IMPACT OF COVID-19 PANDEMIC ON ACCEPTANCE OF E-LEARNING SYSTEM IN JORDAN: A CASE OF TRANSFORMING THE TRADITIONAL EDUCATION SYSTEMS

Manaf Al-Okaily[1*], Hamza M Alqudah[2], Ali Matar[3], Abdalwali Lutfi[4], Abdallah Taamneh[5]
[1*,3,5]School of Business, Jadara University, 733, Irbid, Jordan; [2]School of Accountancy, Universiti Utara Malaysia, 06010 Kedah, Malaysia; [4]College of Business Administration, King Faisal University, 81932, Alhasa, Saudi Arabia.
Email: [1*]m.alokaily@jadara.edu.jo, [2]qudah_hamzah@yahoo.com, [3]amatar@jadara.edu.jo, [4]aalkhassawneh@kfu.edu.sa, [5]a.taamneh@jadara.edu.jo

Abstract

Purpose of the study: This paper aimed at investigating factors influencing students' intention to use e-learning within the context of Jordan. The proposed model integrated subjective norms with the extended Technology Acceptance Model (TAM).

Methodology: The data collected 587 students from Jadara University. Data were analyzed using Partial Least Squares - Structural Equation Modelling (PLS-SEM).

Main Findings: The result has confirmed the direct effect of all variables. Next, the result has also shown that the mediation effect of perceived usefulness and perceived ease of use between subjective norm and the behavioral intention to use the E-learning system was partially supported.

Applications of this study: The results of the current work may contribute to the improvement of the existing literature in the e-learning acceptance fields, and can be applied as an essential input for the development of the recent e-learning training programs.

Novelty/Originality of this study: The present work is intended to conclude a series of concrete research data as well as to contribute a new angle to the existing literature on students' perception of the e-learning system.

Keywords: *Distance Learning, e-learning System Acceptance, Corona-Virus Pandemic, COVID-19, TAM Model.*

INTRODUCTION

Technological and internet development changed how learning services are provided and delivered. These changes and developments help in improving the quality of education (Al-Fraihat, Joy, Masa' deh & Sinclair, 2020). In light of the rapid technological development in the world, the e-learning system has also emerged and developed as a means to facilitate the educational process, especially for those with barriers from enrolling in abroad universities. Recently, due to Corona Virus Disease 2019 (COVID-19) crisis, e-learning has become a very urgent need and an imperative of education necessities in most countries all over the world. Its great importance manifested in solving the problem of quarantined students, reduce the effects of the corona-virus epidemics, and supporting societies in their endeavor to fight the current COVID-19 pandemic.

E-learning system has added new scopes in the educational process by improving new technologies and originating processes and methods to enhance the education process and distance learning activities. The e-learning system concept, as well as mobile learning, has become an essential channel in the education process, whether it is primary, secondary, and higher education, through facilitating the education process and develop its output. There are various definitions in previous studies of the e-learning system. Almarabeh et al. (2014) define it as the providing of education, including several activities relates to teaching, learning, and instructing via numerous automated media, whether it is the internet, extranet, and satellite. Hoppe and Breitner (2004) define the e-learning system as the learning that is supported by the use of modern information and communication technology.

The abundance of studies has examined the student's intention to use e-learning (Hoppe & Breitner, 2004; Almarabeh, et al., 2014; Mohammadi, 2015; Al-Gahtani, 2016; Chu et al., 2016; El-Masri & Tarhini, 2017; Sharma et al., 2017; Alghizzawi et al., 2019; Al-Fraihat et al., 2020; Hayashi et al., 2020; Mousa et al., 2020). One question that has arisen and still needs more evidence relates to what are the new main factors that could contribute to the Jordanian student's intention to use the e-learning system. In Jordan, most of the universities are supplying-learning system techniques for their students to provide safe and simple websites (portal), as well as, to help students and their lecturers in explains the courses' contents simply and effectively, also to facilitate the online discussion, collaborations, and exams. However, most of the Jordanian universities face some challenges in using e-learning. Of the most important is the lack of the number of students enrolled in the e-learning system classes. Moreover, the percentage of attendance is still generally modest and needs improvement. Thus, the question arises that how the university can face this challenge? what are the factors or techniques that can be used to handle this issue?

This study is aimed to examine the determinants of e-learning system acceptance in the Jordanian context by using the TAM. Despite TAM's popularity, several researchers have argued that TAM has some shortcomings, some of which is

that person's attitude is not only determined by perceived usefulness and perceived ease of use. Accordingly, the researcher has broadened the theoretical horizon of the TAM model by adding two external factors in the TAM model, namely social influence and peer influence, that are claimed to determine behavioral intention by the subjective norm. It's been argued that social and peer influence effect occurs only in compulsory environments and has less importance in a voluntary environment.

