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Sahar El Turk

Isabelle D. Cherney

Merrimack College, cherneyi@merrimack.edu

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RESEARCH ARTICLE

Perceived online education barriers of administrators and faculty at a U.S. university in Lebanon

Sahar El Turk, Ed.D.¹, Isabelle D. Cherney, Ph.D.²

¹*D-Institute, Founder and CEO, sel96405@creighton.edu*

²*Merrimack College, Dean, School of Education and Social Policy, cherneyi@merrimack.edu*

Abstract. The purpose of this quantitative study was to identify the perceived barriers obstructing the implementation of online education by administrators and faculty at the School of Arts and Sciences of a U.S. university located in Lebanon. The aim of this study was to offer a solution to the most important perceived barriers to online education that informs administrative decisions concerning the appropriate modalities of online instruction that may be implemented at the university. The exploratory factor analysis identified 8 factors out of 35 possible perceived barriers to online education. Faculty and administrators perceived the structural barriers and the pedagogical barriers as very important. Faculty also perceived technical barriers as very important. As a first step toward offering online instruction, the university leadership could offer blended traditional and online education instruction for suitable courses in the School of Arts and Sciences with the goal of assessing feasibility and acceptance. The implementation of this solution may be smoother if facilitated using various leadership styles. In this article, the transformational leadership style is used for implementing the solution to the problem. The findings of this research may be beneficial for other universities in Lebanon and other nations that may be considering the implementation of online education.

Keywords: perceived barriers of online courses, online education, exploratory factor analysis, descriptive statistics, inferential statistics, transformational leadership

Introduction

Increasingly, online programs and courses are provided at post-secondary institutions in the U.S. (Bell & Federman, 2013). Keengwe and Kidd (2010) found that across the U.S. a large number of universities and colleges are converting traditional face-to-face classes into web-facilitated, blended, or fully online courses. These courses and degree programs play a significant role in attracting and serving non-traditional students who are benefiting the most from online education opportunities (Keengwe & Kidd, 2010; McCarthy & Samors, 2009). The number of students who took at least one online course increased by 7.2% for public four-year institutions and by 12.7% for private non-profit institutions in the U.S. (Allen & Seaman, 2015). Since 2002, the percentage of higher education institutions in the U.S. stating that online education is crucial to their enduring strategies increased from less than 50% to almost 71% in 2014 (Allen & Seaman, 2015). Similarly, the percentage of institutions stating that online education is insignificant to their enduring strategies has fallen to 8.6% (Allen & Seaman, 2015). Allen and Seaman (2015) also noted, “70.7% of all currently active, degree-granting institutions that are open to the public have some distance offerings” (p. 9). Hence, only 29.3% of post-secondary institutions in the U.S. do not provide online education. A study of undergraduate students at an American institution who were enrolled in traditional and online courses showed that students favored online courses to the traditional classroom because they “learned more in these classes, spent more time on these classes, and found

these classes to be more difficult yet of higher quality than traditional classes” (Keengwe & Kidd, 2010, p. 533).

Some private universities in the U.S., such as Princeton University, Harvard University, Wellesley College, Amherst College, Yale University, and Stanford University, are still relatively resistant to offering 100% online instruction degrees. However, they are all incorporating online learning in the form of online courses to varying degrees (Brown, 2012; Harvard Extension School, 2014; Princeton University, 2014; Stanford University, 2014; Wellesley College, 2014; Yale University, 2014). For instance, students in the Harvard Extension School have the option of taking a combination of online and on-campus courses to earn a degree through the school’s video streaming distance education program (Harvard Extension School, 2014).

Online education programs in the U.S. are considered the largest and most developed in the world. Higher education institutions in the U.S. have progressively incorporated online education (Bonk & Kim, 2006; Morey, 2004). Unlike the U.S., online education has not been well received in the Middle East (Mirza & Abdulkareem, 2011).

The following paragraphs present the history of online education in the United Arab Emirates (UAE) and Lebanon, and its level of adoption across the countries. Middle Eastern countries became late adopters of online education because their governments were late adopters of the Internet (Mirza & Al-Abdulkareem, 2011). Governments, which originally resisted the adoption of the Internet, later realized its importance and acquiesced to make the Internet available to their citizens after controlling access to undesired sites (Mirza & Al-Abdulkareem, 2011). However, the incidence of primarily having online education in Middle Eastern countries is low in comparison with the U.S. (Spinks & Bedi, 2012). Some Middle Eastern countries, such as the UAE, are in the process of accepting online education and slowly recognizing the idea of it as a legitimate way to earn a degree in the Middle East (Spinks & Bedi, 2012). For instance, Hamdan Bin Mohammed e-University (HBMeU) has emerged for the purpose of spreading online education. HBMeU was set up in 2002 as the first virtual institution in the Middle East (Spinks & Bedi, 2012). Additionally, U21Global and the Syrian Virtual University, located in Dubai’s Knowledge Village, and the University of Liverpool/Laureate are known for providing online degrees in Dubai (Spinks & Bedi, 2012). On October 23, 2013, the Minister of Higher Education and Scientific Research in UAE, Sheikh Hamdan bin Mubarak Al Nahyan, made a new decision about online higher education that consisted of accepting interactive e-learning education as equivalent to traditional education programs and spreading online education in the country. The Minister required that online education be interactive between instructors and students through the utilization of diverse sophisticated e-learning management systems (Emaratalyoun, 2014). Additionally, online degrees earned from other states would be certified and accepted by the Ministry of Education according to specific criteria including having an interactive e-learning system at the accredited university offering the online degrees (Emaratalyoun, 2014). In 2014, the Ministry of Higher Education and Scientific Research in UAE released a list of 105 accredited foreign online universities recommended for UAE students; 46 were in the United Kingdom, 34 were in the U.S., 20 were in Australia, and five were in New Zealand (The National, 2014).

