

Technology, Demographic Characteristics and E-Learning Acceptance: A Conceptual Model Based on Extended Technology Acceptance Model

Ali Tarhini¹, Tariq Elyas², Mohammad Ali Akour³ & Zahran Al-Salti⁴

¹ Department of Information Systems, Sultan Qaboos University, Mascot, Sultanate of Oman

² English Language Institute, King Abdulaziz University, Jeddah, Saudi Arabia

³ Department of Management Information Systems, Al'Sharqiyah University, Ibra, Sultanate of Oman

⁴ Department of Information Systems, Sultan Qaboos University, Mascot, Sultanate of Oman

Correspondence: Ali Tarhini, Department of Information Systems, Sultan Qaboos University, Mascot, Sultanate of Oman. Tel: 974-5-012-1922. E-mail: ali.tarhini@hotmail.co.uk

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Abstract

The main aim of this paper is to develop an amalgamated conceptual model of technology acceptance that explains how individual, social, cultural and organizational factors affect the students' acceptance and usage behaviour of the Web-based learning systems. More specifically, the proposed model extends the Technology Acceptance Model (TAM) to include four constructs namely, Quality of work life; Social Norm; Facilitating Conditions and self-efficacy. In addition, Individual differences—namely, age, gender, and experience—are hypothesized to moderate the effects of these constructs on behavioral intention and technology use. A comprehensive understanding of this model will provide valuable insights into the factors that influence the acceptance or resistance of web-based learning system by intended users and offers opportunities for future research in understanding the acceptance of technology. Further, understanding these variables is helpful for instructors to design meaningful educational activities to promote student knowledge construction and make learning more effective and appealing.

Keywords: technology acceptance model, e-learning, individual differences, information technology, learning management systems

1. Introduction

The development of Information and Communication Technologies (ICTs) has provided educators and learners with an innovative learning environment to stimulate and enhance the teaching and learning process (El-Masri & Tarhini, 2015; Yadav et al., 2016). Many higher educational institutions and universities around the world are investing heavily to equip themselves with e-learning tools to support their traditional learning and teaching because of its flexibility, low cost and convenience (Deng & Tavares, 2013; Esterhuyse & Scholtz, 2015a). By using e-learning tools such as web-based learning systems, the students will be able to download learning content, submit assignments, and interact with their instructors and other colleagues (Piña, 2010; Abu-Shanab, 2014).

Despite the perceived advantages of e-learning tools mentioned above, previous research has shown that the students are not fully utilized its importance (Álvarez et al., 2013; Tarhini, Hone, & Liu, 2013a). In other words, if the students refuse to use the system, then it will boom to failure (McGill, Klobas, & Renzi, 2014; Scholtz et al., 2014). For instance, Lam et al. (2012) examined the acceptance of e-learning by undergraduate students and found out that only 14.8 % of the students used related features for online discussion. Another study conducted by Islam (2013) in Finland, the author found that the students were mainly using the web-based learning system to download their course materials and submitting their assignments only. Furthermore, recent studies have shown that web-based learning system implementation is not simply a technological solution but also a process of many different factors, such as social factors (Tarhini, Hone, & Liu, 2014b; Aparicio, Bacao, & Oliveira; 2016), organizational such as Facilitating Conditions (FCs) (Masa'deh et al., 2016) and individual factors such

as computer efficacy (Liaw, 2008; Tarhini, Hone, & Liu, 2016) in addition to behavioural and cultural factors. Such major factors play an important role in how the system is developed and used (Zhang, Zhao, & Tan, 2008; Abu-Shanab, Momani, & Ababneh, 2012). Thus, it becomes imperative to understand the factors that may hinder or enable the acceptance of web-based learning systems by students in order to enhance the quality of learning and teaching activities.

In the technology acceptance and adoption literature, a considerable number of models have been applied (e.g., the Theory of Reasoned Action (TRA), the Theory of Planned Behaviour (TPB) and the Technology Acceptance Model (TAM), Unified Theory of Acceptance and Use of Technology (UTAUT)) to investigate and explore the determinants of user's behaviour towards adoption and using information technology. Among these models, the Technology Acceptance Model (TAM) (Davis, 1989) is the most frequently cited and influential model for explaining technology acceptance and adoption. Since it has been developed, TAM has been extensively used, tested, and extended to explain technology adoption and success in a number of application areas (e.g., Bagozzi, 2007; Yousafzai, Foxall, & Pallister, 2007a; Venkatesh & Bala, 2008) and e-learning (Sharma & Chandel, 2013; Park, Nam, & Cha, 2012). Therefore, this paper aims to explain and discuss the development of a conceptual model of technology acceptance that shows how individual, social, cultural and organizational factors affect the students' acceptance and usage behaviour of the Web-based learning systems. More specifically, the proposed model extends the Technology Acceptance Model (TAM) to include four constructs namely, Quality of work life; Social Norm; Facilitating Conditions and self-efficacy. In addition, Individual differences—namely, age, gender, and experience—are hypothesized to moderate the effects of these constructs on behavioral intention and technology use. A comprehensive understanding of this model will provide valuable insights into the factors that influence the acceptance or resistance of web-based learning system by intended users and offers opportunities for future research in understanding the acceptance of technology. Further, understanding these variables is helpful for instructors to design meaningful educational activities to promote student knowledge construction and make learning more effective and appealing.

