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Factors Influence e-Learning Utilization in Jordanian Universities - Academic Staff Perspectives

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Abstract

The new and rapid growth of technologies has changed the face of the world. It is being considered the umbrella for the communication and networking devices and software with applications. In fact, the development of ICT strategy is vital for the growth of the knowledge economy in developing countries. Information and Communication Technology (ICT) is considered in a beginning stage in the developing countries such as Arab world especially in the field of teaching and learning process. This study therefore, is focused with the development of e-learning process through the adoption of ICT among the academic staffs in the Jordanian universities. The main purpose of this study is to examine the potential prominent factors related to the usage of ICT in the public universities among the academic staff. The main challenge of the study is to fully understanding the factor affecting on the ICT usage by applying the Decomposed Theory of Planned Behavior (DTPB). The findings show that self-efficacy (SE), and facilitating condition (FC) have positively affected the Behavioral Intention (BI) to use ICT in the higher educational system among academic staff. There is also a significant relationship between academic staff's perception of technology characteristics and their Perceived Behavioral Control (PBC) towards using the technology in the educational system.

Keywords: Information and Communication Technology (ICT), Decomposed Theory of Planned Behavior (PBC), e-learning, Jordan.

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1. Introduction

The ICT becomes a major factor in the world that drives social, economic and human development. The rapidly growing use of ICT and the Internet by the government, non-government, and individuals in the Arab world has changed many things from the traditional to the digital world. Hence, the development of an ICT strategy is vital for the growth of the knowledge economy in developing countries. In the past three decades, the ICT industry has grown to be a driving force behind the world economy and gaining the attention of the national leaders (Reach, 2004; Intaj, 2007). In relation, Jordan as one of the developing countries tries to become a leader in the Arab world by using ICT in all sectors, particularly in education and higher education sectors, in which, Jordan is considered to have one of the best systems in the Arab world (Al-Zaidiyeen, Mei, and Fook, 2010).

However, the diffusion of the Internet in developing economies is naturally depending not only on the telecommunication infrastructure, but also on the educational development (Deichmann, Eshghi, Haughton, Masnghetti, Sayek, and Topi, 2006). However, the educational-based digital divide is doubly problematic, since the cost for technology-supported educational systems, and the training are considered as the critical challenges for them to be competitive in the global society (Fei Yang, 2006). Moreover, the adoption of educational technology in the

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developing nations does not always result in directly proportional increases in student learning outcomes, so it is important to understand the critical success factors in order to optimize outcomes (Fei Yang, 2006; Müller, Sancho Gil, Herna'ndez, Giro', and Bosco, 2007). Hence, the ICT in educational programs must be developed to boost the national economic productivity in order to generate the economic well-being necessity to support technology diffusion in the wider population.

Effective ICT utilization is hindered by the digital divide between the advanced nations and the less advantaged, which points to the needs for more ICT related research dealing with less developed countries to bridge the gap (Ali, 2004). ICT diffusion patterns in the developing world tend to reinforce the digital divide rather than immediately ameliorating it, suggesting that simply implementing technology in a developing nation is not the entire solution (Müller et al., 2007).

Learners in developing areas struggle both with tight budgets for technology and with the cultural context to convert the ICT use into something useful for them (Aduwa-Ogiegbaen and Iyamu, 2005). Even though ICT deployment provides stimulus for economic growth, this outcome is depending on the role of the educational sector in producing educated and technologically-trained workforces (Mistry, 2005).

However, the developing countries face many difficulties to adopt and accept the new technologies in the educational system. In Malaysian universities, Wee and Abu Bakar (2006) found that the rapid growth of technologies without spending sufficient time and effort being spent to understand the technologies is considered as one of the obstacles of the new technologies. They also found that the lack of network connectivity and lack of management support and encouragement for the academic staff to use the technologies in their teaching and learning process hinder the adoption and integration of technologies in the educational system. On the other hand, new generations are more enthusiastic about adopting and accepting of the new technologies. The early introduction of the Internet and new education systems in the Arab Gulf region made it easier for organizations in the region to adapt and change as expected in the technological culture. There is also a shift to an electronic government in many countries in the Arab world region, for example the UAE, Qatar, Jordan and Tunisia, in which most of the services are done on-line.

