

## E-Readiness Assessment at Tabriz University of Medical Sciences

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### ABSTRACT

**Introduction:** E-readiness assessment is the evaluation of one's ability to accept and use information technologies and their relevant applications. E-readiness assessment helps us identify and study the strengths and weaknesses and consequently find solutions and formulate strategies to improve e-readiness which is considered as a guarantee for the implementation of knowledge development programs. This study aimed to assess e-readiness at Tabriz University of Medical Sciences. **Methods:** The current research is an analytical study using a questionnaire designed by the researchers to assess e-readiness at Tabriz University of Medical Sciences in 2010-2011. Using Cronbach's alpha coefficient, the questionnaire reliability was estimated 0.85. Researchers have randomly selected 520 of managers, IT experts, professors and students at Tabriz university of Medical Sciences. The collected data was analyzed using SPSS. **Results:** In general, the academic staff, students, managers and IT experts have assessed e-readiness as good, measuring  $54.46 \pm 9.63$ . **Conclusion:** The study showed that the overall e-readiness rates were good at Tabriz University of Medical Sciences and suitable platforms were also provided for the University to enter into the field of IT. The condition will further improve if the officials dedicate more attention and support to the activities of Computer Department.

### Introduction

Information technology (IT) has greatly changed the form of academic interactions and has had a significant effect on how knowledge is acquired and transferred throughout society. Universities and academic institutes as the main centers for knowledge creation and transfer will gradually take on new form. Thus, higher education managers and officials shall pay extra attention to the establishment of virtual universities and realization of e-learning programs. The achievement of these goals requires a condition which has several different aspects and is called e-readiness from the systemic viewpoint.<sup>1</sup> E-learning is defined as a new learning approach which provides a well-equipped, well-designed, interactive and learner-centered learning environment for everyone in every place and in every time. E-learning utilizes the resources and features of several digital technologies to create a free, flexible and distributed educational environment.<sup>2,3</sup> E-readiness is an organization ability or a beneficial party (people involved in the education i.e., managers, key officials, professors and students) capacity to be actively present in an

e-environment.<sup>4</sup> E-learning readiness assessment allows officials and policymakers to adopt deliberate policies and devise development plans so that an equal and balance environment for e-learning.<sup>5</sup> Several models have been introduced to assess e-learning readiness. Some of the important ones include: e-learning readiness model (FIU), e-learning readiness assessment model, e-learning access readiness model, organizational e-learning readiness model, hybrid e-learning acceptance readiness model, Rosenberg model, Broadbent model, Anderson model, Honey model, Rogers' model, knowledge group model, Nilsson model, Machado model and ...<sup>6,7</sup> (Table 1) E-learning readiness has different dimensions all of which shall be studied regarding their technical infrastructure (hardware and software, network, security, data base and communication systems), processed and systems, management, human, legal and financial resources, clients, partners and suppliers. In recent years, Tabriz University of Medical Sciences has been among the universities which have tried hard to provide the necessary hardware and software requirements to offer e-learning opportunities for the graduate students and its staff willing to take part in

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in-service training programs. This study aimed to assess the ability to accept and use information technologies and their relevant applications in Tabriz University of Medical Sciences. The findings may help us identify strengths and weaknesses and consequently find solutions and formulate strategies to improve e-readiness which is considered as a guarantee for the implementation of knowledge development programs.

## Methods

The current research was an analytical study using a questionnaire designed by the researchers to assess e-readiness at Tabriz University of Medical Sciences. Likert scale was used in the questionnaire and has five ordered response levels including “very good”, “good”, “average”, “bad” and “very bad”. The e-learning readiness dimensions evaluated in the study were as follows: hardware (the ability to install and support the required hardware, having the necessary technological equipment, and the ability to use technical equipment and hardware for data processing, storage and retrieval), software (the ability of software provided by the university to fulfill educational needs, interface, the ability to produce, develop and support the required software, concurrence of the software with the changing processes, and software integration), network (connecting different departments to the computer network, bandwidth and internet access speed, the number of computers having internet access,