In Lebanon, online education is still not an option. The Lebanese government does not approve any form of online degrees as an equivalent to traditional degrees. According to the official website of the Lebanese Ministry of Education and Higher Education, online education degrees are not accepted as equivalent to traditional degrees (Lebanese Ministry of Education and Higher Education, 2014). Despite this fact, the Arab Open University (AOU), an educational institution affiliated with the Open University in the United Kingdom, offers a Lebanese degree that is accredited by the Lebanese Ministry of Education and Higher Education and a British degree from the Open University in the United Kingdom (AOU, 2014). The British degree is not accredited by the Ministry of Education and Higher Education in Lebanon because it is online. Thus, holders of the British degree will not be able

to work in Lebanon using this specific degree unless they hold a degree that was delivered in the conventional form. There are over 30 public and private universities in Lebanon, none of which offer any online degree programs (Lebanese Ministry of Education and Higher Education, 2014). However, in 2007, the American University of Beirut (AUB) offered an online graduate trial course, MECH798- Design Methodology (AUB, 2014).

In Lebanon, there is no policy validating online degrees, but there are some attempts at introducing online education. Despite not offering online degrees on its campus, AUB utilized Moodle, an official learning management system, to teach Web-enhanced, blended, or online courses (AUB, 2014). In 2013, the Lebanese American University (LAU) offered for the first time an elective graduate computer science course, Structural Bioinformatics, through the utilization of synchronous video conferencing (Khazen, personal communication, August 21, 2014).

To overcome barriers to online education, university leaders should carefully consider a number of cultural and technical barriers to acceptance and instructional success before, during, and after seeking to implement solutions. They would need to know what administrators and faculty members think about online learning and which barriers may inhibit implementation. Bass and Avolio (1993) mentioned that a new vision of an organization could begin and develop when its leaders build a culture that is devoted to support that new vision. The university's leaders need to be the change agents who will create a new vision to change the culture of the university and effectively articulate this change to faculty, administrators, staff, and students. The university's leadership includes executive, academic, and administrative officers. Leaders at the university are the first agents who accept or reject any organizational change occurring at the university, and they are the ones who create and change university policies. McCarthy and Samors (2009) stated that the effective use of online learning as a strategic instrument by academic institutions is a result of strong leadership and help from executive administrators. The leadership role at the university being studied here, the School of Arts and Sciences of a U.S. university located in Lebanon, is crucial in the implementation process of online education in the curricula of the School of Arts and Sciences. Yang (2010) showed that administrators have long assumed their pivotal influence on school policies, faculty morale, and learning atmosphere. The responsibilities of the executive officers are critical to the prosperity and efficient functioning of any academic department at the university under investigation in this study. Academic leaders in their disciplines are responsible for delivering their university's strategic objectives through providing academic leadership in their disciplines, generating income via new activities, managing the delivery of their departments' teaching methodologies, contributing to setting objectives and priorities for the university, and supervising academic affairs. Administrative leaders or directors of the university's departments also have an important role in identifying the barriers to online education and providing an effective solution to overcoming the perceived barriers in order to have a successful implementation of online education at the university.

Thus, the purpose and aim of this study, respectively, based on dissertation research (El Turk, 2015), were to identify the barriers to online education and to create and offer an implementation plan to overcome the most important perceived barriers at one university in Lebanon.

Hypotheses

To identify the perceived barriers to online education, administrators and faculty at a U.S. university located in Lebanon were surveyed. The research question guiding this study was: What are the administrators' and faculty members' perceptions of barriers impeding the implementation of online programs at the School of Arts and Sciences of the university under study, and what must leaders do to overcome them?

In the administrators' data set, the following hypotheses were investigated:

Hypothesis #1: The roles of administrators at the university affect the rating of the cultural barriers.

Hypothesis #2: The roles of administrators at the university affect the rating of the structural barriers.

Hypothesis #3: The gender of administrators affects the rating of all extracted factors.

Hypothesis #4: The administrative status of administrators affects the rating of the epistemological barriers.

Hypothesis #5: The working experience of administrators affects the rating of the structural barriers.

In the faculty's data set, the following hypotheses were investigated:

Hypothesis #1: The gender of faculty affects the rating of all extracted factors.

Hypothesis #2: The age of faculty affects the rating of the technical barriers.

Hypothesis #3: The ranks of faculty affect the rating of the psychological barriers.

Hypothesis #4: The status of faculty affects the rating of cost effectiveness analysis barriers.

Hypothesis #5: The experience with online education affects the rating of all extracted factors.

Methodology

Instrumentation

Note: *this first appeared as dissertation research (El Turk, 2015).*

Two questionnaires were developed based upon the barriers to online education identified in the literature. These questionnaires were designed to survey participants about their perceived barriers impeding online education implementation at the university. The questionnaires were created in December 2014 with an online survey tool. The first questionnaire was sent to executive, academic, and departmental administrators at the university under study. The second questionnaire was sent to faculty members at the School of Arts and Sciences. The participants rated the perceived barriers to online education anonymously.

An online survey tool was used due to geographical and time barriers at the chosen site under study. The online survey tool also saved time and effort because it allowed the researchers to create, administer, and collect data in one integrated Web system. It also ensured accuracy of data because the responses did not need to be entered manually. This tool was convenient and accessible for participants because they could access it through any device and respond to the surveys' questions whenever they wanted and started, and then complete it later. Moreover, the online survey protected the anonymity of participants, which made them feel more comfortable to participate and more honest while replying to questions.

An exemption from institutional review board (IRB) review was requested because this study was led in normally accepted educational settings concerning normal education practices with an adult population. The IRB of Creighton University and the university under study accepted the two questionnaires and other research materials.