Consequently, under the current conditions as a COVID-19 pandemic, the e-learning system has become mandatory for all educational institutions all over the world. Therefore, the current situation is conducive to studying the effect of the aforementioned variables on the intention to use distance learning. However, this research proposes a holistic framework of the acceptance determinants. Those predictors are classified based on the constructs of the TAM model and other proposed factors, namely, social influence and peer influence.

The rest of this paper is structured as follows. Section 2 introduces a literature review of the e-learning system and the study framework. The data and methodology are provided in Section 3. Section 4 discusses the results of the study. Eventually, Section 5 presents the conclusion and policy implications.

LITERATURE REVIEW

The evaluation of e-learning system acceptance under the conditions of the corona-virus pandemic is vital to ensure effective use by instructors and positive influences on students. Thus, this study is aimed to examine the determinants of e-learning system acceptance in the Jordanian context by using the TAM. Based on a comprehensive review of the previous studies, the current research model has been developed, which provides a holistic picture of acceptance determinants. In this respect, this part focuses on the discussion of the most significant e-learning system acceptance predictors. Those predictors are classified based on the constructs of the TAM model, and other proposed factors as social influence and peer influence. Consequently, the researchers expect that current research will contribute to the TAM model as a theoretical contribution.

Given this, the TAM model was proposed by Davis (1989) in the context of Information Technology (IT) used to explain and predict user acceptance of IT. It was presented as one of the most important information technologies acceptance models (Alalwan, Baabdullah, Rana, Tamilmani & Dwivedi, 2018; Shankar & Datta, 2018). It should also be noted that TAM's, similar to the TRA and TPB, which aimed at predicting IT acceptance and adoption. Moreover, the TAM model has been adopted by researchers all over the world to test the acceptance of IT, which has been confirmed to be a strong predictor of technology use (Venkatesh & Davis, 2000). Accordingly, the success of any IT implementation depends on the integration of user acceptance (Raid, 2009). Other recent studies, as Alalwan et al. (2018) have been conducted to examine the validity of the TAM in the mobile internet context. The findings of this study suggest that TAM is a strong theoretical model in the mobile internet acceptance context.

TAM model examination of the user's intention to use a particular IT depends on four main stages (Davis, 1989; George & Mallery, 2003; Yi, Jackson, Park & Probst, 2006). The first stage tests the effect of external factors on Perceived Usefulness (PU) and Ease of Use (PEU) of IT. PU rises from the extent to which users believe that embracing a specific system/innovation could improve their performance, while PEU refers to the extent to which users believe that embracing a specific system could be free of physical and mental efforts (Venkatesh & Bala, 2008; Venkatesh & Davis, 2000).

The second stage is when the PU and PEU affect the user's Attitude Towards Using (ATU) a particular system (Wolk, 2007). In the third stage, the PU and ATU determine the usage intention (Wolk, 2007). The final stage is making decisions to accept or reject the use of technology. However, despite TAM popularity, several researchers have noted that one of the weaknesses of the TAM model is that a person's attitude is not only determined by perceived usefulness and perceived ease of use but also by other critical factors such as social influence that determine users' attitudes towards the use of IT (Miller, Kelly & Ken, 2003; Mathieson, Peacock & Chin, 2001; Venkatesh & Davis, 2000; Malhotra & Galetta, 1999). Some researchers also indicated that the TAM model just focused only on extrinsic motivation, not intrinsic motivation (Davis, 1989). This means that this model focuses only on the outcomes of using IS or IT and does not consider the processes of the usage itself. For example, some people want to use IT because it is interesting or because they want to have rich experience (Alrawashdeh, 2011).

