

# Establishing a Saudi e-University: Transitioning to Asynchronous Learning at King Abdulaziz University

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## Keywords

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*Traditional brick-and-mortar universities in Saudi Arabia are currently experiencing complex and unique problems. Escalating interest in higher education has triggered a vast increase in the student population, and a surge of applicants has prompted academic institutions to curb enrollment in some popular disciplines. While the number of universities throughout the Kingdom has increased, remote areas with dispersed populations remain overlooked. Likewise, an unprecedented rise in the number of women seeking a higher education has overwhelmed the university system, adding another dimension to an already difficult dilemma. However, with the vast development of information and communication technologies, distance learning provides a logical and plausible solution to the aforementioned issues. The popularity and affordability of e-learning and e-tools have facilitated the establishment of e-universities, either as independent entities or as subsidiaries of academic institutions. Consequently, King Abdulaziz University (located in the kingdom's western region) has taken pioneering steps toward establishing an e-university that is equipped to handle the country's unique needs, which will make expanded enrollment in e-learning programs a feasible objective for inclusion in the university's strategic plans.*

## 1. Introduction

Access to higher education by individuals who reside in rural and remote areas is an ongoing concern that affects multiple countries and demographics in both developed and developing nations. Rapid global changes and the increased importance of higher education have spurred extensive development of programs designed for online learning, open education resources (OER), and massive open online courses (MOOCs) in order to meet international demand (Vignare & Geith 2013). The underlying technologies that enable distance learning have matured to a level at which educational materials can be delivered to any location at anytime, and assessment no longer requires face-to-face interactions or paper-based examinations.

Distance education is also a means of empowering women, and thus enabling them to reach their fullest potential, both professionally and academically. Whittington (2013) addressed distance learning's potential to empower women in developing societies by eliminating learning barriers that have traditionally been difficult to circumvent, assuming that the provided information and communication technologies (ICT) are "woman-friendly". According to von Prummer (2008), open learning environments (OLEs) must be designed in a women-friendly manner that considers students' personal environments and life situations. The openness and

flexibility of the distance-learning approach facilitates women's access to intramural educational opportunities despite attempts to deny them such rights. For example, using ICT, the Commonwealth of Learning (COL) implemented its "Life Long Learning" (L3) program in the rural communities of India's Tamil Nadu state, allowing its female farmers to translate knowledge empowerment into livelihood security (Abiodun, 2008; Dighe&Reddi, 2006). Moreover, the World Bank has recommended strategies for overcoming barriers to women's access to and usage of ICTs(infoDev, 2010; Abu-Ghaida & Klasen, 2004), which have been adhered to by both the COL and UNESCO projects (Fiske, 2012).

As industrialized nations continue building knowledge-based economies(EC, 2002; Kikilias, 2002) and others follow suit by developing knowledge-based societies (Al-Hawamdeh& Chen, 2003; Farjani, 2004), electronic communication networks form the backbone of their respective institutional infrastructures, from e-government to e-business (Leitner, 2005; Monteiro, Swatman & Tavares, 2002; Taylor & Swannell, 2001). More broadly, the Internet has become the main communications channel for informing and motivating almost all human activities, from personal interactions to business transactions.

The *modus operandi* of distance learning are causing this mode of education to lag due to the mindset of education traditionalists (Schauer, Rockwell, Fritz, & Marx, 2005; Tamashiro, 2003). Given this state of affairs, novel technologies are being developed to facilitate electronic education at a rapid pace (Babin, Barnett, & Husseiny, 1999; Horton&Horton, 2003; Husseiny, Murdock, O'Brien, & Stevens, 1996; Taylor, 1995), as are innovative assessment techniques to ensure quality instruction (Mandernach, Donnelly, Dailey, & Schulte, 2005) and accreditation at distance-learning institutions (CHEA, 2002).

