Very Much)

Rank	Items	Standard Deviation	Mean
1	Email list	1.18	3.63
2	Send e-mail	1.23	3.56
3	General information from the Internet	1.25	3.48
4	attach the file to the e-mail	1.29	3.28
5	Finding Special Information from the community sites	1.16	3.22
6	Finding information from different search engines	1.30	3.13
7	Web chat	1.22	2.89
8	Create Web Site	1.35	2.59
9	Newsgroups	1.25	2.55
10	Internet discussion	1.19	2.37

Table 2 shows descriptive statistics about the infrastructural factors that affect the application of e-learning technology. The highest mean refers to availability of IT equipment (M =3.65) and lowest mean refers to National preparedness for set up virtual courses (M =3.49).

Table 2:
Descriptive statistics of the infrastructural factors that affect the application of e-learning technology (1=Very Little, 5=Very Much)

Rank	Items	Standard Deviation	Mean
1	Availability of IT equipment	1.23	3.65
2	Using appropriate software	1.26	3.61
3	Availability of sufficient resources for learning courses via the web	1.07	3.60
3	User access to IT equipment in proper time and place	1.15	3.60
4	Providing ICT infrastructure	1.18	3.60
5	Learners access to high speed internet	1.20	3.59
6	Designing Site and web pages and updating information	1.23	3.57
7	Provide a learning package to suit the bandwidth and Speed of the Internet	1.18	3.56
8	Evaluation of the effectiveness of learning programs	1.08	3.54
9	Planning for learning courses	1.21	3.54
10	National preparedness for set up virtual courses	1.33	3.49

Table 3 shows the descriptive statistics of the technical factors that affect the application of e- learning. The highest mean refers to technical supports (M =3.70) and lowest mean refers to reliability of related technology (M =3.47).



Table 3:
Descriptive statistics of the technical factors that affect the application of e-learning technology (1=Very Little, 5=Very Much)

Rank	Items	Standard Deviation	Mean
1	Technical support from the faculty members during the period of learning	0.99	3.70
2	Maintenance of electronic system	1.11	3.69
3	Data and information management of students	1.22	3.60
4	Presentation technical advices to students regarding the application of electronic system	1.18	3.58
5	Helping to solve problems regarding the correct application of technology	1.14	3.57
6	Technical expertise of teacher to conduct web-based courses	1.12	3.49
7	Reliability and validity of the technology in terms of functions	1.19	3.47

The perception of respondents about role of educational factors in application of e-learning was displayed in table 4. The results imply that easy access to training methods was considered as the most important factor (M =3.84) and the lowest mean was appropriate organizers for educational methods (M =3.56).

Table 4:
Descriptive statistics of the educational factors that affect the application of e-learning technology (1=Very Little, 5=Very Much)

Rank	Items	Standard Deviation	mean
1	Easy access to training materials	0.97	3.84
2	Select the appropriate educational media	0.93	3.81
3	Appropriate educational content for learning courses	0.98	3.71
4	Using new strategies of learning	1.02	3.63
5	Interaction between teacher and learner during learning courses	1.16	3.59
6	Educational need assessment before learning courses	1.13	3.58
6	Collaboration and cooperation among those involved learning courses	1.17	3.58
7	Appropriate organize of educational materials	1.14	3.56

Based on the perception of respondents, saving time was the most important reason to use e-learning (M =4.04) and the least important was to disseminate information more efficiently (M =3.56).

Table 5:
Descriptive statistics of the students 'attitudes about E-Learning (1=the least important, 5=the most important)

Rank	Items	Standard Deviation	Mean
1	Saving time	0.95	4.04
2	Saving in material feature and facilities	1.01	3.80
3	Flexibility in the location	1.03	3.78
4	Flexibility in time	1.10	3.75
5	Increase learner' s motivation to learn	1.07	3.74
6	Improvement of Intellectual skills of learners	0.96	3.64
7	Facilitating communication between learners and teacher	1.02	3.61
8	Efficient means for disseminating information	1.13	3.56

3-2-Correlation Analysis:

To test the relationship between variables, correlation analysis was done. Table 5 illustrate the correlation between the key variables. As can be seen in table6 there was a fairly high correlation between infrastructure and the application of e-learning technology. Educational and technical factors are positively correlated with the application of e-learning technology. The more students were positive about e-learning and the more they motivated to apply e-learning technology.