In short, as an extension to the TAM model as external factors in the same conceptual model as highly recommended by Davis (1989) to broaden the theoretical horizon of the TAM model. There are two external factors in the TAM model, namely social influence and peer influence, that are claimed to determine behavioral intention by the subjective norm, as illustrated in Figure 2. These two important factors have been used directly to determine the behavioral intention in other recent studies (e.g., Al-Okaily, Abd Rahman & Ali, 2019). In this regard, they are used in the proposed research model to predict the intention of students to use the e-learning system.
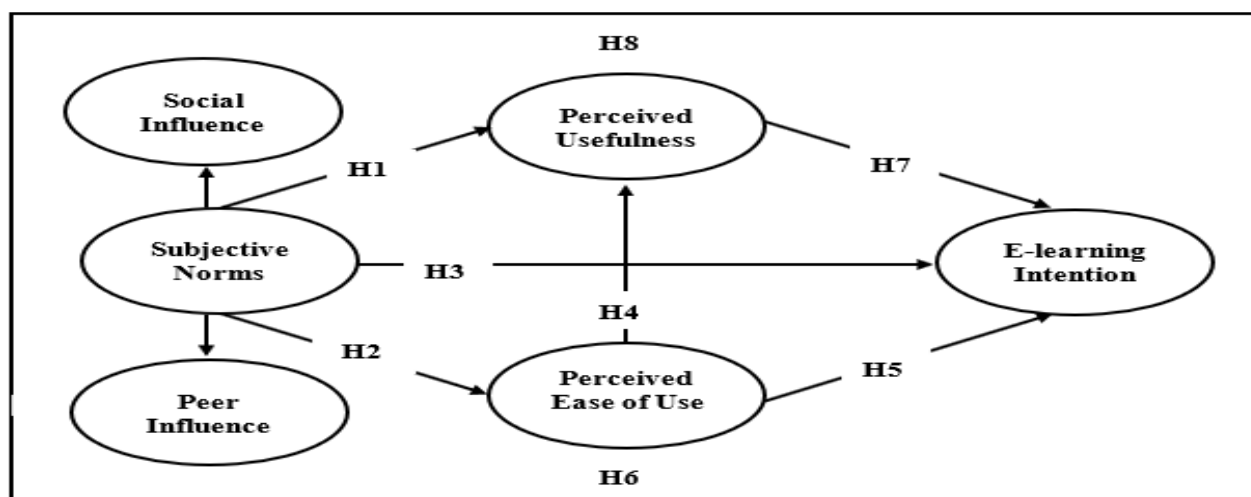
Figure 1: Research Model

Subjective Norm

Subjective norm (SN) is defined as the degree of individual attention influenced by other societal members' opinions while taking a particular decision (Ajzen & Fishbein 1975). SN is similar to Social Influence (SI) in the Unified Theory of Acceptance and Use of Technology (UTAUT) model (Venkatesh, Morris, Davis & Davis, 2003; Venkatesh, Thong & Xu, 2012). In this research, SN was conceptualized as a global variable derived from two dimensions, which were measured using eight items. The first dimension is the social influence, and the second dimension is peer influence. According to the UTAUT model, SI is a good predictor of the use of IT (Venkatesh et al., 2003). Moreover, Venkatesh and Davis (2000) claim that the social influence effect occurs only in compulsory environments and has less importance in a voluntary environment.

Consequently, under the current conditions as the COVID-19 pandemic, the e-learning system has become mandatory for students at Jadara University (i.e., students must use the e-learning system to access learning resources to complete their course, and know the date and venue of exams as well as accomplish and submit exams). Thus, this research will evaluate the experience of Jadara University students toward using Microsoft Teams as an e-learning tool. We will investigate the intention of Jadara University students toward the impact of interactive learning structures accepted in most of the courses in the university. In the e-learning systems context, student's decision to accept such systems is usually affected by other colleagues and lecturers' pressures (El-Masri & Tarhini, 2017; Sharma, Sarrab & Al-Shihi, 2017; Chu & Chen 2016; Tosuntas, Karadag & Orhan, 2015; Tarhini, Hone & Liu, 2014; Tan, 2013). This study will investigate the direct and indirect effect of SN on behavioral intention to accept e-learning systems. Therefore, we postulate the following hypotheses:

H1: SN is positively related to perceived usefulness.

H2: SN is positively related to perceived ease of use.

H3: SN has a positive effect on e-learning intention.

Perceived Ease of Use (PEU)

PEU is defined as ''the extent to which users believe that applying a specific system would be free of efforts'' (Davis 1989, p.320). PEU is similar to Effort Expectancy (EE) in the UTAUT model (Venkatesh et al., 2003; Venkatesh et al., 2012). According to the UTAUT model, EE has a significant influence on the behavioral intention of a user to use IT (Venkatesh et al., 2003). In the TAM model, perceived ease of use was theorized as a direct determinant of behavioral intention (Davis, 1989). Theoretically, perceived ease of use was found to be a significant factor predicting the intention to use the e-learning system (Mousa et al., 2020; Alghizzawi et al., 2019; Al-Emran & Teo, 2019; Mohammadi, 2015; Tarhini et al., 2014). It is expected that if the students' perceptions of the e-learning system are free of effort, then they will play an important role in using the e-learning system. Consequently, this leads to the following hypotheses:

H4: PEU is positively associated with perceived usefulness.

H5: PEU has a positive effect on e-learning intention.

