TAM EXTENSION IN E-LEARNING SYSTEM APPLICABLE IN PRIVATE UNIVERSITIES IN LEBANON

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Abstract

The paper's purpose is to investigate the influence of selected elements (Accessibility, personal innovativeness (PI), resistance to change, facilitating conditions, perceived usefulness (PU), perceived ease of use (PEOU), attitude) on university students' to intend e-learning usage. The objective of this paper is to advance a conceptual framework to analyze and to recognize the intention of students to use e-learning in Lebanese private universities. The collection of the data was from 444 private universities students in Lebanon. The SEM analysis had been used to evaluate the influence of these components to intend e-learning system. The results stated that relationships between accessibility on perceived usefulness are not accepted. Furthermore, the associations between (PI) and PEOU are also not accepted. However, all other relationships are accepted in the framework model. Finally, results discussed then conclusions and future research are presented

Keywords

1. INTRODUCTION

The employment of electronic learning (e-learning) system became essential for schools and universities in order to enhance their learning tools. E-learning continued to develop through all degrees of educational levels (Fathi & Wilson 2009). The demand for the service of e-learning in the area of Africa and Middle East will rise 10% in the growth rate between 2009 and 2014 (Al-Busaidi, 2013).

Electronic learning involves getting information through digital technology by internet (Al-Busaidi, 2013). Different words are used like online learning, e-learning and web-based learning employed to more clarify the internet learning participation. E-learning is considered as a virtual class where teachers and students are not attending physically. E-learning is presented as an advanced tool in order to take place for new challenge of educational institutions.

Many educational institutions integrate e-learning system in their educational program, while the rest use fully e-learning tools (Evans & Haase, 2001). However, e-learning is considered as an expensive tool to apply in universities (Cantoni *et al.* 2004). Thus, e-learning system may face different technical issues and institutional obstacles (Baldwin-Evans 2004). This result globally, different universities are obligated to transfer for e-learning.

TAM is technology acceptance model for IT and has been examined in different studies (Abbad, Morris, & De Nahlik, 2009; Al-Adwan *et al.*, 2013). The extended of TAM presented in different context such as Lebanon to determine the external factors taken from Lebanon's culture. TAM consists of PU, PEOU, ATT and intention. These variables may extend with other variables to examine the adoption of e-learning in Lebanese context.

Accordingly, the purpose of this paper is to investigate the factors that could affect student's adoption of e-learning. Particularly, the objectives of this paper are to evaluate the student's criteria (Acceccibility, personal innovativeness, resistance to change) and their adoption (PEOU, perceived usefulness (PU)) of to their engagement in e-learning. After this definition, then the researcher presents the theoretical background, followed by the literature review, then hypothesis development included in the study clarified. The following part gives a specific clarification of data analysis and outcomes. Findings and discussions are showed next whereas the conclusion is clarified in the final section.

2. THEORETICAL BACKGROUND

The theoretical background is categorized into two parts, the first part will discuss the theory TAM to clarify intention e-learning usage and in the second part will focus on definition of variables.

3. THEORY TO EXPLAIN INTENTION TO USE E-LEARNING

Recently, learners use technology in order to study. Any decision taken is impacted by student's behavior. Besides, previous marketing research has been investigated that technology adoption that contained learners were more efficient as contrast to the technology adoption where no learners were included. To examine the reasons of knowledge in technology adoption, practitioners have employed The Technology Acceptance Model (TAM). This model has accomplished strong assistance through applications, clarifications and repetitions.

By comparing TAM with other model, TAM is presented as more estimator model. Furthermore, based on technology acceptance literature, TAM is considered as an essential model in information technology. This paper aims to examine the reasons of student's adoption of e-learning in Lebanese private universities setting by the combination of external factors (Accessibility, personal innovativeness, resistance to change) which influence the (PU), (PEOU) and to investigate how these constructs can leads students' intention for e-learning usage.

TAM examined the influence of PEOU and PU on attitude and learners' intention to use e-learning (Castiblanco Jimenez et al., 2021). Student's attitude toward using such technology leads to misusage of e-learning usage (Bonk et al., 2002; Hovermill, 2003; Taat & Francis, 2020). Student's attitude is described as a variable that hinder the acceptance of e- learning (Kisanga & Ireson, 2015).

4. VARIABLES CONCEPTUALIZATION

Many studies (Al-Rahmi et al., 2018; Jury, 2007) mentioned variables which have an impact on the intention to use e-learning. The definition of the dependent and independent variables will be explained as follows.

