PalArch's Journal of Archaeology of Egypt / Egyptology

AN EMPIRICAL STUDY OF HIGHER EDUCATION STUDENTS' INTENTIONS TO USE E-LEARNING: DEVELOPING COUNTRY PERSPECTIVE

Atif Ali Gill[1], Samra Malik[2], Sameera Iqbal[3], Haris Haseeb[4] Nasreen Akhtar5*

[1,2]Faculty of Department Business Administration, University of Sahiwal, Pakistan

[3] Faculty, Higher Colleges of Technology, Dubai

[4]MS Scholar, Department Business Administration, University of Sahiwal, Pakistan

[5]MS Scholar, COMSATS university Islamabad, Sahiwal Campus, Pakistan

Atif Ali Gill, Samra Malik, Sameera Iqbal, Haris Haseeb Nasreen Akhtar. An Empirical Study Of Higher Education Students' Intentions To Use E-Learning: Developing Country Perspective-- Palarch's Journal Of Archaeology Of Egypt/Egyptology 17(8), 1046-1058. ISSN 1567-214x

Keywords: Perceived Ease Of Use, Perceived Usefulness, Intention To Use E-Learning, Technology Acceptance Model, Developing Country

ABSTRACT

Information and communication technology generate enormous opportunities to learn education globally. Improvement in technology foster the virtual education that is not bound to physical classroom and traditional face to face teaching pedagogies. Current study analyzed the factors influencing the intention to use e-learning among university students. The data were collected through survey method from the students studying in public sector universities of Sahiwal district, Pakistan. Random sampling was utilized to get data from population of study. Structural equation modelling technique was utilized to statistically test the collected data. Technology acceptance model (TAM) underpinned the theoretical framework. The results found the significant impact of perceived ease of use and perceived usefulness on the attitude that leads to improved intentions to use e-learning. The findings of current study contributed theoretically by extending the TAM theory and practically by providing guidelines for the administration of universities to consider the importance of perceived ease of use, perceived usefulness and attitude while improving the usage of E-learning among students in universities.

INTRODUCTION

Information and communication technology (ICT) creates lot of opportunities in business as well as education sector all over the world (Kim & Park, 2018). The ICT provides alternative to traditional education system through online learning system (Hasan & Bao, 2020). Students can access online classes virtually while sitting anywhere without the restriction of physical presence at same premise. Electronic learning (E-learning) requires internet to communicate among students and teachers (Samsudeen & Mohamed, 2019).

E-learning covers a broad range of ICT based methods like YouTube, portals, websites, learning management systems, mobile and web applications. E-learning enables students, teachers and professionals to equip knowledge without the limitation of physical boundaries. Many universities across the globe are providing online courses along with traditional education system. Despite the numerous benefits of e-learning system students still prefer traditional education system and less inclined towards e-learning usage. Hassan and Bao (2020) assert complex technology which is difficult to operate hinders the usage of system. In developing countries societal groups plays vital role while choosing any decision. Students have lack of affirmative beliefs regarding the outcome of e-learning methods in their career.

In Pakistan there are some dedicated public sectors universities were already providing online and distance learning i.e., Allama Iqbal Open University (AIOU) and Virtual University (VU) (Khan et al., 2020). The Higher Education Commission (HEC), Pakistan continuously bringing new reforms to improve e-learning education system in higher education institutions. Students encourage to accept e-learning as an integral part of their lives (Alhumaid et al., 2020).

Students might face certain problems while integration to use E-learning as an option to replace the traditional teaching model. The problems might be due to the negative intentions of students to use and adapt this model of learning in the future. There is a possibility that students would not have a good experience of e-learning and they do not prefer E-learning to others.

This study is based on finding answers to these research questions.
RQ1: Do perceive usefulness, perceive ease of use, and the subjective norm influence intention to use E-learning?
RQ2: Do attitude mediates the relationship between perceive usefulness, perceive ease of use, and intention to use E-learning?
The next section is incorporated with the literature review, hypotheses development, and underpinning theory along with the theoretical framework of the study.

