Syrians’ acceptance of digital lectures: a case study

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Abstract
Technology-based learning modules are mostly challenged by their acceptance. A single-case study and mixed research method are used to explore a unique situation of applying digital lectures at the postgraduate Programmes at the Faculty of Tourism at Damascus University as a solution for brain drain in the Syrian higher education system. Results indicate that Performance Expectancy, Effort Expectancy (EE), Personal Innovativeness and Satisfaction with the Quality of Services have a significant effect on students’ Behavioural Intention to accept digital lectures. This effect was stronger for males. However, EE was a better predictor for students under 30. In addition, students regarded the use of digital lectures as an alternative plan to continuing their postgraduate studies abroad within the current restrictions on Syrians. For the future successful implementation of e-learning modules, infrastructure-related issues should be taken into account. The study recommends universities going through brain drain and similar crisis situations to utilise digital lectures.

Introduction

The Internet is changing the concept of distance education and universities through its increased involvement in education (Burnett, 2001). Distance education and online instruction have dramatically increased over the last 20 years due to technological advances in the Internet and the prevalence of sophisticated course management systems (Beqiri, Chase, & Bishka, 2010; Wang, 2007). Communication technologies, including the Internet, are facilitating learning through, providing higher education institutions the ability to deliver and receive learning information in a more flexible manner (Concannon, Flynn, & Campbell, 2005). An electronic approach is normally facilitated and supported by teleconferencing, chat rooms and discussion boards through Skype technologies (Lin, 2009). Nowadays, Skype is regarded as an essential tool in academia (Jayanthi, Srivatsa, & Ramesh, 2007).

The severe political conflict in Syria affected higher education by the loss of many of its academics through the increased and significant level of immigration among university professors, thus resulting in very limited expertise in the Syrian market, especially for emerging faculties, such as the Faculty of Tourism. Limited financial resources at Damascus University, and the high risk of travel to Syria imposed further challenges. Moreover, visa restrictions...
on Syrian students led to a high demand for the postgraduate programmes, which were already facing the risk of delivering quality education. As a solution for the brain drain, the dean of the Faculty of Tourism developed an innovative approach of delivering lectures to students using free, available Skype technologies.

Among the various types of digital lectures, several terms are used in the literature to classify the different forms of technology-delivered lectures: a digital lecture refers to two types of lectures, the first includes delivering lectures to students through digital technology online where students attend a live lecture transmitted from a distance through network services. The second is where a digital version of the lecture is available to students on demand in a synchronised manner; a live digitised lecture refers to a digital version of a live class where individuals benefit from the experience of a lecture presented in a classroom and the instructor and students interact physically; e-lectures refer to lectures captured in special studios where the lecturer addresses a virtual audience and this is later transferred to a digital format for students to attend at their convenience (Demetriadis & Pombortsis, 2007).

The digital lectures in this paper refer to the first type mentioned above; delivering a live lecture through Skype technologies to students in class. The Skype technology itself was familiar to all faculty members and students. However, incorporating digital lectures in traditional classes was regarded as an innovative e-learning experience for all students and an original method for teaching at a Syrian university. The digital lectures did not include an audio or video feed of the lecture, nor a digital version of the lecture which students could later access and reuse. The author contributed significantly to the delivery of digital lectures as an on-site facilitator with students throughout classes, and with course instructors. The author minimised bias through triangulation of data.

This case study was developed, using mixed methods of data collection and research approaches. A qualitative method was used in the first phase and a quantitative in the second. The qualitative method was used first because the problem had not been explored before (Creswell, 2008) in the Syrian context. According to Levy (1988), the single-case explanatory methodology is suitable for investigating information technology. The choice of explanatory strategy is important for this study because it helps in determining the patterns of technology acceptance in higher education that were previously established in other similar environments (Yin, 1994).

As there is scarce research related to technology acceptance in higher education institutions in Syria, and there is, as yet, no published research on the use of digital lectures at Syrian universities, there is a strong need for research on the topic. The aim of this paper is to analyse students’ acceptance of a unique situation of using digital lectures and distance technologies as a solution for brain drain at the faculty of Tourism. This study will not be longitudinal, rather it will focus on capturing the user’s perception of digital lectures at one point of time well after their delivery in class, and it will not aim to compare it with traditional face-to-face lecturing.