Al khalifa (2013) conducted a study examining an online education program offered at King Faisal University (KFU) in Saudi Arabia to determine the program's performance based on its stated objectives from the viewpoint of students and faculty members. The study considered three factors specifically: accessibility and flexibility, effectiveness, and quality. Both groups acknowledged that the KFU online education program provided unprecedented accessibility and flexible learning opportunities for students regardless of their age, gender, location, income, competency, or personal commitments. For students, the program offered cost-effective, flexible educational opportunities that did not conflict with their societal obligations or roles. Others appreciated the program's convenience, flexible residency options, and opportunity to enroll in classes or take examinations without a face-to-face presence; female students were especially pleased with an opportunity to learn without leaving home. Regarding the overall effectiveness of online education, it was apparent that the practice offered new challenges and experiences in learning. Revamping and reshaping the learning and teaching process is indispensable for maintaining student and faculty engagement in a new learning environment (Moore & Kearsley, 2005; Pulkkinen, 2007), while achieving quality requires continuous adjustments and experimentation with a program that is still in its infancy. Cohen (2003) developed a model for the evaluation of distance education that emphasizes the necessity of applying well-established and tested pedagogical theories that have exhibited proven results.

The KFU study highlights the need to increase the public's familiarity with online education's true nature and the wide range of unrealized learning possibilities it offers to Arabic-speaking countries as well as many other developing nations. Fortunately, distance education is gradually gaining acceptance as an ideal way of learning in certain contexts (Schank, 2001) in the Middle East (Mohamed, 2005; Nasser & Abouchedid, 2000), Africa (Darkwa & Fikile, 2000) and, indeed, throughout the world (Toshio, 2005; UNESCO, 2002). Distance learning institutions span the entire globe and have provided educational opportunities to millions of students seeking an education in this modern, fiercely competitive, business-oriented world (Grenfell & Grenfell, 2005; Rosenberg, 2005).

## **2. Higher Education in Saudi Arabia**

### **2.1 An Overview**

Until recently, the sole form of higher education available in the Kingdom of Saudi Arabia was the traditional university system, wherein enrolled students physically attend specific classes each semester according to an inflexible and unaccommodating schedule during predetermined daily periods. All students in this scenario must study full time without skipping any courses or semesters. However, such a system can no longer practically provide quality education in the Kingdom; this is especially true given the perpetually increasing demand for advanced degrees, the unprecedented number of high school graduates, and limited classroom capacities.

Furthermore, the escalating cost of a university education has prompted some students to seek employment not only to support their families but also to subsidize the cost of their studies despite the availability of financial aid. In other cases, some high school graduates who have secured gainful employment seek a higher education and therefore shift to a more profitable and fulfilling career path. In either case, the demands of a full-time job prevent these individuals from enrolling as ordinary students.

Today, Saudi Arabia is home to a multitude of universities, colleges, and technical and vocational institutions; most, however, are located in populous metropolitan areas. The construction of high quality universities in distant, sparsely populated locations is not feasible – especially for a country like Saudi Arabia with a significant landmass. Consequently, individuals residing in remote, isolated, or minimally populated areas who cannot afford to relocate are deprived of a higher education. Resorting to less interactive modes of learning, such as correspondence courses, could negatively affect educational quality. Likewise, universities in sparsely populated areas may fail to attract or retain highly qualified faculty members, and with the high cost involved in establishing and maintaining a competent academic institution that serves such a small number of students, the prospects for expanding the existing system into these areas are poor.

To overcome the hurdles involved in making higher education available to all citizens, King Abdulaziz University (KAU) has offered a distance education program for over twenty years, wherein students are not required to attend classes in person, although they must complete final examinations on campus and occasionally attend supplementary presentations throughout the semester. Furthermore, the university has extensively utilized several technologies for

educational purposes in various academic fields, such as teleconferencing and the direct broadcast of lessons in several academic fields to remote classrooms using closed circuit television. Consequently, the university has accumulated extensive experience in the implementation of such technologies, specifically the simultaneous broadcast of lectures to classrooms for use at women's colleges, albeit mainly for prospective teachers.