2. Problem Statement

Many ICT adoption studies have been widely done in the industrialized world, yet there is insufficient knowledge regarding ICT adoption in the less developed countries and in the Arab regions particularly. The adoption of technologies in the Arab regions in comparison to other countries in North America, Europe, and other developing countries is still at its very early stages (Ali, 2004; Azab, 2005; Rasmy, Tharwat, and Ashraf, 2005; Khasawneh and Stafford, 2008). Adoption and usage of ICT in the Arab regions at this stage has not been fully researched by practitioners or academia in the region. Many countries in these regions are still lagging far behind the developed countries in terms of the acceptance of technologies, and many organizations in these regions are not yet ready to accept the ICT. The lack of basic infrastructure, senior management support, sufficient funds, enthusiasm about ICT adoption, level of education and skills, expertise in the field, and the resistance to anything which is new, unclear, and uncertain all impede the adoption of the new technologies (Twati and Gammack, 2006).

With regards to discussions in the previous studies, the literature reviews of information system (IS) field have shown several factors which influence the adoption and acceptance of information technologies. Among the factors that are widely being studied is perceived behavioral control (PBC) (Park, Lee, and Cheong, 2008; Dixon and Siragusa, 2009; Park, 2009; Karaali, Gumussoy, and Calisir, 2010; Macharia and Nyakwende, 2010; Qudais, Al-Adhaileh, and Al-Omari, 2010). In relation to this factor, behavioral intention (BI) is the ultimate destinations that bring to the adoption of one technology. The study, therefore, applies Decomposed Theory of Planned Behavior (DTPB) (Taylor and Todd, 1995) to develop a research model.

PBC is considered as an important factor in the adoption of ICT in the educational system among academic staff. It refers to "person's perception of the ease or difficulty of performing ICT, as well as the beliefs about having the necessary resources and opportunities to adopt educational technologies" (Ajzen, 1991; Pavlou, 2002). Hsieh, Rai, and Keil (2008) found a significant relationship between individual's PBC such as the facilitation that supports the use technologies and their BI to use these technologies.

On the other hand, Dixon and Siragusa (2009) and Bidin, Shamsudin, Sharif, and Hashim (2010) found the importance of PBC on behavioral interaction to accept and use ICT in the educational system. However, the Jordanian higher education institutions consider the PBC as a very important factor to increase the adoption rate of using ICT in the educational system. In fact, the Ministry of Higher Education and scientific Research (MoHESR) presents the facilitating conditions such as technological, resources, and governmental support to the universities to increase the

ICT usage in the educational system (MoHESR, 2013). So, the study focuses on PBC factor to measure the Jordanian academicians' BI to adopt and use of ICT in teaching and learning process.

Hence, this research is conducted to study the adoption and utilization of ICT technologies with a focus on discovering the factors that affect the adoption of ICT among teaching staff (academicians) in Jordanian public universities. However, adoption of ICT technologies will be influence to improve the educational system. Also, the study attempts to build an appropriate research model that will be help the leaderships of higher education institutions to support and encourage the usage of ICT among academic staff in the educational system.

From the above paragraph and reviewing the literatures in the adoption of technologies in the information system field, educational technologies in particular, the study determine the problem statement as the limitation of ICT adoption and usage in the Jordanian higher education institutions among academic staff in their teaching and learning process. In order to solve the problem, the study measures the academic staffs' perception of the educational technologies from several perspective such as technological and management perspectives by studying their perception of PBC that affect on academicians' BI to adopt or reject the educational technologies.