H6: PEU mediates the relationship between subjective norms and intention to use the e-learning system.

Perceived Usefulness (PU)

PU is defined by Davis (1989, p.320) as "the degree to which a person believes that using a particular system would enhance his or her job performance". PU is similar to performance expectancy in the UTAUT model (Venkatesh et al., 2003; Venkatesh et al., 2012). Based on the TAM model, PU is recognized as the main predictor of the behavioral

intention to adopt (Al-Maroof & Al-Emran, 2018). Reviewing the previous studies, numerous works showed that PU was a positive and significant factor influencing the intention to use the e-learning (Hayashi, Chen, Ryan & Wu; 2020; Mousa, Mousa, Mousa & Obaid, 2020; Alghizzawi et al., 2019; Al-Emran & Teo, 2019; Mohammadi, 2015; Tarhini et al., 2014). In a related context, it is claimed that the greater level of the PU to the e-learning, will lead inevitably to the higher intention of the students to adopt/use e-learning system. Thus, we propose the following hypothesis:

H7: PU has a positive effect on e-learning intention.

H8: PU mediates the relationship between subjective norms and intention to use the e-learning system.

METHODOLOGY

This research aimed at understanding the behavioral intention to utilize the e-learning system, in light of the COVID-19 pandemic circumstances. The period early 2020 has enforced most of the countries in the world to implementing E-learning in schools and universities, due to the lockdown and quarantine. In Jordan, all universities have utilized the e-learning system to be capable of continuing the education system. Hence, this circumstance has encouraged researchers to take a view toward utilizing E-learning, to promote the learning and teaching system in Jordan. The sample has addressed the students of Jadara University as a sampling frame. This work concerns the student's perception of e-learning system acceptance. Therefore, the student's become a unit of analysis and the targeted respondent of the study.

An instrument (questionnaire) was developed, and a survey was conducted for obtaining data. The items of studied variables were adapted from published research regarding the e-learning context, and some of them were rewritten according to the study context (see Appendix), using a five-Likert scale 1 to 5 =strongly disagree to strongly agree, respectively such prior studies (e.g., Al-Fraihat et al., 2020; Alghizzawi et al., 2019; Al-Okaily & Rahman, 2017). For content validity and revision, a panel of specialists of six e-learning professionals and e-learning researchers was formed. Considering their comments, we revised some of the items to enhance the clarity of our questionnaire survey. After that, we carried out a pilot test in a sample of 35 students. The finding revealed evidence of the reliability and validity of the instruments.

For data collection purposes, a survey questionnaire was directed to 4500 students online using the university pages on Social Media. To maximize the response rate, two rounds of follow-up messages were undertaken after the initial distribution. The first follow-up messages were issued two weeks after the questionnaires were sent out. The second follow-up message took place three weeks later the first reminders. After five weeks, 587 valid responses were obtained (373 early respondents and 214 late respondents). The response rate was 13.5%. Then, comparing the groups of early and late respondents, the finding from the Kolmogorov–Smirnov test specified an absence of nonresponse bias. The majority of respondents were bachelor students (572). Of the 587 students that participated in the study, 172 from the Faculty of Languages and Arts, 116 from the Faculty of Pharmacy, 111 are from the Faculty of Business, 77 from the Faculty of Science and Information Technology, 48 from the Faculty of Educational Sciences, 39 from the Faculty of Engineering, and 24 from the Faculty of Law.

THE ANALYSIS OF DATA

This study used Smart PLS .3 software to investigate the research hypotheses since the software can deal with reflective constructs within a complicated model (Al-Okaily, Al-Okaily, Shiyyab & Masadah, 2020; Gefen, Rigdon & Straub, 2011; Lutfi, Idris & Mohamad, 2017; Alsaad, Mohamad & Ismail, 2015; Alqudah, Amran & Hassan, 2019a,b). The study's model has contained two levels of constructs (upper and lower), thus conducting the measurement model assessment, each of Composite Reliability (CR), indicators reliability, Average Variance Extracted (AVE), and validity of the discriminate were tested. Regarding the CR, all studied constructs were above .70 value (see Table 1). Besides, all factors' loading is higher than .70. The validity of the instrument was proved by calculating the AVE (Hair, Hult, Ringle, & Sarstedt, 2016). Wherein, the AVE is the indicator used for measuring convergent validity by measuring the variance value of the items share with their respective variable (Hair, Hult, Ringle & Sarstedt, 2016). The results of the AVE (convergent validity) are also presented in Table 1, in which all variables have AVE value larger than .50.

