Research Article
A Study on Barriers of E-learning from Viewpoint of University Staff and Students; Iranian Case Study, Islamic Azad University's Branches, Region I (Fars)

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Abstract: This study aims to examine the key barriers of e-learning in the branches of Islamic Azad University, Region I (Fars Province) from the viewpoint of university staff and students. In this descriptive survey, the barriers of e-learning were investigated with questionnaires and a sample comprising 1000 university staff and students. The results indicate that the lack of management support, impossibility of holding experimental meetings through e-learning, impossibility of university culture transfer and special problems of communicational infrastructures, the lack of easy access to computer systems and communicational lines and the lack of appropriate strategies of providing security are among the most important executional and infrastructural barriers of developing e-learning. In addition, the lack of expert staff in the fields of modern educational technologies, the lack of understanding of planners and the resistance of the beneficial against the implementation of electronic learning are the most important human barriers. Finally, the insufficiency of investment and required facilities, high cost of educational technologies' equipment and costs relating to updating are among the most noticeable financial barriers in front of learning development. Accordingly, in order to break through such problems, we can utilize some strategies, tactics and measures like enhancing the level of awareness, motivation of the staff and students, institutionalizing the university culture during the process of electronic learning, considering a sufficient budget for investing in the implementation and development of e-learning, updating facilities and developing the communicational infrastructures. The results of this study can be utilized by managers and executers of electronic learning. In the generalization of the findings, however, caution must be exercised and any aspect should be considered just like any other study.

Keywords: E-learning, Information Technology (IT), Iran, Islamic Azad University

INTRODUCTION

The new millennium was named the Information Age; the era in which we notice the emergence of modern information and communication technologies. In Information Age, all processes, areas of science and various systems have grown and transformed, under the shadow of ICT, to the extent that make necessary the presence of an instrument for individuals and organizations with which they can synchronize themselves with such incidences. Now, people's lifestyle, business and transactions, communications and research has transformed unexceptionally with the use of e-government, e-commerce, e-economics and e-learning.

In the era in which the plethora of services and information is easily accessible with computers and the internet, both speed and flexibility are vital for any organization to survive and grow. In such an environment, manufacturing and service organizations are constantly exposed to the changes in their performance, types of their offerings, organizational infrastructures and equipment. Therefore, education

institutes, especially higher education institutes, are not exceptional. In other words, education's face is also changed alongside these transformations (Ganasekaran *et al.*, 2004).

Certainly, taking maximum benefit from ICT makes education an alive, active and attractive process; because, it enables individuals to learn more and faster and have a better performance than the traditional learning spaces based on such a learning process. Technology can't be substitute with teacher, coach or professor but it can increase participation among various groups so in order to attain this aim a software infrastructure for all internet based information media is vital (Bruns *et al.*, 2003).

The fact is that the increasing events of transformation in this age make the half-life of knowledge shorter and shorter in such a way that there are predictions about the doubling of human knowledge every 73 days up to 2020. Such predictions create more motives for grasping new opportunities of continual learning in individuals (Hurun, 2001).

E-learning became popular in 2001 and it means computer based training through internet and intranet.

In fact it was replacement for web based training (Dublin, 2004). In the spring of 2003 the primary means of conveying information in distance education courses were e-mail, bulletin boards, satellite broadcasts, the telephone and the traditional postal system (Day and Sebastian, 2002).

E-learning is a novel method of learning procedure that deals with the provision and management of learning opportunities for the enhancement of the knowledge and skills through the internet and computer networks. Not only has e-learning transformed the traditional concepts of teacher 9 as the source of information), students (as the receiver of teacher's information) and classroom and workshop (as the sole environment of learning), but it also has changed the nature of education from teaching to learning. Currently, the traditional teaching methods are not able to meet the requirements of the ever-increasing growth and development of teaching skills. New technologies offer more, newer and more attractive opportunities for learning, such as the chance of experiencing a process of learning relevant to the ability and learning methods of every student. E-learning through the application ICT has broken through the boundaries of time and accessibility and offers learners new instruments for learning (Halket, 2002).