Administrator's questionnaire

The administrators' questionnaire consisted of six demographic variables, including role, gender, age, administrative rank, administrative status, and working experience at the university; seven variables related to online education (familiarity with online education, online education experience, belief of administrators about the relation between students' performance in an online course and their attitudes towards online learning, criticality of online education to the long-term strategy at the university, parity of learning outcomes for online education versus face-to-face instruction, motivations of the implementation of online education at the university, and administrators' belief that the university's faculty would

accept the value and legitimacy of online education at the university); 35 variables exploring the participants' perceived barriers to online education; one variable about additional obstacles impeding the adoption of online education in Lebanon; one variable about administrators' willingness to adopt online education (online programs or online courses) at the university assuming the barriers have been removed; and one final variable about factors weighing the most in administrators' decision to adopt or not adopt online education.

Faculty questionnaire

The faculty's questionnaire consisted of seven demographic variables, including role, department, gender, age, rank, status, and teaching experience; six variables related to online education (familiarity with online education, online education experience, belief of faculty about the relation between students' performance in an online course and faculty's attitudes towards online learning, parity of learning outcomes for online education versus face-to-face instruction, the motivations of the implementation of online education at the university, and faculty interest in developing and/or teaching an online course); the same 35 variables provided in the administrators' questionnaire exploring the participants' perceived barriers to online education; one variable about additional obstacles impeding the adoption of online education in Lebanon; one variable about faculty willingness to adopt online education (online programs or online courses) at the university; and one variable about whether faculty would recommend online courses to their students in case the university offered them.

Surveys response format

The two survey questionnaires contained both structured and unstructured response formats. Both questionnaires ended with an unstructured format with the question "Please feel free to share your thoughts (if any) about any question or answer."

In the administrators' questionnaire, a Likert scale was used to obtain an overall measurement of the participants' perceptions of online education barriers. Participants rated the 35 barriers using a 5-point Likert response format. This scale was balanced on both sides of a neutral option to avoid a biased measurement. The scale ranged from "Not important," "Somewhat Important," "Neutral," "Important," to "Very Important". The variable addressing the familiarity with online education was also measured using a 5-point Likert scale ranging from 1 "Not Familiar," 2 "Slightly Familiar," 3 "Neutral," 4 "Familiar," to 5 "Very familiar." Another 5-point Likert scale was used to evaluate the perceptions of participants towards the parity of learning outcomes for online education versus face-to-face instruction. This format ranged from 1 "Inferior," 2 "Somewhat Inferior," 3 "Same," 4 "Somewhat Superior," to 5 "Superior."

In the faculty's questionnaire, the variable addressing the familiarity with online education was also measured using a 5-point Likert type response format from 1 ("Not Familiar") to 5 ("Very familiar"). Another 5-point Likert format was used to evaluate the perceptions of participants towards the learning outcomes for online education in comparison with face-to-face instruction, ranging from 1 ("Inferior") to 5 ("Superior"). Similar to the administrators' survey, some questions had an open-ended textbox to allow participants to write their answers in case the provided choices were not applicable. At the end of the survey, the open-ended question "Please feel free to share your thoughts (if any) about any question or answer" was added.

Participants

Administrators' sample characteristics

The administrators' sample included 83 administrators representing the university's administrator population, including academic officers, administrative officers, and executive officers. They were recruited from the following departments: Planning and Renovations, Provost Office, Facilities Management, Business Office, Administrations, Admissions,

Continuing Education, and Finance. Forty-seven administrators participated in the survey, representing a response rate of 56.62%. However, pairwise deletion of missing data resulted in the exclusion of seven participants who did not complete the survey and one participant who skipped several questions for a sample of 39 participants.

Table 1: *Administrators Characteristics*

Variable	<i>N</i>	% of Sample	<i>Mo</i>
Role			3
Academic Officer (1)	11	28.2	
Administrative Officer (2)	12	30.8	
Executive Officer (3)	13	33.3	
Other (4)	3	7.7	
Gender			1
Male (1)	23	59	
Female (2)	14	35.9	
Age			4
Under 30 (1)	1	2.6	
30-40 (2)	2	5.1	
40-50 (3)	11	28.2	
50-60 (4)	22	56.4	
Above 60 (5)	3	7.7	
Rank			14
Assistant Provost (3)	2	5.1	
Vice-President (4)	3	7.7	
Assistant Vice-President (6)	1	2.6	
Dean (and full professor) (7)	4	10.3	
Dean (8)	1	2.6	
Assistant Dean (12)	4	10.3	
Director of administrative department (14)	12	30.8	
Chair of academic department (and full professor) (17)	2	5.1	
Associate Chair (19)	1	2.6	
Executive Director (21)	6	15.4	
Administrative Status			1
Full-time (1)	36	92.3	
Part-time (2)	2	5.1	
Working Experience			3
5 years or less (1)	6	15.4	
6 to 9 years (2)	5	12.8	
10 to 19 years (3)	19	48.7	
20 plus (4)	9	23.1	
Familiarity with online education			4
Not Familiar (1)	2	5.1	
Slightly Familiar (2)	7	17.9	
Neutral (3)	1	2.6	
Familiar (4)	21	53.8	
Very Familiar (5)	5	12.8	
Online Education Experience			1
No Experience (1)	32	82.1	
Taken an online course (2)	4	10.3	
Taught an online course (3)	2	5.1	
Developed an online course (4)	1	2.6	

Note: *Mo* = Mode

To measure the central tendency of administrators' data, the mode across the administrators' answers for each of the questions was measured. It was used in this study because the independent variables were categorical. Additionally, the mode is the least affected by the presence of skew in the data among the central tendencies measures. As noted in Table 1, the majority of participants in the administrators' sample were male (*Mo* = 1)

executive officers ($Mo = 3$) with ages between 50 and 60 years old ($Mo = 4$), having a working experience ranging between 10 to 19 years ($Mo = 3$), and holding a full-time position ($Mo = 1$) as directors of an administrative department ($Mo = 14$). The majority of administrators were familiar with online education ($Mo = 4$) but they did not have any experience in online education ($Mo = 1$).