The outline of the paper is as follows. First a brief background will be presented. Next a review of literature on technology acceptance related factors will be discussed. The method, discussion and conclusions are then followed by recommendations for future work.

**Background**

According to the first national competitiveness report of the Syrian economy (Dimashkiyyah, Zaza, & Sbeih, 2007), Syria’s position in technological readiness is very much lagging (109/131),
reflecting a deteriorating technological capacity in terms of utilising modern information technology (Dimashkiyyah et al., 2007).

There are five public universities in Syria that are managed through a centralised administrative system. Damascus University is the most prominent. All universities enjoy a very limited level of decentralisation in decision-making which is the sole responsibility of the Ministry of Higher education. The Faculty of Tourism is the newest faculty at Damascus University, first established in 2009. No learning management systems or other distance learning technologies are available or used at Damascus University. Traditional face-to-face teaching methods prevail in the Syrian educational system as a whole starting from the elementary level. Therefore, all students have no prior experience with technology-based learning. However, students are familiar with the use of Skype technologies for other than educational purposes.

The digital lectures model was designed for providing students at the postgraduate programmes with quality education. However, the necessary human resources were not found at a local level due to brain drain as a result of the Syrian crisis. The professor from the digital lectures module was contracted from an Italian University where he was working after he fled Syria. Damascus University regarded him as an external expert.

Each classroom had between 15 and 30 students attending the digital lectures on a large LCD screen that was set in the centre of the class for that purpose. Lectures were transmitted through Skype technologies. The accompanying power point presentations were located on the left side of the screen, and in front of the class in a way that students could see the tutor and the power point presentation simultaneously in the exact manner as they would have done in a traditional class, thus, allowing ‘students’ and ‘tutor’ to view the same material at the same time. The class facilitator (which was an associate professor at the faculty) managed the data show in classes and other related activities. Students were allowed to ask questions and to interact with each other, and with the tutor (e.g. by discussing a certain topic further in class). This was done using an Audio/Visual system that was installed for the purpose. It comprised, in addition to the above-mentioned LCD screen, a surround system and microphone that was handed to students by the class facilitator upon raising their hand. Every session lasted for three hours, with a 20-min break in between. The curriculum was an English pre-set academic text book with its accompanying power point presentations, in addition to the use of supplementary material provided by the instructor. All students had the material circulated to them prior to the commencement of classes. As the tutor’s first nationality was Syrian, the teaching language was a mix of Arabic and English (e.g. the tutor would teach in Arabic using English terminologies). The supporting material and power point presentations were in English. The tutor would give assignments to students, and students would upload them via e-mail. After grading them, the grades were sent through e-mail to the dean’s office to be then announced to the students. For quizzes and exams, the exam questions would be sent confidentially to the dean via e-mail. Students would answer on official exam papers (regulations at Damascus University stipulate that students answer on blinded papers with the seal of Damascus University on them, including the date). Papers are numbered and scanned before sending them via e-mail to the tutor for checking and grading. Then they would be returned in the same manner to the dean. Grades would then be fixed on the original exam papers (for administrative issues), then announced to the students.

Several obstacles and difficulties emerged before and during the implementation process: (1) legal and bureaucratic issues related to contracting professors who live abroad to work
for the faculty which were solved internally; (2) administrative issues related to assigning skilled help to work on weekends (according to the availability of the tutor); (3) technical issues related to sudden power failures which were resolved by the use of a generator, and other internet connectivity matters.

A successful digital lecturing module is the one which is within budget and meets curriculum objectives. However, regardless of how much it meets the specified functional requirements, if the digital lecturing module is not accepted by its end users, the original goals of the module will not be achieved. Therefore, one of the obstacles that educational institutions face is technology acceptance and behavioural usage intentions (Gong, Xu, & Yu, 2004; Saunders & Klemming, 2003). Technology acceptance is defined as ‘the demonstrable willingness within a user group to employ information technology for the tasks it was designed to support’ (Dillon & Morris, 1998, p. 5).