E-learning provides teaching contents in various frames such as increasing learner's accessibility to lifetime knowledge and increase teaching service quality (Gunasekaran *et al*., 2002). Learners can attend the class at any time and any place so they can save their time (Cantoni *et al*., 2003).

Nowadays people live in a ever changing environment, changes in work, product, regulations, organizational structure and information communication technology infrastructure (Little, 2004).

Although e-learning has been increasingly accepted by the traditional and modern students of the developed nations, it is not completely known in these countries and is not used completely as a learning approach.

The main role of universities in supporting e-learning system is establishing a comprehensive model include essential technical equipment for developing e-learning system (Alexander, 2001).

LITERATURE REVIEW

As information technology entered the field of education, many scholars studied such an event from various aspects. Khan (2000) believes that e-learning means web base learning, internet base training, advanced distributed learning, web based instruction ,online learning and open flexible learning. Henry (2001) claims e- learning is a joint and ultimate product of three key elements: Content, technology and service. Dalgarno (2001) states that web have potential capacity in supporting pervasive activities among teachers and learners.

In many studies, the organizational factors, infrastructures and facilities, planning and policy-making for e-learning have been considered. In others, the qualities and skills necessary for the development of e-learning in the educational systems have been discussed. Some researchers have pointed to the lack of appropriate hardware and software facilities, costs of internet access, limitations of bandwidth, low speeds of internet and response delays (Murphy and Dooley, 2000; Patrides, 2002; Zhang *et al*., 2002; Anstead *et al*., 2004; Wilson and Moore, 2004; Gant, 2004; Liyan *et al*., 2004; Abdon *et al*., 2007; Gulati, 2008).

In some other studies, the focus was on management issues like the methods of students recruitment, lack of standards in the field of e-learning, insufficient wages for staff, insufficient teaching spaces equipped with modern technologies, methods of evaluating students, issues on intellectual property of texts and courses (Wilson, 2003; Arabasz *et al*., 2003; Shea *et al*., 2005).

Some studies have considered the issue of social participation and the lack of social interaction between students and staff. Their findings suggest that students who learn electronically miss the possibility of interacting with their friends, classmates and getting help when facing with potential problems; it is possible that pictures and texts do not satisfy them. Thus, students who learn electronically are deprived of a social feeling and suffer from more irritation and frustration than when they learn in traditional environments (Murphy and Dooley, 2000; Kurtus, 2000; Beneke, 2001; Zhang *et al*., 2002; Anstead *et al*., 2004; Gant, 2004). Many researchers regard the lack of hardware and software facilities as one of the most important challenges of developing e-learning (Zhang *et al*., 2002; Anstead *et al*., 2004; Shea *et al*., 2005; Usan, 2006).

A number of studies looked at the educational aspects of the barriers in front of developing e-learning based of the standpoints of staff and students. In these studies, several issues like the time distance between staff and students, the way of motivating students to start and continue their electronic courses, the inability of students to understand the goals of online courses because of the absence of instructors, insufficient knowledge or even lack of knowledge of instructors or students in the fields of computer, insufficient experience of staff in using modern teaching technology and the credibility of online instruction and the quality of its learners, or the lack of teaching material and courses for instructors in the fields of learning technology (Miller and Miller, 2000; Anstead *et al*., 2004; Mc Pherson and Nunes, 2004; Gulati, 2008).

Regarding such areas, few studies have been carried out in Iran. Therefore, with respect to the importance of e-learning in this era, the key barriers of

implementing e-learning in Islamic Azad University's Region I branches are addressed. There is no doubt that more investigations in other research centers of the Country can considerably and more effectively help to promote the use of modern technologies in the field of e-learning and teaching. With regard to the available studies in other countries, it was tried in this study to address the following essential question:

- Is there any significant difference in the views of students and academic staff towards the barriers of e-learning?

