THE ACCEPTANCE OF SOCIAL PERSONALISED VERSUS STATIC WEB-BASED EDUCATION BY SAUDI STUDENTS

Afaf S. Alamri, Alexandra I. Cristea and Al-Zaidi, M.S

Department of Computer Science
The University of Warwick
Coventry CV4 7AL, UK
{a.alamr, acristea, m.s.alzaidi} @dcs.warwick.ac.uk

Abstract

Saudi Arabia is going through massive changes in the educational system. In particular, web-based education is being strongly supported by the Saudi Ministry of Education. However, we believe a 'one size fits all' is especially not appropriate for the Saudi culture. Hence, this study focusses on the acceptance of the *social personalised* versus static web-based education by Saudi university students, and how a more *social personalised* system can cater for Saudi educational, instead of offering an identical delivery for all students - regardless of students' interests, preferences, backgrounds or even their knowledge. The comparison is based on the well-known Technology Acceptance Model (TAM), the theoretical framework which we use for designing the data collection from students. The results from a case study in Taibah University point towards *Saudi students accepting more easily a social personalised* web-based education than static web-based education. Additionally, the results demonstrate that *TAM is valuable* in explaining the acceptance of the traditional and *social* personalised web-based education. Student's *attitude, perceived ease of use and perceived usefulness* were all found to be key factors in influencing the students' acceptance. The outcomes of this study can aid educational institutes that plan to create static /social personalised web-based education systems, by taking into account these factors that affect students' acceptance.

Keywords: Technology Acceptance Model, traditional, social personalised web-based education.

1. INTRODUCTION

With the aid of information and communication technology, web-based education has become the latest model in education [1]. Many universities are currently applying the idea of e-learning to facilitate life-long learning and provide new educational opportunities for students. The key advantages of web-based education are that make education available for large groups of students as possible; the students can access course material whenever and any location; it encourages learners to take responsibility for their education; highly interactive discussions: students can contribute in dedicated discussion forums; it allows students to collaborate and communicate with their instructors and classmates through e-mail any time [2].

However, there are many stories of failure within web-based education projects. The success of such systems requires end-users' acceptance [3]. Many influencing factors should be considered before adopting an e-learning system, to build a well-designed, easily accessible, interactive and effective system. Prior studies [4], [5], [6], [7] presented many factors that have an effect on an e-learning.

Saudi universities are on their way to applying web-based education in order to provide high-level educational programmes. The Ministry of Higher Education has considered the requirements for applying web-based education systems, and the creation of online resources, because traditional means of education cannot compete with the complexities raised in a rapidly changing society such as Saudi Arabia [8]. In the fact, eLearning offers flexibility for Saudi woman students. It would allow for increased interaction between female students and male lecturers, while face-to-face communication is not allowable. Therefore, a Learning Management System (LMS) was created by the National Centre for E-learning and Distance Learning (NCEL), in order to manage the web-based education

process. This system is called Jusur LMS [9]. Jusur is a traditional LMS. In this LMS, the content of a page would look almost the same ('one size fits all'), regardless of student's interests, preferences, backgrounds or even their knowledge.

Although there have been various studies [10], [8], [11], [12] that have investigated the acceptance the *traditional* web-based education, there is no known about the acceptance of *social personalized web-based education* in the Saudi context. Moreover, the most of the existing literature has concentrated on opinions of faculty employees and administrators; a gap which this paper attempts to rectify. This study examines *social personalised* versus traditional web-based education acceptance in Saudi Arabia from the students' perspectives, and thus attempts to fill a gap in the web-based education literature. It focuses in particular on accepting *social personalised* versus traditional web-based education by using the Technology Acceptance Model (TAM) [3]. Understanding the reasons why students accept or refuse a web-based education system can simplify the design of more accepted systems. Therefore, the aim of this study is:

- *To explore Saudi students' acceptance of social personalised versus traditional web-based education systems.*

    The question posed in this study is:

- *Is Saudi students' acceptance of social personalised web-based education system higher than traditional web-based education system?*

2. RELATED SYSTEMS AND RESEARCH

There are many kinds of web-based education, such as traditional web-based education, personalised web-based education and social web-based education. Traditional web-based education refers to teaching delivered by an electronic medium, such as the internet, intranets, extranets, satellite transmit, audio/video tape, and CD-ROM for education at a distance [13].