## 2.2 Demographic Factors

Saudi Arabia's landmass, for comparative purposes, is roughly one fifth that of the United States, and of its two million square kilometers of land, just 1.67% is arable. As of July 2006, the country's population was an estimated 21 million, with a 2.18% growth rate and a population density of approximately ten people per square kilometer (CIA, 2007). In contrast, millions of people populate its four major metropolitan areas of Riyadh, Jeddah, Mecca, and Medina; roughly sixteen other cities have populations ranging between just over a hundred thousand to over eight hundred thousand.

Strong family ties and diverse cultural factors, especially in rural and isolated areas, impede class mobility among Saudi youth, particularly females, even in the pursuit of higher education or a career. On the other hand, recruiting high quality faculty members to small campuses in sparsely populated locations is impractical. Distance education, coupled with modern technology, is an effective and logical solution in this context, allowing educators to reach students anywhere within the Kingdom. This is a more practical approach to meeting demand for education on the part of those in under-populated areas without sacrificing quality, allowing institutions to recruit distinguished and capable educators from a global pool of candidates to serve in the various phases of distance education. Distance learning is therefore more attainable than providing incentives for greater physical mobility on the part of faculty or students. In fact, many requirements for establishing distance education programs can be achieved through agreements with established and globally esteemed institutions. Providing a fair opportunity to benefit from higher education for the largest number of people from diverse social segments and from both genders can be easily achieved more quickly and at lower cost through expansion of distance education than by doubling traditional education outlets to be dispersed all over the country.

Making the Internet accessible to Saudis, regardless of their location in the Kingdom, is both a tedious and costly undertaking. Nevertheless, Saudi Arabia urgently needs to enhance its Internet infrastructure so that each citizen has access and consequently the ability to benefit from all forms of distance education. Furthermore, Saudi universities must invest in a sufficient work force and adequate facilities to accomplish the aforementioned objectives; fortunately, many of these goals are increasingly easy to achieve given rapid deployment and evolution of ICTs. While all Saudi universities, research institutions, and the King Abdulaziz City of Science and Technology are connected through modern communication networks, they could achieve many benefits from collaborating on extending distance education nationwide. A mutual effort towards expanding the Kingdom's digital infrastructure would lower implementation costs and allow said institutions to deliver wide array of distance-education programs, while also enriching their communities through the collective experience of each university's faculty

members. Additionally, these institutions could also assist in the translation of user interfaces into Arabic for those who lack English proficiency.

### **2.3 Graduate Studies**

Although Saudi graduate students comprise a select number of individuals who have graduated with distinction, there are also outstanding college graduates preoccupied with fulltime employment who nonetheless desire to obtain a graduate degree and advance their careers. Currently, the only postgraduate educational opportunities available to this demographic require registering as an external student. In contrast, most graduate students receive some form of income as part-time research or teaching assistants.

As academic research depends increasingly on multidisciplinary approaches, distance education may also enable busy graduate students to audit or enroll in undergraduate courses outside of their fields and may include special computer training, which could be difficult to fit into a student's schedule. To make significant progress in their research, graduate students may need training and direction to become effective in navigating the web to acquire specific information and in harnessing the multitude of available data and knowledge bases.

Indeed, distance education is suitable for both employed and unemployed graduate students at universities or elsewhere due to their intimate familiarity with distance learning tools. As scholars, graduate students are in constant pursuit of information for research purposes, in addition to the exchange of ideas among a likeminded, international discourse community. Distance learning tools serve as a means of extending and enriching such pursuits. Seeking research resources and desiring to enhance their communication skills with colleagues at university, graduate students can enrich their knowledge base and stretch their knowledge exchange circles outside the country to institutions and associations involved in scientific research issues. Graduate-level research requires the use of utilities that facilitate access to periodicals and specialized research centers afforded by the electronic services systems of distance learning.

### **2.4 Women's Education**

The Kingdom's implementation of distance education programs has received unprecedented attention in relation to higher education for women, specifically within the College of Arts and Humanities and the College of Business and Administration at King Abdulaziz University, for its ability to connect students and faculty members using computers. Full implementation of the distance education program began in 2006 at 102 women's colleges across various regions, and has benefited approximately 300,000 full-time and 40,000 external female students. Post-assessment of the program's progress at 36 colleges revealed positive results and indicated areas that need improvement.

