Offering a Proper E-learning model for Islamic Azad University of Roudsar and Amlash (IAURA)

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Abstract

One of the opportunities that apply Technology an information technology at university is utilization of E-learning. For this reason various models have been suggested for e-learning technologies. In this paper for developing e-learning at IAURA, we analyzed and offered a new model of E-learning as for their requirements and essential offered models (Interactive model, Blended model, Virtual model).In this paper three models were compared. Thus, based on TAM model and utilization of AHP method we weighted these models by Expert Choice Software base on two views as easy and essential of use .E-learning easy of use at IAURA was completed by analyzing and prioritizing models based on implementation requirements and e-learning essential of use at IAURA was completed by analysis of scale of information technology projects at higher education .then we used SAW model for combination of results and interactive model was offered with highest weight. For testing this model in higher education we start many researches and then designed a questionnaire with fifty seven questions for easy of use and essential utilization of interactive model. In this study questionnaire was completed and responded by directors groups, active researchers and experts in e-learning area. After collecting responses, responses were sent to university. Also in this study we used SPSS software for analyzing and finally was determined that education requirements are most important factors in easy of use in interactive model at IAURA. In end of study we exhibited many suggestions for implementation of offered model.

Keywords: E-learning models, interactive model, virtual model, blended model, AHP method, SAW model.

1. Introduction

E-learning is a novel education pattern that serves to solve the contradiction between the large amount of social demands and the lack of educational resources. E-learning is now reaching the core, helping to transform higher education and moving beyond isolated efforts to pervasive influence and change. E-learning provides a student-cantered learning environment and delivers knowledge on-demand with up-to-the-minute information.

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E-learning is not just concerned with providing easy access to learning resources, anytime, anywhere, via a repository of learning resources, but is also concerned with supporting such features as the personal definition of learning goals, and the synchronous and asynchronous communication, and collaboration, between learners and between learners and instructors.

The environment of higher education is evolving. Rising costs, shrinking budgets and an increasing need for distance education is causing educational institutions to re-examine the way that education is delivered. In response to this changing environment, e-learning is being implemented more and more frequently in higher education, creating new and exciting opportunities for both educational institutions and students. E-learning, or electronic learning, has been defined a number of different ways in the literature. In general, e-learning is the expression broadly used to describe "instructional content or learning experience delivered or enabled by electronic technologies".

The e-learning models of higher education today find their roots in conventional distance education. Initially introduced to allow individuals in remote and rural areas to gain access to higher education, distance learning has evolved significantly over time. More recently, the advent of the Internet has enabled tremendous innovation in the delivery of post secondary education. As time goes by, more and more people gain access to the Internet, the cost of computer ownership decreases, and overall computer literacy increases. These trends provide educational institutions an ideal channel for the delivery of educational content.

E-learning went through a hype cycle triggered by technology expectations and technology vendors. It only slumped into a trough of disillusionment when the realities of e-learning became clear: educators and learners have not adopted e-learning as expected and desired learning outcomes are not being achieved. In the growth and experimentation phase of e-learning in the 1990s, universities, public and corporate institutions, incited by technology learning management system vendors, based their e-learning initiatives on an e-learning model comprising three elements: Service to the customer (learner), content and technology.

Owing to the continuous ICT developments, the focus was primarily on the use of technology to create convenient virtual learning environments for learners to access anywhere, any time. The learning design (content development) and the training of educators and learners for online teaching and learning received less attention. Many educators and technology vendors assumed that the delivery of traditional learning content via the Internet constitutes e-learning.

The demand-driven learning model (see figure 1) was developed in Canada as a collaborative effort between academics and experts from private and public industries. Although this model is based on the technology learning management system vendors' model of technology, content and service, the technology is seen as support or a tool to achieve the desired learning outcomes in a cost-effective way. The primary purpose of the model is to encourage academics to take a proactive role in the development and use of technology in the teaching process. It emphasizes the three consumer demands: high quality content, delivery and service. Content should be comprehensive, authentic and researched. Delivery is web-based and the interface of e-learning programmers should be user-friendly with communication tools to support interactivity. Service should include the provision of resources needed for learning as well as any administrative and technical support needed.