Table 1: Cronbach's alphas, R^2, f^2, CR, and AVE

Construct Name	Items name	Items loading	R^2	CR	AVE
Behavioral Intention (BI)	BI1	0.924	0.702	0.864	0.87
	BI2	0.932			
	BI3	0.93			
	BI4	0.946			
Perceived Ease of Use (PEU)	PEU1	0.893	0.466	0.932	0.774
	PEU2	0.924			
	PEU3	0.883			
	PEU4	0.818			
Perceived Usefulness (PU)	PU1	0.888	0.751	0.929	0.768
	PU2	0.918			

Construct Name		Items name	Items loading	CR	AVE
		PU3	0.785		
		PU4	0.907		
Second-Order	**First-Order**				
Subjective Norms (SN)	Social Influence (SI)	SI1	0.843	0.883	0.653
		SI2	0.828		
		SI3	0.807		
		SI4	0.752		
	Peer Influence (PI)	PI1	0.907	0.847	0.818
		PI2	0.901		
		PI3	0.923		
		PI4	0.888		

The discriminant validity test was also conducted to evaluate the range to which a provided study latent variable is distinct from others. Whereby, when the average variance extracted of an individual latent construct is higher than the multiple squared correlations of that construct with other constructs, the discriminant validity will be at an acceptable level (Fornell & Larcker, 1981). As illustrated in Table 2, all studied variables had good discriminant validity values.

Table 2: The AVE square root

	BI	PI	PEU	PU	SI
Behavioral Intention	**0.933**				
Peer Influence	0.641	**0.905**			
Perceived Ease of Use	0.774	0.636	**0.88**		
Perceived Usefulness	0.812	0.685	0.837	**0.876**	
Social Influence	0.667	0.764	0.648	0.693	**0.808**

Regarding the structural model, the R square (R²), effect size (f²), t-value, and path coefficient of each relationship have been calculated. The R² value of behavioral intention shows that approximately 70 percent of the variance in the E-Learning Intention is considered by the proposed framework. Besides, Perceived Usefulness, with an R^2 of about 75 percent, proven to be well forecasted by its predictors. Also, the R² value for the Perceived Ease of Use was 46.6 percent, is moderately predicted by its predictors (see Figure 1). Concerning f², Cohen's (1988) declared that f² values of .35, .15, and .02 express big, moderate, and small effect size value. That is an evaluation that describes the proportional effect of specified exogenous constructs on endogenous constructs by recognizing the changes in the value of R² after excluding a certain exogenous variable (Hair et al., 2014a). The result revealed that perceived ease of use and subjective norms had a small effect size (.074, .045, respectively), while the perceived usefulness had a medium effect (0.17). Despite some variables have a small effect on Behavioral Intention, yet, it is at an acceptable effect size level.

RESULTS/FINDINGS

This study is investigated the stated hypotheses by utilizing the procedure of 1000 bootstrapping to compute the T-value, P-value, and path coefficients. Table 3. shows that behavioral intention to use the e-learning system is significantly and positively affected by subjective norms (peer influence and social influence), perceived usefulness, and perceived ease of use, thus all respective hypotheses were supported. Besides, the results also confirmed that the perceived usefulness of the e-learning system is significantly and positively affected by perceived ease of use. Hence H4 was supported.

Concerning the mediating effect of perceived ease of use the e-learning system, the result has revealed that perceived ease of use is partially mediate the relationships between subjective norms (social influence and peer influence) and the behavioral intention to use the e-learning system. Also, the result has confirmed that perceived usefulness is partially mediate the relationships between subjective norms and the behavioral intention to utilize the e-learning system. Whereby, as shown in Table. 4 the variance accounted for (VAF) between 20% and 80% indicates partial mediation (Hair, Hult, Ringle & Sarstedt, 2016). Thus, both hypotheses H6 and H8 are accepted.

Table 3: Result of hypotheses testing (path coefficients-β) of the study.

No.	Relationship IV	DV	Path coefficient	T statistics	p-values	Sig.	Decision
H1	SN ⟶	PEU	0.685	30.932	0.000	Sig. +	Supported
H2	SN ⟶	PU	0.734	35.745	0.000	Sig. +	Supported
H3	SN ⟶	BI	0.174	4.595	0.001	Sig. +	Supported
H4	PEU ⟶	PU	0.633	19.444	0.000	Sig. +	Supported

H5	PEU ⟶ BI			0.277	5.847	0.001	Sig. +	Supported
H7	PU ⟶ BI			0.453	8.58	0.000	Sig. +	Supported
No.	IV	MED	DV					
H6	SN	PEU	BI	0.189	5.686	0.000	Sig. +	Supported
H8	SN	PU	BI	0.331	8.707	0.000	Sig. +	Supported