3. Issues of ICT Adoption in Teaching and Learning Process

ICT plays major roles in every aspect of our life and it's required in every sector and industry, including the educational sector. This sector has been going through some evolution and changes with the influence and supports of ICT to improve the quality and the efficiency of the teaching and learning process (Westera, 2004). These include the innovation of e-learning or online learning, emails, multimedia-based teaching materials, and also application systems, and databases. The adoption and diffusion of educational technologies that leverage ICT and the Internet have provided an unprecedented opportunity for improving higher education around the world (Davis and Wong, 2007). Therefore, the educational technologies must become more popular among developing nations which seek economic improvement (Khasawneh, Khasawneh, Bsoul, Idwan, and Turan, 2013). In fact, the educational technology is becoming more universal at an increasing rate as most firms recognize the needs to prepare the IT professionals for the global environment (Margavio, Hignite, Moses, and Margavio, 2005).

In an effort to transform and realign universities into 'Information Age', a major restructuring of computer centers and IT division and establishing division of e-learning activities has been initiated to maintain and increase the use of ICT in the universities teaching and learning practice. One of the main goals of these divisions is to upgrade the teaching skills and practice amongst the teaching staff. The introduction of such centers has assisted and helped university management, staff, and students in maximizing the value of information technology and further delivering the leading-edge information technology products, services, supports, trainings and education for staff and students.

Apart from this, the globalization of the learning process is paralleled with the dramatic increase in the utilization of the Internet as an educational support tool (Van Raaij and Schepers, 2008). Meanwhile, the developing nations are always one step behind the Western world in terms of the adoption of important information technology innovations (Hall, 1999), and it seems equally unquestioned that the West can provide important guidance and supports to the educational technology initiatives of the developing world, as part of the assistance in the implementation of technology-based economic development models (Watson, 1994). In general, ICT is seemed as critical to the development process upon which economic prosperity depends, but it is also an integral part of the education systems, fundamentally changing the nature of the educational process (Kenny, 2001).

The ICT is essential for economic development in the broad endeavor of global business (Torre and Moxon, 2001) as well as in the underdeveloped nations (Stafford, Turan, and Khasawneh, 2006). Very few researches have been done to examine the innovativeness and ICT diffusion process in the developing nations, particularly in the Middle East (Ali, 2004; Khasawneh and Stafford, 2008). This is imbalanced, since half of the world lives in developing economies (Sahay and Avgerou, 2002), and the developing economies in the Middle East are worthy of special consideration (Loch, Straub, and Kamel, 2003).

ICT is widely deployed in the higher education institutions that changed the fundamental structure and scope of education in universities (Turan and Khasawneh, 2008). The explosive growth of ICT has made it a popular platform for providing electronic services to business and education (Chiu, Hsu, Sun, Lin, and Sun, 2005). It is widely accepted that advances in technology and new developments in educational system provides opportunities to create well-designed, student-centered, and facilitated e-learning environments (Khan, 2005). While many institutions and educators have integrated or utilized ICT technologies into their educational environments, the effectiveness and efficiency of those new technologies in the education system as well as their ability to deliver instruction, are still questionable (Qudais et al., 2010).

4. Literature Review

4.1. Decomposed TPB Model (DTPB)

The DTPB model was introduced by Taylor and Todd (1995a, 1995b). They present a new design of the Theory of Planned Behavior (TPB), which is considered as helpful to the perception of the relationships between the belief structure and the BI. According to Taylor and Todd (1995b), DTPB model presents three sets of belief structure which are attitudinal beliefs, normative beliefs, and control beliefs.

The formal PBC is constructed into the DTPB in which Taylor and Todd (1995) categorize into SE and FC, where FC consists into Technology Facilitating Condition (TFC), Resources Facilitating Condition (RFC), and Government Facilitating Condition (GFC), as seen in Figure 1. Also, the DTPB provides a complete understanding of a behavior practice and more effective assistance to IS managers and researchers who are interested in the field of study.