As technology is fundamental to e-learning, this model provides a valuable framework for understanding the importance of investing in ICT infrastructure to support content, delivery and service. However, this model also highlights the importance of realizing the changing needs of learners and their employers and the pedagogical changes that must be made to content and services to meet these needs.
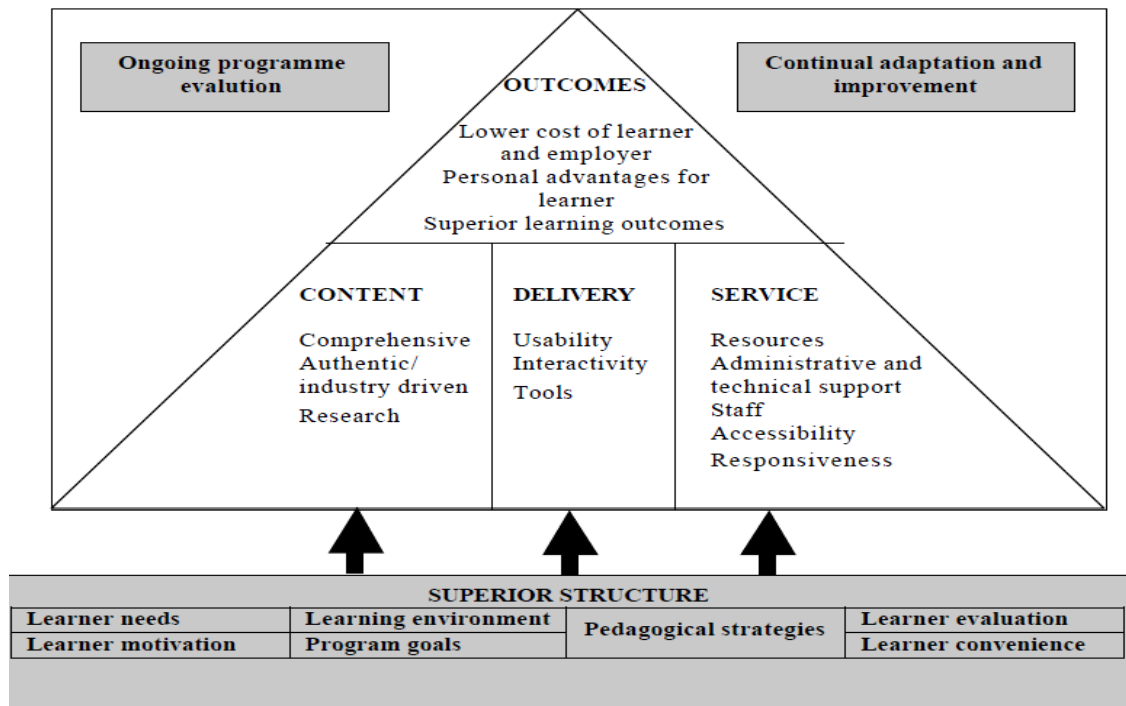
Figure 1.The demand-driven learning model

As above statements IAURA for maintaining its lead in higher education want to use e-learning technologies in education goals. In short general and special goals of this study as follows:

- Examining existing model of e-learning at higher education.

- Identifying IAURA requirements in E-learning.

- Recognizing necessities implementation of E-learning.

- Recognizing suitable model for utilization in information technology at IAURA.

2. Instructional design models

One of the most crucial prerequisites for successful implementation of e-learning is the need for careful consideration of the underlying pedagogy, or how learning takes place online. Conrad (2000:11) defines effective e-learning as "... the integration of instructional practices and Internet capabilities to direct a learner toward a specified level of proficiency in a specified competency".

Instructional value is added by:

- customizing content for the needs of the learners

- Presenting outcomes-based learning objectives

- logically sequencing material to reinforce those objectives

- Basing navigational options (hypertext links) on existing and desired skills and knowledge of learners

- Designing objective-based, interactive learning activities that learners must complete to receive some form of evaluation.

