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The effect of social media usage on students' e-learning acceptance in higher education: A case study from the United Arab Emirates

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Abstract. This study investigates the influence of student social media usage on the acceptance of e-learning platforms at the British University in Dubai. A modified Technology Acceptance Model was developed and validated for the quantitative study, which comprised data collected from 410 graduate and postgraduate students via an electronic questionnaire. The findings showed that knowledge sharing, social media features and motivation to use social media systems, including Facebook YouTube and Twitter, positively affected the perceived usefulness and perceived ease-of-use of e-learning platforms, which, in turn, led to increased e-learning platform acceptance by students. The research model can be adapted to similar studies to assist in further research regarding how higher-education institutions in the UAE can maximize the benefits and uptake of e-learning platforms.

Keywords: *E-learning; technology acceptance model; social media; motivation; knowledge sharing; YouTube; Twitter; Facebook.*

1. Introduction

Social networking sites (SNS) have become increasingly popular since the rise of the second generation of web-based communities (Web 2.0) because of increased collaboration and sharing between users through interactive applications such as blogs, podcasts, and live feeds (N. Al-Qaysi & Al-Emran, 2017; Mhamdi, 2017c, 2017a; Mhamdi, Al-Emran, & Salloum, 2018; S. A. Salloum, Al-Emran, Abdallah, & Shaalan, 2017; S. A. Salloum, Al-Emran, & Shaalan, 2017; S.A. Salloum, Al-Emran, Monem, & Shaalan, 2018; S.A. Salloum, AlHamad, Al-Emran, & Shaalan, 2018). Recently, Facebook has experienced surging popularity, particularly by people who use new technologies as a virtual space that complements or replaces social interaction as "real life" (Bosch, 2009). Social networks created specifically for educational purposes as e-learning platforms provide a unique opportunity for educators to create a sense of community among students and encourage personal interaction leading to the creation of new knowledge and a collective ethos (S. A. Al-Mohammadi & Derbel, 2015; M. T. Alshurideh, Salloum, Al Kurdi, Monem, & Shaalan, 2019; M. Habes, Salloum, Alghizzawi, & Alshibly, 2018). A number of studies were conducted to measure the students' use of social media applications (N. Al-Qaysi, Mohamad-Nordin, & Al-Emran, 2019b, 2019a; N. Al-Qaysi, Mohamad-Nordin, Al-Emran, & Al-Sharafi, 2019). Previous studies suggest that education-based SNSs, such as Ning, can be used effectively in distance education (Brady, Holcomb & Smith 2010). These e-learning platforms enable online courses including registration, monitoring, and evaluating student and teacher activities (Costa, Alvelos, & Teixeira, 2012). Clearly, it is important to

understand the success factors contributing to the acceptance of e-learning platforms through social networks to test relations between the social network and e-learning platforms if combined with the Technology Acceptance Model (TAM) to the main functionalities and tools available in e-learning platforms and their use by the students and teachers.

2. Literature Review

The widespread use of e-learning and m-learning platforms on the internet and by institutional and private providers have provided a new flexible and portable way for students to acquire knowledge and knowledge sharing skills (Al-Emran & Mezhuyev, 2019; Al-Emran, Mezhuyev, & Kamaludin, 2018b, 2019; Al-Emran, Mezhuyev, Kamaludin, & AlSinani, 2018; Al-Emran & Teo, 2019; S. A. Salloum, Al-Emran, Shaalan, & Tarhini, 2019). E-learning platforms allow students to interact with teachers and classmates simultaneously via multiple media including text, live video, file sharing and live blogs (Boyd & Ellison, 2007; Cofield, 2002; Kim, Lee, Shin, & Yang, 2017). They can also engage in self-learning by taking control of both the process and content of their learning (S. Al-Mohammadi, 2015; S. A. Al-Mohammadi & Derbel, 2015). A number of studies have identified the impact of knowledge sharing by SNSs on e-learning (Kwahk & Park, 2016). In addition to gaining skills and enabling information searches, they provide educational templates and motivate the usage of e-learning by newly graduated students (Galan, Lawley, & Clements, 2015). The purpose of this paper is to determine whether e-learning acceptance is positively or negatively influenced by social media tools namely knowledge sharing (KNW), social media features (SOC), and motivation and usage (MOT), by using the TAM model in the UAE.