Table 4: The Result of Mediation Effect Using VAF

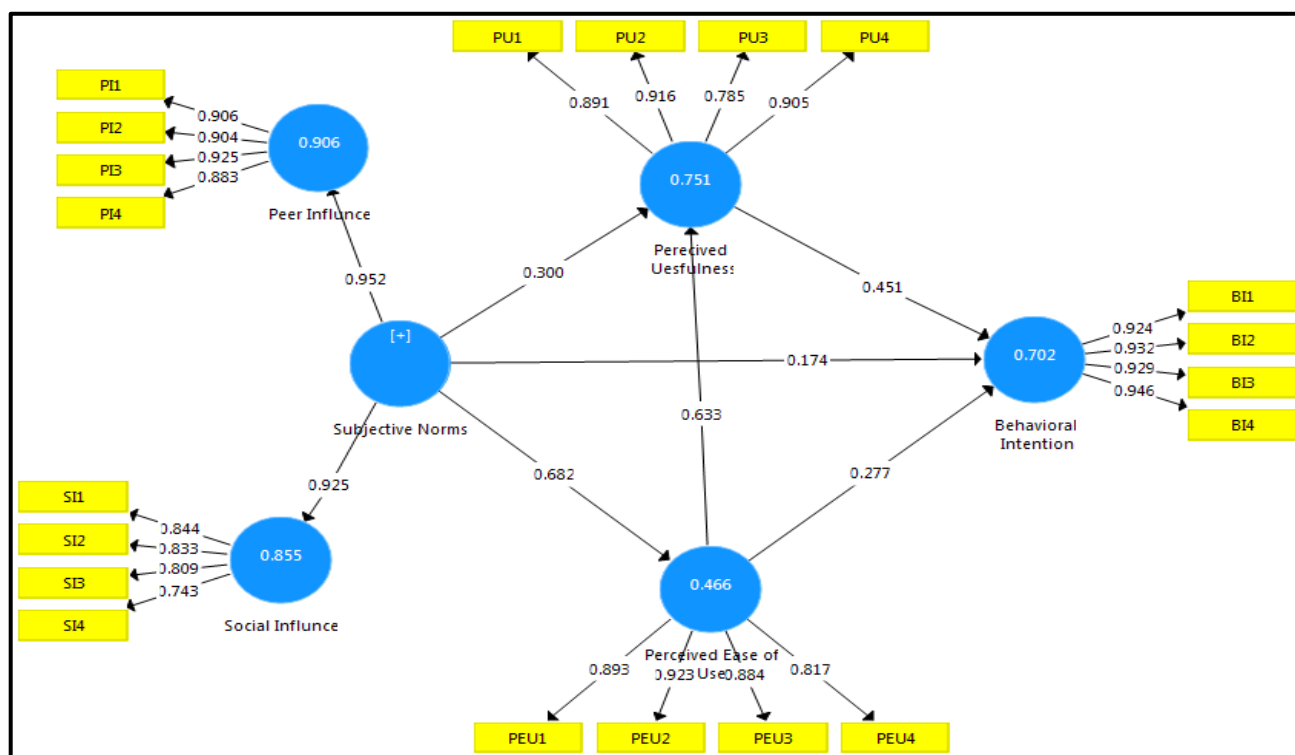| H	Relationship	Indirect Effect	Total Effect	VAF	Result of Mediation Effect
H6	SN → PEU → BI	0.384	0.563	0.682	Partial Effect
H8	SN → PU → BI	0.594	0.812	0.731	Partial Effect

*VAF=Indirect Effect/Total Effect

Figure 2: PLS Algorithm for the Research model

DISCUSSION/ANALYSIS

The main purpose of the current study was to explore the factors affecting a student's intention to use e-learning. To accomplish that, we address eight concepts and explores their causal associations based on a modified TAM model in the e-learning context. The present research offers several findings. The results indicated that the subjective norm has a significant positive direct effect on perceived usefulness (H1), perceived ease of use (H2), and e-learning intention to use (H3). The significant relationship between subjective norm and perceived usefulness are aligned with previous research (Aljazzaf, Al-Ali & Sarfraz, 2020; Shankar & Datta, 2018). This finding indicates that the influence of others (social and peer) plays an important role in how useful the e-learning system is perceived. Moreover, prior studies also supported the relationship between subjective norm and perceived ease of use (Al-Gahtani, 2016; Binyamin, Rutter, & Smith, 2019). This result implied that learners will perceive the e-learning system as easy to use if influential persons make use of the system and consider it necessary. Another possible explanation for these findings is the fact that when learners' anticipations towards the e-learning benefits are confirmed, the e-learning system will enhance their satisfaction and acceptance which ultimately achieves the perceived objectives. H3 formulates that subjective norm has a significant direct impact on e-learning intention. This study results confirmed the significant effects of subjective norm on e-learning acceptance and intention to use. Students seem to favor informal types of networking such as peers, other student's colleagues, and teachers instead of formal types while seeking advice and supports on e-learning related matters. It is widely argued that if individuals perceive that persons who are important to them think or advice that they should use and accept IS\IT, then the individual's will incorporate their beliefs into their own beliefs system, and accordingly perceives the system more beneficial in its purpose (Abdullah, & Ward, 2016; Lutfi et al., 2016). To