The Unified Theory of Acceptance and Use of Technology originally developed by Venkatesh, Morris, Davis, and Davis (2003) attempted to improve on the predictive ability of eight previous models; the social cognitive theory, the innovation diffusion theory, the theory of reasoned action, the theory of planned behaviour (TPB), the technology acceptance model (TAM), the combined theory of planned behaviour/TAM (C-TPB–TAM), the model of PC utilisation and the motivational model, through incorporating the common constructs from the previous theories into one unified theory in order to explore students’ behaviour intentions.

The theoretical model

An adapted unified theory of use and acceptance of technology is developed for this case study introducing two new constructs: Personal Innovation and Satisfaction with the Quality of Services (SQS), as predictors to digital lectures acceptance, with the moderating effect of two separate demographic variables; age and gender as with the original UTAUT model (Figure 1).

The model proposes key constructs to predict Behavioural Intentions (BI) to use a technology; BI are indications of how hard people are willing to try, of how much effort they are planning to exert in order to perform the behaviour (Fishbein & Ajzen, 1975). Performance Expectancy (PE) refers to the degree the use of a certain technology will benefit its user in performing a given task. Effort Expectancy (EE) refers to the degree the user of a certain technology perceives it as easy to use, and is regarded as an essential element for individuals to accept or reject a given technology (Wu, Tao, & Yang, 2008).

Personal innovativeness

Innovation is defined as ‘an idea, practice or object perceived as new by an individual or other relevant unit of adoption’ (Rogers, 1976, p. 292). It is ‘the degree to which an individual is relatively earlier in adopting an innovation than other members of his social system’ (Rogers & Shoemaker, 1971). Innovativeness was also defined as ‘a normally distributed, underlying personality construct, which may be interpreted as a willingness to change’ (Hurt, Joseph, & Cook, 1977). Innovation is a technology-related concept that reflects the individuals' behaviour when confronted with a new technology to use (Rogers, 2002). Personal Innovativeness (PI) in the Domain of Information Technology (PIIT) is defined as ‘the willingness of an
individual to try out any new information technology’ (Agarwal & Prasad, 1998). Individuals with higher levels of PIIT are more likely to possess positive intentions towards the use of new information technology, thus reducing the risk of project failures (Agarwal & Prasad, 1998). Past research found that innovators tend to adopt positive ideas regarding new technologies and are more capable of dealing with uncertainty, which in turn affects their BI towards new information technology (Fang, Shao, & Lan, 2009; Hung & Chang, 2005; Lian & Lin, 2008).

**Satisfaction with the quality of service**

There is a growing body of literature on students’ perceptions of satisfaction with web-based programmes (Banks & Faul, 2007; Dibiase & Rademacher, 2005; Heiman, 2008; Summers, Waigandt, & Whittaker, 2005; Walker & Kelly, 2007). Past studies examined the benefits of online instruction (e.g. Berge, 1997; Leonard & Guha, 2001; Matthews, 1999; Richardson & Swan, 2003), and student satisfaction (e.g. Drennan, Kennedy, & Pisarski, 2006; Mandernach, 2005; Reisetter, LaPointe, & Korcuska, 2007; Wyatt, 2005; Young & Norgard, 2006). Studies found that students valued the online learning experience (Schoech & Helton, 2002; Wright, Marsh, & Miller, 2000). Prompt feedback and the ability to interact with the tutor were found to be the most significant contributors to student satisfaction in online instruction (Arbaugh, 2000; Swan, 2001), in addition to convenience and flexibility (Arbaugh, 2000; Burnett, 2001; Motiwalla & Tello, 2000; Rangecroft, Gilroy, Long, & Tricker, 1991). Perceptions of the level of institutional technical-support services also affected behavioural intention (Lee, 2010; Rangecroft et al., 1991). In fact, one of the most important barriers to e-learning was found to be the lack of technical support (Schifler, 2000; Shannon & Doube, 2004).

The role of gender as a direct or indirect influence on an individual’s behavioural acceptance received very little consideration in the literature (e.g. Venkatesh & Morris, 2000; Gefen & Straub, 1997). Past research found that individual differences such as age and gender can play a crucial role in implementing technological innovations (Taylor & Todd, 1995; Thompson, Higgins, & Howell, 1994). PI is influenced by demographics, experience, personal values, social context and social norms (Woodside & Biemans, 2005), whereas, age and gender did not influence student satisfaction with online courses (Kim & Moore, 2005; Thurmond, Wambach, Connors, & Frey, 2002; Walker & Kelly, 2007).
Based on the above propositions, the following hypotheses are proposed:

**H1:** PE, EE, PI and Satisfaction with the SQSs will tend to influence students’ Behavioural Intention towards digital lectures.