Faculty sample characteristics

The initial faculty sample consisted of 363 faculty members at the School of Arts and Sciences at two campuses of the university; 160 participated resulting in a response rate of 44.07%. However, pairwise deletion of missing data resulted in the exclusion of 21 participants who failed to complete the survey and seven participants who skipped some questions for a sample of 132 participants.

Table 2: *Faculty characteristics*

Variable	<i>N</i>	% of sample	<i>Mo</i>
Role			1
Faculty at the School of Arts and Sciences (1)	125	95.42	
Other (2)	3	2.29	
Department			6
Communication Arts (1)	10	7.63	
Computer Science and Mathematics (2)	19	14.5	
Education (3)	4	3.05	
English (4)	29	22.14	
Humanities (5)	20	15.27	
Natural Sciences (6)	36	27.48	
Social Sciences (7)	13	9.92	
Gender			2
Male (1)	53	40.46	
Female (2)	78	59.54	
Age			2
Under 30 (1)	24	18.32	
30-40 (2)	47	35.88	
40-50 (3)	27	20.61	
50-60 (4)	27	20.61	
Above 60 (5)	6	4.58	
Rank			4
Adjunct Faculty (1)	3	2.29	
Visiting Faculty (2)	3	2.29	
Research Faculty (3)	3	2.29	
Instructor (4)	48	36.64	
Lecturer (5)	9	6.87	
Senior Instructor (6)	3	2.29	
Assistant Professor (7)	20	15.27	
Associate Professor (8)	10	7.63	
Professor (9)	2	1.53	
Status			6
Full-time (Tenured) (1)	13	9.92	
Full-time (Tenure Track, not tenured) (2)	18	13.74	
Full-time (Not-tenure track) (3)	19	14.5	
Part-time (Tenured) (4)	12	9.16	
Part-time (Tenured track, not tenured) (5)	9	6.87	
Part-time (Not-Tenure track) (6)	52	39.69	
Adjunct (7)	1	0.76	
Other (8)	3	2.29	
Teaching Experience			1
5 years or less (1)	85	64.89	
6 to 9 years (2)	10	7.63	
10 to 19 years (3)	16	12.21	
20 plus (4)	19	14.5	

Variable	<i>N</i>	% of sample	<i>Mo</i>
Familiarity with online education			4
Not Familiar (1)	17	12.98	
Slightly Familiar (2)	22	16.79	
Neutral (3)	15	11.45	
Familiar (4)	49	37.4	
Very Familiar (5)	13	9.92	
Online Education Experience			1
No Experience (1)	95	72.52	
Taken an online course (2)	24	18.32	
Taught an online course (3)	3	2.29	
Developed an online course (4)	9	6.87	

Note: Mo = Mode

The level of experience with online education was notable because it showed that the majority of faculty at the School of Arts and Sciences (72.52%) did not have experience with online education while 18.32% of faculty had participated in an online course.

As noted in Table 2, the majority of the participants in the faculty sample were female ($Mo = 2$) instructors ($Mo = 3$) with ages between 30 and 40 years old ($Mo = 2$), having a maximum of 5 years of teaching experience ($Mo = 1$) and holding a part-time non-tenure track position ($Mo = 6$) in the natural sciences department ($Mo = 6$). The majority of faculty members were familiar with online education ($Mo = 4$), but they did not have any experience in online education ($Mo = 1$).

Results

Since the small sample of administrators was not sufficient for an exploratory factor analysis, both administrators and faculty datasets were combined to reduce the number of dependent variables (barriers) and to identify a structure in the relationship between independent (demographic) and dependent (barriers) variables. After combining both data sets, an exploratory principal components factor analysis was conducted on the 35 barriers used in the survey to understand how those barriers were conceptually linked and to facilitate thematic statistical analysis. To keep the factors with eigenvalue of one or greater, a Varimax with Kaiser Normalization was done prior to factor rotation (Lloyd et al., 2012).

SPSS was used to verify the sampling sufficiency for this analysis through the Kaiser-Meyer-Olkin (KMO) measure. The Bartlett's test of sphericity was also used to evaluate the possibility of conducting a factor analysis. A high KMO value and a small p-value for the Bartlett's test were desired.

The output of the exploratory factor analysis presented the proportion of variance accounted for by each barrier and the total variance explained by the extracted factors. The criteria used to retain factors included factors with eigenvalues > 1 , a review of the scree plot, factors containing at least two items, factors with coefficients of $> |.50|$ on at least one factor, and factors with high communalities ($> .5$) (Kaiser, 1960; Stevens, 1986). The rotated component matrix was used to group the barriers.

Exploratory Factor Analysis

Measure of sampling adequacy

Table 3: *KMO and Bartlett's Test*

KMO Measure of Sampling Adequacy		0.789
	Approx. Chi-Square	3033.42
Bartlett's Test of Sphericity	Df	595
	Sig.	0.000

Note: KMO=Kaiser-Meyer-Olkin

As shown in Table 3, the high KMO (0.789) measure of sampling adequacy indicates that correlations between items were large and that underlying factors caused the proportion of variance in the variables; thus, it allowed for the application of factor analysis. This was supported by the Bartlett's test of sphericity ($\chi^2 = 3033.416$, $p < .001$). Thus, the factor analysis could be conducted.

Total variance explained

The following criteria were used to retain factors: factors with eigenvalues >1 , a review of the scree plot (Figure 1), factors containing at least two items, factors with coefficients of $> |.50|$ on at least one factor, and factors with high communalities ($>.5$) (Kaiser, 1960; Stevens, 1986). Using these criteria, 10 factors were extracted, and the cumulative percentage of the extraction sums of squared loadings was 70.218%, which means that the extracted factors explain approximately 70% of the variance or the variability in the original variables.