2. Theoretical Framework

This paper will identify a set of factors that fall in different domains such as personal, social, behavioural and technological that might influence the use and adoption of e-learning systems. We discuss the development of the proposed conceptual model for future research by explaining the different factors in greater details. It is worth noting that the proposed model is trying to obtain a complete understanding of a phenomenon under investigation which requires some sacrifice in the degree of parsimony (Taylor & Todd, 1995b). The development of the proposed model help future researchers to hypothesis and test the relationships between the identified constructs in order to check if the theorized model is valid or not (Sekaran & Bougie, 2011). However, drawing on the fact that prior models related to acceptance and adoptions of IT have some limitations, therefore, the most appropriate approach was to select the relevant constructs related to context of e-learning.

In particular, the proposed research model will integrate 3 categories of variables. The first category includes the key determinants (independent variables) that may have an effect on Behavioural Intention (BI) and Actual Usage (AU) of the e-learning system. These constructs are Perceived Ease of Use (PEU), Perceived Usefulness (PU), Social Norms (SN), Facilitating Conditions (FC), Self-efficacy (SE) and Quality of Work Life (QWL). The second category includes two dependent variables which are BI and AU. In this paper BI is expected to influence the AU of the e-learning system. The third category integrates a set of demographic variables (age, gender, educational level and experience) as moderators that may have an impact on the relationships between the key determinants and BI. Figure 1 depicts the proposed conceptual model and a detailed explanation of each category is presented in the next sections of this paper.

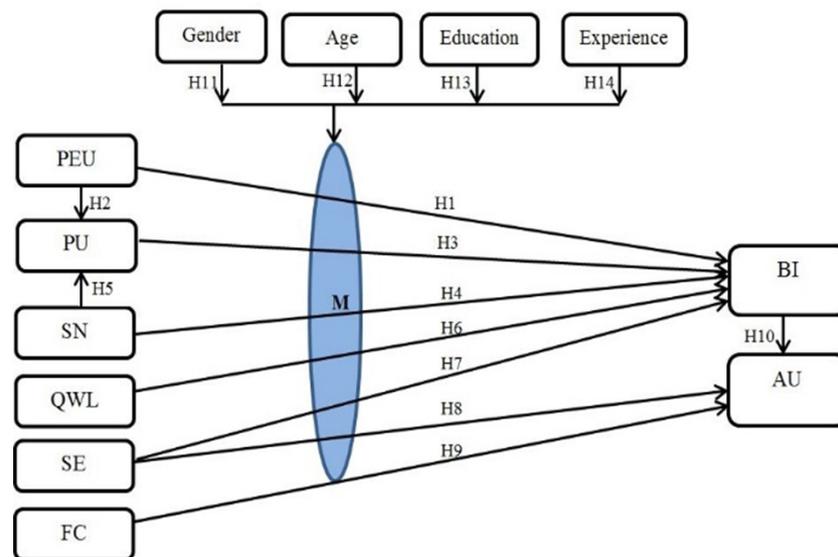


Figure 1. The proposed conceptual model

2.1 Perceived Ease of Use

Perceived Ease of Use (PEU) is defined as “the degree to which a person believes that using a particular system would be free of effort” (Davis, Bagozzi, & Warshaw, 1989, p. 320) and is similar to effort expectancy in UTAUT (Venkatesh et al., 2003). In the TAM, TAM2 and DTPB, PEU was theorized as a direct determinant of BI. In addition, a number of researchers found a support to the indirect relationship of PEU on BI through PU (Yousafzai et al., 2007a; Almajali et al., 2016; Al-Tomny et al., 2016; Ramirez-Anormaliza et al., 2016; Alalwan et al., 2016). Strong evidence supported the important role that PEU play in predicting the BI (Davis, 1989; Igarria et al., 1997; Tarhini, Hone, & Liu, 2014a; Masa’deh et al., 2015; Abdullah & Ward, 2016; Esterhuysen & Scholtz, 2016).

Reviewing the literature, the majority of the subsequent studies about student perceptions on using technologies support the important role that PEU plays in predicting the BI (Liu et al., 2010; Chang & Tung, 2008; Harb & Abu-Shanab, 2012; Anormaliza et al., 2015). However, the degree of significance was different between the findings in the literature. The difference in the findings was based on the field of study, sample size, or techniques used for analyzing. For example, Peng et al. (2009) found that PEU was the strongest determinant on the intention to use the system, which supported the findings of Chang and Tung’s (2008) study. Furthermore, Saeed and Abdinnour-Helm (2008) found that PEU have a direct and significant influence on BI. However, it was not the strongest predictor on the BI to use to the system. In contrast, Chesney (2006) concluded that perceived ease of use did not have a direct and significant influence on the intention to use the system.