**H2:** Age and gender respectfully will tend to moderate the influence of PE, EE and PI on students’ BI in H1.

In this case, the researcher is primarily interested in learning whether or not the digital lectures were beneficial in some way to the students, and aims at answering the following research questions:

- **RQ1:** What do the digital lectures mean to students?
- **RQ2:** How likely are students to accept digital lectures?
- **RQ3:** Are male or female students less or more likely to perceive PE and the ease of use of digital lectures as essential elements for their acceptance?
- **RQ4:** Does the satisfaction with the SQS affect behaviour intentions?
- **RQ5:** How does personal Innovation affect male and female intentions?
- **RQ6:** How well does the adapted model explain students’ acceptance of digital lectures?

**Method**

Data were collected from students enrolled in the Academic and Executive Master’s programmes at the Faculty of Tourism at Damascus University by two means. For the qualitative analysis, interview questions consisted of a set of semi-structured questions that were followed by targeted questions about the predetermined categories using probe questions specifically to explore students’ perceptions of PE, EE and satisfaction with the SQS. For the quantitative analysis, a questionnaire consisting of 18 items measuring five constructs was developed. Pre-testing was conducted to ensure the clarity and accessibility of the scale’s items. PE, EE and Behavioural Intention constructs were used from the original Unified Theory of Use and Acceptance of Technology by Venkatesh et al. (2003). Two items from the PI scale in the PIIT by Agarwal and Prasad (1998), and two items from the Innovativeness scale by Hurt et al. (1977) were used to measure PI. The satisfaction with the SQS construct was developed by the researcher. All items were translated to Arabic, then items were then back translated to check the translation validity (Brislin, 1986). All answers were in a Likert-type scale with five-point variation, 1 = *Never* and 5 = *Always*. Cronbach’s Alpha obtained for the constructs are shown in Table 2. Students were informed that the questionnaires and interviews will be used for scientific research.

**Sample and procedure**

Data were collected in two phases. First, semi-structured interviews were conducted with key informants to identify themes and matters related to digital lectures and to expand the depth of data gathering (Levy, 1988). Students were interviewed by the researcher at the end of classes. In addition to an external party, ‘the media’ that interviewed students regarding their experience with digital lectures, participants were selected based on their willingness to appear on national TV. These interviews were also included in the study to increase its
reliability (Yin, 1994). Interviewees were asked questions related to their experience with digital lectures, and whether they thought they faced issues related to their successful delivery, in addition to their perceptions of impact and acceptance.

For phase two of the study, students voluntarily filled out the survey instrument in class after 28 weeks of attending digital lectures at the end of the second semester. Most students were motivated to express their opinion on this newly introduced experience. No rewards were offered to students in return. Fifty-one out of fifty-three questionnaires were valid for analysis (Males = 30, Females = 21; N = 34 > 30 years, N = 17 < 30 years) (Table 1).

Participants’ age ranged from 24 to 28 years. The age of the respondents was normally distributed. The response rate was considerably very high ensuring a representative random sample of the study population, indicating that there is no need to worry about the non-response bias (the bias that results when respondents to a survey are different from non-respondents) (Windle & Rolfe, 2011). In addition, the respondents’ gender was representative of the study population; the sample (58.8% males, 41.2% females) did not differ significantly from the programme’s population at the master’s programmes as a whole (56.6% males, 43.4% females).

Table 1. Demographics.