Table 6:
Correlation between the variables and the application of e-learning technology

Factors	The correlation value	Sig
Infrastructural factor	0/62**	0/000
Educational factor	0/57**	0/000
Technical factor	0/38**	0/000
students 'attitudes about E-Learning	0/29*	0/013

** 5% significance level, *1% significance level

4. Multiple variable analyses:

A regression model was applied to understand the relationship between the independent variables and the application of e-learning technology by student. The result of the model are represented in Table 7. As Table 7 shows, factors that impact on applying e-learning technology are "Infrastructural factor", "Educational factor", and "Technical factor". According to the table, the adjusted R2 in the model shows that the independent variables can explain about 0/70 percent of the changes in the dependent variable.

Based on table 7, three variables showed to have significant impact on applying e-learning technology. The variable of Infrastructural factor, Educational factor, and Technical factor have had positive impact on applying e-learning technology.

The effect of infrastructure is positive and significant at 99% confidence level ($\beta=0/432$, Sig=0.000). Hence, Infrastructural factor can determine 0/432 increase in applying e-learning technology. Beta coefficient shows that this effect is the strongest effect among the variables. Accordingly, improving educational factor is likely to be increased by 0/365. Furthermore, technical factor has had positive impacts on applying e-learning technology ($\beta=0/285$, Sig=0.008). Therefore, when investment in e-learning technology increase web-based activities. The significant of a high amount of R2 of regression model (Table 8) as well as proving the significant of F, imply the goodness of fit of the regression model of research.

Table7:
Multivariate Regression Analysis

	B	B Standard error	Beta	T	Sig.
(Constant)	0.458	0.376			0.000
Infrastructural factor	0.441	0.99	0.432	4.43	0.000
Educational factor	0.406	0.105	0.365	3.86	0.000
Technical factor	0.259	0.09	0.285	2.78	0.008

Table 8:
The result of the stepwise multiple regression model assessment to apply e-learning technology

R	R2	Adjusted R2	F	Sig F
0/84	0/72	0/69	34/21	0/000

5. Discussion and conclusion

Summarizing, through the regression analysis, it appears that infrastructural, educational and technical factors, are important predictors that significantly influence the application of e-Learning. The result of this study showed that support of Government and donors in developing e-learning technology is importance for educational and social achievements. This investment is leading to significant progress in increasing quality of education. Also they can provide IT equipment and resources in developing countries and it requires specific planning and more effort to deliver e-learning technology in university.

According to findings for performing e-learning in educational environment needs a board array of human and physical resources such as content and instruction methods, infrastructure, professional development and

networking of agents in information sharing group. These e-learning programs can help collaboration between learners, improvement of professional skill and educational quality, and promoting active learning strategies. The results of the positive relationship between infrastructural factor and positive students' attitudes towards use of e-learning technology showed that success and actual use of these technologies related to external support and with their general feelings about computers and the web. It is noteworthy that the results confirm the findings of Selim (2005) and Mahdizade et al(2008) that it's research in identifying main factors affecting the success of e-learning, such as providing the required technology infrastructure and teachers' perceptions. Furthermore, creating collaborative and supportive work culture can be enhanced e-learning opportunity and improving professional development. Therefore e-learning technology enables individuals to create and receive knowledge through a discussion and interactive sharing, offering resolution and novel insight and it causes that critical thinking skills enhance through engagement. The findings confirm the findings Cahill (2008) that he points in this research that relationship exists between structural factors (access to educational content during the course of learning, different management styles of learning) with the implementation of courses e-learning. Also this finding confirms the findings Chehen (2004) regarding the benefits of information technology and e-learning. Accessing to data and educational material provide knowledge management for agricultural students. Chehen(2004) in his research showed that the using of information of banks, data centers, saving data, using of data processing and etc, he showed also the application of information technology causes economic saving and prevention of wasting time. These findings also confirm the finding's Rogers (2003) that has been discussed factors influencing the use of the Internet users and classified in the form of demographic factors, environmental factors, educational, technical characteristics and economic status in his study. These findings confirm the finding's Frazee (2006) presentation educational factors as the influencing factor on the possibility of implementing e-learning to learn in his study. Frazee (2006) sorted out the effective factors on quality of learning such as: organizational factors, technology factors, factors related to teachers, factors related to learners and educational design factors. Also, these findings confirm the findings Dringus & John (2003), Hirston (2007) refers that cases such as large-scale training, availability of educational content, the training cost in terms of cost and time for multiple learners dispersed in terms of spatial. In sum, e-learning is key component of the large challenge of educating the next generation of workers for a new, knowledge-center economy. One of the effect positive of e-learning is creating opportunity for self-employment to agricultural graduates. This is often a challenge for developing countries to create new jobs for agricultural graduates.

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