Instructional design models for e-learning based on the processes of designing, developing and delivering curriculum material are usually closely aligned with traditional classroom learning models that specify some combination of planning, implementing and evaluation to organize and present curriculum content.

3. Technology Acceptance Model and E-learning

ICT adoption and diffusion has been studied in great detail lately by researchers in the information systems area. It can be studied at two levels: the first is at the organizational level and the other is at the individual level. If the unit analysis is an individual, the emphasis is on the acceptance of technology. In information systems research, the user's attitude toward using and the actual usage of a technology are addressed in the technology acceptance model (TAM). TAM is an intention-based model developed specifically for explaining and/or predicting user acceptance of computer technology. It has been used as the theoretical basis for many empirical studies of user technology acceptance. Technology acceptance was defined as "an individual's psychological state with regard to his or her voluntary or intended use of a particular technology". Therefore, in this paper TAM is used to study the acceptance of the e-learning technology. The research presented here is motivated and guided by two main questions. First, do students (learners or users) would like to accept e-learning or vice versa? Second, what are the factors that significant in explaining the intention towards e-learning?, that is, do the attitudinal beliefs such as perceived ease of use and perceived usefulness has relationship towards the e-learning adoption? In other words, this study examined TAM in an academic setting, investigating the factors affecting students' acceptance of e-learning technology.

TAM has been applied in numerous studies testing user acceptance of information technology, for example, word processors, spreadsheet applications, e-mail, web browser, telemedicine, websites, e-collaboration [20], and blackboard. In this study, the e-learning was considered a system that makes use of Internet and web technology in accomplishing its mission of delivering information to and interacting with the students through a computer interface. Figure 2 presents original version of TAM.
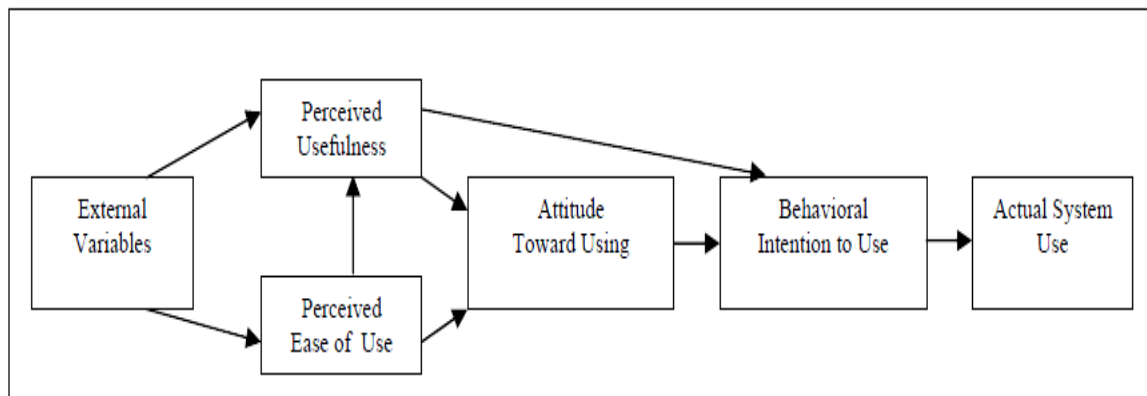

Figure 2.Original technology acceptance model

4. Research Methodology

For implementing major goals of research that is offering an E-learning model for IAURA ,main structure of offered model was constructed based on TAM model. In studying of e-learning models in organizations, three groups of models can be identified.

- Organizations that use E-learning for reinforcement and upgrading their Traditional training.
- Organizations that merge traditional and virtual training for education.
- Organizations that haven't enough space, environment and physical requirements but all process, education interactions and administrative interaction are done as virtual.

By above classification three distinct models were defined in utilization of E-learning at higher education centers as follows:

- Interactive model: interactive model by tools and facilities are used only for virtual communicating besides traditional learning.
- Blended model : interactive model is mixed of traditional learning and E-learning

- Virtual model: in this model all of process and learning activities are presented and implemented as virtual.