3. Research Model

This paper proposes a framework for identifying the impact of information networks on e-learning systems in UAE where the factors that may affect the use of e-learning can be grouped through social media tools, namely knowledge sharing (KS), social media features (SMF), and motivation and usage (MS) for-learning system acceptance. Figure 1 illustrates the proposed research model.

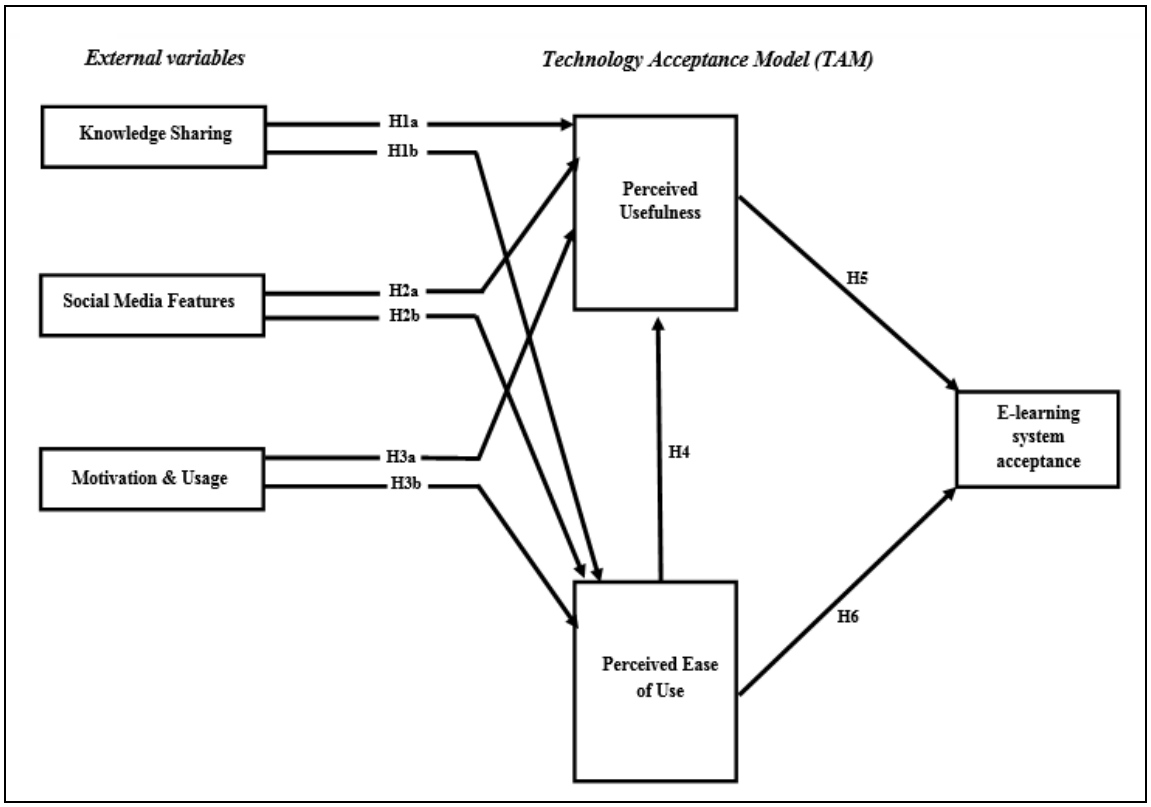

Figure 1. Research Model.

3.1. Knowledge sharing effect on e-learning system acceptance (TAM)

E-learning is defined as "a method of teaching and learning that fully or partially signifies the educational model used, based on the use of electronic media and devices as tools in knowledge sharing for enhancing the availability of training, communication, and interaction, and that helps in accepting novel ways of comprehending and establishing learning" (Sangrà, Vlachopoulos, & Cabrera, 2012). A key advantage of e-learning is its portability as a virtual environment across many devices including personal computers, mobile phones, and tablets (S. A. Salloum & Al-Emran, 2018; S. A. Salloum, Al-Emran, Khalaf, Habes, & Shaalan, 2019). The platforms enable students and teachers to access course contents in digital formats, share knowledge, and thereby, make learning more interactive among teachers and/or colleagues, such as online forums and sharing resources using multi-media. These platforms can provide different features such as the creation of online courses, monitoring and evaluation of activities for both students and teachers. Many studies have confirmed that these platforms were able to support many activities (Costa et al., 2012), thus achieving usefulness through the easy exchange of knowledge (Majchrzak, Faraj, Kane, & Azad, 2013) Previously, knowledge sharing was restricted within an organization among sub-groups (Majchrzak et al., 2013). Social media has revolutionized the formal and informal sharing of knowledge and information by individuals, groups and organizations (Al Emran & Shaalan, 2014; M. Habes, Alghizzawi, Salloum, & Ahmad, 2018) and effective knowledge sharing has a positive impact on the acceptance of education platforms (Al-Emran, Mezhuyev, & Kamaludin, 2018a) because it can facilitate the transfer of scientific knowledge (Al-Emran & Salloum, 2017; Mohammed Habes, Salloum, Alghizzawi, & Mhamdi, 2019; S. A. Salloum, Al-Emran, & Shaalan, 2018). Hence, the following assumptions were proposed:

H1a: Knowledge Sharing (KNW) has a positive effect on perceived usefulness (PU).

H1b: Knowledge Sharing (KNW) has a positive effect on perceived ease-of-use (PE).

3.2. Social media features and acceptance of e-learning platforms

SNSs are electronic structures that interactively represent formal or informal relationships between individuals or organizations within a given domain where trust and power differentials in relationships play a key role (Liccardi et al., 2007; Mhamdi, 2017b). SNSs provide unique social media features (SMFs) because they allow individuals to interact with strangers and enable users to articulate and make visible their personal social networks (Emira Derbel, 2019a; S. A. Salloum, Mhamdi, Al Kurdi, & Shaalan, 2018). SNSs have implemented a wide variety of technical features to display and articulate their profiles. Profiles are unique pages where one can "type oneself into being" by providing personal information, file sharing, real-time interaction and profile photos (Boyd & Ellison, 2007; M. Habes, 2019). Leading sites include Facebook, Twitter, Instagram, Live Bowen, Google Plus, Snapchat, LinkedIn and YouTube, which are also used as unregulated global media outlets to generate publicity and disseminate information as news and entertainment (Emira Derbel, 2019b, 2019a; Mohammed Habes et al., 2019; Mhamdi, 2016, 2017a; Mhandi, 2019; S. A. Salloum, Maqableh, Mhamdi, Al Kurdi, & Shaalan, 2018; S. A. Salloum, Mhamdi, et al., 2018; S. A. Salloum & Shaalan, 2018b). Ease-of-use and 24/7 global availability positively or negatively influence user attitudes, beliefs, and convictions (E Derbel, 2014; Emira Derbel, 2017a, 2017b; Lüders & Brandtzæg, 2017). E-learning studies show that the perceived usefulness (PU) and ease-of-use (PEOU) of SNSs facilitate student acceptance of e-learning platforms that incorporated features of portability and the opportunity for interactive collaboration. More flexible approaches to teaching and learning made available through SMFs have also increased acceptance of e-learning platforms (Chatti, Jarke, & Frosch-Wilke, 2007; Rennie & Morrison, 2013; S. A. Salloum & Shaalan, 2018b). Hence, the following assumptions are proposed:

H2a: Social media features (SOC) have a positive effect on perceived usefulness (PU).

H2b: Social media features (SOC) have a positive effect on perceived ease-of-use (PE).

3.3. Motivation and usage acceptance of e-learning platforms

MU of e-learning platforms facilitate the ability of students and teachers to use and accept them in terms of achieving their expectations required to achieve and improve education outcomes (Keller &

Suzuki, 2004). Several studies confirmed that the educational value added by SNSs have a positive impact on the ease-of-use and perceived usefulness of e-learning platforms (Sun, Tsai, Finger, Chen, & Yeh, 2008; Zacharis, 2012). The psychosocial needs of users and self-motivation can predict their intention to accept e-learning platforms (Law, Lee, & Yu, 2010). Hence, the following assumptions are proposed:

H3a: Motivation and usage (MOT) have a positive effect on perceived usefulness (PU).

H3b: Motivation and usage (MOT) have a positive effect on perceived ease-of-use (PE).

3.4. The Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) (Davis, Bagozzi, & Warshaw, 1989) is an established methodology for measuring user acceptance of new technology in terms of perceived usefulness (PU) and perceived ease-of-use (PE) (Al-Maroof, Salloum, AlHamadand, & Shaalan, 2019; Alhashmi, Salloum, & Abdallah, 2019; Said A Salloum et al., 2019). There is a significant body of literature on its broad application across digital technology, including mobile devices, social media, websites and internet platforms, and various versions of the model have been developed since its introduction in the late 1980s and adoption across various industry sectors.