The most of universities in Saudi Arabia apply the Jusur Learning management systems (LMS) [9]. This is typically used in traditional web-based education setting. The main role of a learning management system is to simplify the procedure of administrating education. An LMS is not used to author course content. In such a system, the instructors can manage their courses, and also manage contact with students. In addition, LMSs permit students to use and download course material, submit their homework assignments electronically, check their course results, and communicate with other students. In contrast to LMS, a learning content management system (LCMS), such as Blackboard[1] and Moodle[2], helps towards creating and managing learning content, that is, the media, pages, quizzes, lessons [14]. It allows designers to author and re-use web-based educational content. These systems are not created to offer *personalized* learning that helps for an individual student. Students and lecturers need advanced web-based education to encourage and allow them to take control of their learning as well as lecturers to discover new styles of teaching. However, the personalised education systems search for address the problems with static web based education system. The personalised Education System is "an online system that will measure your personal behaviours and preferences, store them and use these to alter the nature of the education given to you. The aim is to deliver a personalised and unique education to you and in so doing give you the best education you can receive."[15]. There are few adaptation engines for web-based education. For example, MOT [16], [17] was attempted to cater the requirement for an adaptive and flexible approach to education. It is designed to facilitate *personalized* learning support for an individual learner. MOT built based on the LAOS framework for authoring [18], [19], [20] and LAG frameworks [21]. MOT implements the LAOS framework: it has a domain model, the goal and constraints model. The domain model in the shape of a conceptual hierarchical layer and the goal and constraints model in the structure of a lesson layer, dealing with other presentation of contents at attribute level. A LAG framework has the three layer model for authoring adaptation which are direct adaptation techniques and rules; an adaptation language; and adaptation strategies.

One limitation of most adaptive or personalised Learning is that it has lack of social and collaborative learning activities. Social presence is an important factor in eLearning. Hence, several of

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[1] http://www.blackboard.com
[2] http://moodle.org/

researchers have moved toward a social adaptive Learning to covers the social aspects of online learning [22], [23], [24]. Topolor [24] is an example of an social *personalized* e-learning system. Topolor mainly comprises of three sub-systems, i.e., Topolor-Home, Module Centre and Q&A Centre. Each of them has adaptive and social interaction features that aid to improve education experience. Topolor-Home offers interaction tools that support collaboration and communication Module Centre maintains online modules, and offers recommendations of learning resources, education peers and interaction tools that support *personalized social* e-learning. Q&A Centre presents questions and answers linked to learning subjects, and recommendations of questions, learning topics, expert peer and social interaction tools are provided to practices and discussions, and collaborations. Additionally example, the Adaptive Display Environment (ADE) [25], is other an example of a relatively complete adaptation delivery engine, which delivers adaptive educational hypermedia. ADE is a modular system which supports several forms of content formats and adaptation languages. It was created based on the LAOS framework [16] for adaptive Hypermedia systems, which implements a division between the content and adaptation specifications.

3. THEORETICAL BACKGROUND

This section will build a foundation to answer the research questions by reviewing the literature on the theory that guided the study: the Technology Acceptance Model (TAM) in Fig.1, which we used to estimate influence the user's intention towards using *social personalised* versus traditional web-based education system. TAM was introduced by [26] to explain computer-usage behavior. Since then, TAM has been the most frequently cited and influential model for understanding the acceptance of information technology and has received extensive empirical support (e.g.,[27]). The theoretical basis of TAM was Theory of Reasoned Action (TRA) [28]. TRA is a widely-studied model from social psychology which is concerned with the determinants of consciously intended behaviors. According to TRA, a person's performance of a specified behavior is determined by his or her behavioral intention (BI) to perform the behavior, and BI is jointly determined by the person's attitude (A) and subjective norm (SN) concerning the behavior in question.