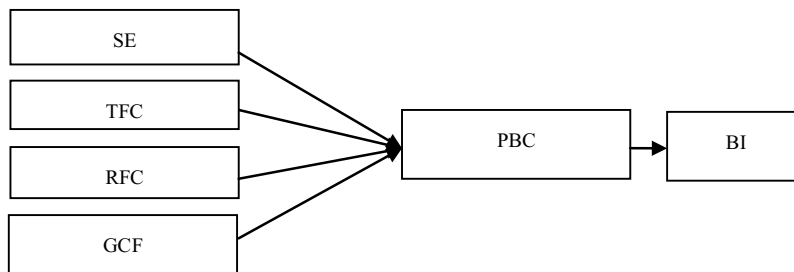


Fig 1. Perceived Behavioral Control Antecedents (Taylor and Todd, 1995)

4.2. Perceived Behavioral Control (PBC)

PBC is the third antecedent variable of the BI in the TPB (Ajzen, 1991). According to Venkatesh (2000), the PBC will help understanding the human behavioral and establish an important interest from psychological perspective than the actual control. In particular, control relates to an individual's awareness of the availability of the resources and knowledge and necessary performing a certain behavior. In fact, the PBC and the BI can be considered as the expectation of the actual use of the behavior (Ajzen, 1991). Further, Venkatesh (2000) argues that PBC has the main influence as the dependent factor, which significantly affects the BI. The significance of PBC was established from the role that acquisition of control and facilitates information since the individual has the resources to administer the behavioral activities (Pavlou, 2002).

Researchers have positively considered the PBC as one of the antecedent factors of the BI. In relation, Ajzen (1991) refers it as the awareness of the individuals on the ease or difficulty of performing a certain behavior. Similarly, Mathieson (1991) defines it as “the individual's perception of his or her control over performance of the behavior”, which was extended by Doll and Ajzen (1992) who define PBC as “the perceived ease or difficulty of performing the behavior and assumed to reflect past experience as well as anticipated impediments and obstacles”.

Previous studies have widely utilized the PBC as the influencing determinant of the BI. For instance, Mathieson (1991) found that the PBC affects the BI to use the IS, which is similar with the significant relationship found between the PBC and BI in the computer resources center (Taylor and Todd, 1995a). Also, Pavlou (2002) investigation over the e-commerce behavior found that a positive relationship between the PBC and BI, which is agreed by Battacherjee (2000) and Taylor and Todd (1995). In general, there is a strong relationship between the PBC and BI in the theoretical and empirical studies.

One step ahead, Ajzen (1991) specifies three conditions for a precise prediction of the PBC and BI. The first condition requires that the measurement of the intention and PBC must be compatible with the behavior which is wanted to perform. The second condition requires that the intentions and PBC must be stable in all time between their

prediction and observation of a certain behavior. The final condition insists that the important of the accuracy of the PBC to assure the perceptions of behavioral control realistically mirror the actual control.

In a nutshell, the proposed factors of the PBC to examine the adoption of ICT in the higher educational system will be adapted from the DTPB. The determinants of the PBC in the DTPB are (i) SE and (ii) FC which include (a) TFC, (b) RFC, and (c) GFC.

Self-Efficacy (SE)

SE is a determinant factor derived from the social cognitive theory by Bandura (1986). According to Gist and Mitchell (1992), the SE is defined as “a more complex and generative process involving the construction and orchestration of adaptive performance to fit changing circumstances”. There are three components of SE (i) a comprehensive summary of the perceived ability to perform a certain behavior, (ii) dynamic determinant, and (iii) involve mobilization part.

Compeau and Higgins (1995) define SE from IS perspective as the individual ability to use computer. In the context of utilization of ICT in the educational system among lecturer, SE describes the capabilities to use ICT and Internet in the teaching and learning process by academicians in the higher educational institutions. Also, Compeau and Higgins (1995) view that SE play an important role in the measurement of computer usage. Hartzel (2003) also found that SE in using computer is important. In contrast, Igbaria and Livari (1995) found that the SE has an insignificant influence on the PU.

Facilitation Conditions (FC)

The FC has appeared as an external factor related to the environment (Triandis, 1979; Taylor and Todd, 1995a), in which an understanding of the expected effect from FC is considered as a critical issue. In general, the FC explain that the performed behavior cannot occur if the surrounding conditions prevent it (Triandis, 1979), or if the FC in the environment makes the behavior difficult (Thompson, Higgins, and Howell, 1994). Initially, it has two categories: facilitating resource factors such as time and money, and facilitating technology factors such as compatibility and security (Taylor and Todd, 1995a).

