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Designing Information Technology Framework of Enriching E-Learning Pedagogies

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Abstract **– Academic institutes around the world have adopted the electronic learning (e-learning) model to serve the students' community, particularly those in a rural area or could not be admitted to local universities for different reasons.This study is an attempt to investigate the nature of barriers and challenges encountered in promoting e-learning pedagogies at Saudi universities. In this respect, King Saud University has been selected as a case study. A literature review of e-learning rationale, frameworks, designs and the current status of education reform in Saudi higher education are demonstrated.Findings have been discussed with pedagogues and recommendations that would enable the transition to an e-learning university environment are presented.**

Abstract **– Electronic Learning, Information Technology, Saudi Arabia, Higher Education**

1. Introduction

In order to provide a comprehensive and current status of e-learning in Saudi Arabia, Saudi geographic, economic, and cultural aspects need to be addressed. E-learning concept has been around for decades and is one of the most significant recent developments in the information systems industry.E-Learning can be viewed as a web-based system through which learners can access information, re-imaging learning experiences and injecting social features into it. The e-learning mode offers manifolds of advantages over the traditional mode of learning such as time, space, faculty resources, cost and so forth. Due to these factors, the Kingdom of Saudi Arabia (KSA) is rapidly adopting e-learning and fast emerging as an e-learning hub in the region. The cultural constraints towards female students, higher cost of educationand the conservative environment in the KSA has caused a greater support towards e-learning programs.

The implementation of ICT and its influence on the whole educational outcome has brought a fundamental change in KSA academic learning environment. The teaching and learning centers have been established across the institutes in the country to support e-learning. All major Saudi universities such as King Saud University, King Abdul Aziz, Al-Baha, Taiba, Qassim, King Khalid and Madinah have initiated e-learning agreements with the NCeL. The Saudi Higher Education Ministry has initiated many programs in the countryfor the promotion of e-learning and distance education applications in compliance with quality standards, naming Tajseer, Jusur, Portal, Excellence, Maknaz,and Taiseer.

2. Methodology

The study is based on the application of the analytical, descriptive approach through an analytical review of theliterature from a knowledge framework and using the interviews and surveys in the data collection process from the perspective of graduate students and the faculty members from the department of MIS of College of Business Administration at KSU as the study tool.

The study has revealed that there are challenges and issues that hamper the adoption of e-learning in the KSA higher education institutes. The vagueness and absence of regulations on e-learning required being addressed. This study addresses the need for a comprehensive framework to foster the excellence of

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e-learning by assessing the solutions recommended by the research community. Since the nature of the information needed in this research is related to opinions, attitudes, and beliefs, the interview method was best suited for collecting data. Therefore, qualitative research methods in the form of interviews, course evaluations and in the class discussion were used to explore and understand the impact of e-learning on Saudi students especially the female ones. The overall approach of this study is a case study of female graduate students of College of Business Administration at King Saud University.Interview sessions were initiated with evaluation questionnaires that were given in English by the author. The questionnaires are developed in-house with the collaboration of colleagues who were associated with different departments of the College of Business Administration at King Saud University.

The researcher believes that interviews are a better option because theyprovide enough opportunity to discuss or explain answers. The advantages of an interview are that open-ended questions can be employed more successfully, particular questions of special interest can be added, followed up questions can be inserted, and unclear questions or answers can be clarified such as "Tell me what your e-learning experience was like" or "How did you motivate yourself during the whole e-learning process?". The researcher has avoided questions that permit a "yes-no" answer. These closed-ended questions probably would not help gain a complete picture of respondent's experience such as "Were you satisfied with the outcome of e-learning?" "Have you changed your internet service provider to secure faster access speed?" and so forth.

A. The Limitations of the Study

The study includes the human and the temporal limitations as follows, Human limitations: This study was limited to studying the Master students and faculty responses of Department of Management Information Systems of College of Business Administration at the King Saud University.Temporal limitations: This study was conducted during the academic year of 2014 – 2015.

3. Literature Review

It is suggested by researchers (Moore et al, [1]that the term e-learning has most likely originated during the 1980's. Nichols (2003) define e-Learning as being accessibleusing technological tools that are either web-based, web-distributed, or web-capable. The belief that e-learning not only covers content and instructional methods delivered via CD-ROM, the Internet or an Intranet [2, 3]but also includes audio and videotape, satellite broadcast. The researchers [4] stated that e-learning is not only procedural but also shows some transformation of an individual's experience into the individual's knowledge through the knowledge construction process.