LITERATURE REVIEW

E-learning uses electronic media and devices as their instrument to intensify accessibility of communication which facilitates to set up a different way of learning (Krishnan and Husain, 2017). Electronic devices like mobile phones, tablets, computers enable work through E-learning (Lee et al., 2009). Th usage of E-learning is linked with the authentic utilization of electronic devices. The authentic use indicates the behavior while the intention to use indicates the

attitude (Talukder et al., 2019). Intention to use reflects the behavioural intention that an individual performs before adopting a certain activity (Indarsin & Ali, 2017). The technology acceptance model (TAM) explained by Fishbein and Ajzen in 1975 (Zaineldeen et al., 2020). TAM model also indicates that behavioral intention has a large impact on attitude towards using electronic devices (Fishbein & Ajzen, 1977).

Perceive Usefulness and Attitude towards E-learning

The E-learning system can be considered as an effective medium of study when students realize that outcome of E-learning method is fruitful for them (Salloum et al., 2019). Literature revealed the relation exist between the perceived usefulness and attitude towards e-learning (Mahmodi, 2017). Hence, from the above literature following hypothesis can be derived as:

H1: Perceive usefulness has a significant influence on attitude towards e-learning.

2.2. Perceived Ease of use and Attitude towards E-learning

Perceived ease of use (PEOU) explains the understanding of learner that it requires less efforts to use a particular E-learning method and feel comfort to handle it (Salloum et al., 2019). Tarhini et al., (2017) asserted the positive correlation between PEOU and intention to use E-learning. Moreno et al., (2017) also witnessed the same that PEOU facilities the intentions of a learner to use E-learning method.

The above mentioned helps to derive following hypothesis:

H2: Perceived ease of use has a significant influence on attitude towards e-learning.

Subjective Norms and Intention to Use E-learning

Subjective norms (SN) relate to the societal groups and peers influence on the decision making of an individual belong to that society (Salloum et al., 2019). In certain situations, individuals act on a certain phenomenon in a particular way due to the pressure of others' expectations rather considering own feelings and beliefs. Ameen et al., (2019) highlighted the linkage of subjective norms with intentions to use E-learning. From the above-mentioned following hypothesis can be postulated as:

H3: Subjective norm has a significant influence on intention to use E-learning.

2.4. Attitude towards Intention to Use E-learning

Attitude states the students being optimistic towards the usage of E-learning and show positive or negative reflections on the way of E-learning that leads to behavioural intentions (Liaw et al., 2007). Literature reveled the importance of learner's attitude towards using the E-learning method. The above literature derived the following hypothesis:

H4: Attitude has a significant influence on intentions to use E-learning.

Mediating role of attitude

In literature, attitude is used to measure a person's decision that is linked with three factors: perceived ease to use, perceived usefulness, and perceived trust (Indarsin & Ali, 2017). Attitude plays a significant role to affect student's

learning in the classroom by influencing a student's intention to use E-learning (Hussein, 2017). Technology Acceptance Model (TAM) creates a linkage between attitude and Perceived Ease of Use and Perceive Usefulness. Studies on technology adoption have planned attitude as an essential forecast that revealed user's positive attitudes will guide to higher intention to use E-learning. Following the above-mentioned following hypothesis can be stated as:

H5: Attitude mediates the relationship between perceived usefulness, perceived ease to use and intentions to use E-learning.

Underpinning theory: Technology Acceptance Model (TAM)

Davis (1989) presented the Technology Acceptance Model (TAM) that used in literature frequently to evaluate the acceptance level of a certain technology among users. Recent studies on E-learning also utilized the TAM as their underpinning theory to examine the intentions to use e-learning among learners of different contexts. Present study also employed the TAM as underpinning theory of its research framework to analyze the explained variance of exogenous variables on the endogenous variable of intentions to use E-learning among students in public higher education institutes.