Therefore, the inclusion of PEU is to investigate students’ beliefs of whether the system is free of effort and to predict their behavioural intention to use the e-learning systems. It is expected that if the students find the system easy to use, then they are more likely to adopt and use it. Hence, based on many models and previous research that consider the direct relationship of PEU on BI and indirectly through PU, we propose the following hypothesis:

H1: Perceived Ease of Use will have a direct positive influence on the intention to use web-based learning System.

H2: Perceived Ease of Use will have a direct positive influence on Perceived Usefulness of web-based learning system.

2.2 Perceived Usefulness

Perceived Usefulness (PU) is defined as “the degree to which a person believes that using a particular system would enhance his/her job performance” (Davis, 1989, p. 453). PU is similar to relative advantage in the model DOI and performance expectancy in UTAUT (Venkatesh et al., 2003). In other words, it is the extent to which

benefits are seen as outweighing costs. In the TAM, TAM2 and Augmented TAM, PU was theorized as a direct determinant of BI. In addition, many researchers have provided evidence of its direct determinant on AU (Gefen & Straub, 1997; Igbaria, Parasuraman, & Baroudi, 1996; Lederer et al., 2000; Szajna, 1994; Alenezi et al., 2015; Alalwan et al., 2016; Abdullah, Ward, & Ahmed, 2016; Masa'deh et al., 2016; Obeidat et al., 2016). Compared to the other behavioural belief construct (PEU), PU was found to have a significantly greater correlation with BI than did perceived ease of use (Davis, 1989) and the same result has been found in e-learning studies (Liu et al., 2010; Chang & Tung, 2008). Davis (1989) concluded that users are mostly driven to adopt and use the system primarily because of the functions it performs for them.

In the present context of the paper, PU will be used to investigate the students' beliefs about the potential benefits in using the elearning system. Many research studies have highlighted the important role that PU plays on BI to use Web-based learning tools (Chang & Tung, 2008; Liu et al., 2010). For example, Liu et al. (2010) applied an extended TAM to explore the factors that affect the intention to use an online learning community. They found that PU was the most influential variable in predicting the intention to use the web-based learning system. In contrast, Saeed (2008) found that PU has an influence on the intention to use but was not the most influential factor. Therefore, it is expected that if students think that the e-learning system is useful and will add value to their education then they are more likely to adopt and use the system. In contrast, students may resist educational technologies if they are sceptical of their educational value. Therefore, it is hypothesized that PU will have a positive significant influence on the intention to use the elearning system. Therefore, the researcher hypothesized:

H3: Perceived Usefulness (PU) will have a direct positive influence on the intention to use web-based learning system.

2.3 Social Norm

Social norm also known as Social Influence, is defined as "the person's perception that most people who are important to him or her think he or she should or should not perform the behaviour in question" (Ajzen, 1991). In other words, SN refers to the social pressure coming from external environment which surrounds the individuals and may affect their perceptions and behaviours of engaging in a certain action (Ajzen, 1991, p. 188). SN was included in many theories such as TRA, TPB, DTPB and TAM2 and is similar to social influence in UTAUT; and image in IDT.

SN was studied in some research as an antecedent of BI and in other studies as an antecedent PU. However, as mentioned by Venkatesh et al. (2003) the influence of SN is very complex. SN was found to be an important determinant of behaviour in TRA and TPB, and directly and significantly related to the behavioural intention (Venkatesh et al., 2003; Venkatesh & Morris, 2000; Alenezi et al., 2015a). The direct effect of SN on BI is justified from the fact that people may be influenced by the opinion of others and thus involved in certain behaviour even if they don't want to. Venkatesh and Davis (2000) argue that the effect of SN occurs only in mandatory environments and has less influence in a voluntary environment.

According to Taylor and Todd (1995b), SN is decomposed into two groups and usually determined by peer and superior influences. In the context of e-learning technologies, student's decision to adopt and accept such technologies is usually influenced by other colleagues/students and superiors/lecturers pressures (Sharma et al., 2014; Abbasi et al., 2015). However, there are inconsistencies in the findings when studying the direct impact of SN on BI. For example, while some scholars found a significant influence of SN on BI such as (Abbasi et al., 2015; Van Raaij & Schepers, 2008; Almajali, Masa'deh, & Al-Lozi, 2016) others failed to find any influence (Lewis, Agarwal, & Sambamurthy, 2003; Chau & Hu, 2002; Ndubisi, 2006; Davis, 1989). Davis (1989) omitted the SN construct from the original TAM due to theoretical and measurement problems, however SN was added later in TAM2 due to its importance in explaining the external influence of others on the behaviour of an individual. Therefore, based on the inconsistencies of the above findings and the importance of SN in establishing behavioural intention towards adoption and acceptance of a technology and its impact on PU, and in an attempt to overcome the limitation of TAM in measuring the influence of social environments (Venkatesh & Davis, 2000), it is hypothesized:

H4: Social Norm will have a positive influence on student's behavioural intention to use and accept the e-learning technology.