The e-learning mode could be distinguished further subject to the media used for delivering content. The computer-based learning comprises the use of a full range of hardware and software that are available for the use of ICT [5]. The component can be used either as computer-managed instruction and computer-assisted-learning. In computer assistedlearning, computers are used by providing interactive software as a support tool within the class or outside. In the computer-managed-instruction, computers are used for storing and retrieving information to aid in the management of education. The computer-based learning could be further branched out into the internet-based learning [6]. This cloud base learning stores the contents on the internet and allows access to authorized users. The researchers [5] called this mode "synchronous" or "asynchronous" by the application of applying optional timing of interaction. The synchronous type allows the users to learn with the instructors and with other Internet-based groups through the videoconference and chat rooms. This learning mode offers instantaneous feedback to the learners. The asynchronous mode also allows learners to discuss with the instructors as well as among themselves over the Internet at different times. The learning tools used in this mode include thread discussion and emails [6] and [5]. This mode is suitable for learners who have time constraints and would like to respond later. They would not be able to receive instant feedback from the faculty or peers' learners [6].

The Organization for Economic Co-operation and Development (OECD) defines e-learning as the use of ICT to enhance and support learning in tertiary education. It covers a wide range of systems, from students using e-mail and accessing course work online while following a course on campus programs offered entirely online. The e-learning could be sub-divided subject to the mode of offered courses. A traditional campus offering courses in thephysical classroom may tie them with e-learning to the Internet or other online network to a different extent. Web-supplemented courses focus on classroom-based teaching, but include elements such as putting a course outline and lecture notes online, use of e-mail and links to online resources. Web-dependent courses require students to use the Internet for key elements of the program such as online discussions, assessment, online project, collaborative work, but without a significant reduction in classroom time. In mixed mode courses, the e-learning element begins to replace classroom time. Online discussions, assessment, collaborative work replace some face-to-face teaching and learning. But significant campus attendance remains part of the mix. Students can follow courses offered by a university in one city from another town, country or time zone once courses are offered fully online.

A relatively new emerging mode of learning is called the Massive Open Online Course (MOOC). This mode is described by researchers [7] as providing education to all segments of society at a distance with minimal entry requirement or cost. The learning materials are openly accessible by learners. The participants in this mode share the same platform and collaborate in the production of knowledge. This includes the production of learning materials and the exchange of knowledge amongst all the participants in the course [8]. In 2015, more than 100 universities offered this mode with features varying from cost-free to fee paying. The MOOC model is expected to expand to define the future shape of e-learning [9].

The e-learning mode is made to order in Saudi Arabia due to cultural constraint, high population growth, scarcity of teaching staff and geographical nature of the country. The researchers [10] have an address that largely scatter Saudi territory and small towns, villages, and tribes that do not have access to traditional universities. The long distance between the learners and the universities, make it difficult for learners to attend and commute. The high cost of attendance is another barrier that allows making e-learning a perfect solution.The statistics [10], showed that a high number of Saudi students are applying for admission to universities and colleges that are causing pressure on the Saudi Ministry of Higher Education. In 2009 more than 400,000 students applied to enroll in higher education institutions and universities, but only 50,000 students were admitted. The Saudi government has initiated to ease the situation by financing students' education board called "King Abdullah Foreign Scholarship Program". This solution has cost the government a huge amount of money, but allows students to continue education at quality institutes.

There is a huge shortage of female teaching staff for female only conventional educational institutes in KSA. Saudi female only universities have a serious shortage of faculty who could teach specific subjects such as information security, computing informatics and so forth. In this situation, e-learning is the most feasible option to address the resource constraints. The King Saud University is utilizing an e-learning mode to deliver courses to female students through male faculty. In this mode, male faculty cannot see the female students on smart board, but synchronously communicate via audio, email, and phone.