Investigation on the influence of FC on the individual’s BI towards ICT adoption in the educational system cannot be neglected. Although, Triandis (1979) found that FC influences only on the actual behavior, Chang and Cheung (2001) suggest that the FC influences the intention to use. As agreed by Venkatesh, Morris, Davis, and Davis (2003) who found that the FC determinant is similar to PBC, which influence the BI and also the actual usage.

In response to figuring that the FC has been utilized in the measurement of adoption of new technology, Hung, Ku, and Chang (2003) have utilized it and argue that the FC influences the adoption of wireless application protocol (WAP). Also, Venkatesh (2000) highlights that the FC influences the individual’s behavior to use and accept the new technologies. Then, Venkatesh et al. (2003) report that the FC influence the user’s acceptance of new technologies. Consequently, the researchers considered that the success in adoption and diffusion of technologies means that the more conditions have been facilitated. Therefore, the FC in the field of adoption and utilization of new technologies can be considered as a motivator that speeds the adoption or inhibitor that delays it. Hence, this study proposes three issues of conditions to be measured: (a) TFC, (b) RFC, and (c) GFC. The following describes each condition of PBC.

Technology Facilitating Conditions (TFC)

The first factor of FC is the technology which requires the availability of infrastructure, training, and system compatibility. Previous researchers discussed TFC from IS perspective. For instance, Venkaesh et al. (2003) demonstrates that the degree of an individual beliefs and attitudes to use new technologies are influenced by the organizational and technical infrastructure which support the adoption and utilization of the technology. In addition, Ratnasingham, Gefen, and Pavlou (2005) exploit the concepts of technology connectivity by presenting three dimensions, which are compatibility, telecommunication infrastructure, and internal integration.

With respect to the IS researches, the availability of infrastructure and training are considered as a significant form of the TFC, in which it is measured in many of the technology adoption and acceptance studies. Technological support is considered the main issue in motivation towards using technologies such as providing training (Bonk, 2001), instructional design and development support (Dooley and Murphrey, 2000; Bonk, 2001).

Resource Facilitating Conditions (RFC)

The second factor in FC is the resources, which is required to use specific technologies in the social system. Time and money are considered the important examples of the RFC. Lu, Yu, Liu, and Yao (2003) suggest that regulation, policies, and the legal environment are also considered significant elements in the FC. Cheung, Chang, and Lai (2000) propose that individuals require not only the important resources but also they need to encourage them to adopt the technologies. Consequently, Lee (2001) points out that when academic staff feels that there is an institutional support, their levels of motivation and dedication to use the technologies will be improved.

Facilitating Government Support

The third factor in the FC is government support. Government can play important roles in the diffusion of innovation (Gurbaxani, Kraemer, King, Jarman, Dedrick, Raman, and Yap, 1990). In Jordan, the government encourages the utilization of ICT in the different fields, especially the educational system. They support in facilitating the adoption and diffusion of technology in several forms. For example, they set clear regulations and rules that reduce security risks and playing more specific actions to encourage a higher educational sector to use ICT in the educational system as suggested by Partridge and Ho (2003).

As a result, Hsien et al. (2008) argued that there is a significant relationship between individual's PBC such as the FC to support the use of technologies and their BI to use these technologies. In addition, the FC support encourages them to use technologies in their teaching and learning process. The availability of technologies and their ability to do the functions at best with the availability of resources and government support to use the technology such as hardware, Internet connection, training courses, and motivations support and also considered important to adopt and use the technologies in the teaching system.

5. Theoretical Framework

The study intends to explore the factors that affect the BI of academic staff in Jordanian public universities to adopt and use of ICT in their teaching and learning process. To achieve the main objectives, this study has applied adoption theory to build a model relevant to the study's environment.

Consequently, building the model has driven the study to indicate several factors that represent an aspect of the study; management aspect that contains factors from DTPB such as (SE), and (FC) including technology, resources and government support.

Eventually, the proposed research model will be the authority for all universities to encourage the adoption and utilization of ICT in the education and learning process in Jordan and the Arab countries because this study is considered as a novel study in the Arab region. The proposed model could assist the decision and policy makers determining the most influential factors that affect the academicians' BI to use ICT in the educational system and try to support it.