METHODOLOGY

Theoretical Framework

The research framework of current study as shown in Figure 1 depict the perceived usefulness, perceived ease to use and subjective norms as exogenous variables while attitude and intentions to use E-learning as endogenous constructs. Moreover, attitude act as a mediator between the relationship of perceived usefulness and intentions to use E-learning and relationship of perceived ease of use and intentions to use E-learning.

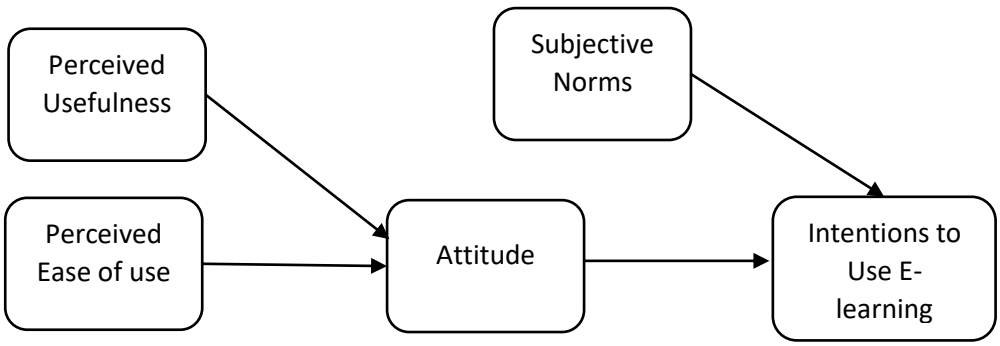

Figure 1: Theoretical Framework

Data collection and sampling

The data in the present study were collected through close ended questionnaires that were distributed personally to the students at public sector universities in Sahiwal district, Punjab Pakistan. The minimum sample size was 129 calculated using G* Power with a medium effect size of 0.15 and a confidence interval of 95%. Meanwhile, previous literature depicted a low

response rate in developing countries using a survey method, that is less than 50%. Due to this reason, the sample size has been increased and 400 questionnaires sent for getting an adequate response rate. After initial screening, a total of 220 responses was retained for the analysis of data.

Instrument development

The first section of the questionnaire examines the personal information of respondents including gender, age, e-learning experience and qualification. In the next section, respondents were asked to rate perceived usefulness, perceived ease of use, attitude, subjective norms and intentions to use e-learning. Items were adopted from the literature, as shown in Table 1. The survey instrument followed a 5-point Likert scale ranging from strongly agree (01) to strongly disagree (05).

Table 1 Operationalization of variables

Variables	Items	AVE	CR	References
Intention to use E-learning	4	0.623	0.868	(Kim & Park, 2018)
Perceived usefulness	3	0.731	0.920	(Lee et al., 2009)
Perceived ease of use	3	0.753	0.900	(Lee et al., 2009)
Subjective norm	3	0.733	0.890	(Lee et al., 2009)
Attitude	3	0.724	0.910	(Lee et al., 2009)

Statistical tool for data analysis

The present study examines the variance through the exogenous variables towards the intentions to use e-learning among students in public sector institutes. Structure equation modelling (SEM) is a suitable technique where the research is exploratory and predictive in nature. For the analysis of demographic data, SPSS software used to analyze the frequencies and percentage of respondents' demographic variables. Hypotheses testing done through SmartPLS v3.0 software to examine the effect of predictors on the criterion variable of intention towards e-learning usage.

ANALYSIS AND FINDINGS

Multivariate Skewness and Kurtosis

The present study assessed the multivariate skewness and kurtosis before further analysis through web power application software available at https:webpower.psychtsat.org/models/kurtosisi suggested by Sarstedt et al. (2017) and Cain et al. (2017). After analysis results depicted that data were not multivariate normal, Mardia's multivariate skewness and kurtosisi were ($b=55.28$, $p<0.01$) and ($b=357.20$, $p<0.01$) respectively. Hence, current study uses PLS-SEM by smartpls software due to multivariate normality issue.