conclude, students learning under the conditions of corona-virus pandemic tend to rely on a greater amount of information via the e-learning system to sustain and achieve their objectives.

The results also pointed out that each of the three hypotheses H4 (perceived ease of use → perceived usefulness), H5 (perceived ease of use → e-learning intention), and H7 (perceived usefulness → e-learning intention) are supported. Perceived ease of use is found to have a significant positive impact on e-learning intention (H5). This finding is consisting of earlier works (Mousa et al., 2020; Alghizzawi et al., 2019; Mohammadi, 2015). These findings could be explained by the reason that if students think or perceive that it is uncomplicated and simple to use new technologies such as e-learning, then they are willing and intent to spend more effort and time to learn how to do so, which would undoubtedly improve their performance. In contrast, if e-learning is complicated and difficult to operate and use, then students would be unwilling to try to use it. Likewise, perceived usefulness is found to have a significant impact on the intention to use e-learning (H7). This result is similar to previous studies (Hayashi et al., 2020; Mousa et al., 2020; Alghizzawi et al., 2019; Tarhini et al., 2014). One of the main reasons whether students decide to use a new technology or not is to consider if it can bring considerable benefits to them concerning learning. In comparison with traditional teaching methods and e-learning, e-learning is not limited by place and time and can be carried out anytime, which seriously increases the efficiency of student learning. Accordingly, if students perceive the usefulness of e-learning, their intention and willingness to use e-learning would also undoubtedly be improved. Additionally, the ease of use of the e-learning system also directly affects the usefulness of e-learning (H4). Jadara University students believe that if e-learning is easy to use to them, its usage and acceptance will also be very useful. To be Rational, these two constructs are fairly reasonable, as the use of e-learning should be not complicated and useful so that students and learners tend to accept and use it.

Concerning the mediation test, H6 and H8 state that perceived usefulness and perceived ease of use mediate the relationship between subjective norm and e-learning intention. Results have revealed promising mediating between subjective norm and e-learning intention via both perceived usefulness and perceived ease of use. As discussed earlier, the perceived usefulness of learning from an online system is known as the perceived advantages and the overall perceived benefits of the e-learning system. Perceived ease of use, is about perceived needed technological features accepted and agreed by system users (learners). The influence of subjective norm on e-learning intention to use is highly meditated by the technological features (elements) and benefits (advantage) that an e-learning system provides to learners. Accordingly, e-learning providers and designers should give particular attention on the improvement and development of the advanced and latest technologies that enable e-learning users to get services and access learning resources such as (complete their course and know the date and venue of exams as well as accomplish and submit exams) easily and simply. Likewise, to increase the perceived benefits for learners, e-learning providers and designers need to offer easy access, convenient communication, students and instructors training/consulting, continuance repair, and maintenance, etc.

Overall, the current work demonstrates some important theoretical and practical insights and implications. It identifies the role of the subjective norm (social and peer influence) as an important external variable of the TAM model. Although the subjective norm is one of the most significant facilitators of e-learning technology, prior works have rarely integrated social and peer influence together as an external variable (subjective norm) into the TAM to successfully investigate the student's e-learning intention to use and acceptance. Besides, it also extends e-learning literature by extending the applicability of the TAM model in explaining the direct relationship between subjective norm and e-learning intention to use as well as the mediation effect of both perceived ease of use and perceived usefulness on such relationship. Despite extensive studies on the use of the TAM model as a theoretical foundation, very rare has been specifically related to such relationships.

Concerning the practical implications of this work, the developed model facilitates policymakers to recognize subjective norm factors that promote more extensive acceptance and use of the e-learning system. Specifically, the validated model helps e-learning providers to give specific attention to possible impacts of both social and peers that they might have overlooked. This can benefit them to estimate the influence of social and peers to the students as well as to facilitate their intentions on e-learning particularly during emergency circumstances such as the corona-virus pandemic. Additionally, the findings of the current study proven that when e-learning system usage effortless and is more useful to users, it will be used more beneficially and promote higher levels of e-learning use and acceptance. Accordingly, e-learning system designers and developers should pay further attention to these two essential factors (perceived usefulness and perceived ease of use) that are important aspects of the learners' viewpoint. As a result, they should decrease the learner's efforts while using the e-learning system by designing friendly interfaces and the government should also provide suitable ICT infrastructure. Finally, advertising and marketing campaigns should also launch on the potential benefits of e-learning usage.