TAM proposes external variables as the basis for tracing the impact of external factors on two main internal beliefs, *perceived usefulness (PU)* and *perceived ease of use* (PEU). According to Davis [3], *perceived ease of use* is the degree to which a person believes that using a particular system would be free of effort and *perceived usefulness* is the degree to which a person believes that using a particular system would enhance his or her job performance. These two beliefs both influence users' *attitude* toward using information systems (IS).
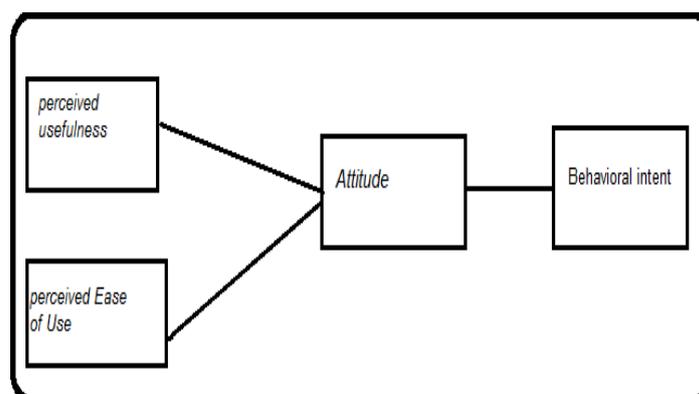
Figure 1 Technology Acceptance Model (TAM)

Despite the potential of e-learning as a tool to enhance education and training performance, its value will not be realized if users do not accept it as a learning tool. TAM aids the researcher to "identify why a particular system may be unacceptable, and pursue appropriate corrective steps" [26]. The TAM has been extensively utilised and extended for studying the acceptance of various technologies by diverse users groups and in different contexts. For example, in Egypt, Abdel-Wahab [6] used the Technology Acceptance Model to investigate students' acceptance of web based-education. He found that the core links of the model hold true. Moreover, Tam was used in Korea by

Park [7] to study students' tendency to accept web based education. He found that TAM was a valuable theoretical model in understanding behavioural intention to use web based-education. Furthermore, Hong et al. [17] adopted TAM to examine Taiwanese users' acceptance of a digital system. They found that PEOU was a significant factor, impacting on the user's intention to use the system, whereas PU was found to be insignificant.

4 RESULTING HYPOTHESES

The prior section has laid the basis for this study by discussing the theory that guided the development of the research model as flowing:

4.1 Attitude

User's attitude towards such a system has been investigated in several prior researches. According to Ajzen, attitude is a "disposition to respond favourably or unfavourably to an object, institution or event" [29]. The attitude factor has been examined in numerous studies that have used TAM, to understand the acceptance of using new technologies. For example, Ndubisi [30] studied the influence of various factors on the acceptance of a Blackboard system in Malaysia. Attitude had the most impact on the intention to accept the Blackboard system. Similarly, Abdel-Wahab [6, 31] mentioned that attitude was significant in explaining Egyptian students' intention to accept web-based education. Egyptian students share a similar culture to the Saudi students, who are the target participants of this study. Hence, we hypothesise that:

> **H1**: Saudi students' *attitude* toward *social personalised* web-based education system is more positive than traditional web-based education system*.*

4.2 Perceived usefulness

The Perceived Usefulness is "the degree to which a person believes that using a particular system would enhance his or her job performance. A useful system allows the user to benefit from its use" [3]. King and He [32] showed a meta-analysis of the TAM literature in different fields. The study found that PU is an important factor that informs attitude and intention to use a system. Furthermore, there are several research studies on the use of educational systems that have also found the significance of PU in explaining attitudes towards their acceptance [33], [34], [35]. As such, the literature shows that the student who perceives the technology to be useful would have a more positive attitude towards employing it. Therefore, this study postulates that:

> **H2**: Saudi students' *perceived usefulness* toward *social personalised* web-based education system as more positive than traditional web-based education system*.*

4.3 Perceived ease of Use

The Perceived Ease of Use is "the degree to which a person believes that using a particular system would be free from effort" [3]. There are various studies on the use of eLearning systems that have presented the significance of PEOU in explaining attitudes towards their acceptance. For example, Moon and Kim [36] showed the influence of PEOU of the World Wide Web to be stronger than that of PU. Huang et al. [37] studied students' acceptance of web based education and found that PEOU has an important influence on attitudes in using web based education.