After examining mentioned models based on three elements content, technology and services, four elements for comparing these models were considered .this elements are as followings:

A: Technological requirements

Technological requirements that are one of the vital conditions for implementing and managing E-learning can be considered as:

- Telecommunication infrastructures and high band width in communication networks

- Information literacy and propound basic educations

- Necessity of   security information and electronic activities

- Demand to special hardware and software

B: Cultural and legal requirements

- Need to get confidence   and support policymakers

- Necessity of using motivating factors for obtaining   teacher and student cooperation

- Necessity of using suitable legal framework

- Necessity to propound flexible education at anywhere and anytime and provide cultural-building for this matter

C: Human resource requirements

- Need to teacher and technological support

- Need to expert human resource in information technology fields

- Economic (sumptuary) requirements

- Costs of providing software and Learning Management System (LMS)

- Predicting maintenance budget

For extracting conceptual model and using of TAM model, firstly three models were compared based on rate of coverage projects at IAURA. For identifying rate of coverage projects by examining models and ultimate extracting preferred model that coverage most of projects, Likert scale was used with 3 degrees of 1 to 3. At first in this phase list of projects based on rate of their coverage were polled. For selecting preferred and suitable model, polling process was done from five managers and E-learning experts at IAURA. Table 1 shows arithmetic mean of obtained score in three models.

Table 1.final score of models based on projects coverage

Model	Virtual	Blended	Interactive
Score	0.263	0.301	0.434

Therefore based on projects coverage of IT at IAURA, most score was assigned to virtual model, blended model and interactive model respectively.

on the other hand for examining models based on easy of use (implementation requirements) ,AHP method was selected for group decision .for this purpose a group with five expert in IT area for making right group decision was informed. By expert choice paired comparison matrixes were analyzed. All consistency ratios (C.R) in all stages became less than 0.1 that was reliability calculation of analytic hierarchy process (AHP) method. Table 2 shows score for three model based on calculated weight in AHP method.

Table 2.final score of models based on implementation requirements

Model	Virtual	Blended	Interactive
Score	0.670	0.201	0.129

Therefore most implementation requirement assigned to virtual, blended and interactive models respectively. In the end for integration the results of stages of the above, Simple Additive Weighting (SAW) method was used. Table 3 shows calculations, formulas and obtained result by SAW method.

Table 3.Calculations for selecting Conceptual Model

Rate of Projects Coverage by Models P:$r_{ij}=X_{ij}/X \times J$			X*J=Max X_{ij}
Implementation Requirements Models I: $r_{ij}=X \times j/X_{ij}$			X*J=Min X_{ij}
SA i=$\sum W_j r_{ij}$			
Models	Calculations	Normal Weight	Final Weight
Interactive	SA1==(0.497×0.609)+(0.497×1)	0.382	0.799
Blended	SA2=(0.497×0.705)+(0.497×0.61)	0.329	0.653
Virtual	SA3=(0.497×1)+(0.176×0.497)	0.288	0.584

As regards in SAW model the most weight is selected, thus as the above table interactive model is preferred model for IAURA. For testing this model at IAURA, a questionnaire was designed with 50 questions that involved variables related to easy of use and essential of use of interactive model. The population study was selected 25 people of managers, faculty members, researchers and experts in IT areas. All questions in questionnaire were designed in two sections based on TAM model that we explained it in the previous section.

1: Benefits and necessity of using of interactive model.

In this section, questions were categorized as follows:

- Cultural Requirements: the purpose of designing questions in this section is identifying of degree of important in cultural requirements that by using interactive model must be improved, would be assessed.

- Economic Requirements: questions in this section were for rate importance rate of interactive model using in economic providence especially for IAURA.

- Education Requirements: purpose of designing questions in this section is surveying degree of Accountability of interactive model to education requirement at IAURA.

2: Easy of use of interactive model.

In this section, questions were categorized as follows:

- Technical Factors: In this section importance rate of technological factors for example hardware and software equipments were considered.