Figure 1 presented the scree plot of the eigenvalue against the factor number. The scree plot showed the eigenvalues on the y-axis and the number of factors on the x-axis. As noted in the figure, the point where the slope of the downward curve was visibly stabilizing presented the 10 factors that should be created by the analysis.

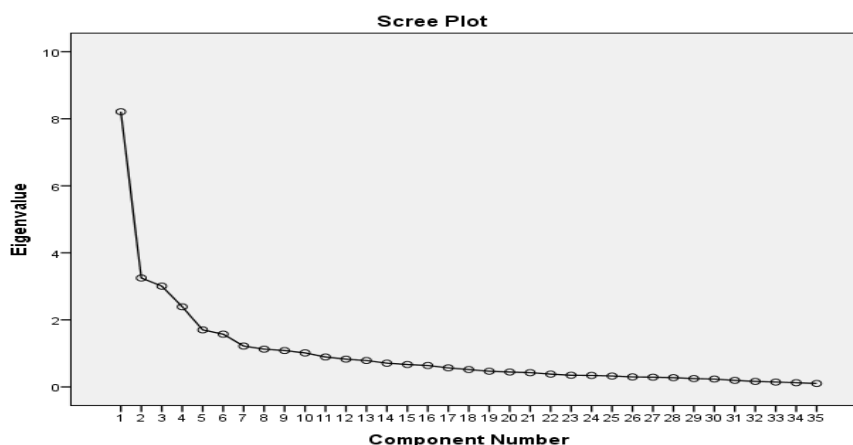


Figure 1. Scree Plot of the Eigenvalue Against the Factor Number

Factors

The rotated component matrix was used to group the variables. All 35 items were loaded into 10 factors. No items were excluded. The 10 factors were identified as follows. The first factor was classified as *cost-effectiveness analysis barriers* and revolve around the following seven items: faculty coordination costs, online courses may cost more to develop than face-to-face courses, online courses may cost more to deliver than face-to-face courses, greater faculty effort and time to develop and teach an online course, inadequate compensation, increased workload, and technological infrastructure investment. The second factor was categorized as *interpersonal barriers* and included the following three factors: lack of personal relationship with students, faceless teaching, and lack of social interaction within the class. The third factor was categorized as *pedagogical barriers* and involved the following five barriers: lack of control over student cheating, inability to grasp visual cues from students, difficulty of conveying concepts in some fields online, online students may not learn as well as face-to-face students, and doubts about the quality of online learning outcomes. The fourth factor was categorized as *technical barriers* and consisted of the following four items: inadequate infrastructure, frequent technology failures, lack of consistent electricity, and slow Internet access. The fifth factor was categorized as *cultural barriers* and comprised the following four barriers: resistance to online teaching methods, lack of acceptance of online instruction by faculty, faculty hesitancy to teach courses that they do not own, and

faculty reluctance to embrace a course that does not allow for a high degree of customization. The sixth factor was categorized as *epistemological barriers* and contained the following three barriers: lack of awareness about online education in Lebanon, lack of administrative and technical support, and lack of knowledge in the utilization of online learning systems. The seventh factor was categorized as *psychological barriers* and involved the following two barriers: personal anxiety with technology and personal anxiety with online teaching. The eighth factor was categorized as *job security barriers* and consisted of the following two barriers: fear of the imminent replacement of faculty by adjunct faculty and faculty concerns about their rank. The ninth factor was categorized as *structural barriers* and involved the following three items: lack of governmental policy approving online degrees, inadequate pedagogical skills for online teaching, and students need more discipline to succeed in online courses. The tenth factor was categorized as *philosophical barriers* and included the following two barriers: financial readiness of the university to use online learning management systems and lack of acceptance of online education by potential employers.

Reliability analysis

Table 4: *Reliability Coefficients for All Constructs*

Factors	Cronbach's alpha
Cost-effectiveness analysis barriers (CEAB)	.86
Cultural barriers (CB)	.88
Technical barriers (TB)	.82
Interpersonal barriers (IB)	.84
Pedagogical barriers (PLB)	.77
Epistemological barriers (EB)	.76
Psychological barriers (PSB)	.88
Job Security barriers (JSB)	.50
Structural barriers (STB)	.47
Philosophical barriers (PHB)	-.36

Note: The Cronbach's alpha less than .7 are bolded.

As shown in Table 4, the first seven developed scales or factors were reliable and acceptable because they had reliability coefficients ranging from .7 to approximately .9. The last three factors (job security, structural barriers, and philosophical barriers) had reliability coefficients of less than .7, implying that these three factors were not statistically reliable. To summarize the unreliable data, the central tendency (mode) of the three factors and their corresponding barriers are presented in Table 5.

Table 5: *Mode of the Unreliable Factors and Their Barriers*

	Mo
Factor 8: Job Security Barriers (JSB)	3
Factor 9: Structural Barriers (STB)	4
Factor 10: Philosophical Barriers (PHB)	3
Lack of governmental policy approving online degrees (STB1)	5
Inadequate pedagogical skills for online teaching (STB2)	4
Students need more discipline to succeed in online courses (STB3)	5
Fear of the imminent replacement of faculty by adjunct faculty (JSB1)	3
Faculty concerns about their rank (JSB2)	3
Financial readiness of the university to use online learning management systems (PHB1)	3
Lack of acceptance of online education by potential employers (PHB2)	4

Note: Mo = Mode

As shown in Table 5, the majority of participants (administrators and faculty) were neutral about the job security barriers ($Mo = 3$) and the philosophical barriers ($Mo = 3$).

However, the structural barriers were found to be important ($Mo = 4$). For that reason, the job security barriers and the philosophical barriers should be deleted because their items were not consistent internally. Thus, four barriers were deleted from the analysis, leaving 31 barriers and eight factors including cost-effectiveness analysis barriers, interpersonal barriers, pedagogical barriers, technical barriers, cultural barriers, epistemological barriers, psychological barriers, and structural barriers.