| Gender          | Number of learners (N = 51) | Percent (%) |
|-----------------|-----------------------------|-------------|
| Male            | 30                          | 58.8        |
| Female          | 21                          | 41.2        |
| Age (Mean = 30.59) |                             |             |
| 24              | 3                           | 5.88        |
| 25              | 6                           | 11.76       |
| 26              | 7                           | 13.73       |
| 27              | 8                           | 15.69       |
| 28              | 8                           | 15.69       |
| 29              | 2                           | 3.92        |
| 31              | 1                           | 1.96        |
| 32              | 2                           | 3.92        |
| 33              | 1                           | 1.96        |
| 34              | 1                           | 1.96        |
| 35              | 1                           | 1.96        |
| 36              | 1                           | 1.96        |
| 38              | 1                           | 1.96        |
| 39              | 1                           | 1.96        |
| 40              | 2                           | 3.92        |
| 41              | 1                           | 1.96        |
| 42              | 1                           | 1.96        |
| 44              | 1                           | 1.96        |
| 46              | 1                           | 1.96        |
| 47              | 1                           | 1.96        |
| 48              | 1                           | 1.96        |
| Area            |                             |             |
| Economics       | 11                          | 21.58       |
| Tourism         | 17                          | 33.33       |
| Archaeology     | 3                           | 5.88        |
| Engineering     | 3                           | 5.88        |
| Employee/Ministry of Tourism | 14  | 27.45       |
| Private consulting | 3                       | 5.88        |
| Designation within faculty |               |             |
| Full time learner with assistantship | 11  | 21.58       |
| Skype experience | 51                          | 100         |
| On-line course experience | 0  | 0           |
| First time on-line learners | 51  | 100         |
| Willingness to use |                 |             |
| Compulsory      | 51                          | 100         |
Measures and analysis

The outcome measure of this study was to predict students’ acceptance of digital lectures. Past research by Wolfson, Cavanagh, and Kraiger (2014) recommended to segment adults into smaller group categories (older vs. younger) to better determine the relative importance of age-related variables in computer-assisted learning and to be able to investigate the more proximal predictors of age effects in technology-based instruction. To explore for age differences, students were categorised in this study into two age groups: above 30 years; digital immigrants and below 30 years; digital natives, based on sample characteristics (Mean = 30.59 years old).

Themes or categories of student’s behaviour were identified through collecting information from multiple sources such as interviews and observations. Directed content analysis was used to develop the initial coding scheme for data analysis (Kyngas & Vanhanen, 1999) with focus on the research question. Responses from the two sources of interviews were summarised into transcript sheets after careful listening to the audio and video recordings. Back translation was done by a colleague to ensure accuracy of meaning. Key concepts or variables were identified as initial coding categories (Potter & Levine-Donnerstein, 1999). Next, operational definitions for each category were determined using the theory of technology acceptance and research model to serve as an initial framework to identify students’ acceptance of digital lectures. The coding strategy began immediately with the predetermined codes. Data that couldn’t be coded were identified and analysed later to determine if they represented a new category or subcategory of an existing code. Within the course of analysis, a new category emerged (Miles & Huberman, 1994).

According to students, PE was identified as an important factor to their acceptance, communicated in the up-to-date knowledge regardless of the impact of the Syrian crisis and its resulting lack of qualified professors at the Faculty of Tourism:

Knowledge is very important to me … I believe that what I learn through digital lectures is going to reflect on me and benefit me in my career. (Participant 1)

While there is a lack of qualified tutors in Syria at this point, I can still be exposed to up-to-date knowledge and best practices which is important for me to link my practical experience with academic principles and developments in the field of tourism. (Participant 2)

Regardless of the current crisis, the Faculty managed to supply us with the possibility of gaining external expertise and new knowledge through digital- Lectures that are transferred by an innovative communication system. (Participant 3)

Although there are no experienced professors at the time in the country, we now have online lessons through Skype to compensate for this … and I consider it as a leading initiative for the Faculty of Tourism at Damascus University. (Participant 4)

One of my fears when I enrolled at the master’s program was getting good quality education … the Skype lectures solved that for me. (Participant 5)

Students reflected on the ease of use of the system:

I feel that anyone can manage to start the system as it is an easy Skype connection which we are all familiar with, especially after the Syrian crisis where most of us use it on daily basis to communicate with those abroad. (Participant 6)

Issues related to infrastructure were identified communicating satisfaction with the SQS:

It is fine as a first time trial of digital–Lectures … but if it is going to be a systematic teaching method, I think it needs more up to date equipment and more sophisticated Audio visual systems. (Participant 7)
At the beginning I had my fears especially when there were problems in connection quality, and what made it worse was the sudden power outage we faced during class … but when these problems were solved, I felt it was worth it. (Participant 8)

A new category emerged related to digital lectures being an alternative for students continuing their post-graduate studies abroad:

To me it could be a substitute for travelling abroad to gain knowledge and to be exposed to others experiences in the field. (Participant 9)