4.1 Perceived Accessibility (PA)

Perceived accessibility is described as the ease of dwelling a pleasant life with the assistance of the e-learning system (Lättman *et al.,* 2016) and refers to the person perceptions, experiences, and expectations of accessibility. It is considered as another factor that may influence e-learning acceptance is perceived accessibility (Abdulfattah, 2021). PA to learning is considered as a concept for designing and assessing of several of IF and services such as e-learning (Kushwaha *et al.,* 2021). A prior research posited that intention e-learning usage is related with inadequate internet accessibility, technical skills, administration assistance and insufficient design content (Prasetya, 2021). The researcher found that the extend of the variable "perceived accessibility" will enrich the TAM model to better understand that the more the learner get easily access to use e-learning, the more the usage of e-learning system will rise.

4.2 Personal Innovativeness

PI refers to the attitude of person: the capability of that person to undertake new technologies (Schillewaert et al., 2005). PI is a feature that may additionally be quintessential for students' intention to e-learning (Al-Busaidi, 2013). According to Chang et al., (2017) described PI in IT as a symbol of the tendency to taking uncertainty that persons have but others have not. In this study, the researcher will rely on Al-Busaidi's definition. The researcher will consider personnel innovativeness as a variable that extend the TAM model in order to better clarify if its impact on TAM model to indent learner in e-learning usage.

4.3 Resistance to Change (RTC)

Prior research attributed instructors' RTC as critical barriers to their employ of e-learning structures (Ferdousi, 2009). Previous research has revealed that the RTC act an essential role of IT adoption such as e-learning adoption (Herodotou et al., 2020; Kamal et al., 2020). Resistance to change is considered as major challenges to the effective implementation of reforms among students, as their habits slow the process of implementation of any educational reform (Ouaissa et al., 2021). The researcher beliefs that the resistance to change is considered as an obstacle on learner to e-learning usage system, since the e-learning is a novel applicable trend in the Lebanese context.

4.4 Perceived Usefulness (PU)

PU is described as a level where a person perceives technological know-how as high quality and efficiency (Nysveen et al., 2005). According to Indarsin and Ali (2017), PU is considered as a degree where an individual have faith that some way will enhance the individual's performance. The usefulness perception is the enlargement to which a person has faith that using a particular technology will enhance their productivity (Tuffahati & Nugraha, 2021). Based on this understanding, it can be interpreted that employing e-learning can enhance users' performance and they will take advantage of e-learning if it is useful for their work. Usefulness perception is the most significant construct and can influence attitude, intention to use technology more than other constructs (Levina Nathania & Anandya, 2021). Based on this, usefulness perception is one of the variables that can influence e-learning usage (Mailizar et al., 2021).

4.5 Perceived Ease of Use (PEOU)

Setyowati and Respati (2017) defined PEOU as degree of confidence from individual that the individual is applying on some system without need for extra efforts. Based on the TAM and these implementations in the field of e-learning, the ease of use perception is the enlargement where person had faith that applying some technology will be independent from making any effort to learn (Mailizar et al., 2021). Using easy the e-learning is also a factor that can influence users to access it (Mailizar et al., 2021). This indicates that ease of use perception has an impact to intend e-learning system (Saeed Al-Maroof et al., 2021).

4.6 Attitude

Customers who have positive attitudes, have a positive usage intention (Meng-Hsiang et al., 2014). As evaluated by the theory of planned behavior (TPB), attitude has a considerable impact on person behavior (Boateng et al., 2016). Studies into learner's attitudes are important when evaluating whether learners present the applying of technology in education as easily adaptive, beneficial, and adopted for their learning (Um, 2021). Based on affirmation definition, the researcher found out the most comprehensive definition which is the capability to learn in different manner by showing interest to the e-learning system.

4.7 Facilitating Conditions (FC)

Facilitating conditions is described as individual's perception of technical assistance which existed for the usage of a device or system (Venkatesh et al., 2012). FC refers to the level to which technology infrastructures find to help the use of a particular system or tool (Khechine et al., 2020). Furthermore, (FC) must be present to ease its utilization for both teachers and learners (Harjanto & Sumarni, 2021). Facilitating Conditions is considered as one asset which may include provision of professional development and system assistance, put asset available about e-learning (Wang et al., 2021).

4.8 Intention to Use e-learning

Usage intention is additionally described as an individual's subjective probability that learners will produce some conduct (Hsu et al., 2007). In the previous decades, researchers have determined that if one has the intention to use technology, there will be a great opportunity of one adopting that technology (Tsai et al., 2011). In online learning help systems, intention to use is one of the factor determinants of accepting the use of such rising technology (Aypay et al., 2012) and it is able to enhance the learning performance of the learners (Al-Rahmi et al., 2019).

5. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

This study is aiming to investigate the variables impacting student usage intention of e-learning to better understand the consumer behavior toward this important educational process. In the literature review, the argumentative will be used by mentioned support or not supporting for the hypotheses tested by previous research. The aim is to improve literature that built a viewpoint. Argumentative approaches are applied in the literature.