Normality

Not all p -values of the Shapiro-Wilk (SW) were greater than .05 for both data sets (administrators and faculty). Therefore, the assumption of normality was not met. This was one of the reasons for using the non-parametric tests to analyze the hypotheses of the study.

Descriptive Statistics

Results of administrators' data analysis

In the administrators' data set, the following barriers received the highest mode ($Mo = 5$): lack of governmental policy approving online degrees in Lebanon and the lack of control over student cheating. Additionally, the following barriers were perceived as important ($Mo = 4$): lack of awareness about online education in Lebanon, lack of administrative and technical support, lack of knowledge in the utilization of online learning systems, slow Internet access, personal anxiety with technology, personal anxiety with online teaching, inadequate pedagogical skills for online teaching, lack of personal relationship with students, faceless teaching, lack of social interaction within the class, inability to grasp visual cues from students, difficulty of conveying concepts in some fields online, doubts that online students may not learn as well as face-to-face students, doubts about the quality of online learning outcomes, resistance to online teaching methods, lack of acceptance of online instruction by faculty, faculty hesitancy to teach courses that they do not own, greater faculty effort and time to develop and teach an online course, and technological infrastructure investment.

Those items deemed to be less of a barrier included frequent technology failures ($Mo = 2$) and lack of consistent electricity ($Mo = 1$). The majority of administrators were neutral ($Mo = 3$) on the following barriers: inadequate infrastructure, faculty reluctance to embrace a course that does not allow for a high degree of customization, faculty coordination costs, online courses may cost more to develop than face-to-face courses, online courses cost more to deliver than face-to-face courses, inadequate compensation, and increased workload.

The barrier, "Students need more discipline to succeed in online courses," did not have a mode because 12 of the participants rated this barrier as "Somewhat important" and 12 rated this barrier as "Important." No conclusions were made, as the mean of this barrier was 3.44.

Table 6: *Descriptive Statistics of Online Education Barriers*

Barriers	Administrators	Faculty
	Data Set	Data Set
	<i>Mo</i>	<i>Mo</i>
Lack of governmental policy approving online degrees	5	5
Frequent technology failures	2	5
Lack of consistent electricity	1	5
Slow Internet access	4	5
Students need more discipline to succeed in online courses	/	5
Lack of control over student cheating	5	5
Lack of awareness about online education in Lebanon	4	4
Lack of administrative and technical support	4	4
Lack of knowledge in the utilization of online learning systems	4	4
Inadequate infrastructure	3	4
Personal anxiety with technology	4	4
Personal anxiety with online teaching	4	4
Inadequate pedagogical skills for online teaching	4	4

Barriers	Administrators	Faculty
	Data Set	Data Set
	<i>Mo</i>	<i>Mo</i>
Lack of personal relationship with students	4	4
Faceless teaching	4	4
Lack of social interaction within the class	4	4
Inability to grasp visual cues from students	4	4
Difficulty of conveying concepts in some fields online	4	4
Online students may not learn as well as face-to-face students	4	4
Doubts about the quality of online learning outcomes	4	4
Lack of acceptance of online instruction by faculty	4	4
Greater faculty effort and time to develop and teach an online course	4	4
Increased workload	3	4
Technological Infrastructure investment	4	4
Resistance to online teaching methods	4	3
Faculty hesitancy to teach courses that they do not own	4	3
Faculty reluctance to embrace a course that does not allow for a high degree of customization	3	3
Faculty coordination costs	3	3
Online courses may cost more to develop than face-to-face courses	3	3
Online courses cost more to deliver than face-to-face courses	3	3
Inadequate compensation	3	3

Note: There is no mode for this barrier in the administrators' data set because 12 administrators rated this barrier as "Somewhat important" and 12 rated this barrier as "Important".

Results of faculty data analysis

As shown in Table 6, the barriers in the faculty data set with the highest mode ($Mo = 5$) were lack of governmental policy approving online degrees in Lebanon, frequent technology failures, lack of consistent electricity, slow Internet access, and lack of control over student cheating.

Additionally, the barriers perceived to be important ($Mo = 4$) were lack of awareness about online education in Lebanon, lack of administrative and technical support, lack of knowledge in the utilization of online learning systems, inadequate infrastructure, personal anxiety with technology, personal anxiety with online teaching, inadequate pedagogical skills for online teaching, lack of personal relationship with students, faceless teaching, lack of social interaction within the class, inability to grasp visual cues from students, difficulty of conveying concepts in some fields online, online students may not learn as well as face-to-face students, doubts about the quality of online learning outcomes, lack of acceptance of online instruction by faculty, greater faculty effort and time to develop and teach an online course, increased workload, and technological infrastructure investment. As noted in Table 6, faculty at the School of Arts and Sciences perceived all barriers mentioned in the survey as important or very important except for the barriers they were neutral about due to the lack of online teaching experience.

The majority of faculty were neutral on the following barriers ($Mo = 3$): resistance to online teaching methods, faculty hesitancy to teach courses that they do not own, faculty reluctance to embrace a course that does not allow for a high degree of customization, faculty coordination costs, online courses may cost more to develop than face-to-face courses, online courses cost more to deliver than face-to-face courses, inadequate compensation.

Inferential Statistics

The section below presents the non-parametric tests used and the results of hypotheses testing in both administrators' and faculty's samples.

Testing administrators' hypotheses

Hypothesis #1: The roles of administrators at the university affect the rating of the cultural barriers' importance.

The chi-square of the cultural barriers construct was significant ($\chi^2 = 8.326, p = .04$). On average, executive officers' mean ranking scores of the cultural barriers were the highest ($M = 26.46$), followed by a mean rank of rating score of 20.32 for academic officers, 13.83 for administrative officers, and 15.50 for other roles of administrators.