3.5. Linking the Technology Acceptance Model (TAM) to e-learning system acceptance

TAM explains technology usage behavior. Accordingly, TAM has been the most famous and influential model for understanding the acceptance of information technology and has received extensive empirical props in many studies (Noor Al-Qaysi, Mohamad-Nordin, & Al-Emran, 2018; Mezhuyev, Al-Emran, Fatehah, & Hong, 2018; Mezhuyev, Al-Emran, Ismail, Benedicenti, & Chandran, 2019). According to the TAM, perceived ease-of-use is the degree to which a person feels that using a technology system is not a hard effort and perceived usefulness is the degree to which a person feels would enhance the performance results of his or her job. These two beliefs together influence the users' position in using the technology system (Davis, 1989). Electronic education is of great importance in education and training for both students and teachers, but its importance lies in the acceptance of users of these services as an educational tool, and since the TAM model works to measure the acceptance of technology, we will adopt it in e-learning through perceived usefulness and ease-of-use on users (Lee, Yoon, & Lee, 2009). Many studies have been carried out to define users' e-learning acceptance (Gamble, 2018; S. A. Salloum & Shaalan, 2018a). The results showed that perceived usefulness and perceived ease-of-use have led to an increase in the students' intention to use and adopt e-learning systems (Hsia & Tseng, 2008). Hence the following assumptions were proposed:

H4: Perceived ease-of-use (PE) has a positive effect on perceived usefulness (PU).

H5: Perceived usefulness (PU) has a positive effect on e-learning system acceptance (EA).

H6: Perceived ease-of-use (PE) has a positive effect on e-learning system acceptance (EA).

4. Research Methodology

4.1. Data collection

A quantitative survey was used employed to empirically test the hypotheses of the research model and validate its conceptual framework (Creswell, Plano Clark, Gutmann, & Hanson, 2003)**.** Four-hundred-and-eighty graduate and undergraduate students from the British University in Dubai (BUiD) were chosen as the survey cohort sample. The study was conducted on 480 students with 410 completed questionnaires, while 70 questionnaires were not considered due to incomplete submissions. The questionnaires were completed by 410 respondents with a response rate of 85%. Responses were then tested by the conceptual model to determine whether the number accepted as a sample size. The analysis was performed using structural equation modeling. Thus, 408 as a sample size is considered high compared to the unimportant requirements used to analyze the hypotheses in (Chuan & Penyelidikan, 2006).

4.2. Participants

The convenience sampling approach is an effective method to capture survey participants (Al-Emran, Alkhoudary, Mezhuyev, & Al-Emran, 2019; Al-Emran & Shaalan, 2017; M. Alshurideh, Salloum, Al Kurdi, & Al-Emran, 2019; Malik & Al-Emran, 2018; S. A. S. Salloum & Shaalan, 2018). The study sample included students from different colleges with different levels of study and different age groups. The survey cohort comprised 180 males (44%) and 230 females (56%) of which 75% were aged between 18 and 29 and 25% were more than 30 years. Ninety-seven percent identified as having advanced computer skills and 85.6% used SNSs daily. The most popular SNS platforms were Facebook 80%, YouTube 92%, and Twitter 72%. Motivations for using SNSs were chatting with friends 97%, watching and sharing videos, using educational platforms 93%, and updating status and accounts 86%.

5. Findings and Discussion

5.1. Measurement Model Analysis

To evaluate the validity of the measurement and structural models of the research framework, Partial Least Squares-Structural Equation Modelling (PLS-SEM) was adopted (Chin, 1998) using industry-standard Smart-PLS software (Ringle, Wende, & Will, 2005). There is a connection between the indicators which showed the measurement model (outer model) and the link between the potentially existing but not evident constructs of the participants' own selves. The proposed model was measured from SEM-PLS with its nifty probability method (Anderson & Gerbing, 1988). To predict the reliability and convergent validity, several measurements were done which included Factor Loadings, Average Variance Extracted and Composite Reliability. Factor loadings were used to depict the weight and correlation of each questionnaire variable as a perceived indicator. The actor's dimensionality was shown through the bigger load value. Composite reliability measure composite reliabilities (CR) was used to determine reliability. It worked in the same way as the previously mentioned determinants. It gave accurate values with the help of factor loadings, and they were used in the given formula. The latent construct can be shown by the Average Variance Extracted (AVE) which is the average amount of difference or variations in each variable. AVE can be used when there is discriminate validity, and it is greater than one factor. It can examine each factor's convergence. According to Table 1, the aftermath of consequence and the questionnaire reliability and convergent validity have surpassed the requirements. In Table 1, the basic requisites for the reliability and validity of the questionnaire are shown and the results obtained for every factor is shown by the variables obtained from the questionnaire.