5.1 The Effect Of Perceived Accessibility On Student's Perceived Usefulness

Students who use e-learning found that accessibility could be done at any time, from any computer, and even from home (Stevens et al., 2020; Daultani et al., 2021). Kraemer et al., (1993) claimed that large accessibility records are related to higher usefulness of the knowledge. When learners can without issues get admission to e-learning systems, there is an expanded opportunity that they will positively have an impact on the usefulness of such device (Al-Aulamie, 2013; Wongvilaisakul & Lekcharoen, 2015; Almaiah et al., 2016; Revythi & Tselios, 2017; Bhattarai & Maharjan, 2020). The outcomes of the previous research pointed out that an e-learning system's PU is significantly impacted by the PA (Baleghi-Zadeh et al., 2014; Salloum et al., 2019; AlHamad, 2020). However, Thong et al., (2002) could not confirm the latest studies' positive impact of accessibility on PU. Therefore, the hypotheses as follows:

H1 a: Accessibility has a positive impact on student's PU in Lebanese private universities.

5.2 The Effect Of Perceived Accessibility On Student's Perceived Ease Of Use

A study aimed to evaluate the students' point of views at university in Saudi Arabia, about e-learning as a learning advanced. The results revealed that as accessibility is applicable, students have faith they have easy access to the techniques for e-learning (Algahtani et al., 2020).

According to (Al-Aulamie, 2013; Attis, 2014; Bachtiar et al., 2014; Wongvilaisakul & Lekcharoen, 2015; Almaiah et al., 2016; Revythi & Tselios, 2017; Salloum et al., 2019; AlHamad, 2020), they discovered that PEOU is positively impacted by perceived accessibility (Bhattarai & Maharjan, 2020). In addition, in a study of a digital library system, Thong et al.

(2002), discovered a positive impact of accessibility on PEOU. Another study examined the e-learning adoption in Pakistan showed no significant relation between accessibility and PEOU of the e-learning (Kanwal & Rehman, 2017). Therefore, the researcher assume the following hypotheses:

H2 a: Accessibility has a significant influence on student's perceived ease of use in Lebanese private universities.

5.3 The Effect Of Personal Innovativeness On Student's Perceived Usefulness

PI is some other variable that impacts acceptance behavior for new technologies (Agarwal & Prasad, 1998; Hung, Ku & Chang, 2003; Konrad et al., 2005) and might also be vital for students' intention to full e-learning. Thus, the greater the learners' innovativeness, the extra they are usefulness exposed in e-learning usage intention.

Previous studies published a tremendous effect of personal innovativeness on PU (Konrad et al., 2005) to learn about the adoption of Internet technologies (Raaij & Schepers, 2008; Schillewaert et al., 2005; Ngafeeson & Sun, 2015), on behavioral intention (Ngafeeson & Sun, 2015; Tarhini et al., 2017; Alalwan et al., 2018) and on e-learning acceptance (Salloum et al., 2019).

A research demonstrated that technology innovativeness, PU and attitude are positively impacted toward intention (Álvarez-Marín et al., 2021). However, according to some research it was pointed out that PI had insignificantly impact on perceived usefulness (Chihui, 2009; Ullah, 2020). The hypothesis given below is hence developed:

H1 b: Personal innovativeness has a positive impact on student's perceived usefulness in Lebanese private universities.

5.4 The Effect Of Personal Innovativeness On Perceived Ease Of Use

Analytical consequences determine that PI has notably significant impact on PEOU. Same result was revealed in the study of mobile knowledge management (Chihui, 2009). Indeed, findings revealed that the more the learners'PI, the more simulated the impact of PEOU on the attitude towards the game (Matute-Vallejo & Melero-Polo, 2019). Another study revealed that students' PI positively affected their PEOU (Joo et al., 2018). The hypothesis given below is hence developed:

H2 b: PI has a significant influence on student's PEOU in Lebanese private universities.

5.5 The Effect Of Resistance To Change (RC) On Student's Perceived Usefulness

RC may impact the acceptance of cell phone technologies among preservice instructors having an impact on the four constructs of the TAM model (Bhattacherjee & Hikmet, 2007; Nov & Schecter, 2012). Furthermore, a study found that the impact of RTC on perceived usefulness (Shittu et al., 2016). However, people can also discover insignificant technical troubles as device failures, and pass overall incredible influences of the technology (Özdemir-Güngör & Camgöz-Akdağ, 2018). Latest research found a medium influence of RTC on perceived usefulness (Sánchez et al., 2019). Thus, the hypothesis mentioned below

H1 c: Resistance to change has a negative influence on student's perceived usefulness in Lebanese private universities.