4. E-Learning Framework at King Saud University

The KSU in Riyadh is a public university founded in 1957 as the first university in the Saudi Arabia. The student body of KSU consists of about 65,000 students both male and female . The KSU was the first in the country to offer a range of courses supported by e-learning to serve the female students. The KSU has taken many initiatives to improve the quality of e-learning such as the establishment of the Deanship of e-Learning and Distance Education. The Deanship is responsible for supporting the development of courses in e-form, provide advice and technical support to faculty, and provide an environment to stimulate e-communication between faculty members and students. The Deanship provides training courses for faculty on how to use Blackboard and Smartboard Technology. In addition, the Deanship collaborated with the NCeL to organize training sessions on e-learning. In order to improve the e-learning environment, the Deanship installed 784 Smart classrooms, each equipped with a projector, Internet-connected computer and document reader for efficient and effective facilitation of instructional material. The KSU provides students with about 3,911 works stations, equipped with the newest technology available and multiple software packages for student and faculty to promote e-learning. In addition, extensive multimedia centers and technology-based classrooms have been constructed to support teaching. The KSU is undertaking a project that aims to provide students and faculty with access to approximately 90,000 e-textbooks from 13 publishers. The KSU provides students with email accounts, access to Wi-Fi, computer rooms and online libraries, campus licenses for software, repositories for courses and study materials and online course catalogs. The College of Business Administration has 16 laboratories for e-learning with a capacity of two faculties to give instruction.

A. Faculty Perspective on E-Learning

It has been observed from the research (Alebaikan, 2010) [11] that the faculty has a reservation in respect of supporting e-learning including management support (Fig. 3.). Alebaikan [11] corroborated this sentiment in her observation of faculty perception towards blended learning in Saudi Arabian universities. In another study, [12]it has been reported that 76% of faculty who participated in the study felt that administrative support was a barrier to their motivation to participate in the blended learning process.Al Saif [13] found that faculty, especially female faculty, was interested in utilizing technology in their classrooms. He also determined several barriers to the implementation, including poor Internet connection, lack of leadership support and poor training.The common theme found in the literature review implicate the lack of training and support from leadership for faculty. It should be noted that the studies found that information technology-savvy faculty fare better than their colleagues.AbdulCalder and Anthony [14] found that some faculty felt untrained in new classroom technologies such as usage of the Smartboard system.Wong, Connelly, and Hartel [15] suggested

that the new generation of students is more visually oriented and relate stronger to technology than to traditional learning.

The instructors who teach e-learning courses agree that technology adoption is a fundamental concept in a pedagogical change in higher learning institutes (Fig. 1.). They have recommended that equipping and faculty's training is a requirement to the overall success of the e-learning program.

At King Saud University, the facultiesare encouraged to adopt e-learning tools in their instruction. Nearly 60% of faculties (Fig. 2.) agree or strongly agree in response to the statement "University encourages faculty to incorporate technology into instruction". The University is committed to improving the quality of e-learning process by establishing the Deanship of e-Learning and Distance Education. The Deanship has addressed the development of courses in electronic form, provide technical support to teaching community, and provide an environment to promote e-learning among faculty members and students.

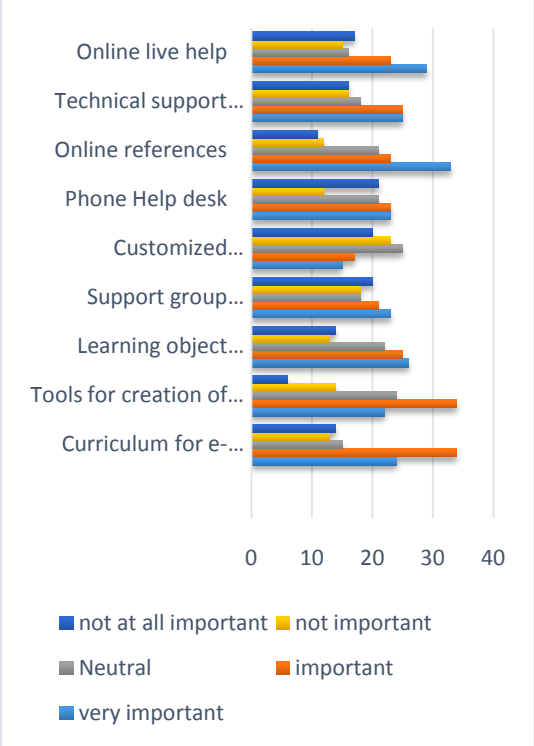

Figure 1.Rate the importance of the following IT resources to support faculty e-learning activities