H5: SN will have a positive influence on perceived usefulness of web-based learning system.

2.4 *Quality of Work Life (QWL)*

The Quality of Work Life (QWL) seeks to achieve integration among technological, human, and societal demands (Cascio & McEvoy, 2003). Reviewing the literature, the term “Quality of Work Life” has appeared in Research Journals in USA only in 1970s and since then it regained an interest by scholars and researchers. Quality of Life (QWL) was included based on a number of suggestions in the IS literature that this extension may improve the TAM model (Kripanont, 2007; Agarwal & Karahanna, 2000).

QWL has not previously been considered within an educational context and the current study therefore explores whether it plays a role within this context. In this research, QWL is defined in terms of students’ perception and belief that using the e-learning system will improve their quality of work life such as saving expenses when downloading e-journals, or in communication when using email to communicate with their instructors and colleagues. Generally speaking, a mismatch between students and the impact of technology on their lives can be disadvantageous for both students and institutions and which in turn affect their behavioural intention to use the e-learning systems. Thus, the emphasis is given to QWL construct due to the economic gains and increases in opportunities for advancement in students’ lives and it is expected that the higher the QWL the better the acceptance of the technology.

Srite and Karahanna (1999) found a moderating effect of a set of individual differences including gender and culture on the relationship between QWL and behavioural intention. They found that people with high masculinity will focus more on materiality and might be concerned with usefulness and work goals rather than perceived ease of use and quality of work life that is dominated in the feminine cultures. Therefore, it is expected that introducing the QWL construct will enable a better capturing of cultural influence on the acceptance of e-learning systems especially the impact of masculinity/femininity on intention to use the system. According to Zakour (2004), the include of QWL in TAM will help in better understanding the technology acceptance by users and conclude that future research should highly consider this construct due to its importance. Thus, we propose that understanding the relationship between QWL and BI is an important goal, in order to satisfy the various needs of the students and in return eliciting favourable behavioural intention. It is worth noting that QWL can be considered the operationalize construct of PU. We therefore expect the relationship between those two constructs to be correlated. Based on previous discussions, we hypothesis the followings:

H6: QWL will have a positive influence on student’s behavioural intention to use the web-based learning system.

2.5 *E-Learning and Self-Efficacy*

Self-Efficacy (SE) as an internal individual factor-has been defined as the belief “in one’s capabilities to organize and execute the courses of action required to produce given attainments” (Bandura, 1997, p. 3). In the Social Cognitive Theory (SCT), SE is a type of self-assessment that helps the understanding of human behaviour and performance in a certain tasks (Bandura, 1997; Bandura, 1995; Alenezi et al., 2015b; Alalwan et al., 2015). In the context of IT, self-efficacy has been defined as “an individual’s perceptions of his or her ability to use computers in the accomplishment of a task rather than reflecting simple component skills” (Compeau & Higgins, 1995, p. 192).

According to Marakas et al. (1998), SE is categorized into two types, the first is related to general use of computers and is known as “general computer self-efficacy”, whereas the second is related to a specific task on the computer and is known as “task-specific computer self-efficacy”. Several studies have found SE to be an important determinant that directly influences the user’s behavioural intention and actual usage of IT (Downey, 2006; Shih & Fang, 2004; Guo & Barnes, 2007; Yi & Hwang, 2003; Hernandez, Jimenez, & Jose Martin, 2009) and e-learning acceptance (Chang & Tung, 2008; Yuen & Ma, 2008; Park, 2009; Vijayarathy, 2004; Chatzoglou et al., 2009; Roca, Chiu, & Martínez, 2006; Darawsheh et al., 2016). On the contrary, Venkatesh et al. (2003) did not find a casual direct relationship between SE and BI.

In the context of this paper, self-efficacy is defined as a student’s self-confidence in his or her ability to perform certain learning tasks using the e-learning system. In general, it is expected that e-learning users with higher level of self-efficacy are more likely to be more willing to adopt and use the system than those with lower self-efficacy. Therefore, consistent with previous research that integrated self-efficacy as a direct predictor that has effects on behavioural intention and actual usage of the system, we propose the following hypotheses:

H7: Computer self-efficacy will have a positive influence on student’s behavioural intention to use the web-based learning system.

H8: Computer self-efficacy will have a positive influence on the actual usage of the web-based learning system.