With regard to the determining of PU, Lee et al. [38] performed a meta-analysis study of TAM studies. They found that PEOU was a significant determinant of PU. We believe that Web-based education systems can have great educational advantages, but if the user perceived that a system was not easy to use they would have a negative attitude towards it and refuse to use it .Hence, the study postulates the following hypothesis:

> **H3**: Saudi students' *perceived Ease of Use* toward *social personalised* web-based education system in a more positive than traditional web-based education system.

5 CASE STUDY DESIGN

In this study, quantitative methods were chosen to achieve the research goals. We developed the questionnaire, based on measures that have been validated by prior researchers: the TAM measures of perceived usefulness, perceived ease of use, and behavioral intention from Davis [3], [26]. Resulting questionnaire items are thus mapped on these measures precisely. All questionnaire items were firstly published in English and then were translated into Arabic.

The target population for this research was the students of the University of Taibah, Saudi Arabia. University of Taibah normally also uses the Jusur System (a traditional web-based education system), as explained in the introduction. Thus our target population is quite familiar with that system. In order to introduce the social personalised web-based education alternative, we needed to offer them a brief presentation about the meaning of the social personalised web-based education system and a hands-on experience with such a system. Therefore, an adaptive learning environment system(ADE) was selected which delivers adaptive educational hypermedia because it supports basically all adaptation types from Brusilovsky's taxonomy [39] and the extended Knutov's taxonomy [40] which delivers adaptive educational hypermedia. Also, the topic of eLearning was run on an adaptive learning environment system (ADE) then it was shown to students from different colleges (Applied Science, Business, Computer Science, and English). The students were asked to complete the course on ADE system. The time assumed to complete was around 25-30 minutes. After finishing the course we asked the students to evaluate and compare between ADE system and Jusur System. The questionnaire consisted of a set of four questions which asked about perceived usefulness, perceived ease of use, and behavioral intention toward two systems. The option of preferring traditional learning was also provided, to permit for a balanced answer.

300 questionnaires were distributed to students. From the 300 questionnaires distributed, 214 questionnaires were returned (overall response rate: 71.3%). The questionnaire answers were analysed by using regression analysis with the help of the SPSS program, to confirm the relationship among factors. Descriptive statistics in SPSS were used to compare between personalised and traditional web-based education.

6 RESULTS

Table 1 shows the demographics of the students who answered the questionnaire. The students were asked about their gender, year of study, and college. It shows that there was a relatively equal distribution of 118 female students and 96 male students. Furthermore, five colleges as shown below were represented, teaching quite different disciplines, thus corresponding to our aim to target higher education students from different areas. Saudi Arabian higher education takes five years in total. In this case study, we have also managed, as planned, to have responses from students from all these five years of study, as shown in the table 1.

Table 1: Demographics of the respondents of the questionnaire

Gender	No.	College	No.	Year	No.
Female	118	English	54	1st	38
Male	96	Islamic Studies	44	2nd	54
		Computer Science	19	3rd	46
		Business	51	4th	25
		Applied Science	46	5th	51

The students' intention to use *social personalised* web-based education (49.6 per cent) was higher than traditional web-based education (20.8 percent). The remaining student respondents (29.6 per cent) intend to use a blend of personalised web-based education and traditional learning as shown in table 4.

Furthermore, the vast majority of respondents (62.1%) had a more positive *attitude* towards *social personalised* web-based education than classic web-based education as revealed in Table 3. Therefore, hypothesis H1 was supported. Moreover, the student's *attitude* towards *social personalised* web-based education and classic web-based education had significantly contributed to the explanation

of intention (R2 .125; p < .001) as shown in Table 2. The R Square (*R2*) shows how much of the difference in the dependent variable is described by the other set of factors (independent variables). That is how much of the dependent variable is explained by the dependent variables. Moreover, if the *p*-value reported in the analysis is less than 0.05 (the most common significant level), then the proposed independent variables influence the dependent variable. Otherwise, they are not linked. The beta weight (*β*) is used to compare the different variables and their contribution to the explanation of the dependent variable [41].

Table 2 Results of Attitude influencing intention in personalised/ traditional web-based education system

R Square .125	
Beta	.354
Sig (*p*-value)	.000

A majority of participants (58.4 percent) indicated that *social personalised* web-based education was more useful than classic web-based education. Moreover, participants (63.6 percent) found that *social personalised* web-based education was easier to use than classic web-based education as shown in Table 3. Therefore, hypotheses H2and H3 were supported.