Studying abroad is very expensive for me, I think these lectures could somehow expose me to tourism knowledge while I am in my country, without having to pay any additional expenses. (Participant 10)

It was difficult for me to get a visa to travel abroad to continue my studies … I felt the digital lectures are a perfect solution for me to be lectured in a similar mean. (Participant 11)

Students reflected upon their behaviour intention towards digital lectures:

I think it is a brilliant solution within the current circumstances … I would strongly recommend this course to my colleagues in the future if it includes digital lectures. (Participant 12)

I loved this new approach … I would like to attend more in the coming semesters and I think the key is in getting good quality lecturers. (Participant 13)

The themes that emerged from the interviews in relation to adoption factors critical to the acceptance of digital lectures were: PE, ease of use, infrastructure-related issues, substitute for studying abroad and behaviour intentions. In addition, all students regarded the use of digital lectures an innovative learning experience.

After establishing what digital lectures meant to students, the quantitative method approach was used based on results from the first phase that were triangulated using a confirmatory analysis on the identified adoption factors to verify findings from the first phase, and to validate the proposed theoretical study model. To examine the study hypotheses, first, simple Pearson correlation analysis was conducted to investigate how PE, EE, PI and SQS correlate with BI. Results are shown in Table 2.

Second, to examine study hypothesis one, simple regression analysis was conducted to investigate how well PE, EE, PI and SQS influence students’ Behavioural Intention to digital lectures. Results were statistically significant for PE ($F(1, 49) = 125.363, p < .001, \beta = .848$), the adjusted $R^2$ value .713., statistically significant for EE ($F(1, 49) = 33.037, p < .001, \beta = .635$), the adjusted $R^2$ value .391., statistically significant for PI ($F(1, 49) = 12.986, p < .01, \beta = .458$), the adjusted $R^2$ value .193., and statistically significant for SQS ($F(1, 49) = 105.539, p < .005, \beta = .826$), the adjusted $R^2$ value .676. A simultaneous multiple regression was conducted to investigate how well the combination of variables PE, EE, PI and SQS correlate with BI. Results were statistically significant $F(4, 46) = 37.292, p < .001$. The adjusted $R^2$ value for the full model was .744.

The mixed research method enabled extending and supporting the adoption factors of students’ acceptance of digital lectures. Therefore, based on results from the quantitative and qualitative analysis, hypothesis one was sustained.

Next, for hypothesis two, to examine whether age and gender tend to moderate the influence of PE, EE and PI on students’ behavioural intention was found in hypothesis one. A hierarchical multiple regression analysis was conducted. For the first step of each analysis, the independent variable and the moderating variables were included. To avoid potentially problematic high multicollinearity with the interaction terms, all variables were centred
Table 2. Cronbach’s α and correlation matrix of adoption factors.

| Constructs | α   | PE   | EE   | PI   | SQS |
|------------|-----|------|------|------|-----|
| PE         | .839|      |      |      |     |
| EE         | .759| .391**|      |      |     |
| PI         | .626| .376**| .369**|      |     |
| SQS        | .870| .405**| .487**| .353*| .822**|
| BI         | .931| .844**| .625**| .439**|      |

*p < .05; **p < .01.

Table 3. Hierarchical regression for the moderation effect of gender on the relationship between PE and BI.

| Step      | PE × gender | Interaction of (PE × gender) × BI |
|-----------|-------------|----------------------------------|
| Step 1    | $R^2 = .721$, $F (2, 48) = 62.106, p < .001$ |                                   |
| Step 2    | $ΔR^2 = .051$, $ΔF (1, 47) = 10.601, p < .001$ |                                   |

Table 4. Hierarchical regression for the moderation effect of age on the relationship between EE and BI.

| Step      | EE × age | Interaction of (EE × Age) × BI |
|-----------|----------|--------------------------------|
| Step 1    | $R^2 = .487$, $F (2, 48) = 22.761, p < .001$ |                                   |
| Step 2    | $ΔR^2 = .073$, $ΔF (1, 47) = 7.773, p < .001$ |                                   |

and interaction terms between (PE × gender; PE × age); (EE × gender; EE × age); (PI × gender; PI × age) were created (Aiken & West, 1991), then the interaction term was added to the regression model for each analysis Table 3. Indicates that Gender moderated the relationship between PE and Behaviour Intention ($b = .686, SE_b = .211, β = .428, p = .002$), while strengthening the effect for males. However, age did not moderate the effect of PE on BI, $ΔR^2 = .00$, $ΔF (1, 47) = .030, p = .863$, indicating that the effect of PE is the same for all age groups.