2.6 Facilitating Conditions

The Facilitating Condition (FC) has been defined as “the degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system” (Venkatesh et al., 2003, p. 453). More specifically, it comprises the availability of external resources (time, money and effort), which is known in the literature as Resource Facilitating Conditions “RFC” (Fu, Farn, & Chao, 2006; Lin, 2006; Guo & Barnes, 2007; Ajjan & Hartshorne, 2008) and also the availability of the technological resources (PCs, broadband, accessible network, network security, etc.), which is referred to as the Technology Facilitating Conditions “TFC” (Fu et al., 2006; Taylor & Todd, 1995b). In other words, it is providing the external resources that are needed to facilitate the performance of a particular behaviour (Ajzen, 1985). In the context of e-learning, FC will be measured by the perception of students of whether they are able to access the required resources and the necessary support to use the e-learning services.

Reviewing the literature, FC construct is considered an important antecedent of the UTAUT model and is similar to Perceived Behavioural Control (PBC) from TPB, C-TAM/TPB and compatibility from IDT (Ajzen, 1985; Taylor & Todd, 1995b; Venkatesh et al., 2003). FC was included as a direct determinant of BI and AU in many theories and by many researchers in the field of technology studies. For example, the relationship between FC and BI was found to be significant in several studies (e.g., Shih & Fang, 2004; Yi et al., 2006). On the contrary, other researchers found FC non-significant in predicting BI but significant in determining usage (Chang et al., 2007; Limayem & Hirt, 2000).

Thus, the importance of the external influence of facilitating conditions on the decision-making process is a crucial antecedent of human behavioural roles within information system studies (Shih & Fang, 2004; Tarhini et al., 2016) and within the e-learning context (Ngai, Poon, & Chan, 2007; Maldonado et al., 2009). Therefore, it is very important to investigate whether FC has a direct influence on the actual usage of the e-learning system, as the absence of facilitating resources may represent barriers to usage (Taylor & Todd, 1995a, p. 153). Hence, it is expected that these external resources will lead the students to adopt the learning management systems. Based on the above discussion, the researcher proposes the following hypothesis.

H9: Facilitating conditions will have a positive influence on actual usage of web-based learning system.

2.7 Behavioural Intention

The presence of Behavioural Intention (BI) in TAM is one of the major differences with TRA. BI is considered to be an immediate antecedent of usage behaviour and gives an indication about an individual's readiness to perform a specific behaviour. Ajzen (1991) claims that as a general rule, “the stronger the intention to engage in a behavior, the more likely should be its performance”. In TAM, both PU and PEOU influence an individual's intention to use the technology, which in turn influence the usage behaviour (Davis, 1989).

There is considerable support in literature for the relationship between BI and usage behaviour in general (Davis et al., 1989; Taylor & Todd, 1995a; Taylor & Todd, 1995b; Venkatesh & Davis, 2000; Venkatesh et al., 2003). This has recently been extended to the e-learning context (Tarhini, Hone, & Liu, 2014c; Chang & Tung, 2008; Masa'deh et al., 2015). In addition, the path from BI to AU is significant in the TAM, DTPB, and TPB models. BI has a large influence on AU. However, it is worth mentioning that when individuals have prior experience with using the technology, the effect of BI is more predictive on AU (Taylor & Todd, 1995b).

In the context of information system research, system usage were studied as a dependent variable and is often measured by only BI (Agarwal & Karahanna, 2000; Venkatesh & Morris, 2000; Gefen & Straub, 2000), or by only AU (Szajna, 1994; Davis, 1989), or even both BI and AU (Venkatesh & Davis, 2000; Venkatesh et al., 2003). In the context of e-learning and similar to previous studies, this research considered both BI and AU as dependent variables in the theoretical framework. It is expected that BI will have a direct influence in predicting the usage behaviour of students to accept and use the web-based learning system in the future. Therefore, the researcher proposes the following hypotheses:

H10: Student's BI will have a positive effect on his or her actual use of web-based learning system.

2.8 Gender

Gender is defined as a hierarchical separation between women and men embedded in both social institution and social practices (Jackson & Scott, 2001). The consideration of gender in models of behaviour was introduced in gender schema theory (Bem, 1981) and other technology acceptance models (e.g., TAM 2 and TPB). Previous studies has shown that men and woman are different in decision-making processes and usually use different socially constructed cognitive structures (Venkatesh & Morris, 2000).

Previous research has suggested that gender plays an important role in predicting usage behaviour in the domain of IS research (e.g., Venkatesh & Morris, 2000; Gefen & Straub, 1997; Porter & Donthu, 2006; Venkatesh et al., 2003; He & Freeman, 2010; Wang, Wu, & Wang, 2009; Morris & Venkatesh, 2000; Tarhini et al., 2014). For example, Venkatesh et al. (2003) found that the explanatory power of TAM significantly increased to 52% after the inclusion of gender as a moderator. More specifically, gender was found to have a moderating impact on the relationships between PU, PEOU, SE, SN, QWL and BI as well as AU.