5.1.1 Convergent validity

To predict the convergent validity, certain specific indicators were used including factor loadings, variance extracted and reliability (J. F. Hair, Black, Babin, & Anderson, 2010). Internal consistency among the different recordings of a construct (using Cronbach's Alpha) is demonstrated when the reliability coefficient and composite reliability for all constructs exceed 0.7 (Hair et al. 1998). As Table 1 shows Cronbach's Alpha score exceeded 0.7 (Gefen, Straub, & Boudreau, 2000; Nunnally & Bernstein, 1978) and the range of CR was from 0.700 to 0.899. The AVE was from 0.733 to 0.819 thereby satisfying the criteria and explained at least 50% of the variance extracted from the set of items under each latent construct (Falk & Miller, 1992).

5.1.2 Discriminant validity

The criteria for discriminant validity are fulfilled when AVE values exceed the squared correlation among the constructs in the measurement model (Fornell & Larcker, 1981; J. Hair, Hollingsworth, Randolph, & Chong, 2017). If the AVE value exceeds 0.5, the constructs should explain at least 50% of the measurement variance. To check the discriminative value, the PLS-SEM using Smart-PLS was utilized. The AVE analysis is shown in Table 2. The square roots of the AVE scores are shown by the bold diagonal elements in the table. Correlations between the constructs are shown by the off-load diagonal elements. The square root of AVE scores was between 0.769 and 0.899 as shown in the table was thus greater than 0.5. The AVE was greater in comparison to other correlations within the constructs. It depicted the fact that there is a lot of variance of all constructs with their very own measures. The other constructs present in the model favored discriminate validity. According to the rules of discriminate validity, the loading of

each of the items must be greater than the loadings of its respective equivalent variables (Gefen et al., 2000). The second criterion has been fulfilled and it is shown in Table 3. There is another condition in the criteria which suggested that HTMT values must be less than 0.85. This criterion has been fulfilled and is also shown in the table. As a result, discriminate validity was fully established.

Constructs	Items	Factor Loading	Cronbach's Alpha	CR	AVE
E-learning system acceptance	EA1	0.810	0.830	0.834	0.801
	EA2	0.900			
Knowledge sharing	KNW1	0.855	0.841	0.899	0.733
	KNW2	0.796			
	KNW3	0.753			
	KNW4	0.707			
Motivation and uses	MOT1	0.719	0.716	0.871	0.756
	MOT2	0.888			
	MOT3	0.896			
	MOT4	0.744			
Perceived Ease-of-use	PE1	0.854	0.799	0.796	0.819
	PE2	0.908			
	PE3	0.800			
	PE4	0.779			
Perceived Usefulness	PU1	0.830	0.836	0.700	0.736
	PU2	0.870			
	PU3	0.794			
	PU4	0.889			
Social media Features	SOC1	0.766	0.872	0.792	0.810
	SOC2	0.852			
	SOC3	0.805			
	SOC4	0.899			

Table 1. Convergent validity results conforming acceptable values (Factor loading, Cronbach's Alpha, CR ≥ 0.70 & AVE > 0.5).

	EA	KNW	MOT	PE	PU	SOC
EA	**0.879**					
KNW	0.116	**0.890**				
MOT	0.376	0.313	**0.895**			
PE	0.200	0.322	0.601	**0.793**		
PU	0.321	0.561	0.128	0.463	**0.769**	
SOC	0.235	0.456	0.118	0.500	0.596	**0.899**

Table 2. Fornell-Larcker Scale.

	EA	KNW	MOT	PE	PU	SOC
EA						
KNW	0.524					
MOT	0.638	0.433				
PE	0.700	0.325	0.510			
PU	0.639	0.390	0.288	0.673		
SOC	0.104	0.300	0.570	0.508	0.578	

Table 3. Heterotrait-Monotrait Ratio (HTMT).