Hypothesis #2: The roles of administrators at the university affect the rating of the structural barriers.

The chi-square of the structural barriers construct was significant ($\chi^2 = 10.246, p = 0.017$). On average, academic officers' mean ranking scores of the structural barriers were the highest ($M = 26.32$), followed by a mean rank of rating of 22.85 for executive officers, 13.21 for administrative officers, and 11.67 for other roles of administrators.

Hypothesis #3: The gender of administrators affects the rating of all extracted factors.

The chi-square of all constructs was not significant ($\chi^2 < 5.99, p > .05$).

Hypothesis #4: The administrative status of administrators affects the rating of the epistemological barriers.

The p-value of the epistemological barriers subscale was significant ($p = .048$). On average, part-timers' mean ranking scores of the epistemological barriers were the highest ($M = 34.5$) followed by a mean rank of rating of 18.67 for full-timers.

Hypothesis #5: The working experience of administrators affects the rating of the structural barriers.

The chi-square of the structural barriers subscale was significant ($\chi^2 = 8.14, p = .043$). On average, administrators having 20 plus years of working experience had the highest mean ranking scores of the structural barriers ($M = 28.17$) followed by a mean rank of 16.17 for administrators having five years or less of working experience, 24.10 for administrators having six to nine years of working experience, and 16.26 for administrators having 10 to 19 years of working experience.

Testing faculty hypotheses

Hypothesis #1: The gender of faculty affects the rating of all extracted factors

The chi-square of all subscales with gender was not significant ($\chi^2 < 5.99, p > .05$).

Hypothesis #2: The age of faculty affects the rating of the technical barriers

The chi-square of the technical barriers construct was significant ($\chi^2 = 9.924, p = .04$). On average, faculty aged between 50 and 60 years had the highest mean ranking scores of the technical barriers ($M = 71.43$), followed by a mean rank of lower rating score for faculty under 30 years ($M = 68.06$), followed by a mean rank of lower rating score for faculty between 30 and 40 years ($M = 74.05$), followed by a mean rank of lower rating score for faculty between 40 and 50 years ($M = 55.69$), followed by a mean rank of lower rating score for faculty between above 60 years ($M = 33.14$).

Hypothesis #3: The ranks of faculty affect the rating of the psychological barriers.

The chi-square of the psychological barriers subscale was significant ($\chi^2 = 15.37, p = .05$). On average, associate professors' mean ranking scores of the psychological barriers were the highest ($M = 71.05$), followed by a mean rank of the rating score of 56.48 for instructors, 47.25 for assistant professors, 44.78 for lecturers, 42.17 for adjunct faculty, 33 for senior instructors, 30.33 for visiting faculty, 26.83 for research faculty, and 15 for professors.

Hypothesis #4: The status of faculty affects the rating of cost effectiveness analysis barriers.

The chi-square of the cost effectiveness analysis barriers subscale was not significant ($\chi^2 = 8.336, p = .304$).

Hypothesis #5: The experience with online education affects the rating of all extracted factors.

The chi-square of all subscales was not significant ($\chi^2 < 5.99, p > .05$).

Discussion

A comparison between the administrators' and faculty members' perceptions of their rankings of barriers to online education at the School of Arts and Sciences of the U.S. university located in Lebanon showed that both groups were in strong agreement in weighting the level of importance of the majority of barriers with few exceptions. For instance, the slow Internet access barrier was perceived as "important" for administrators and "very important" for faculty at the School of Arts and Sciences. The inadequate infrastructure and the increased workload barriers were perceived as "important" for faculty whereas administrators were neutral about them. The resistance to online teaching methods and the faculty hesitancy to teach courses that they do not own were perceived as "important" for administrators whereas faculty members were neutral about them.

As shown in Table 6, perceptions of the lack of consistent electricity and frequent technology failures differed between the two groups. For example, the majority of administrators rated the lack of consistent electricity as "not important" ($Mo = 1$) and frequent technology failures as "slightly important" ($Mo = 2$). However, the majority of faculty members perceived these two barriers as "very important" barriers ($Mo = 5$). After conducting descriptive statistics analysis, inferential statistics were conducted to compare the outcomes of the two groups.

The results of hypotheses testing in the administrators' data set showed three of the eight independent variables tested in the administrators' sample affected administrator ratings of barriers to online education significantly ($p < .05$): role, status, and working experience. The independent variables that did not show significant differences among the means were gender, rank, working experience, familiarity with online education, and online education experience.

The results of hypotheses testing in the faculty's data set showed two of the nine independent variables tested in the faculty's sample affected faculty ratings of barriers to online education significantly ($p < .05$): age and rank. The independent variables that did not show significant differences among the means were role, department, gender, status, teaching experience, familiarity with online education, and online education experience.

Several steps could help in implementing a solution to reduce or eliminate the important perceived barriers to online education at the university under study. One solution is to offer an effective blended online education only for suitable courses at the School of Arts and Sciences as a trial to explore the degree of success or failure of online education. Additionally, to overcome the most important barriers to online education, stakeholders will need to change the culture of the university, advocate for acceptance of online education at the Ministry of Education in Lebanon, increase the awareness of online education at the Ministry of Education in Lebanon, implement technical controls to assure student honesty, develop students' self-discipline skills, increase the Internet speed in Lebanon, increase the reliability of electricity, hire sufficient numbers of experts in IT to support the faculty and students at all times throughout the course instruction, create a sense of faculty presence in the online courses, and prepare faculty to be competent in the specialized delivery of online teaching.