Based on the results of the reviews on literatures regarding adoption theories and the literature, the study builds the model, which includes the critical factors to be considered while describing the adoption and utilization of ICT in educational sector in Jordan. Consequently, there are some difficulties encountered in expressing the meaning of the associations among the factors such as the differences of the culture, language, and human skills between developed and developing countries.

6. Research Model

The literatures reveal that the usage of ICT in teaching and learning process provides the inference that an individual, such as teacher or lecturer adopts ICT in teaching and learning process through two perspectives: (i) technology characteristics, and (ii) external factors. Generally, these perspectives have been utilized in several studies in IS field. For example, some adoption studies focus on technology characteristics, best exemplified by the study which was accomplished by Agarwal and Prasad (1999) which found that the technology characteristics were influencing on the adoption and the approval of new innovations. Agarwal and Prasad (1997) also found the role of technology characteristics in the adoption and acceptance of technologies. Although there are many studies in the IS field include these perspectives, but studies that include sets of antecedent factors to each perspective are rare. For example, the external factor perspective in this research stands for the FC which are definitely the element of the DTPB by Taylor and Todd (1995).

From the theoretical view, the factors that are described in the research model of this study were chosen from the DTPB. The model is proposed as an innovation in the adoption and acceptance of technology in general, and in the Jordanian higher education system in specific. Figure.2 presents the research model in a hypothetical view of the study. This part of the study tries to explain the relationship between factors in the form of the alternative hypotheses.

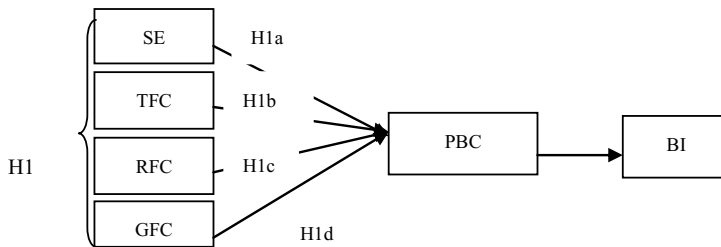


Fig 2. Research Model (Hypothetical's View)

7. Hypotheses Formulation

PBC deals with a consumer's perception of whether a particular behavior is within their control which is affected by their beliefs regarding access to resources and opportunities and to self-confidence (Ajzen, 1991). As PBC is included as a component of the research model, this factor carries out the control beliefs through four factors identified as the: (i) SE, (ii) TFC, (iii) RFC, and (iv) GFC.

Hypothesis H1: There is a relationship between Jordanian academic staffs' perceived behavioral control and its antecedent factor, control beliefs, comprising beliefs about facilitating factors and the use of ICT in the teaching and learning process.

The research hypothesis H5 can be answered by testing the four sub hypotheses H1a to H1d as follows;

Hypothesis H1a: There is a positive relationship between the self-efficacy and the academic staffs' perceived behavioral control in using ICT in the teaching and learning system.

Hypothesis H1b: There is a positive relationship between the technology facilitating condition and the academic staffs' perceived behavioral control in using ICT in the teaching and learning system.

Hypothesis H1c: There is a positive relationship between the resource facilitating condition and the academic staffs' perceived behavioral control in using ICT in the teaching and learning system.

Hypothesis H1d: There is a positive relationship between the government facilitating condition and the academic staffs' perceived behavioral control in using ICT in the teaching and learning system.

The dependent variable in this study is the BI to use technology. The literature shows that IS studies deliberated the intention variable as the main construct of the individual actual behavioral as supported from the theoretical foundations. Therefore, a significant relationship between BI and actual use of ICT in higher education institution among academic staff is expected. Particularly, the use of ICT in higher education institutions is still introductory, so, it is difficult to measure the actual use directly because the numbers of the potential adopters are still little.

8. Findings and Results

This part discusses the findings and the results of the study. It presents the results of the hypotheses testing using multiple regression techniques.