Venkatesh et al. (2003) found gender to influence the relationship between performance expectancy (similar to PU) and BI, with the relationship significantly stronger for men compared to women. Their findings are consistent with literature in social psychology, which emphasizes that men are more pragmatic compared to women and highly task-oriented (Minton, Schneider, & Wrightsman, 1980). It is also argued that men usually have a greater emphasis on earnings and motivated by achievement needs (Hoffmann, 1980; Hofstede & Hofstede, 2005) which is directly related to usefulness perceptions. This suggests that men place a higher importance on the usefulness of the system. Their argument is also supported by other researchers (e.g., Srite & Karahanna, 2006; Venkatesh & Morris, 2000; Terzis & Economides, 2011). In contrast, Wang et al. (2009) did not find any moderating effect of gender on the relationship between performance expectancy (similar to PU), effort expectancy (similar to PEOU) and BI. It is expected that gender will also affect the relationship between QWL and BI since it focuses on the benefits of the technology and this is considered a more salient issue for males than females (Kripanont, 2007).

In terms of the moderating impact of gender on the relationship between PEOU, SE, FC, SN and BI, it is expected to be stronger for women compared to men. Venkatesh et al. (2003) reported that the intention to adopt and use a system is more highly affected by effort expectancy for women than men. Their results are consistent with gender role studies (Lynott & McCandless, 2000; Schumacher & Morahan-Martin, 2001). The reason could be that women compared to men generally have higher computer anxiety and lower computer Self-Efficacy (SE). The difference is based on the correlational relationship which is closely related to PEOU, so that higher computer self-efficacy will lead to lowering of the importance of ease of use perception (Venkatesh & Morris, 2000). This is also supported in previous research in psychology (e.g., Cooper & Weaver, 2003; Roca et al., 2006) which suggests that men perceive analytical and competitive approaches to solving problems which will lead to higher score on Self-Efficacy (Venkatesh et al., 2004). Furthermore, it is expected that gender will have an impact on Facilitating Conditions (FC) and that the relationship will be stronger for women compared to men. This argument is based on Hofstede's cultural theory (Hofstede & Hofstede, 2005) proposition and more specifically related to masculinity/femininity cultural dimensions, which indicates that women compared with men rated a higher importance towards FCs with respect to service aspects and the working environment. Additionally, it has been found that gender affects the relationship between SN and BI such that the effect is stronger for women (Venkatesh & Morris, 2000; Venkatesh et al., 2003; Kripanont, 2007; Huang, Hood, & Yoo, 2012). Women are found to rely more than men on others' opinion (Venkatesh & Morris, 2000; Hofstede & Hofstede, 2005) as they have a greater awareness of others' feelings compared to men and therefore more easily motivated by social pressure and affiliation needs than men. Therefore it is expected that the relationship between SN and BI will be stronger for women than for men (Wang et al., 2009).

In line with previous discussion, it is expected that the relationship between PU, QWL and BI will be stronger for male students, whereas the relationship between PEOU, SE, FC, SN and BI will be stronger for female students. Thus we propose the following hypotheses:

H11: a1, a2, a3, a4, a5, a6: The relationship between PEOU, PU, SN, QWL, SE, FC and Behavioural Intention and actual usage of the e-learning system will be moderated by the gender.

2.9 Age

Research has shown that age is an important demographic variable that has direct and moderating effects on behavioural intention, adoption and acceptance of technology (e.g., Chung et al., 2010; Venkatesh et al., 2003; Wang et al., 2009; McCoy, Everard, & Jones, 2005; Yousafzai, Foxall, & Pallister, 2007b; King & He, 2006; Walker & Johnson, 2008; Sun & Zhang, 2006; Akhter, 2003; Porter & Donthu, 2006). Venkatesh et al. (2003) reported that age was an important moderator within his UTAUT model. They found that within an organizational context, the relationships between performance expectancy (similar to PU), FC and BI was stronger for younger employees, while the relationship between effort expectancy (similar to PEOU) and SN was stronger for older employees in accepting and using the technology (Venkatesh et al., 2003). They concluded that "increased age has been shown to be associated with difficulty in processing complex stimuli and allocating attention to information on the job" (Venkatesh et al., 2003, p. 450). They also found that age moderate the

relationship between facilitating conditions and behavioural intention. Similarly, Morris and Venkatesh (2000) found the same moderating effects of age. It could be that age increased the positive effect of SN due to greater need of affiliation (e.g., Morris & Venkatesh, 2000; Burton-Jones & Hubona, 2006).