Respondent Profile

The demographic analysis depicted male participants have higher response rates with 52.4% as compared to the female at 47.6%. The age of respondents illustrated that the majority 42.9% belonged to the age bracket of 18-20 years about 38.4% of respondents have age bracket of 21-23 years, 18.7% are age bracket of 23 and above years.

The education variable reflected that most respondents were studying in bachelor program comprising 60.6%, respondents studying in master program were 39.4% who filled the questionnaire. Majority of respondents almost 54.8% had 1-3 months' experience of using e-learning, 30.5% had 4-6 months experience of using e-learning, while 14.7% had more than 6 months experience of using e-learning.

Assessment of measurement model

Sixteen items are used to measure five constructs in the current study, and that comprises the outer model where items stated as indicators while constructs are denoted as latent variables. Confirmatory Composite Analysis (CCA) is performed through Partial least squared structural equation modelling (PLS-SEM) using SmartPLS software (Hair et al., 2020) for measurement model as shown in Figure 2. All constructs are reflective as adopted through literature and in reflective measurement model the criteria to measure internal consistency by composite reliability (CR), the convergent validity of latent variable through average variance extracted (AVE). While discriminant validity measured through Fornell and Larcker method (Fornell & Larcker, 1981).

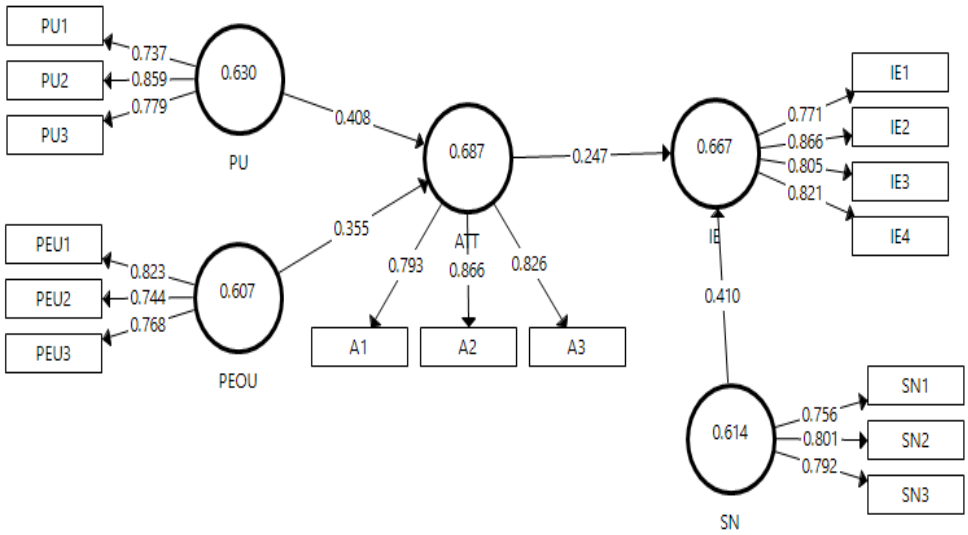

Figure 2: Measurement Model

Results of measurement model using PLS algorithm in SmartPLS shown in Table 3 that items loadings of each item greater than 0.40 that represents

indicator reliability while CR value of all constructs is greater than 0.70 that represents internal consistency in the model. Furthermore, the AVE of each construct is greater than 0.50, showing that the model is convergent valid.

Table 3: Assessment Results for the measurement Model

Construct	Items	Loadings	CR	AVE
Perceived Usefulness (PU)	PU1	0.737	0.836	0.630
	PU2	0.859		
	PU3	0.779		
Perceived ease of Use (PEOU)	PEOU1	0.823	0.822	0.607
	PEOU2	0.744		
	PEOU3	0.768		
Subjective Norm (SN)	SN1	0.756	0.827	0.614
	SN2	0.801		
	SN3	0.792		
Attitude (ATT)	ATT1	0.793	0.868	0.687
	ATT2	0.866		
	ATT3	0.826		
Intention to use e-learning (IE)	IE1	0.771	0.889	0.667
	IE2	0.866		
	IE3	0.805		
	IE4	0.821		

Discriminant validity measured in the present study by using Fornell and Larcker's criterion, which is a well-known method to measure how constructs are distinct from each other in a model. Fornell and Larcker (1981) criterion stated that the square root of AVE comes in diagonal place, and it should be higher than the other constructs correlation values. Moreover, the results in Table 4 show that all diagonal values are higher than the corresponding correlation values which reflects the model is highly discriminant valid.