5.6 The Effect Of Resistance To Change On Student's Perceived Ease Of Use

According to Sánchez et al. (2019) a significant influence of RTC is determined on PEOU. According to Shittu et al. (2016), they found in their research an impact of RTC on PEOU. RTC is negatively associated to PEOU (Nov & Ye, 2008). Thus the hypothesis mentioned below

H1 c: Resistance to change has a negative influence on student's perceived ease of use in Lebanese private universities.

5.7 The Effect Of Perceived Usefulness On Attitude

According to the literature, PU positively affects users' conduct intention (BI) directly (Kibelloh & Bao, 2014; Álvarez-Marín et al., 2021; Cicha et al., 2021; Nematolahi & Seifzadeh, 2021). Moreover, according to Mohamad et al. (2021) who found that PU and intention to use are positively related among Bangladeshi and Malaysian university students during the pandamic. A large number of empirical studies have found that PU is the primary estimator of technological knowledge applied (Davis, 1989; Davis et al., 1993; Igbaria & Iivari, 1995; Gefen & Straub, 1997; Koufaris & Hampton-Sosa, 2002; Gefen et al., 2003; Legris et al., 2003; Ong et al., 2004; Hsu & Lu, 2004; Cheong & Park, 2005; Lee, 2006; Ong & Lai, 2006; Kulviwat et al., 2009; Lee et al., 2009; Indarsin & Ali, 2017;Yu et al., 2018)

Moreover, several marketing research revealed that there exist a positive relation between perceived usefulness on attitude (Teo, 2011; Teo & Wong., 2013; Teo & Zhou, 2017; Sinha & Verma, 2020; Gill et al., 2020; Kumar et al., 2020; Wangmo et al., 2020; Mailizar et al., 2021; Ngo & Nguyen, 2021; Nugraha et al., 2021; Pham et al., 2021; Sriram & Mohanasundaram, 2021; Um, 2021; Alshurafat et al., 2021; Buabeng-Andoh, 2021; Cicha et al., 2021; Davoodi et al., 2021; Gurer, 2021; Kim et al., 2021).

According to the literature, the greater of PU of the e-learning device, the greater the person's positive attitude would perceive (Yang et al., 2011). There is a positive linkage between PU and the attitude towards the application (Ayeh et al., 2013; Salloum et al., 2019). Hence, the hypothesis is as follows:

H3: Perceived usefulness (PU) has a positive effect on the attitude in Lebanese universities.

5.8 The effect of Perceived Ease of Use on Attitude

Researchers found a significant correlation between PEOU and attitude (Park, 2009; Shroff et al., 2011; Teo & Noyes, 2011; Chang, 2012; Okazaki & dos Santos, 2012; Ayeh et al., 2013; Boateng et al., 2016; Kanwal & Rehman, 2017; Teo et al., 2019; Wangmo et al., 2020; Gill et al., 2020; Sinha & Verma, 2020; Alshurafat et al., 2021;Buabeng-Andoh, 2021; Cicha et al., 2021; Davoodi et al., 2021; Gurer, 2021; Mailizar et al., 2021; Ngo & Nguyen, 2021; Nugraha et al., 2021; Wahyudi et al., 2021; Pham et al., 2021).

However, according to Karkar et al., (2020) observed that lower PU and PEOU are the main elements that confront the acceptance of e-learning. According to researchers (Salloum et al. 2019; Walker et al., 2020; Rasyidha et al., 2020; Wahyudi, et al., 2021) explored that (PEOU) has no impact on the usage intention of e-learning device. Furthermore, according to Rafiee and Abbasian-Naghneh (2019), by studying the acceptance of technology in learning in Zimbabwe context, revealed usefulness appears as a vital driver for intention to apply e-technology in education and Ease-of-Use was not related to the intention to use.

Furthermore, PEOU and attitude has no significant impact in Vietnam context (Teo et al., 2018; Ho et al., 2020; Álvarez-Marín et al., 2021). This could mean that learners could be able to apply this application if they feel it useful. In addition, Kim et al. (2021) posits that PEOU had no directly impact on attitude. Based upon the previous research, the hypotheses is as follows:

H4. PEOU has a positive effect on the attitude in Lebanese private universities.

5.9 The Effect Of Facilitating Conditions On Intention To Use

(FC) have significant impact towards (BI) (Foon & Fah, 2011; Im et al., 2011; Teo, 2011; Tao & Zhou, 2012; Chen & Chan, 2014; Martins et al., 2014; Mutlu & Der, 2017; Raman & Rathakrishnan, 2018; Almaiah & Alyoussef, 2019; Kamal et al., 2020; Zarafshani et al., 2020; Gurer, 2021). In addition, as per the study of Ngo & Nguyen, (2021) who revealed that FC has an influence on attitude towards intention to use.