network extensibility, users’ ability to store data on the servers, data storage method, and network performance in providing the required services), security (defined and determined security standards and policies, deployment of hardware infrastructure and security mechanisms such as information confidentiality, physical security, sufficient updated security knowledge, and user satisfaction), data base and information systems (transparency of the stored data, updating the data base, reducing duplication of information in different units and departments, the ability to share information needs, and information systems access speed), processes and systems (using standard processes, targeted integration and optimization of processes, and having an analyzer for the organization’s systems), management (being familiar with University’s website administration, managers creative and innovative solutions for different problems and situations, the ability to control and financially manage IT projects), regulations and financing (observing IT legal rules such as copyright and intellectual property law, financial support and investment in IT sector, and optimal use of foreign investment) and clients, partners and suppliers (accountability, information security, the quality of information made available to the clients, and determining the rate of electronic communication with suppliers, university departments and other organizations). Using Cronbach’s alpha coefficient, the questionnaire’s reliability is estimated 0/85. In order to evaluate the validity of the questionnaire, it was handed over to e-learning professors and experts. After making the

**Table 1. Main Indicators in E-learning Readiness Assessment Models**

Model	Indicator						
	Technology Infrastructure	Content	Policy	Culture	Standard	Financial Resources	Human Resources
E-learning Readiness Model (FIU)	*	*		*			
E-learning Readiness Assessment Model	*	*	*	*		*	
E-learning Access Readiness Model	*	*		*		*	*
Organizational E-learning Readiness Model	*			*			*
Hybrid E-learning Acceptance Readiness Model	*	*		*		*	*
Rosenberg model	*			*		*	*
Broadbent Model	*			*		*	*
Anderson Model	*	*		*		*	*
Honey Model	*	*				*	*
Rogers’ Model						*	*
Knowledge Group Model	*			*			*
Nilsson Model	*	*		*			
Machado Model		*		*			*

proposed changes, the questionnaire was confirmed. Factor analysis was also used to further check and control the questionnaire. 520 of managers, IT experts, professors and students were randomly selected to take part in the study. 337 people answered the questionnaire. The collected data was statically analyzed using SPSS 17 and descriptive statistics including mean and standard deviation.

## Results

In general, the academic staff, students, managers and IT experts have assessed e-readiness as good, measuring  $54.469.63\pm$ . The mean value of each area was shown in table 2 & Figure 1.

## Discussion and Conclusion

Rapid advances in computer science and emergence and development of information networks and specially Internet have provided education planners and authorities with new methods and facilities. Consequently, past problems in the field of education especially those which were due to time and space constraints have gradually faded away. E-learning is one of the new ICT-based methods of education which considers individuals as active learners. It can evolve all forms of learning and education in the 21<sup>st</sup> century and put an end to the challenge which is the result of the increasing demand for education and lack

of educational resources.<sup>8</sup> Researchers have been well aware of the importance of e-learning assessment and the relevant challenges. As a result, this paper emphasized on the need to design and present a conceptual framework for e-learning assessment. It also attempted to provide a detailed study of University capabilities in different areas. The University scored  $60.54\pm 12.23$  out of 100 in hardware readiness. The University Network infrastructure and equipment scored  $54.46\pm 15.40$  out of 100. According to the survey, there were some problems regarding Internet speed and access time especially during non-office hours. Undoubtedly, dial up connection was so slow that it made data loading and retrieval very difficult. Furthermore, providing more individuals especially students with internet access would increase the costs. The university scored  $56.56\pm 12.74$  out of 100 in software readiness and related equipment. Suitable computer equipment plays a significant role in supporting the University performance and successful implementation of its e-learning programs. Thus, supporting (giving equipment purchase loans and lending equipment) the students who are willing to participate in virtual courses is a necessary and effective action. The university scored  $59.11\pm 22.78$  out of 100 in security readiness. Several different measures should be undertaken by the University to protect individual and organizational information, guarantee information accuracy and authenticity, prevent hackers to penetrate into