RESEARCH METHODOLOGY

This study is a descriptive survey. The population of the study comprises all of the staff and students of Islamic Azad University's Region I branches (Fars Province). The research sample was selected in a way it could represent the population expected to meet the purpose of the research. Based on the sampling method, 1074 participants were selected as the sample using the cluster sampling method. Overall, 1000 questionnaires were returned and used in the process of data analysis. The research instruments were interviews and a questionnaire including two sections of "Personal specifications" and "e-learning barriers measurement scale" with 29 questions arranged from very low to very high based on Lickert's five-item scale. The questionnaire's content validity was fulfilled by benefiting from the opinions of teaching and e-learning experts and after several stages of correction and revision. In order to measure the questionnaire's reliability, 30 were completed as a pilot by staff and students apart from the research sample. Cronbach's alpha for e-learning barriers was 0.87, which indicates the reliability of research instrument. The data were analyzed in two descriptive and inferential parts. In the inferential part, mean comparison test, Bartlett's test and factor analysis were utilized.

RESULTS

Personal specifications: The findings demonstrate that the average age of the studied participants was 20 years.

Regarding their scores' average, 32% were above 17, 51% (highest frequency) were between 14 and 17 and 17% were below 14. Regarding the academic staff, 28% were instructors, 60% were assistant professors and 12% were associate professors. About 97% of the sample was at a high-intermediate level of computer and information knowledge.

Barriers of e-learning development:
Executional barriers: The existing executional barriers of developing e-learning from the standpoint of the academic staff and students are provided in Table 1, according to their priority.

According to Table 1, all of the specified barriers had a mean score of above three, which were regarded as higher than the average level based on two views. In other words, the executional issues and difficulties inhibit the development of e-learning more than an average degree; lack of support from senior management for the establishment and development of e-learning is the most important factor in this area (average staff view = 4.24, average students view = 4.28).

The executional barriers comparison test was conducted with $\alpha = 0.05$ in these two independent populations and the results indicate that the null hypothesis- the difference between the views of the two populations-is not accepted. Therefore, there is evidence indicating that there is not a significant difference between the considered priorities of the two populations.

Infrastructural barriers: The existing infrastructural barriers of developing e-learning based on the views of staff and students are presented in Table 2 in accordance to their priority.

Considering the above table, we can see that the lack of high-speed internet networks, the specific communications problems and the lack of an easy and general access to the internet are the most noticeable problems of this field. As to these problems, the appropriate measures and solutions should be thought by the ministry of ICT. Having some strategies and

Table 1: Executional barriers of developing e-learning according to staff and students

Specified barriers	Students' view			Staff's view		
	Mean	S.D.	Priority	Mean	S.D.	Priority
Lack of support from senior management	4.28	0.708	1	4.24	0.830	1
Impossibility of holding experimental meetings and workshops through e-learning	4.04	0.876	2	3.96	1.230	2
Possibility of transferring academic culture through e-learning	3.96	1.010	3	3.74	1.390	3
Lack or insufficiency of incentives for studying through e-learning	3.85	0.925	4	3.61	1.100	4
Lack of real persons for students to refer and solve problems emerged through e-learning	3.81	0.729	5	3.58	0.702	5
Lack of standard patterns for e-texts' software and related legal terms	3.60	0.910	6	3.47	0.789	6
Spending too much time for teaching and unpreparedness of students	3.38	1.080	7	3.44	1.280	7
Unacceptability of the issued certificates of e-learning courses by some responsible authorities	3.22	1.080	8	3.12	1.090	8

Table 2: Infrastructural barriers of developing e-learning according to staff and students

	Students' view			Staff's view		
Specified barriers	Mean	S.D.	Priority	Mean	S.D.	Priority
Difficulty of access to computers and suitable communication lines	4.37	0.652	1	4.25	0.812	1
Specific problems of communications	4.29	0.784	2	4.07	0.645	2
Insufficient facilities, hardware and software equipment compatible with modern tech	4.28	0.727	3	3.94	0.663	3
Lack a suitable strategy for security creation	4.17	0.844	4	3.68	0.665	4
Technical and administrative problems for equipment maintenance	4.09	0.774	5	3.62	0.962	5
Time consuming learning of technical solutions	3.82	0.794	6	3.53	1.050	6

Table 3: Human resources barriers of developing e-learning according to staff and students