Several studies showed that there is no effect between facilitating conditions and PEOU and showed also no effect between intention and facilitating conditions (Tarhini et al., 2017;

Rasyidha et al., 2020; Sriram & Mohanasundaram, 2021). Thus, the hypotheses are suggested as follows:

H5: Facilitating conditions has a significant influence on intention to use in Lebanese private universities.

5.10   The effect of Attitude on Intention to Use

Empirically, numerous studies have additionally agreed that attitude has a positive impact on intention (Fishbein & Ajzen, 1977; Lee et al., 2005; Cheung &Vogel, 2013; Rathnaweera & Karunasena, 2020;   Sinha & Verma, 2020; Cicha et al., 2021; Gurer, 2021; Khafit & Puspaningtyas, 2021; Nugraha et al., 2021; Wahyudi, et al., 2021; Álvarez-Marín et al., 2021; Albudoor & Peña, 2021; Alshurafat et al., 2021).

However, a research explored that attitude had insignificant effect on intention (Teo & Noyes, 2011; Al-Adwan et al., 2013; Wangmo et al., 2020). Additionally, a research made in India during the pandemic of Covid 19 among nursing students pointed out a negative attitudes towards e-learning (Gaur et al., 2020). Hence, the proposed hypotheses as follows:

H6: Attitude has a positive impact on the intention to use in Lebanese private universities.

6. CONCEPTUAL FRAMEWORK

On the basis of extensive literature review a research model based on the theories and concepts is as under:
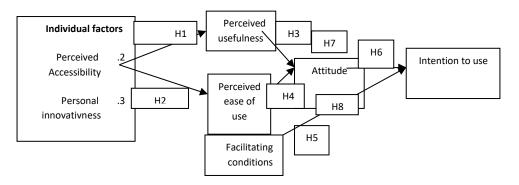

Fig.1: conceptual framework
Source (developed by the researcher)

7. RESEARCH METHODOLOGY

This present research design will be conclusive with cross sectional design, because the objective is to test specific hypotheses and to analyze the linkage between the research variables. In the following sections the researcher will address the measurement, research population and sample, analysis.

7.1 Population and Sample

The population's target of this paper was of all learners from Lebanese private universities during the academic year 2020-2021. Accordingly the research population is defined as all universities students who have e-learning experiences and studying across the different levels of education in different academic programs (undergraduate, MBA students, Master, PHD student, DBA student) in Lebanon. In order to avoid the subjectivity and bias, the study employed the following equation in order to obtain the sample size (Yamane, 1967). An approximate number of the size will be acquired by Blom Invest Bank to analyze the universities students market. Data was collected from the distribution of electronic survey. The researcher obtained 445 responses, one of these responses was missed so the total is 444 responses.

7.2 Data Analysis

Data was gathered from the distribution of electronic survey. The researcher obtained 445 responses, one of these responses was missed so the total is 444 responses. Overall, 54.8 percent of respondents were women, 33/100 of respondents were aged between 18-28 years, 39.3/100 were aged between 28-38 years, 16.4/100 were aged between 38-48 years and 11.2/100 were older than 48 years. The educational level question showed that 54.4/100 held a bachelor degree, 37.8/100 a Master's degree and 6.7/100 held a PhD. 0.9/100 held DBA. In addition, for the relationships information, 3.4/100 from the respondents were divorced, 42.5/100 were married and 54.2/100 were single.

Table 1: Means, standard deviation

	Accessibility	PI	RTC	PU	PEOU	FC	ATT	ITU
Mean	3.2746	3.2472	3.2528	3.2697	3.2629	3.2255	3.2506	3.1948
Std. Deviation	0.92464	0.83347	0.94794	1.01288	0.90527	0.94750	0.97873	0.98106
Minimum	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Maximum	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00

Table 1 presents the descriptive statistics for the study factors. By Comparing with scale possibilities, it displays the mean values, standard deviations for all variables. The mean value of the accessibility was highest at 3.2746, with a standard deviation of 0.92464, perceived usefulness was the second highest mean at 3.2697 with a standard deviation of 1.01288, followed by PEOU (Mean value 3.2629, SD 0.90527), RTC (Mean value 3.2528, SD 0.94794), attitude towards use (Mean value 3.2506, SD 0.97873), Personal innovativeness (Mean value 3.2472, SD 0.83347), facilitating conditions (Mean value 3.2255, SD 0.94750), and finally, intention to use (Mean value 3.1948, SD 0.98106).