In contrast with this, Chung et al. (2010) did not find any moderating effect of age on the relationship between PEOU, PU and BI in online communities. In sharp contrast, Wang et al. (2009) found that age differences moderate the relationship between effort expectancy (similar to PU) and BI and was stronger for older adults but did not find any moderating effect of age on effort expectancy (similar to PEOU) and BI. Sun and Zhang (2006) found that the relationship between PU and BI was stronger for younger adults in the adoption decision. Correspondingly and since QWL may be correlated with PU since its perceived the importance of technology on user's quality of work life, it is expected that the relationship between QWL and BI will be stronger for younger users. Additionally, with respect to social and psychological influence on the adoption decision, Jones et al. (2009) found the relationship between SN and BI to be stronger for older adults. Similarly, Wang et al. (2009) found that age moderates the relationship between SN and BI, and the effect was stronger for older adults on using m-learning technology.

In terms of computer and internet self-efficacy, it was found that older people have low self-efficacy in use of technology (Czaja et al., 2006). The rationale could be that older adults often think that they are too old to learn a new technology (Turner, Turner, & Van de Walle, 2007; Tarhini, 2013). Previous research also found that age differences influence the perceived difficulty of learning a new software application (Morris, Venkatesh, & Ackerman, 2005; Morris & Venkatesh, 2000). There is a clear evident that younger adults have lower levels of computer anxiety than their older counterparts (Chaffin & Harlow, 2005; Saunders, 2004) and that lower levels of computer anxiety are associated with lesser reluctance to engage in opportunities to learn new Internet skills (Jung et al., 2010).

Despite the inconsistencies that have been found in previous research about the direct or moderating effect of Age on the influence of various determinants on behavioural intention, many researchers support the important role that age plays in the context of technology acceptance. Therefore, it is expected that the effect of age on the relationship between PEOU, SE, SN and BI will be stronger for older students, while the influence of PU, QWL on BI will be stronger for younger students. Therefore, we propose the following hypotheses:

H12: a1, a2, a3, a4, a5, a6: The relationship between PEOU, PU, SN, QWL, SE, FC and Behavioural Intention and actual usage of the e-learning system will be moderated by the age.

2.10 Educational Level

In previous studies, education level was related to knowledge and skills which in turns affect the behavioural beliefs (PU and PEOU) towards acceptance and usage of new technologies (Rogers, 2003; Agarwal & Prasad, 1999). Educational level, like other individual factors, has been studied as an antecedent of PU or PEOU (Agarwal & Prasad, 1999) and as a moderator that affects the relationship between main determinates and behavioural intention (Burton-Jones & Hubona, 2006). In particular, educational level was found to influence the relationships between PEOU, PU, SN and BI (Porter & Donthu, 2006; Rogers, 2003; Sun & Zhang, 2006; Zakaria, 2001; Mahmood, Hall, & Swanberg, 2001; Burton-Jones & Hubona, 2006).

Venkatesh et al. (2000) found a positive correlation between the level of education and PU, Similarly, Burton-Jones and Hubona (2006) suggested that higher education level leads to positive association with PU and those users are less sensitive to PEOU since it will reduce the computer anxiety and improve the overall attitude. In contrast, Agarwal and Prasad (1999) found that there was no relationship between educational level and PU, but there was with PEOU. Similarly, Al-Gahtani (2008) found that educational level only moderate the influence of PEOU on BI, while no moderating impact were found on the relationship between PU and BI towards using computer applications on a voluntary basis in the context of Arab countries. Abu-Shanab (2011) found a moderating effect of educational level on the relationship between most of the key determinants of UTAUT and acceptance of internet banking in Jordan. Moreover, educational level was also found to negatively affect the social influence on behaviour when adopting new technology in an organization as both education and experience will empower the users (Burton-Jones & Hubona, 2006; Lymperopoulos & Chaniotakis, 2005).

The moderating impact of educational level on the relationship between quality of life and behavioural intention has not been investigated in literature. Nevertheless, it is expected that educational level will have an impact on the relationship between QWL and BI such that the relationship will be stronger for students with higher educational level. The rationale is that students who have higher level of education will perceive the e-learning system and value the impact of this system on their career.

Despite mixed results, however the moderating role that educational level can play on the adoption and acceptance of technology is indisputable (see meta-analysis of Mahmood et al. (2001) and Sun and Zhang (2006)). Hence, it is expected that the relationships between (PU, QWL) and BI will be stronger for users with higher educational level, while the relationships between (SN, PEOU) will be stronger for users with lower educational level. We thus propose the following hypotheses:

H13: a1, a2, a3, a4, a5, a6: The relationship between PEOU, PU, SN, QWL, SE, FC and Behavioural Intention and actual usage of the e-learning system will be moderated by Educational Level.

2.11 Experience

The concept of experience refers to the involvement of an individual in something over a period of time. In the technology context, an individual's experience is measured by the level of experience and number of years in using a specific technology and will result in a stronger and more stable behavioural intention relationship (Venkatesh & Morris, 2000; Venkatesh et al., 2003; Poon, 2007). Users may employ the knowledge that have gained from their prior experience to form their intentions (Fishbein & Ajzen, 1975). Experience was not incorporated in the original TPB and DTPB; however it was added later after follow-on studies due to its importance on the intentions (Morris & Venkatesh, 2000). Moreover, TAM2 clearly incorporated Experience as a moderator that affects the relationship between main determinants and behavioural intention (Venkatesh & Davis, 2000).