CONCLUSION

This work aimed to identify factors that influence a student's intention to accept the e-learning system. The TAM model was applied as a proper theoretical foundation for the proposed conceptual framework. To achieve the study aims; a quantitative survey was conducted with self-administered questionnaires, which were distributed to acquire data from a target sample. Data analysis and findings were discussed, including the details of the measurement model, and validity

assessment. After that, the hypotheses testing results were presented. The finding from a survey of 587 students pointed out that all eight examined hypotheses are significantly supported.

LIMITATION AND STUDY FORWARD

However, any research implications must be assessed concerning its limitations, and the current research is no exclusion. In fact, due to this study population which is only limited to one private university in Jordan. Future work may employ this study model further in different universities or academic institutions in Jordan and other countries. Additionally, this work mainly examined the students' intention to use of e-learning system; hence, further studies may be carried out to identify the instructors' and administrators' intention to continue using such systems. Furthermore, this work employs a survey approach to the cross-sectional. Respondents filled out the varying questionnaire survey at one time. This method of weakness is that the results do not guarantee the causality association among variables. Also, the weakness of the cross-sectional is the tendency to standard method-bias. The results are influenced by the fact that the present work could not observe the dynamic changes of e-learning system acceptance. Future work should apply other methods, for instance, longitudinal and/or experimental study methods to test the developed associations for an extended period to provide more precise findings. Finally, as the current study model examined the direct and mediating effects of a potential variable, the proposed model of this research could be more complex by exploring the moderating effects of other important constructs such as gender and education level in learner's behaviour usage to increase the robustness of the findings.

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AUTHORS CONTRIBUTION

The first author is responsible for the manuscript preparation, designs the research framework, collected data, and contribute to the enrichment of the literature review for this research and corresponding to the publisher.

The second author designed the tables, figures, formulated the study method, and analyzing the data.

The third author involves preparing the introduction and reviewed the work.

The fourth author interprets the finding and reviewed the work.

The fifth author was involved in planning, supervised the work designed the references, and reviewed the manuscript.

All co-authors have read and approved the published version of the manuscript.

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Appendix

Appendix 1: Measurements items and sources

Constructs	Code	Measurements Items	Sources
Social Influence	**SI1**	People who are important to me think that I should use the e-learning system.	Ajzen 1991; Davis et al., 1989; Fishbein & Azjen 1975; Taylor &Todd 1995; Moore & Benbasat, 1991; Venkatesh et al., (2012).
	SI2	People who influence my behavior think that I should use the e-learning system.	
	SI3	Students in my university who use the e-learning system have more effects than those who do not.	
	SI4	Students in my university who use the e-learning system have a higher profile than those who do not.	
Peer Influence	**PI1**	My friends would think that I should use the e-learning system.	Taylor & Todd, (1995); Hsieh, Rai and Keil (2008); Brown, Dennis and Venkatesh (2010).
	PI2	My relatives would think that I should use e-learning system.	
	PI3	My peers would think that I should use e-learning system.	
	PI4	My classmates would believe that I should use e-learning system.	
Perceived Usefulness	**PU1**	Using the e-learning system is useful in my daily life.	Davis (1989), Taylor and Todd (1995), Salloum and Al-Emran (2018).
	PU2	Using the e-learning system increases my productivity.	
	PU3	Using the e-learning system saves my time.	
	PU4	Using the e-learning system enhances my efficiency.	
Perceived Ease of Use	**PEU1**	I feel that the e-learning system is easy to use.	Davis (1989), Taylor and Todd (1995), Salloum and Al-Emran (2018).
	PEU2	I feel that the e-learning system is convenient.	
	PEU3	Getting the information that I want from the e-learning system is easy.	
	PEU4	The e-learning system requires no training.	
E-learning Intention	**BI1**	I intend to use the e-learning system in the future.	Venkatesh et al. (2012), Venkatesh et al. (2003).
	BI2	I would likely use the e-learning system in my daily life whenever it is possible.	
	BI3	I am planning to use the e-learning system frequently.	
	BI4	I predict that I would be using the e-learning system in the near future.	

Appendix 2: PLS Bootstrapping for the Study Structural Model: Direct/Indirect Hypotheses