	Students' view			Staff's view		
Specified barriers	Mean	S.D.	Priority	Mean	S.D.	Priority
Insufficiency of expert members of the boards in the fields of modern teaching technologies	4.01	0.667	1	4.21	1.030	1
Resistance of stakeholders against implementation of e-learning	3.92	0.784	2	4.16	0.820	2
Lack of commitment of board members to devote time for e-learning	3.81	0.691	3	4.08	0.830	3
Unfamiliarity of planners and administrators with applications of e-learning	3.76	0.611	4	3.92	0.778	4
Lack of interest among students to e-learning and lack of information	3.66	0.684	5	3.67	0.707	5
Unfamiliarity of students with methods of communicating with instructors in e-learning	3.56	0.792	6	3.52	1.010	6

Table 4: Financial and credit barriers of developing e-learning according to staff and students

	Students' view			Staff's view		
Specified barriers	Mean	S.D.	Priority	Mean	S.D.	Priority
Insufficient investment and necessary funds	4.04	0.761	1	4.11	0.700	1
High costs of updating necessary texts and subjects	3.38	0.883	2	4.09	0.943	2
High costs of required equipment	3.77	1	3	3.74	0.725	3
Low wage and salary fees of teaching e-learning courses	3.45	0.940	4	3.72	0.866	4
Unacceptability of the defined register expenses for students	3.13	0.950	5	3.54	0.707	5

plans regarding the prevention from information piracy (phishing) and its safety are among the other important and considerable issues of the field.

The infrastructural barriers comparison test was conducted with $\alpha = 0.05$ in these two independent populations and the results indicate that the null hypothesis-the difference between the views of the two populations-is not accepted. Therefore, there is evidence indicating that there is not a significant difference between the considered priorities of the two populations.

Human resources barriers: Table 3 presents the human resources barriers in front of the development of e-learning based on the views of staff and students and according to their priority.

Table 3 clarifies that the insufficiency of qualified staff for using modern educational technologies is the most urgent barrier against the development of e-learning in this field. The transmission of teaching from traditional classrooms to an e-learning environment calls for the achievement of some skills, especially when such a method is new. Some doubt that the implementation of e-learning makes teachers' task very easy; otherwise, such an idea is not always true. The resistance of stakeholders against the utilization of this modern method is the second human barrier in the direction of e-learning development. The lack of

commitment among academic staff to devote their time learning through technologies is the third priority.

The human resources barriers comparison test was conducted with $\alpha = 0.05$ in these two independent populations and the results indicate that the null hypothesis-the difference between the views of the two populations-is not accepted. Therefore, there is evidence indicating that there is not a significant difference between the considered priorities of the two populations.

Financial and credit barriers: Table 4 prioritizes the financial and credit barriers of e-learning development based on the views of staff and students.

The development of e-learning calls for great deals of investigation in both sections of finance and human resources. The most important matter regarding the costs of e-learning is related to the supply of content, instruments and systems. The insufficiency of investment and the necessary credit for the development of e-learning is the most important financial issue in developing e-learning in the study's population. The high costs of updating the necessary content and the necessary equipment are the second and third priorities.

The financial and credit barriers comparison test was conducted with $\alpha = 0.05$ in these two independent populations and the results indicate that the null

Table 5: Extracted factors with their eigen-value, variance percentage and cumulative percentage

Factor	Eigen-value	Eigen-value's variance (%)	Variance's cumulative percentage
Executional	5.137	34.354	34.354
Infrastructural	4.517	28.996	63.350
Human resources	3.846	21.149	84.498
Financial and credit	3.462	9.423	94.430

hypothesis-the difference between the views of the two populations-is not accepted. Therefore, there is evidence indicating that there is not a significant difference between the considered priorities of the two populations.

Factor analysis of e-learning development's barriers: In order to classify the barriers of developing e-learning in the study's population, the factor analysis method was used. The appropriateness of the gathered data for the analysis was determined by KMO value and Bartlett's test. KMO value was calculated as 0.847, which indicates the appropriateness of the data for factor analysis. Further, the statistic of Bartlett's test was 117.345, which was significant at the level of $\alpha = 0.05$ since p-value = $0.008 < \alpha = 0.05$.