In traditional Saudi university environments, women receive instruction in separate facilities, either directly from female instructors or in parallel with male students by means of teleconferencing. Distance education not only enhances interactions between female students and their instructors, it also widens the breadth of specializations available to them. Women with families, or those who live far from a college campus, will no longer be deprived of a

higher education and can easily enroll in programs that best fit their lifestyles. Furthermore, previously enrolled female students whose studies have been interrupted due to personal obligations can resume their educations (Evans, 1995). Distance learning allows women to freely enter technological fields that may increase their prospects for employment; similarly, universities can develop training programs specifically designed for women who intend to join the workforce.

The United Nations Development Program (UNDP) initiated a distance education program that was designed to train Saudi women in professional fields and subsequently equip them with skills and tools with which to advance their careers, sustain efficient workplace performance, and increase productivity (UNDP, 1999b; Khan, Khan, & Al-Abaji, 2001). The project entailed establishing a center for on-line training in higher administration, information technology, and communications and public relations. The program has made interactive multimedia instructional materials available online and on DVDs. Distance-education and training programs facilitate contacts with the most qualified instructors wherever they are, not necessarily in Saudi Arabia. Potential trainees are selected from pools of individuals who would likely occupy important administrative positions in various public and private organizations. Practical training has been provided at three central locations – Riyadh, Jeddah, and Dammam – whereby twenty women are trained at a time; each center is equipped with 20 workstations for trainees in addition to other necessary equipment. Lesson content, which is delivered in Arabic, includes appropriate materials for the implementation of distance education in a Saudi context.

## 2.5 Distance Education

Given recent initiatives to expand the reach of Saudi universities many institutions, regardless of their objectives, have introduced or plan to introduce distance education programs (Mirza & Al-Abdulkareem, 2011). For example, the program launched by KFUPM envisions the creation of an integrated learning environment employing the latest technologies while adhering to the highest international standards (KFUPM, 2014).

As the largest institution of higher education in Saudi Arabia, and one of the most distinguished universities in the Middle East, King Abdulaziz University has developed a strategic plan to become key center for research in the region, while simultaneously and steadily developing a distance-learning program for the eventual formation of an e-university (KAU, 2005). Distance education is a simpler alternative to campus-based institutions and can be systematically developed in tandem with a traditional system without negatively affecting the latter. To make progress towards establishing an e-university strengthens the efficiency of the education process and promotes the utilization of communication and information technologies in a research-oriented environment.

## 3. Traditional and Distance Education at King Abdulaziz University

### 3.1 Distance Education Enrolment

Figure 1 depicts KAU student enrollment for the 2008-09, 2010-11 and 2012-13 academic years. Female enrollment in distance education rose 55% on average, which is on par with traditional education's 56% growth rate; when compared with male enrollment rates, females

have a 44% edge over their counterparts. Over a six-year period the growth rate for male and female enrollees was 61% and 27%, respectively. On the other hand, while females initially accounted for just 4% of distance education enrollees, this number grew nearly twenty times over a five-year span; comparatively, male enrollment grew only by approximately 14% during the same period.