Leadership plays a major role in implementing the proposed solutions and setting the vision for the university's future. University administrative leadership includes executive officers, academic officers, and administrative staff officers. Leaders must take several considerations before, during, and after implementation of a blended program. To motivate faculty to embrace the technological advances and to change the university culture about

distance education, university leaders must gain the trust of their “followers.” As Burns (1978) noted, true leadership arises from working with followers and is much more than simply telling them what to do or satisfying their wants and needs in exchange for support. Rather than feeling obligated to move into blended learning, the faculty must engage in the change because they want to and because they feel that what they are doing is the right thing to do. Thus, the leaders must engage the faculty with higher-level sensibilities that inspire the faculty. This transformational style of leadership seems to be particularly relevant in this case. As Lick, Clauzet, and Murphy (2013) mentioned, this leadership approach causes “positive change in followers with the end goal of developing followers into leaders” (p. 23). Burns further noted that successful leadership is one that produces success at a collective level. In other words, these implementations should be seen as being good for the whole university.

Prior to implementing the blended program, leaders must communicate their shared vision for the online program that will be implemented. They may need to hire qualified faculty to teach online courses and to mentor other faculty just beginning to offer online instruction. Leaders should focus on the effort of faculty to design and develop their own online courses in order to achieve the most desirable learning outcomes. Additionally, they must be the advocates who will introduce this cultural change in a convincing and lasting way. They should communicate with existing faculty to inform them about the benefits, principles, and practices of online education. Leaders should consult with faculty about how to best develop new curricula and should offer training to staff who will be responsible for faculty and student services. They should support faculty before starting implementation of the online program by offering detailed training courses on how to use the learning management system, on how to improve their online teaching skills, and on what online education is and can be. They should also motivate faculty by empowering them, recognizing their efforts, and compensating them through incentives if they agree to take part in the new online instruction and if they execute their tasks effectively. To motivate faculty, leaders should take into consideration faculty members’ needs and desires. Moreover, leaders have to allow time and tolerance for growing competencies to all students and faculty as they adapt to the learning management system. In essence, fear of the technical challenges and the change must be overcome.

During the implementation of the blended program, leaders should take into consideration their role as managers to the blended program implemented. They need to convince faculty members who may be resistant to this change about the advantages of implementing this program at the university, to them and to students. They need to control the quality of online education offered at the university. For instance, they have to motivate instructors to write a detailed course syllabus that comprises schedules, duties, and outcomes that should be achieved. Further, they should encourage social interactions between faculty and students. Additionally, they should provide consistent support for faculty teaching and students enrolled in the blended program. After the implementation process, leaders need to ensure that the online environment implemented was technically feasible to use for all faculty and students.

Limitations of the Study

Some participants tended to skip open-ended questions. Considerations of other stakeholders, such as students who may have different perceptions regarding barriers to online education, were not included. The third limitation was the lack of online education experience of participants, which presumably influenced their perceptions to barriers of online education.

Delimitations of the Study

This study was conducted at only one private American university in the Lebanon and, thus, is not generalizable to other universities in other nations and cultures. Further, this study was only administered to the School of Arts and Sciences faculty at the university in Lebanon.

Faculty at other schools such as the School of Business, the School of Engineering, or the School of Pharmacy may have different perceptions. Faculty and administrators at other private universities and at the public Lebanese university in Lebanon may have different perceptions regarding online education. Nevertheless, both faculty and administrators' responses had high internal agreement. The second delimitation was the time of the data period for data collection, which took place from December 14, 2014 through February 15, 2015. In this period, some participants were traveling out of the country, and they did not have the chance to fill in the survey. The reason for including faculty and administrators in the study was their important leadership role at the university. The leadership role is fundamental for the implementation of the online education in Lebanon and faculty and administrators are the decision makers regarding the effective execution of online education at this university. Faculty members were included in the study because they would be the stakeholders delivering the instruction through online modalities.

Conclusion

This study fills a gap about online education in Lebanon. Online education may be an excellent alternative to traditional education for countries in the Middle East, including Lebanon. The introduction of online programs to the university under study might contribute to increasing revenues, increasing enrollments, expanding educational offerings to non-traditional populations, potentially improving retention, alleviating space constraints, solving commuting distance and time issues, reducing overall costs, and improving student learning outcomes.

The findings showed that administrators perceived the structural barriers and the pedagogical barriers as very important. Administrators perceived the interpersonal barriers, cultural barriers, epistemological barriers, psychological barriers, and cost-effectiveness analysis barriers as important. They did not perceive the technical barriers as important except for the slow Internet access. As far as faculty members are concerned, the findings of the descriptive statistics also showed that they did not rate any barrier as "Not Important" or "Somewhat Important." Instead, all barriers were perceived at least "Important" except for a few barriers that were neutral for faculty. The faculty at the School of Arts and Sciences of this university rated the technical barriers, structural barriers, and pedagogical barriers as very important. The epistemological barriers, the psychological barriers, the interpersonal barriers, the cultural barriers, and the cost-effectiveness analysis barriers were perceived as important. Administrators and faculty at this university agreed on rating the pedagogical and the technical barriers as very important and all the other barriers as important. The only difference found is the rating of the technical barriers. Administrators rated this factor as important and faculty members rated it as very important.

The inferential statistics were also used to test five hypotheses of the administrators' data set and five hypotheses of the faculty's data set. The findings showed that the factors affecting the administrators' rating of the level of importance of the perceived barriers were (a) roles, (b) administrative status, and (c) working experience of administrators. The barriers' constructs affected by these factors were (a) the cultural barriers, (b) the structural barriers, and (c) the epistemological barriers. The factors that affected the faculty members' rating of the level of importance of the perceived barriers were (a) age of faculty and (b) ranks of faculty. The barriers' constructs affected by these factors were (a) technical barriers and (b) psychological barriers.

The proposed solution to the problem is to overcome the important barriers to online education and to offer an effective blended online education only for suitable courses at the School of Arts and Sciences as a trial to explore the degree of success or failure of online education. Leaders must take into account the current culture and transform it from within the faculty. Trust between administrators and faculty must be established. The leaders must inspire faculty through their vision for the future of their institution.

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