However, the *perceived usefulness* (PU) and *Perceived ease of use* (PEOU) contributed significantly to the explanation of *attitude* (R2 .347, p < .001) as presented in Table 3. Additionally, it emerged that PU had the strongest significant influence on attitude (B =.389), followed by PEOU (B=.325).

Table 3 Results of factors influencing attitude in social personalised/ traditional web-based education system

R Square .347		
	perceived usefulness (PU)	**Perceived ease of use (PEOU**)
Beta	.389	.325
Sig (*p*-value)	.000	.000

Table 4 students' acceptance of social Personalisation web-based education

Social Personalised web-based education	Percent
Positive attitude towards Social Personalised web-based education	62.1
Perceived Ease of Use	63.6

Perceived Usefulness	58.4

7 DISCUSSIONS AND FURTHER STUDIES

This study aims to analysis students' intentions toward *social personalised* versus traditional web-based education in a Saudi university. The results showed that *attitudes* of students were more positive toward *social personalised* web-based education than towards the traditional web based-education, based on actual hands-on experience with both types of systems. This means that the current solution of a 'one-size-fits-all' approach is not appropriate for Saudi education. Moreover, as expected, the *attitude* towards the system was found to be a significant factor in affecting the *students' intentions* to use *social personalised* web-based education and a traditional web-based education. Therefore, the acceptance of traditional or *social personalised* web-based education can be encouraged by creating favorable attitudes towards it, by teaching students about these systems, and their potential benefits.

Further supporting evidence of this came when analysing the *perceived usefulness* of such systems. The results revealed that the majority of students perceived *social personalised* web-based education as more *useful* than traditional web-based education. The findings showed that PU had the strongest influence on *attitude*. These results confirmed that if a student perceives web-based education as useful, s/he is more likely to have a favorable attitude towards accepting it. Thus, to facilitate the acceptance of a web-based educational system, it is very helpful to enhance the students' perceptions of the usefulness of this type of education.

More interestingly, the vast majority of students stated that *social personalised* web-based education is actually *easier* to use than traditional web-based education. Prior research has shown that if a system is difficult to use, the user may be discouraged from using it [36]. In our study also, the *perceived ease of use (PEOU)* had a significant impact on *student's attitude*. Therefore, designing easy to use and user-friendly systems is very important for their acceptance. This result may suggest a need for offering training for students on how to interact and use such systems (e.g. video tutorials).

The study has some limitations that need attention while considering its results. Firstly, the research population was limited to the students of Saudi Arabian university of Taibah. In consequence, the outcome of the study may not reflect the general use of web-based education in higher education. In addition, the students' sample, whilst reasonably large and representative in terms of subject variety and years of study, was from the University of Taibah only. The study could be extended to other students' sample of other Saudi universities. In fact, we have already performed additional case studies, and extending the range of Saudi universities explored [42]. In addition, the study has focused on a few factors, mainly derived from one theory. Future research can explore other variables that could have an impact on intention to using a particular web-based system. This can be done by testing or integrating other well-established theories, like the Theory of Planned Behaviour (TPB) [43] to predict human behaviours.

8 CONCLUSION

The study has considered the requirements for applying *social* and *personalised* e-learning target to the Saudi higher education system. This research is one of the few studies to have investigated the acceptance of *social personalisation* web-based education versus traditional, and the factors influencing students' intention to use these technologies, in Saudi Arabia. Additionally, the study has used the Technology Acceptance Model to explain the acceptance of personalised web-based education by the studies of Taibah University. The study indicates that TAM is a valid model for this purpose, adding to the empirical proof of the power of TAM to explain *technology acceptance*. Furthermore, this study has contributed to our understanding of issues linked to the acceptance of web-based education. Factors that need to be taken into account, such as attitude and perception of *usefulness and ease of use* are just as important as the actual usefulness and ease of use, and lead to the strong need of proper training about the benefits of web-based education. More importantly, *personalisation* seems to be stringently needed in the implementation of web-based education in

Saudi Arabia, and *social learning* should also be considered as a potential useful addition, to address the specificity of the Arab culture, where such contact may be more socially acceptable and feasible than the face-to-face alternative.

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