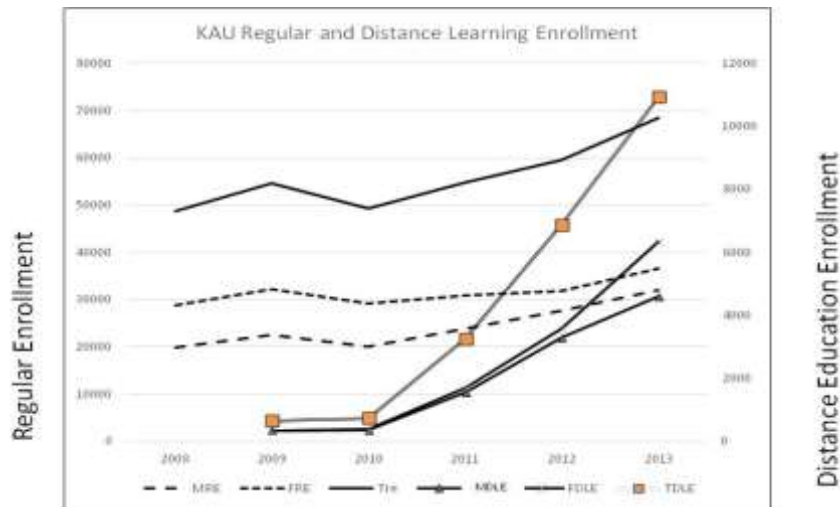


Figure 1: Traditional and distance education enrollment  
For the 2008-09, 2010-11, and 2012-13 academic years

The vast increase in female enrollment shown in Figure 1 has been attributed to the availability of distance education, which enables women to attend classes that are otherwise restricted to males. Distance education, unlike traditional Saudi institutions that feature gender-separated classrooms, provides a genderless learning medium. Furthermore, its curricula are unaffected by either over- or under-enrollment in any specific subject or class, eliminating cases in which a course may be canceled due to insufficient interest or split into several sections because of heavy demand.

The simultaneous growth of enrollees in both traditional and distance education that Figure 1 indicates are, respectively, modest and significant, demonstrating that e-learning's convenience has triggered migration from one mode of delivery to the other. This suggests that the e-university concept is capable of fulfilling one of its primary missions: to provide educational opportunities to otherwise overlooked demographics. That is, an e-University provides services to those who might otherwise be unable to afford or access a higher education. This observation is supported by the fact that admission to Saudi higher education institutions is uniform all over the country and Saudis, like most people in most countries, prefer admittance to nearby colleges (in contrast to Americans, who prefer being away from home during undergraduate studies).

Regression analysis was performed using SAS 9.4, revealing an R-square measure of goodness of fit for five of the series (more than 75% of the change in the dependent variable can be explained by the independent variable). All coefficient-statistics, which are displayed

numerically in parentheses below the estimated parameters, are significant, at the 10% level of significance. The series (FRE) R-square is lower than the other is, but still acceptable at 58%. Figures 2 and 3 depict a twenty-year forecast for traditional and distance education, respectively.