Table 2: Cronbach Alpha

	N	Cronbach Alfa
PA	5	0.92
PI	5	0.789
RTC	5	0.956
PU	4	0.95
PEOU	4	0.903
FC	3	0.892
Attitude	4	0.948
Intention to use	3	0.932

Table 2 describes Cronbach's α is utilized to evaluate the internal consistency of the multi-item scales. Perceived accessibility measurement was adapted from 5 items on 5 points of Likert scale according to (Salloum et al., 2019) where (α =0.92). The personal innovativeness measurement was adapted from 5 items on 5 points of Likert scale according to (Salloum et al., 2019) where (α = 0.789). Resistance to change measurement was adapted by 5 items on 5 points of Likert scale according to (Salloum et al., 2019) where (α= 0.956). Perceived usefulness were based on a study by (Lee, 2006) and evaluated by employing a four-point Likert scale (α 0.95). PEOU was adapted by (Salloum et al., 2019) assessed on a 4 items scale where (α 0.903). Facilitating conditions was adapted by (Teo, 2011) by applying three items where (α 0.892).

Attitude toward use is assessed by Salloum et al., 2019) by applying four items where (α 0.948) and finally the intention to use was evaluated by (Roca & Gagné, 2008).with three items where (α 0.932).

Discriminant validity is the enlargement to which data construct (here a unobservable variable) is recognize from other variables (Hair et al., 2006). Thus, high discriminant validity contributes a proof that a statistical construct is exclusive and took some phenomenon that other measures do not. Discriminant validity is employed when cross relationships between index testing different variables are not extremely great and, therefore, relationships between the unobservable variables are only moderately strong (Kline, 1998).

KMO is Kaiser-Meyer-Olkin test is a statistical measure to determine how suited data is for factor analysis. The test measures sampling adequacy for each variable in the model. The following result of KMO where, the perceived accessibility (KMO 0.877), Personal innovativeness (KMO 0.76), ristance to change (KMO 0.931), PU (KMO 0.872), PEOU where (KMO 0.82), Facilitating where (KMO 0.74), Attitude toward use is (KMO 0.865) and finally the intention to use where (KMO 0.768).

Table 3: Correlations matrix

		Accessibility	Personal Innovativeness	Resistance to change	Perceived Usefulness	Perceived ease of use	Facilitating Conditions	Attitude towards use	Intention to use
Accessibility	R	1							
	P								
Personal Innovativeness	R	.686**	1						
	P	0.000							
Resistance to change	R	.656**	.695**	1					
	P	0.000	0.000						
Perceived Usefulness	R	.569**	.631**	.735**	1				
	P	0.000	0.000	0.000					
Perceived ease of use	R	.618**	.547**	.620**	.585**	1			
	P	0.000	0.000	0.000	0.000				
Facilitating Conditions	R	.531**	.491**	.572**	.522**	.666**	1		
	P	0.000	0.000	0.000	0.000	0.000			
Attitude towards use	R	.495**	.521**	.667**	.754**	.665**	.618**	1	
	P	0.000	0.000	0.000	0.000	0.000	0.000		
Intention to use	R	.562**	.563**	.701**	.743**	.678**	.621**	.813**	1
	P	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

* P<0.05, ** P< 0.01, *** p < .001

In addition, table 3 represents correlations between constructs. Also, the p-value for all constructs denotes a significant relationship. After reviewing data, the author observed that all factors correlated. The research analysis shows that the correlations between accessibility with PU and between accessibility with PEOU are respectively (r = .569**, p < .001); (r = .618**, p < .001) which indicates a positive relationship between these variables. Moreover, personal innovativeness with PU and PEOU are respectively (r=.631**, p < .001); (r=.547**, p < .001). Correlations between RTC with PU and PEOU are as follows (r = .537**, p < .001), (r = .620**, p < .001) which also indicates that the constructs are positively related.

In addition, PU (r = .754**, p < .001), PEOU (r = .665**, p < .001) which means that there are significant and correlated with Attitude. Furthermore, Facilitating Conditions (r = .621**, p < .001), Attitude (r = .813**, p < .001) are significant and positively correlated with intention to use.

A multiple regression analysis was conducted using partial least square (PLS) regression from other methods (linear regression, polynomial regression, logistic regression, Quantile regression, ridge regression, Lasso regression,...) because it places minimum limits on sample size, measurement scale, and residual distribution (Chin, 1998). It also combines the use of multiple linear regression and factor analysis to measure model parameters and model structure (Meng-Hsiang et al., 2014). Besides that, this is a successful tool for investigating complex associations.

7.3 Statistical Techniques Used

A structural model was improved and predicted employing structural equation modelling (SEM) techniques. SEM is a method of analyzing statistical data to test constructs about linkage among observable and hidden variables (Hoyle & Panter, 1995). The main benefits of this technique are the capability to predict a model combining measurement and structural considerations together. In SEM, the measurement model presents the statistical association between the observed and latent variables. SEM techniques have been well established in testing user adoption in IT (Venkatesh et al., 2003). In IT context, numerous number of research have used the SEM approach like Moon and Kim (2001). However, it is not the main aim of this study to ensure a large debate of SEM techniques which can be exposed in Bollen (2005).