Moderating for age accounted for a significant amount of the variance in students’ intentions towards digital lectures (Table 4). The interaction term between EE and age indicated a significant proportion of the variance in BI ($b = -.593, SE_b = .213, β = -.281, p = .008$), with a significant higher positive association between EE and increased Behaviour Intention for students under thirty.

EE and gender accounted for a significant amount of the variance in Behaviour Intention, (Table 5). The interaction term between EE and BI was significant ($b = 1.024, SE_b = .261, β = .705, p < .001$), with moderation strengthening the effect of EE for males.

PI and gender accounted for a significant amount of the variance in Behaviour Intention (Table 6). The interaction term between PI and gender accounted for a significant proportion of the variance in BI ($b = 1.172, SE_b = .630, β = .425, p = .069$). Moderation strengthened the effect of PI for males. However, age did not moderate the effect of PI on BI, $ΔR^2 = .018$, $ΔF (1, 47) = 1.253, p = .269$, indicating that PI’s effect is the same for all age groups.

Based on the above analysis, hypothesis two was partially sustained for the moderating effect of gender on the relationship between PE, EE, PI and Behaviour Intention, respectively, and for the moderating effect of age on the relationship between EE and Behaviour Intention.

Discussion and conclusions

This study attempted to analyse students’ acceptance of digital lectures using a modified UTAUT model. Two new variables: Personal Innovation and Satisfaction with the SQSs were
explored as predictors to digital lectures’ acceptance in the Syrian context. Seventy-four per cent of the variance in students’ acceptance of digital lectures was explained by the full model. This result is consistent with past studies (Venkatesh et al., 2003). PE had the largest effect on BI to accepting digital lectures, it explained 71% of the variance (AbuShanab, Pearson, & Setterstrom, 2010; Al-Gahtani, Hubona, & Wang, 2007; Anderson, Schwager, & Kerns, 2006; Pardamean & Susanto, 2012; Venkatesh et al., 2003). Thirty-nine per cent of the variance in BI was explained by EE, and 19% was explained by PI. These results are similar to past studies on innovativeness (Liu, Li, & Carlsson, 2010), which found that individuals with higher levels of PI are more likely to create favourable intentions to use the new IT (Agarwal & Prasad, 1998), and studies on innovators (Hung & Chang, 2005; Lian & Lin, 2008; Fang et al., 2009). Satisfaction with the SQS explained 68% of the variance in Behavioural Intention. These results are consistent with findings from previous research on the direct effect of satisfaction on Behavioural Intention (Zeithaml, Berry, & Parasuraman, 1996). However, students found that the quality of the technical system and related infrastructure issues needs further development if the digital lectures are going to be used as a systematic tool in teaching. Past research found that men compared to women are more task oriented and more ‘pragmatic’ in their thinking (Minton & Schneider, 1980), are motivated by achievement (Hoffman, 1972), strive for performance and recognition, and are driven by perceived usefulness (Venkatesh & Morris, 2000; Venkatesh et al., 2003). The core self-evaluation constructs were different when evaluated in men and women (Feingold, 1994; Johnson, Marakas, & Palmer, 2006). Gender differences related to personal characteristics such as creativity (Reis, 2002) and risk-taking (Belcourt, 2009) have also been reported. Moderating for age revealed that there is a higher association between EE and increased BI for students under 30, and for males. This finding is in line with previous research (Venkatesh et al., 2003). In addition, past studies found age to be an important predictor of interest in organisational settings (Minton & Schneider, 1980). Age was negatively related to BI which could be a result of the perception of habit (Burton-Jones & Hubona, 2005, 2006; Igbaria, 1993) and difficulties in processing complex stimuli and allocating attention to task relevant knowledge (Plude & Hoyer, 1995; Venkatesh et al., 2003). This can also be explained by the fact that younger students are digital natives that have been interacting with digital technology from an early age (Thompson, 2013). Past research on UTAUT found that the ease of use construct had a greater effect on the BI for women (Gefen & Straub, 1997; Venkatesh & Morris, 2000). This is different from the results of this study where the effect of EE on BI was higher for males.