Previous research has found that a user's degree of relevant experience moderates a number of relationships within TAM (e.g., Lymperopoulos & Chaniotakis, 2005; Al-Jabri & Al-Khaldi, 1997; Venkatesh et al., 2003; Venkatesh & Bala, 2008). The relationship between behavioural intention and usage was empirically confirmed to be more statistically significant for expert users compared to novice users (Taylor & Todd, 1995a; Venkatesh et al., 2004; Venkatesh & Davis, 2000) and thus experience will have a positive influence on the strength of the relationship between BI and AU.

As for PU, Taylor and Todd (1995a) reported that experience significantly moderates the relationship of PU and BI such that the relationship was stronger for inexperienced users, their results were not expected. This means that experienced users tended to give less consideration on PU and based their consideration to control information in formation their intentions (Taylor & Todd, 1995a). In contrast, Venkatesh et al. (2003) did not find a significant moderating effect of experience on the relationship between "performance expectancy" (similar to PU) on BI. This suggested that PU has a strong impact on BI for inexperienced users.

Additionally, the moderating effect of experience on the relationship between PEOU and BI is clear and stable in the literature (Venkatesh & Davis, 2000; Venkatesh & Morris, 2000). Generally speaking, when users have prior knowledge in using the technology, this will provide the users a more robust base to learn as users will relate their incoming information with what they already know (Venkatesh et al., 2003). In other words, experienced users will perceive PEOU as not a big issue when learning a new technology (Venkatesh et al., 2003). Venkatesh (2002) found that the direct influence of PEOU on BU will decrease over time due to the experience that individuals obtain during the time using the system. In contrast, inexperienced users with no prior knowledge will prefer to use the technology which is easy to use.

With respect to SN, empirical evidence has demonstrated that experience was also found to significantly moderate the relationship between SN on BI (Venkatesh & Davis, 2000; Venkatesh & Morris, 2000). Venkatesh and Davis (2000) argued that the influence of SN on BI will decrease over time. Where users already have extensive experience, the role of SN will be expected to be lower as users are more able to draw on their own past experiences to shape their perception rather than the opinions of others (Venkatesh & Davis, 2000; Venkatesh & Morris, 2000). Similarly, Karahanna, Straub and Chervany (1999) found that inexperienced users are more driven by SN than experienced users. It is expected that the relationship will be stronger for inexperienced users since they will be more sensitive to their colleagues' opinion (Venkatesh et al., 2003).

In terms of self-efficacy and facilitating conditions, it is noteworthy to mention that SE has been studied as a direct determinant and moderators on behavioural intention and usage behaviour to use the technology and is similar to "indirect" experience e.g. (Park et al., 2012; Vijayasarathy, 2004; Ong & Lai, 2006; Roca et al., 2006). In addition, experience was found to influence the relationship between facilitating conditions and behavioural intention (Venkatesh et al., 2003). The authors found that the relationship was stronger for experience. They suggested that when the experience increases, this will lead to user's wider options for help and support and this will lead to more usage of the system.

Therefore, it is expected that experience will play an important role on the relationship between main determinants and behavioural intention to use the e-learning system. It is expected that when students experience increases; they will be more aware of the benefits of the e-learning system on their education e.g. (Evanschitzky & Wunderlich, 2006; Stoel & Lee, 2003). Hence, we propose the following hypotheses:

H14: a1, a2, a3, a4, a5, a6: The relationship between PEOU, PU, SN, QWL, SE, FC and Behavioural Intention and actual usage of the e-learning system will be moderated by Experience.

3. Discussion

This paper proposed a theoretical framework that might be helpful in understanding the various factors that are expected to influence the adoption and acceptance of e-learning systems in the context of developing and developed countries in the context of higher educational institutions. The research model is based on prominent well known technology acceptance models and theories that have been previously well-validated, e.g., TAM, TAM2, TRA, DTPB and UTAUT which are relevant to the context of e-learning. These factors reflect personal, social, and situational factors and specifically include social norm, facilitating conditions, e-learning self-efficacy, quality of work life, perceived ease of use, perceived usefulness and behavioural intention and usage. In addition, demographic characteristics were integrated as a set of moderators in the model.

Therefore this research proposes and tests two types of hypotheses, in the first category, this study proposes 10 direct hypotheses from H1 to H10. In the second category, 4 individual characteristics were hypothesized to have a moderating impact on the relationship between the main determinants and BI. It is expected that extending the TAM to include SN, SE, QWL and FC, in addition to the sets of individual characteristics as moderators, may help in explaining more of the variance of behavioural intention and actual usage as well as explore reasons for why the model may hold better in some contexts than others.

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