7.4 Assessing the Model Fit

Study's hypothesis model proposed that accessibility, personal innovativeness, RTC, PEOU, PU, Attitude, intention to Use are examined the distinctive constructs; the model fitting values are CMIN/DF =32.994, CFI = 0.868, RMSEA = 0.268. Almost all the fit indices are not within the recommended levels CMIN/DF< 5, CFI>0.9, SRMR< 0.08, 0.03<RMSEA< 0.08, PClose >0.05; and the value for GFI=0.868 which is less than 0.95 as a typical score. Therefore, the model fit is not an ideal.

Table 4: Model Fit

Measure	Estimate	Threshold	Interpretation
CMIN	362.931	--	--
DF	11.000	--	--
CMIN/DF	32.994	Between 1 and 3	Terrible
CFI	0.868	>0.95	Terrible
SRMR	0.141	<0.08	Terrible
RMSEA	0.268	<0.06	Terrible
PClose	0.000	>0.05	Not Estimated

Confirmatory factor analysis (CFA) was employed as the initiative move of the second-move continuance of analysis. In general, rectifications are conducted once since a every single alter could impact remaining terms of the result.

8. RESULTS AND DISCUSSIONS

Refer to Table 3, accessibility and PU are not associated. Therefore, H1a is not supported. These results were not consistent by the previous studies, (Al-Aulamie, 2013; Baleghi-Zadeh *et al.,* 2014; Wongvilaisakul & Lekcharoen, 2015; Almaiah *et al.,* 2016; Revythi & Tselios, 2017; Salloum *et al.,* 2019; Bhattarai & Maharjan, 2020; AlHamad, 2020). In contrast, findings are confirmed with the research made by Thong *et al.,* (2002). That's mean that users is not able to perceived usefulness according to the access.

Moreover, findings determined that accessibility is positively related to PEOU. Therefore, H2a is accepted. The results are confirmed with the latest research (Thong *et al.* 2002; Bhattarai & Maharjan, 2020). However, the results are not consistent with (Kanwal & Rehman, 2017). Thus, the results explain that users are able to apply e-learning system because of the accessibility. The accessibility make the application more easier to work with the system.

Moreover, personal innovativeness is positively related to PU. Thus, the hypotheses H1 b is accepted. The results were confirmed with (Konrad *et al.,* 2005; Schillewaert *et al.,* 2005; Raaij & Schepers, 2008; Ngafeeson & Sun, 2015; Álvarez-Marín *et al.,* 2021). However, findings are not

confirmed with the study conducted by (Chihui, 2009; Ullah, 2020). This explain that the ability of users to innovate reflect the usage toward e-learning system.

Additionally, PI and PEOU are not related. Therefore, H2 b is not accepted. Results are not revealing a common agreement with the literature (Chihui, 2009; Joo *et al.,* 2018). The results explain the personal innovativeness have no effect on PEOU toward usage intention of e-learning.

According to the results, this study determined that the resistance to change is positively related to PEOU and PU. Thus, the result indicated that H1c and H2 c are supported. The results agreed with the literature (Bhattacherjee & Hikmet, 2007; Nov & Schecter, 2012; Shittu *et al.,* 2016; Sánchez *et al.*, 2019) however, the results disagreed with the findings of (Nov & Ye, 2008) which indicated a negative association toward PEOU. This clarify that RTC has an essential act to affect the usage intention in e-learning system.

Results also showed that there are relationships between PU and Attitude. Therefore, H3 is accepted, these results agreed with the outcomes of (Yang *et al.,* 2011; Ayeh *et al.,* 2013; Salloum *et al.,* 2019) which pointed out that there is a positive significant linkage between PU and Attitude. This research also confirmed with the studies (Park, 2009; Teo & Noyes, 2011; Shroff *et al.,* 2011; Okazaki & dos Santos, 2012; Ayeh *et al.,* 2013; Boateng *et al.,* 2016; Kanwal & Rehman, 2017; Teo *et al.,* 2019) revealed that PEOU and attitude had a positive relationship. This resulted that H4 is accepted.

Findings indicated the PU is positively related to the learner's attitude toward e-learning. Thus, the learner's have faith that the e-learning is useful and this support them to apply e-learning. Accessibility leads to use e-learning useful and achieve for better results. Characteristics of e-learning are used by the learner's in order to enhance their grades and review their modules.