- Legal factors: legal factor in this section were considered that were important in easy of use of interactive model.

- Economic factors: In this section budget prediction and cases that need the cost were considered.

- Motivational factors: Whereas attention to requirements cased motivation in users and ease of use thus in this section degree of Motivational factors were considered.

- Organizational factors: in this section effective factors in easy of use of interactive model in organizational level were considered.

Options in all questions very low, low, average, high and very high were selected. After gathering responses, SPSS software was used for analyzing and extracting average score of each question. Also reliability of questionnaire that was calculated by SPSS software was 0.8679 that shows high reliability of questionnaire.

5. Research Outcomes
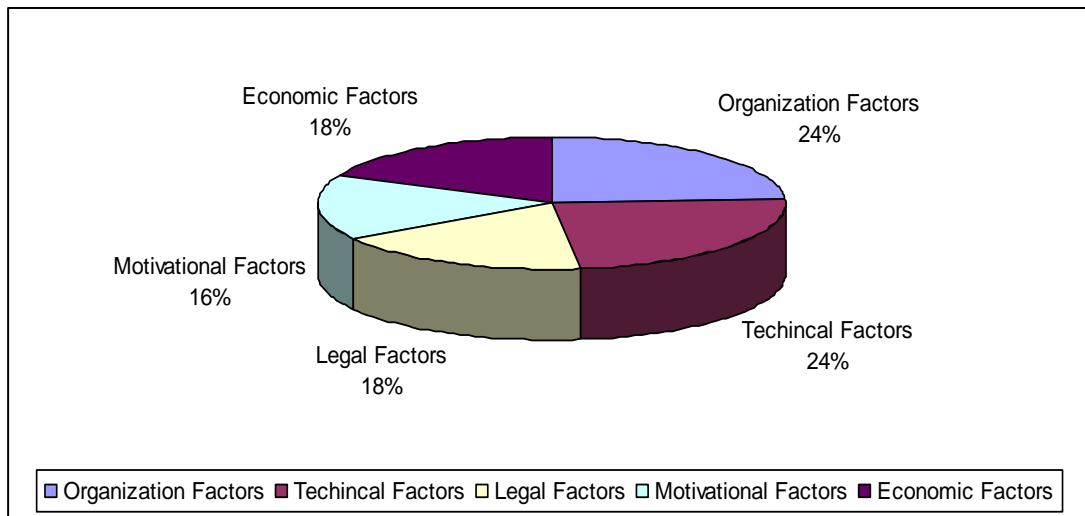
Figure 3.Results of polling relevant to easy of use in interactive model

Figure 3 shows Results of polling relevant to easy of use in interactive model .According to the figure 3, the highest degrees belong to technical factors, organizational factors, legal factors, economic factor and motivational factors respectively.
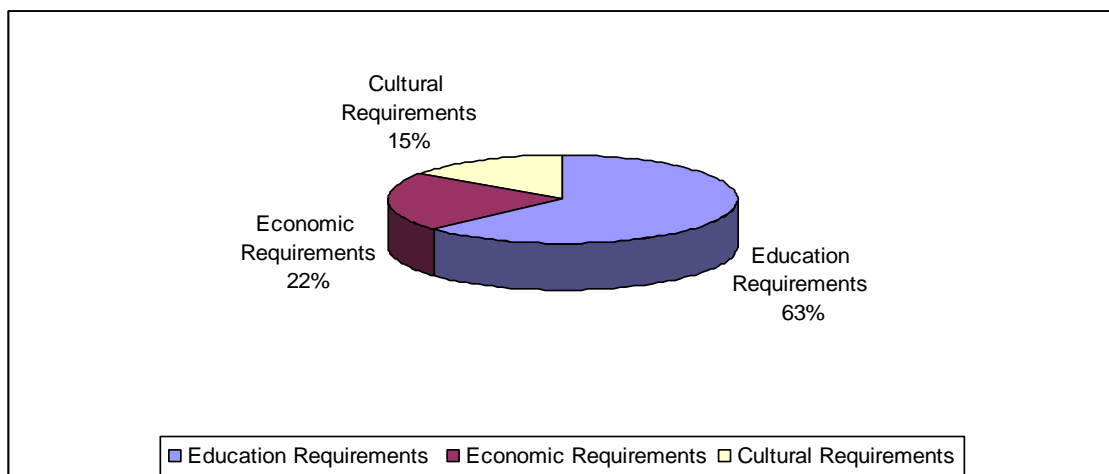