| Table 5. Hierarchical regression for the moderation effect of Gender on the relationship between EE and BI. |
|---|---|---|
| Step | EE × Gender | Interaction of (EE × Gender) × BI |
| Step 1 | $R^2 = .424, F(2, 48) = 17.671, p < .001$ | $\Delta R^2 = .142, \Delta F(1, 47) = 15.366, p < .001$ |
| Step 2 |

| Table 6. Hierarchical regression for the moderation effect of gender on the relationship between PI and BI. |
|---|---|---|
| Step | PI × gender | Interaction of (PI × gender) × BI |
| Step 1 | $R^2 = .214, F(2, 48) = 6.542, p = .003$ | $\Delta R^2 = .054, \Delta F(1, 47) = 3.464, p = .069$ |
| Step 2 |
In conclusion, the brain drain that prevailed in the Syrian higher education system as a result of the Syrian crisis made implementing digital lectures from remote areas a supporting educational tool for students attending postgraduate programmes. The digital lectures managed to expose students to external experiences at a time where there were many sanctions imposed on Syria. Thus, quality education was not sacrificed at any extent, especially when the study found it to be the most important factor for its acceptance among all age groups. However, the manifested relationship of PE with males is expected, within the sample characteristics, because participants were pursuing their postgraduate degree for career advancement, regardless of the current crisis. Moreover, within the Syrian culture, men are known for their dominance, whereas women are known for their modesty compared to men. Although the communication system was familiar to all students and was relatively easy to use, its stronger relationship with males could be due to emotional rather than technical factors (e.g. a common practice of Skype among Syrians is that females are mostly uneasy about it out of fear of being misused by others), and one would expect this to be manifested due to the geographical disposition and distrust among Syrians as a result of the crisis. The satisfaction with the quality of the technical system was within an acceptable level. Nevertheless, students acknowledged the value of the digital lectures experience because it served other important goals, such as knowledge transfer within the strains of the Syrian crisis. Moreover, students regarded the use of digital lectures as an alternative to continuing their postgraduate studies abroad, especially with the visa restrictions on Syrians. Overall, digital lectures were perceived as an exceptionally effective educational tool during brain drain and crisis situations.

Recommendations

Individual and contextual factors should be taken into account in the future design of e-learning modules. From an educational and managerial perspective, learning modules should emphasise academic usefulness. This suggests that it is important for other opportunities to explore where digital lectures could improve students’ overall performance (e.g. (1) the transfer of advanced up-to-date knowledge and distinct experiences to postgraduate students from different parts of the world; (2) as an alternative solution within crisis, sanctions and brain drain situations). Second, for older learners, top management should identify students who may have difficulties and (a) assign special assistance, (b) offer demonstrations (e.g. a video tutorials, special training prior to course), (c) provide supplementary material (e.g. a digitised copy of the lecture) and (d) customise learning modules. However, for younger learners, simplicity and ease of use should be considered in the future design of e-learning modules. Third, it is important to identify less innovative students at the beginning of the programme (e.g. self-administered questionnaires), and find ways to motivate them at an earlier stage. As for innovative students, it is important to foster a culture where innovation, experimentation and flexibility are valued. Lastly, special consideration should be given to service quality (e.g. infrastructure, service support mechanisms). It is recommended that universities going through during brain drain and similar crisis situations should utilise digital lectures.

Limitations

The moderating effect of the interaction between age and gender was not analysed similarl to the original UTAUT model. However, if it was tested, it would enrich the current analysis and
add theoretical rigour to Behaviour Intention. Another limitation is regarding the directed approach used in this study that emphasised finding evidence to support the study model which could have blinded the findings of other related aspects. While PI was difficult to be qualitatively assessed, it could have been done by first assessing how innovative an individual is, and then performing the interview. However, this was not deemed possible in the current set-up. Basing results on such measures remains a challenge for future research. Studies of the new variables need to be replicated across a wider range of students with different technologies in order to examine the understudied constructs over time (i.e. conduct a longitudinal research), and other personal factors such as experience and willingness to use. Results of this study are limited to the independent and dependent variables explored.

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