Additionally, in the same way, the impact of the external factors on TAM constructs is applied to lead for intention to use. Although, students are younger enough to be enthusiastic among technology, they positively affect PU. Students are aware to accept technology. Students receive technology in their learning in order perceive a positive useful towards e-learning intention. Most of students have self-motivation to use e-learning. Thus, no need for reward system.

In addition, this study confirmed with (Foon & Fah, 2011; Im *et al.,* 2011; Teo, 2011; Chen & Chan, 2014; Martins *et al.,* 2014; Mutlu & Der, 2017; Raman & Rathakrishnan, 2018; Almaiah & Alyoussef, 2019; Wang *et al.,* 2020) which revealed in their studies, a significant influence between FC and intention to use. Therefore, hypotheses H5 is accepted. Moreover, results stated a significant relation between attitude and usage intention that means that H6 is accepted. Previous studies showed the same results in different context (Ong *et al.,* 2004; Yu *et al.,* 2007; Raaij & Schepers, 2008; Wangpipatwong *et al.,* 2008; Alenezi & Karim, 2010; Ayeh *et al.,* 2013; Elkaseh *et al.,* 2014; Hussein, 2017; Yang *et al.,* 2017; Salloum *et al.,* 2019; Yu, 2006).

Researcher relies on the attitude that may lead to the intention to use. In this case, ATT showed the students' point of views toward e-learning usage at Lebanon, in the analysis of the following relationship between PU toward ATT, and PEOU toward ATT which would lead to intention to use. Furthermore, students' points of views addressed, as well as the external variables, on the two faith PU and PEOU, and the outcome ATT toward ITU.

This presents that students believe that e-learning is a beneficial system for them. It showed a significant attitude toward e-learning. Findings of this paper confirmed with Davis *et al.* (1989) and Davis (1989), who clarified that the contrast of TAM theory influences e-learning technology usage. Findings were confirmed with Ahmad Althumibat et al. (2012).

Table 5: Structural relationships and hypotheses testing

			Estimate	S.E.	C.R.	P	Hypothesis
PU	<---	AC	.007	.054	.127	.899	H➜Rejected
PU	<---	PI	.189	.057	3.316	***	H➜Accepted
PU	<---	RC	.450	.054	8.363	***	H➜Accepted
PEOU	<---	AC	.222	.055	4.067	***	H➜Accepted
PEOU	<---	PI	.049	.058	.852	.394	H➜Rejected
PEOU	<---	RC	.245	.054	4.506	***	H➜Accepted
ATU	<---	PU	.536	.032	16.913	***	H➜Accepted
ATU	<---	PEOU	.368	.035	10.377	***	H➜Accepted
ITU	<---	FC	.106	.030	3.550	***	H➜Accepted

			Estimate	S.E.	C.R.	P	Hypothesis
ITU	<---	ATU	.452	.042	10.878	***	H➜Accepted
ITU	<---	PEOU	.174	.035	4.905	***	H➜Accepted
ITU	<---	PU	.248	.037	6.733	***	H➜Accepted

p**=<0.01, p* <0.05 Significant at p**=<0.01 , p* <0.05

6. CONCLUSIONS AND FUTURE RESEARCH

The purpose of the study is to examine factors which the e-learning system are impacted. The paper is made on the learners' private universities of Lebanon. Further, to show the suggested conceptual framework relevance and hypothesis employed for investigating the intention to adopt e-learning system, the results of data analysis are interesting. (SEM) techniques were employed to investigate hypotheses of the research. Tables show the results of data analysis. From the all six hypotheses, some hypotheses were supported and others were not accepted. The hypotheses which were accomplished through TAM model (H2a, H1 b, H1c, H2c, H3, H4, H5 and H6) have been supported. The outcomes present that variables such as PEOU, PU and attitude can enhance the intention to accept e-learning system. The literature review confirmed these outcomes.

The study has some constraints that will be presented in this paragraph. The study was organized using only private universities in Lebanon which is considered as a limitation since the researcher didn't examine factors in other educational institutions such as college, schools. The study could have become more valued by including public universities and more educational institutions in Lebanon in the research.

Moreover, the researcher limited his study by limited factors to examine how e-learning system adoption is impacted and ignored other factors. By enhancing a more genuine clarification of the e-learning device, the variables that impact the intention to use e-learning can be clarified in a better way. Another constraint was taking only 444 university learners as the participants of the research. Data was collected by survey questionnaire. To accomplish more consistent findings, best technique and method of sampling would be employed and more learning and academic organizations from other regions and countries such as the UAE in which countries like Dubai, Abu Dhabi, and other countries such as Iraq would be tested. Additionally, for future studies, more learners will be interrogated to enroll in the research. Moreover, to achieve for better outcomes and interviews will be used. We will also help the Arab public or private educational institutions to apply e-learning system.

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