Figure 4.Results of polling relevant to essential of use in interactive model

Figure 4 shows Results of polling relevant to essential of use in interactive model. According to the figure 4, the highest degrees belong to education requirements, economic requirements and cultural requirements respectively. Figure 5 shows the overall results of polling.
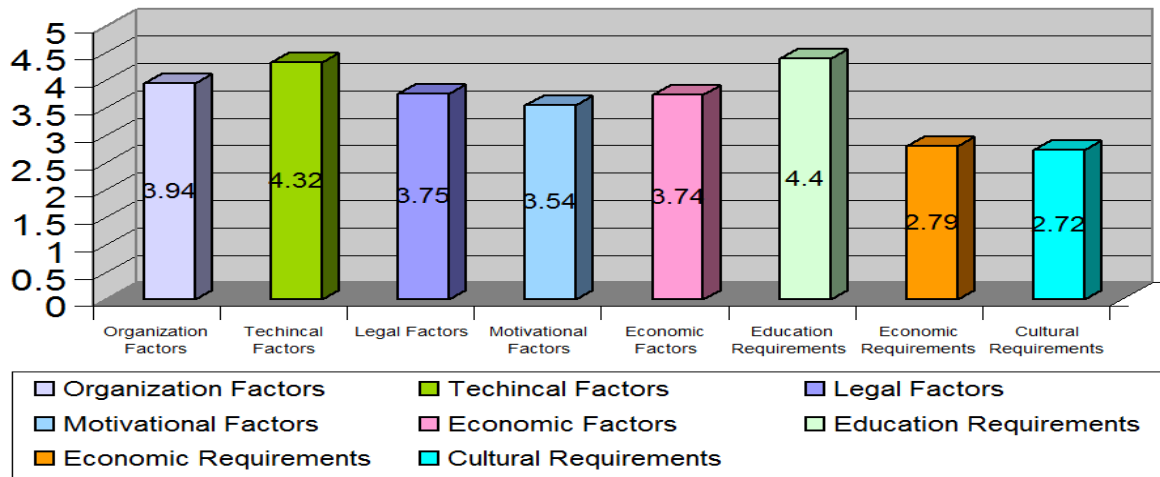

Figure 5: the overall results of polling

6. Conclusion and Recommendations

E-learning is a large and growing market with great potential in higher education. In order to maximize this potential, e-learning implementations should endeavor to satisfy the needs and concerns of all related groups as much as possible.

In this paper 3 models of e-learning were compared for IAURA .Finally interactive model is preferred model for IAURA.

In this section some recommendations were offered for implementing an interactive model at IAURA as follows:

- As for important of technical factors in easy of use in interactive model, IAURA should extend their band width in communication networks. Also hardware and software facilities and expert human resources should be provided for using and raising effectiveness interactive model at IAURA.

- As for important of education requirements , IAURA can by using of interactive model to increase quality of education and learning opportunities .also by providing virtual meetings can cause the improvement in these cases.

- For saving in time training, increasing its effectiveness and training opportunities by virtual interactions , is suggested that time-consuming activities so marking ,solving of classroom problems , interchanging of classroom exercises and make an online examination without limitations of time and location would be done by interactive model.

- As for results of questions about educational requirements and high important of them is suggested, IAURA respond to these needs by providing access to electronic references and information bases.

- As for the high important of economic requirements in E-learning easy of use, budget allotment and providing credit are initial conditions for E-learning development. Thus for doing this purpose, IAURA can provide a suitable commercial model for providing requirements and facilities.

As for high important of information security and virtual communications based on respondents views, is suggested that IAURA consider a stability legal infrastructure for this matter.

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