8.1. Result of Hypothesis: Hypothesis (H1)

Ajzen (1991) addresses that “the more resources and opportunities individuals believe they possess, and the fewer obstacles or impediments they anticipate, the greater should be their perceived control over the behavior”. With regards to the perception on control, Table 1 displays the relationships between the individual's control beliefs of ICT (as measured by FC and SE) investigated in this study using Pearson's correlation. Preliminary analyses were conducted to ensure no violation of the assumptions of linearity, normality, and homoscedasticity.

Table 1. Mean, SD, Alpha Reliability and Zero-order Correlation (Control Belief Vs PBC and BI)

Variables	M	SD	BI	PBC	SE	TFC	RFC	GFC
DV1-BI	4.96	1.47	(0.83)					
DV2- PBC	5.174	1.498	.745**	(0.91)				
IV1- SE	5.720	1.168	.625**	.700**	(0.90)			
IV2-TFC	4.947	1.930	.805**	.679**	.599**	(0.95)		
IV3- RFC	4.914	1.758	.746**	.687**	.631**	.850**	(0.94)	
IV4-GFC	5.730	0.857	.675**	.545**	.543**	.552**	.550**	(0.67)

Note. ** P<.01

As seen in the Table 1, there is a strong, positive correlation between the academic staffs' SE with respect to ICT-use and their BI and their PBC ($r = 0.745$ (BI), $r = 0.700$ (PBC), at $p < 0.01$). Concerning the three variables of FC, it is revealed that there is a strong, positive relationship between BI and PBC with all FC as follows, TFC ($r = 0.805$ (BI), $r = 0.679$ (PBC), $p < 0.01$); RFC ($r = 0.746$ (BI), $r = 0.687$ (PBC), $p < 0.01$); and GFC ($r = 0.675$ (BI), $r = 0.545$ (PBC), $p < 0.01$). On the other hand, Table 2 shows the control belief result obtained by conducting multiple regression analysis.

Table 2. Results of multiple Regression: Control Belief Vs PBC

Predictor Variable	Unstandardized Coefficients		Standardized Coefficients	t	
	B	Std. Error	Beta		
IV1-SE	0.496	0.054	0.386	9.256*	
IV2-TFC	0.175	0.046	0.226	3.786*	
IV3-RFC	0.165	0.052	0.193	3.165*	
IV4-GFC	0.182	0.068	0.104	2.671*	
R:	0.783				
R ² :	0.614				
Adjusted R ² :	0.610				
	DF	Analysis of Variance		F	Sig of F
		Sum of Squares	Mean Square		
Regression	4	570.398	142.600	162.812	0.000
Residual	410	359.101	0.876	1	

Note. **P<.001, *P<.05

The standardized coefficients (β) values for SE, TFC, RFC, and GFC are positive and all of them are significant. Therefore, there are significant relationship between PBC and the academic staffs' perception on SE and TFC, RFC, and GFC, to use ICT in the educational system. Thus, the results support all hypotheses on SE and FC (H1a, H1b, H1c, and H1d).

9. Conclusion

The study concerns on the adoption of ICT in the teaching and learning process among academic staff in the Jordanian higher education institutions. Therefore, the study proposes a suitable model to guide solving the research problem and specifying the critical success factors of the study. As a summary, the findings of this study contribute to theoretical modelling by modifying the IS adoption theories in relation to a new application area that may give new insights into the theory. It is also proposed that this study improves a successful adoption of the particular services (ICT) that are supported by new technologies by deepening the knowledge about factors inhibiting or facilitating their adoption for developing nation in general, and for the Arab countries in particular, as these countries share a similar culture, religion, and speak the same language.

In relation to, the findings of the control belief factors that derived from PBC by Taylor and Todd (1995) also reveal having a significant relationship with the intention to use educational technologies. The results are consistent with the previous studies in that they argued that there are four factors indicated for the PBC (SE, TFC, RFC, and GFC). The findings in Table 6.18 showed that the SE and controllability factors, which are represented by three factors TFC, RFC, and GFC, contribute significantly to the variation of intention. The study's findings on SE and the FC factors are positively related to the BI.

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