5.1.3 Coefficient of Determination

A careful examination of the structural model for predictive accuracy was performed using the coefficient of determination (R^2 value), where the squared correlation was tested between a particular endogenous construct's actual and predicted values. The combined effect of exogenous latent variables on the endogenous variables was implied by the coefficient. It also showed the degree to which the variance present in the endogenous constructs was favored by the exogenous construct recognized by it. (Chin, 1998) showed that the values between 0.33 to 0.67 are direct, values exceeding 0.67 are high, and those between 0.19 to 0.33 are weak; a value below 0.19 is not admissible. Table 4 and Figure 2, show the

model had a high predictive power, which supported almost 75% and 81% of the variance in EA and PU respectively and PEOU was between 0.33 and 0.67; hence, the predictive power of the latter construct was considered moderate.

Constructs	R^2	Results
EA	0.750	High
PU	0.810	High
PE	0.540	Moderate

Table 4. R^2 of the endogenous latent variables.

5.1.4 Structural Model Analysis

A structural model which used SEM-PLS was used to check the proposed hypotheses (Al-Maroof et al., 2019; Al-Shibly, Alghizzawi, Habes, & Salloum, 2019; Alghizzawi, Habes, & Salloum, 2019; Alhashmi et al., 2019; Alomari, AlHamad, & Salloum, n.d.; Muhammad Alshurideh, 2018; Muhammad Alshurideh, Al Kurdi, & Salloum, 2019; Mohammed Habes et al., 2019; S. A. Salloum, Alhamad, Al-Emran, Monem, & Shaalan, 2019; Said A Salloum et al., 2019). It had most of the chances to evaluate the relationship present among the theoretical constructs for the structural model. Table 5 and Figure 2 show the results where all the hypotheses were significant. Based on the data analysis, hypotheses H1a, H1b, H2a, H2b, H3a, H3b, H4, H5, and H6 were supported by the empirical data. The results showed that PU significantly influenced KNW (β= 0.418, P<0.05), SOC (β= 0.736, P<0.05), MOT (β= 0.325, P<0.05), and PE (β= 0.580, P<0.001), supporting hypotheses H1a, H2a, H3a and H4 respectively. Further, PE significantly influenced KNW (β= 0.289, P<0.05), SOC (β= 0.456, P<0.05) and MOT (β= 0.198, P<0.05), supporting hypotheses H1b, H2b, and H3b. EA was determined to be significant in affecting PU (β= 0.832, P<0.001) and PE (β= 0.281, P<0.001), supporting hypotheses H5 and H6 respectively. A summary of the hypotheses testing results is shown in Table 5.

H	Relationship	Path	*t*-value	*p*-value	Direction	Decision
H1a	Knowledge sharing -> Perceived Usefulness	0.418	5.222	0.030	Positive	Supported
H1b	Knowledge sharing -> Perceived Ease-of-use	0.289	6.123	0.012	Positive	Supported
H2a	Social media Features -> Perceived Usefulness	0.736	3.122	0.022	Positive	Supported
H2b	Social media Features -> Perceived Ease-of-use	0.456	1.313	0.040	Positive	Supported
H3a	Motivation and uses -> Perceived Usefulness	0.325	4.119	0.017	Positive	Supported
H3b	Motivation and uses -> Perceived Ease-of-use	0.198	18.189	0.000	Positive	Supported
H4	Perceived Ease-of-use -> Perceived Usefulness	0.580	23.255	0.000	Positive	Supported
H5	Perceived Usefulness -> E-learning system acceptance	0.832	17.155	0.000	Positive	Supported
H6	Perceived Ease-of-use -> E-learning system acceptance	0.281	19.101	0.001	Positive	Supported

Table 5. Results of structural Model.