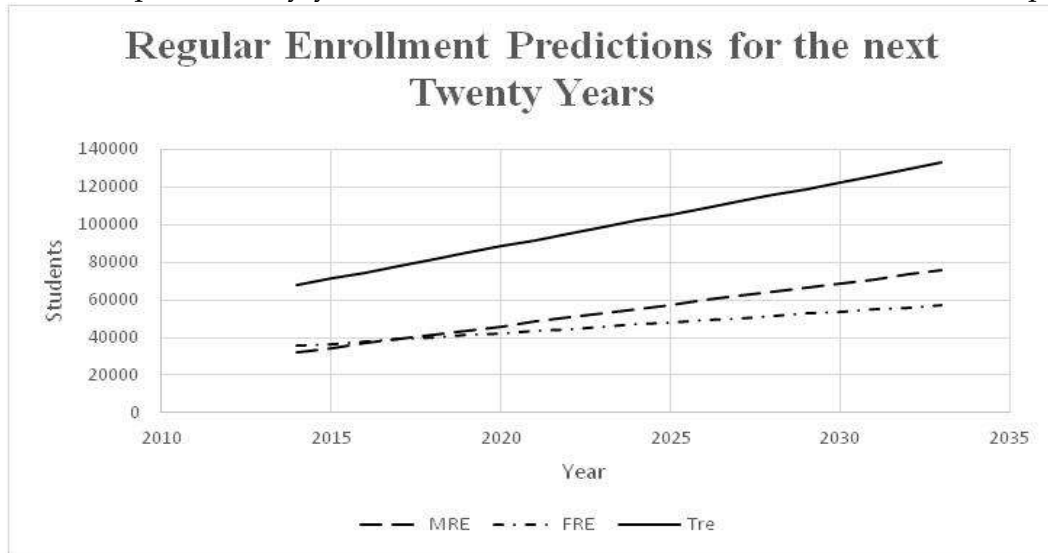


Figure 2: Forecasted enrollment in traditional education

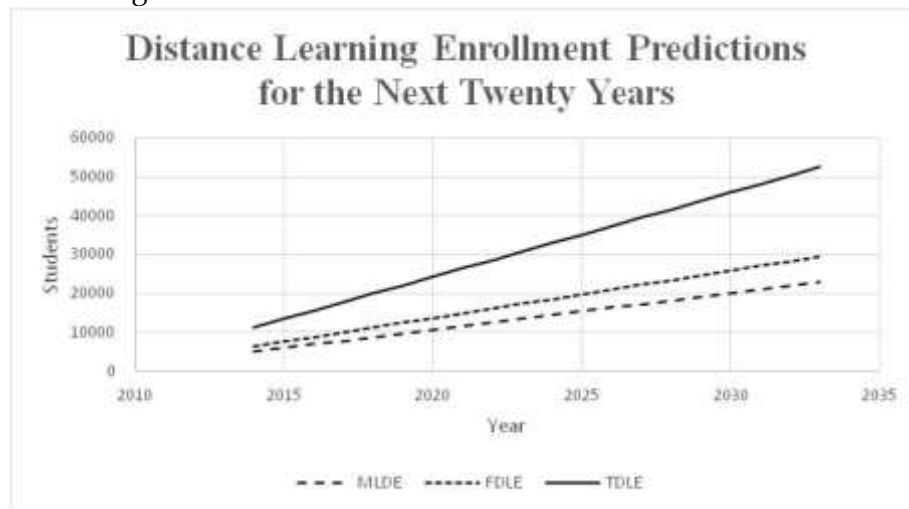


Figure 3: Forecasted enrollment in distance education

Higher enrollment trends amongst female students in traditional education programs should reverse direction in the near future or gradually slow over the next twenty years. In parallel, female enrollment in distance education programs will likely quintuple during the same period, although male enrollment is expected only to quadruple. Overall, observers expect student enrollment in distance learning programs to fulfill the specific objectives stipulated in the KAU Second Strategic Plan—namely to make 80% of all university courses available online and achieve a total enrollment of 50,000 students (Al-Filali, 2014). Considering Saudi Arabia's



modest population growth rate, in addition to other anticipated social and demographic changes (EII, 2013), the trends indicated in both graphs suggest that the establishment of an e-university should expand KAU's reach into otherwise overlooked areas, and attract more women seeking to pursue a higher education due to its wide selection of specializations.

### 3.2 Distance Education Model

KAU continuously strives to adapt the latest educational technologies to streamline the process involved in obtaining a university degree. Furthermore, it is keen to provide opportunities for all individuals to pursue a higher education through several approaches to distance education, amongst which e-learning is at the forefront. The university envisions implementing an e-learning infrastructure especially in relation to dissemination of information and interaction between science and learning without place or time restrictions. In addition, the University is developing the e-learning program to boost traditional education processes. The program is an effective, modern means for providing new opportunities for thousands of students who aspire to a university education that realizes their ambitions and fulfill their desires.

The university's vision regarding distance education involves utilizing modern technology in fields related to computers and the Internet to provide students with a university education while preserving the quality of education and advancements in scientific performance, such that graduates of distance-learning programs would have the same knowledge and qualification as their peers in the formal education system. To achieve this, KAU has initiated an intermediate five-year plan designed to lay the foundation for a comprehensive distance education program. This entails establishing an integrated course development and student services system, provisioning workers for its development and application, and encouraging cooperation between departments in reviewing curricula and student supervision. KAU's distance education model encompasses:

- Publishing materials either online rousing physical media
- Providing students with a portfolio each semester containing notes and media, such as DVDs
- Developing a training plan for faculty members who will use the system
- Identifying a means of transmitting lectures by way of satellite television channels or directly to satellites
- Assessing ways to collaborate with other universities, both financially and academically, in course development
- Organizing students' final examinations according to the distance from nearby major cities of their locations until an on-line method of evaluation matures
- Continuous preparation of scientific laboratory sessions and workshops for distance learners
- Pursuing the construction of a studio to record and transmit lectures and hold scientific demonstrations