As the above Table 5 presents, the Eigen-value of the first factor was 5.137 that has the highest role in determining the barriers. The Eigen-value of the fourth factor was lower than the others, so it accounts for a lower percentage in comparison with other factors. Totally, the four factors explicated 94.43% of the total variance of e-learning development's barriers. The remaining 5.57% relates to factors that were not identified by the factor analysis.

CONCLUSION

The present study aimed to make managers, planners, policy makers, students and the members of boards familiar with the existing issues of using e-learning in the studied population. The findings demonstrated that the lack of supporting senior management, lack of holding laboratories through e-learning and impossibility of transferring academic culture were among the most noticeable executional barriers of electronic learning's development. In addition, the specific problems of communications, the difficulties in accessing computers and communication networks, the lack of an appropriate strategy in order for the creation of security are some of the challenges identified in the field of infrastructural barriers. Therefore, the empowerment and development of the communication infrastructures in education institutes and the provision of the ground for accessing the information networks would be one of the important steps towards the development of e-learning. This is because the effectiveness of e-learning depends on the accessibility as well as the reliability of software and hardware. The lack of good communication infrastructures intensely affects the connection between learners and educational systems.

The insufficient investment and the necessary facilities, high costs of educational technologies'

equipment and updating them are among the most pressing financial barriers against the implementation of e-learning. Thus, the necessary finance of supplying e-learning facilities and instruments are essential for universities. Of course the skilled and committed workforce is one of the important factors of accepting e-learning in every organization or institute (Broadbent, 2001). Therefore, investing in the section of training human resources and instructing skillful workforce is another significant matter in the development of e-learning. It is obvious that e-learning without expert and capable human resources is a complete failure and would make the traditional systems more resistant and make the arrival of IT (Information Technology) to the grounds of higher education more difficult than ever. Among others, the inadequacy of expert members of boards in the field of the modern educational technologies, unfamiliarity of planners, resistance of stakeholders against the implementation of e-learning are the most urgent human barriers of this population. Moreover, it is important to consider the nature of various major fields of education in planning for using e-learning. E-learning cannot replace the traditional one and it should focus on those courses and fields of study that the traditional systems cannot meet them, or the possibility of tackling their educational problems and succeeding in them is higher. We can say that universities cannot overcome the barriers of developing e-learning without adopting a holistic and consistent approach; their policies for directing and supplying the necessary sources for facilitating the long process of e-learning development should be specified.

Like others, this study encountered a number of limitations, such as the resistance and disagreement of some stakeholders against the execution of e-learning technique because of their lack of necessary knowledge about the novel and up to date subjects of information technology, the lack of commitment and devotion of adequate time by some authorities to respond to the questions, high wasting of time because of holding the briefing sessions and pre-response instructions and so on. Such issues should be considered in the future attempts. Like similar studies, the generalization of the results of this study should be treated with caution and be done after considering every aspect.

REFERENCES

Abdon, B.R., S. Ninomiya and R.T. Raab, 2007. E-learning in higher education makes its debut in Cambodia: The provincial business education project. Int. Rev. Res. Open Distance Learn., 8(1): 1-14.

Alexander, S., 2001. E-learning development sand experiences. Educ. Train., 43(4-5): 240-248.

Anstead, T., R. Ginzburg, K. Mike and R. Belloli, 2004. Using Technology to Further the Dine Colloge Mission. University of Michigan Business School, Michigan.

Arabasz, P., J.A. Pirani and D. Fawcett, 2003. Supporting E-learning in Higher Education. Research Study from the EDUCASE Center for Applied Research, ECAR.

Beneke, 2001. E-learning. Retrieved from: www.uni-hildesheim.de. (Accessed on: May 4, 2007).

Broadbent, B., 2001. Tips to Help Decide if your Organization is Ready to E-learning. Retrieved from: http://www.e-learning hub.com (Accessed on: May 16, 2007).