Table 2. The Mean Value of E-learning Readiness in Each Studied Area

Area	Mean	Area	Mean
Hardware	60.54±12.23	Processes and Systems	47.18±18.63
Software	56.56±12.74	Management	51.87±17.50
Network	54.56±15.40	Human Resources	55.98±22.09
Security	59.11±22.78	Legal and Financial resources	38.54±18.97
Data Base and Information Systems	53.90±12.40	Clients, Partners and Suppliers	66.79±15.26

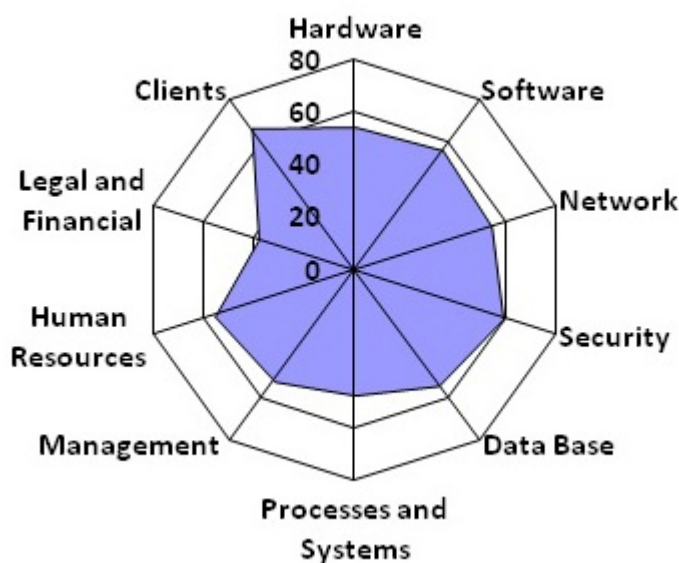


Figure 1. E-Readiness in Tabriz University of Medical Sciences.

e-learning network and provide a safe and secure learning environment. Furthermore, providing powerful network-based antivirus protection will ensure the convenience for all users (students, professors and managers). The university scored 53.90±12.40, 47.18±18.63 and 53.90±12.40, 47.18±18.63 and 51.87±17.50 out of 100 in data base and information system readiness and processes, systems readiness and management readiness, respectively. These areas need further support. It is also a good idea to utilize services offered by private companies to overcome deficiencies. The University scored 55.98±22.09 out of 100 in human resources readiness. As long as users do not develop a certain degree of readiness and the required skills, all the attempts to improve their technical skills and familiarize them with course frameworks, legal rules and models will be futile. Computer skills of all users should be always updated. Users' efforts (professors and staff) to improve their technical skills will reduce their stress while operating the systems. Hybrid education models (Internet and ordinary classroom) will encourage students and even professors to get involved in e-learning. The University scored 38.54±18/97 out of 100 in legal and financial readiness. Some costs such as the cost of establishing telecommunications infrastructures, developing courseware, changing organizational culture and business process, training human resources and implementing new systems and adapting them to the existing ones are considered as inherent features of all e-learning courses and cannot be avoided at all. Some people wrongly believe that virtual universities are much cheaper than ordinary ones. Certainly, the more students enroll in virtual courses, the more the course tuition will decrease and the program will reach to profitability sooner. Families are willing to pay more for high quality education. According to the cost control policy, universities should collaborate with other universities. They can offer joint e-learning programs and share electronic content. The University scored 66.79±15.26 out of 100 in clients, partners and suppliers readiness. This area includes the ability to evaluate learners' performance, course achievement and education environment. Successful implementation of e-learning system requires coordination between its different elements and components. As a result, managerial monitoring and attention are required to ensure consistent operation of all system elements (offices, computer center, central library and faculties). Lack of physical presence makes the student feel abandoned without any guide. This is one of the main problems of e-learning programs. Providing consultation services for students and arranging several meetings with the presence of students, content producers, professors, managers and staff will be helpful in solving the problem.

Although Tabriz University of Medical sciences has scored good in e-readiness, further analysis showed that two areas including processes and systems and legal and financial have received average ratings. As a result, reconsiderations should be made and necessary measures should be adopted to provide the required circumstances for their improvement. It is worth mentioning that all the other areas which have received good ratings need further specialized research. Furthermore, the university computer department needs further attention and support of authorities in order to play its role in the successful implementation of e-learning programs.

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