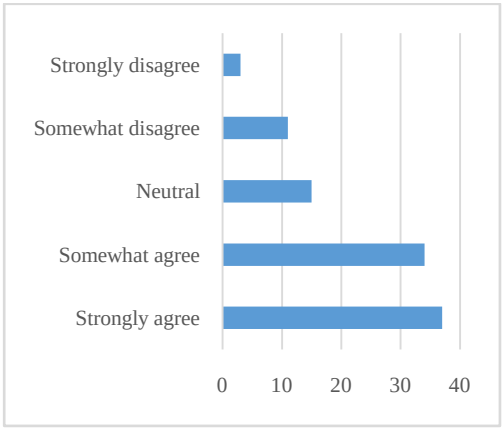

Figure 2.The university encourages faculty to incorporate technology into instruction

5. Conclusion

The Kingdom of Saudi Arabia, the most populated country in the Gulf Cooperation Council, represents the largest education industry in the region. With the majority of the Kingdom's population below the age of 25, the country's education sector holds immense growth potential. In KSA, higher education has faced a challenge to absorb secondary school graduates in the country's universities and colleges due to the high population of 30 million. In order to accomplish this, a number of solutions have been put forward, including being internationally accredited [16, 17]an e-learning model to educate the large students' community and finance their higher education abroad. In this respect, KSA has maintained a high level of spending on education in the 2016 fiscal budget by allocating 23 percent of total spending of SR 326 billion [18].

In weaving together students' and faculty perspectives on online versus face-to-face sections, there seemed to be a strong underlying pattern. Most female students believe that they learn better in e-learning mode as compared to face-to-face format. Some students did not want to risk taking difficult courses online and preferred what they considered to be the richer experience of the face-to-face classroom. The findings suggest that, unless a university works to foster strong levels of instructor presence and guidance into its online courses, its students' demand for online learning may soon level off. Moreover, students' online enrollments may tend to concentrate on IT related courses and other technical areas that are generally regarded as "professional courses". In considering how to apply the results of this article, the University may wish to survey their online learners in order to understand whether students perceive a gap between the Universities's online and face-to-face offerings in

terms of instructor guidance and presence, or in terms of the quality of learning. If such gaps are observed, college leadership could work closely with instructors to identify opportunities and resources for improvement.The student input is very critical to refining the whole process of e-learning approach. University administrators could work with faculty and concernedindividualsto design student survey that would provide informative feedback to address the obstacles and streamline of the teaching process. The survey data should be discussed with department chairs and program coordinators to oversee the process. Special faculty committees or task forces may be formed that would generate ideas subject to the survey data and provide mutual support for pedagogical improvement. The management may fund instructional technologists to provide technical input and support for course design and improvement. These committees or task forces might initially address the shortcoming of e-learning courses. These groups should not disintegrate once the shortcoming and gaps have been successfully addressed. While most students in our study preferred to enroll in e-learning sections for technology related courses, that does not necessarily imply that they were always pleased with the quality of learning in their e-learning courses. Many e-learning courses still revolve around lectures and other instructor---centered approaches and could certainly benefit from pedagogical improvement. The University may initially ground their improvement processes in the relatively innovative Saudi culture of online instruction, and after having demonstrated success in that environment shared those processes across the local institutions.

First, the reader is reminded that all student respondents in this survey took at least three courses in e-learning course delivery formats. Thus, these student respondents had personal experience taking e-learning course format. This range of personal experience is reflected in the students' detailed comments and supports the conclusion thatindicated course mode preferences accurately reflect their opinions.

It is particularly important for the Ministry of Higher Education (MOHE) in KSA to examine the barriers, challenges, and benefits that have been encountered and to design and implement solutions related to the adoption of e-learning. Although the literature review that was conducted to investigate the barrier, as well as the challenges and the status of e-learning have demonstrated positive outcome.The majority of the respondents during the interview have endorsed the benefits of e-learning in KSA. They acknowledge the value of e-learning in revising teaching methods. They mentioned that e-learning helps to establish student-centric teaching and develop appropriate learning material. They acknowledge that e-learning is able to provide them interactive learning during group studies and interactive cooperation among themselves. They felt that e-learning enables faculty to spendmore time withthe individual student and assist them towards their critical thinking approach. The majority of the respondents (81%) agreed that e-learning provides more flexible learning, increase the effectiveness of their classroom time and provide more learning opportunities while not on campus.It is recommended that the transition to e-learning university environment is facilitated by providing the workshops. Seminars should be conducted for new students and faculty and educational institutes should deploy latest technologies in student computing laboratories. Faculty should be given short training courses on how to embrace technology in delivering content, and technology should be one of the core ingredients of management strategic policies. The assumptions and recommendation explored in this study may be relevant to other cultures similar to the KSA and facing the same challenges and issues.

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