Bruns, R., J. Dunkel and J.V. Helden, 2003. Secure smart card-based access to an e-learning portal. Proceeding of the 5th International Conference on Enterprise Information Systems. Angers, France, pp: 167-172.

Cantoni, V., M. Cellario and M. Porta, 2003. Perspectives and challenges in e-learning: Towards natural interaction paradigms. J. Visual Lang. Comput., 15(5): 333-345.

Dalgarno, B., 2001. Technologies supporting highly interactive learning resources on the web: An Analysis. J. Interact. Learn. Res., 12(2): 153-171.

Day, J.N. and J.P. Sebastian, 2002. Preparing vision specialists at a distance: A qualitative study on computer-enhanced learning. J. Visual Impair. Blin., 96(11): 796-807.

Dublin, L., 2004. The nine myths of E-learning implementation: Ensuring the real return on your E-learning investment. J. Ind. Commer. Train., 36(7): 291-294.

Ganasekaran, A., R.E. Mc Gaughey and R.D. Mc Neil, 2004. E-Commerce: Teaching and learning. J. Electron. Commerce Organ., 2(2): 16.

Gant, M., 2004. Five Key Barriers Facing Organizations in E-learning, E-learning Compus. Retrieved from: www. elearncampus. com (Accessed on: May 10, 2007).

Gulati, S., 2008. Technology-enhanced learning in developing nations: A review. Int. Rev. Res. Open Distance Learn., 9(1): 1-16.

Gunasekaran, A., R.D. Mc Nile and D. Shaul, 2002. E-learning: Research and applications. Ind. Commer. Train., 34(2): 44-53.

Halket, R., 2002. E-learning how to survive it. Ind. Commer. Train., 34(2): 80-82.

Henry, P., 2001. E-Learning technology, content and service. J. Educ. Train., 43(4): 249-255.

Hurun, M.H., 2001. Integrating e-learning into the workplace. J. Intern. Higher Educ., 4(3): 301-310.

Khan, B.H., 2000. A framework for web-based learning. Tech. Trends, 44(3): 51.

Kurtus, R., 2000. Initial Consideration Before Developing E-learning: CBT or WBT. Retrieved from: www.School for-champiobs.com/e-learning initialconsid.htm.

Little, B., 2004. Achieving high performance through e-learning. Ind. Commer. Train., 33(6): 203-207.

Liyan, S., S. Emise, R.S. Janette and M.H.K. Hill, 2004. Improving online iearning: Student perceptions of useful and challenging characteristics. Internet High Educ., 7: 59-70.

Mc Pherson, M. and M.B. Nunes, 2004. Developing Innovation in Online Learning: An Action Research Framework. Routledge Falmer, London.

Miller, G. and W. Miller, 2000. A telecommunication network for distance learning: If it's bult, will agriculture teachers use it? J. Agric. Educ., 4(1): 79-87.

Murphy, T.P. and K.E. Dooley, 2000. Perceived strengths, weakness, opportunities and treats impacting the diffusion of distance education technologies in a college of agriculture and soil. J. Agric. Educ., 41(4): 12-32.

Patrides, L.A., 2002. Web-based technologies for distributed (or distance) learning: Creating learning-centered educational experiences in the higher education classroom. Int. J. Instr. Media, 29(1): 60-77.

Shea, P., A. Pickett and C. Sauli, 2005. Increasing access to higher education: A study of the diffusion of online teaching among 913 college faculty. Int. Rev. Res. Open Distance Learn., 6(2): 1-27.

Usan, S., 2006. Application and problems of computer assisted education in turkey. Turk. Online J. Educ. Tec., 5(4): Article 2.

Wilson, R., 2003. E-education in the UK. J. Digit. Inform., 3(4): 1-6.

Wilson, E. and G. Moore, 2004. Factors related to the intent of professionals in agricultural and extension education to ebroll in an online master's degree program. J. Agric. Educ., 45(4): 96-105.

Zhang, W., J. Niu and G. Jiang, 2002. Web-based education at conventional universities in china: A case study. Int. Rev. Res. Open Distance Learn., 2(2): 1-24.