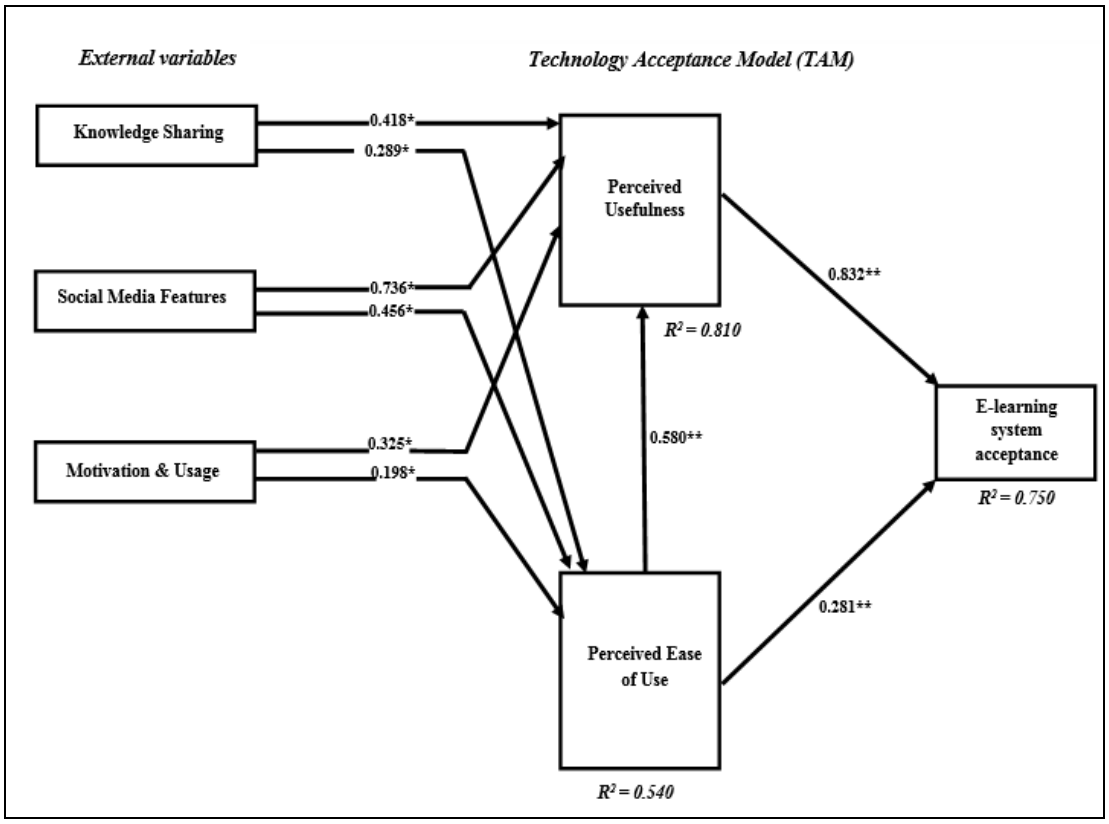

Figure 2. Path coefficient results.

6. Conclusion and Future Studies

6.1. Study Contributions and Discussion

This study examined the influence of social media on student acceptance of e-learning platforms at BUiD. It employed the TAM to determine whether SMS functions of knowledge sharing, material features and motivation and use affected PU and PE to increase student acceptance of e-learning platforms. As shown in Table 5 above all nine hypotheses were supported. The findings are consistent with previous studies which show that social media usage positively affects e-learning adoption, particularly perceived interest, knowledge sharing and social media features (Acarli & Sağlam, 2015; Al-Rahmi, Alias, & Shahizan, 2016; Al-Rahmi & Zeki, 2017; Dhume, Pattanshetti, Kamble, & Prasad, 2012; Dumpit & Fernandez, 2017; El-Masri & Tarhini, 2017; Fathema, Shannon, & Ross, 2015; Fryer & Bovee, 2016; Henseler, Ringle, & Sarstedt, 2015; Hsia & Tseng, 2008; Said A Salloum, Al-Emran, & Shaalan, 2017). Curriculum planners and administrators of higher education institutions in the UAE should consider how social media usage affects e-learning acceptance and optimize relevant SMS features in e-learning platforms. Since SMS technology is continually evolving, this will require an on-going commitment to research in innovative and applied applications. The model developed in this paper can be applied to future studies.

6.2. Limitations

Previous studies have used Facebook, YouTube, Twitter, and Instagram to investigate their impacts on higher education. Although Facebook and YouTube are among the most widely used by students in UAE, the participants in this work were more likely to use Facebook compared to other alternatives. However, this finding may not be generalized since the participants were students from one university which was the BUiD in the United Arab Emirates. Thus, their points of view do represent the entire population of the United Arab Emirates, which leads to the limitations of the study. On the other hand, these results can represent the viewpoint of Emirati students in this university. Learning more about the students,

government officials and the differences and similarities between the students and the non-governmental and governmental bodies concerning the impact of the factors suggested by the TAM model requires further research.

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