### 3.3 Electronic Management Education Services

The Electronic Management Education System (EMES) was implemented to facilitate communication between instructors and students, whether individually or in groups, and provide educational services while duplicating many aspects of a traditional academic environment. Its primary functions include online delivery of course content, lectures, and presentations in an electronic classroom that features group discussion and standard assessments such as quizzes and exams; students may also present research projects to instructors and classmates. The EMES provides academic services such as both standard and special student study plans based on a student's academic standing, allowing students to add or drop courses according to either university regulations or the individual's own study plan. The provided administrative services include scheduling lectures, presenting curricula and content, issuing student and course statistics and reports, and fielding inquiries concerning teaching schedules and student records. The aforementioned services connect instructors, students, colleges, and the university through an online network. Finally, the EMES provides a range of more general services such as e-mail, surveys, and important announcements for students and faculty.

There are currently more than 64 distance-learning courses prepared for deployment at KAU, 25 of which have been uploaded to the EMES, in addition to six other courses that will soon be incorporated into the university's curriculum. These include subjects such as public and business administration, social sciences, psychology, linguistics, literature, and anthropology.

### 3.4 Electronic Self-Service System

As part of its framework for promoting distance education, KAU developed an electronic self-service system that students and faculty members can access either from home using their own Internet connections or locally on campus. Unlike the EMES, which allows students and faculty members to perform tasks related to specific courses, the On Demand University Services (ODUS) system facilitates access to provide all its services online via the Internet or its intranet. This has taken the system beyond the stage of providing automated administration services, utilizing direct interaction with university databases and automated systems to access academic services. This makes the benefits obtained from inquiries into and operations of University databases (administration, academic or financial) available in a secure manner without breaching the security of the system.

### 3.5 Satellite Communications

Another component of KAU's development of its distance education program includes using satellite technology to establish direct connections between the main campus in Jeddah and its geographically dispersed branches in locations such as Jizzan and Tabuk, which will subsequently be able to access both ODUS and the EMES. Additionally, plans are underway to create a 24-hour satellite television channel dedicated to KAU activities that will present live interactive lectures and coverage of university events as well as other beneficial academic programming. Until the channel's infrastructure is fully established, however, the university will purchase a few hours of daily broadcast time from public stations. Later, if a significantly

large enough pool of viewers forms throughout the Arab world, the channel will broadcast pilot programs.

#### 4. Discussion and Conclusion

Distance education offers excellent potential as a means of fulfilling Saudi Arabia's higher education needs as it can be adapted to the country's unique state of development and diverse demographic, cultural, and social properties. KAU has made great progress in making distance education a reality, and thus far has succeeded in implementing key components of its strategic plan. In turn, this success should spawn both national and international opportunities for the program in a rich and relatively untapped market.

Enrollment in traditional brick-and-mortar universities will likely decline or grow more slowly in the coming years in favor of e-universities, assuming that employers will screen potential employees objectively. Society's overall willingness to accept the legitimacy of e-learning will have a bearing on its future, and therefore greater emphasis should be placed on enhancing its public perception. Unfortunately, many organizations perceive online degrees as inferior to those obtained through face-to-face contact, especially in countries where online education is in its infancy. Some work circles erroneously perceive as a form of correspondence or print-based education, despite its asynchronous nature. Dispelling such notions requires that e-universities to establish themselves as trustworthy entities that produce exceptional graduates. To develop an adequate level of trust, however, requires institutions to perpetually innovate distance learning to achieve excellence in both educational content and delivery.

The significant increase in distance education enrollment at KAU that is currently under way is likely to occur at other academic institutions as well if they also adhere to the same high standards. Universities that is capable of providing a variety of educational delivery methods widen and increase the paths available to students seeking a college or postgraduate degree. Like telecommuting and outsourcing, distance education can address the world's ever-changing economic and social needs.

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