Table 4: Discriminant Validity Matrix using Fornell and Lacker's Criterion

	ATT	IE	PEOU	PU	SN
Attitude (ATT)	0.829				
Intention to use e-learning (IE)	0.543	0.817			
Perceived ease of Use (PEOU)	0.635	0.614	0.779		
Perceived Usefulness (PU)	0.651	0.650	0.687	0.794	
Subjective Norm (SN)	0.723	0.588	0.644	0.691	0.783

Structural Model

The inner model comprises the relationships between constructs, including exogenous and endogenous, which is also termed as a structural model. In this study, two constructs attitude and Intention to use are endogenous while others are exogenous there are four direct relationships which are hypothesized from

H1 to H4 as mentioned in literature section above. The bootstrapping procedure has been adopted to approximate normality by taking subsample and measure structural model using variance-based PLS-SEM technique through SmartPLS software as shown in Figure 3.

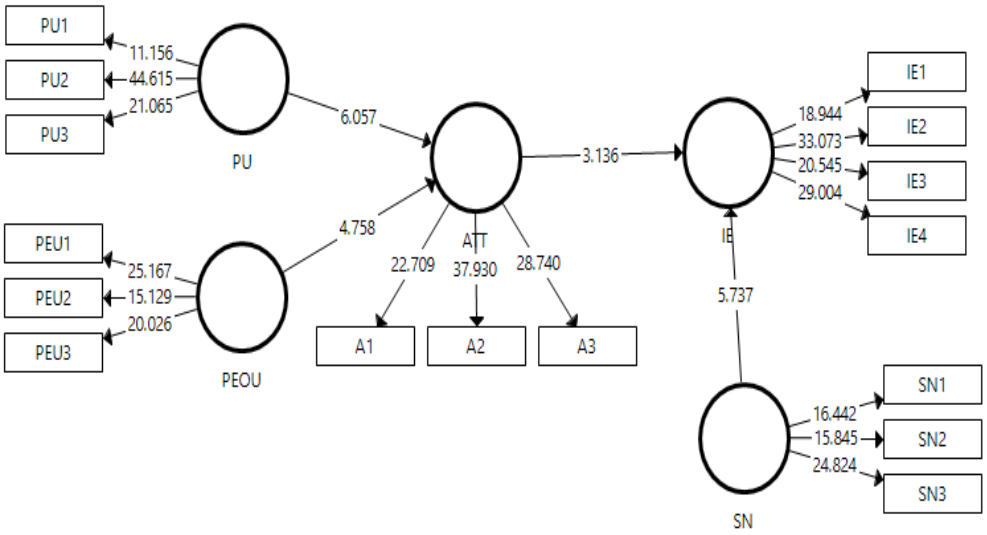

Figure 3: Structural Model

Assessment of structural model

Table 5 shows that all results of all direct relationships of current study. Hypothesis 1 proposed that perceived usefulness is significantly associated with Attitude. Figure 3 and Table 5 demonstrates a significant positive association between perceived usefulness and Attitude towards E-learning at (β= 0.408, t= 6.057, p-value< 0.05) supporting hypothesis 1. Hypothesis 2 postulates that Perceived ease of use has a significant influence on Attitude. Figure 3 and Table 5 demonstrate a significant association between Perceived ease of use and Attitude towards E-learning at (β= 0.355, t= 4.758, p-value< 0.05) supporting hypothesis 2. Hypothesis 3 articulated that Subjective Norms has significant association with intentions to use E-learning. Figure 3 and Table 5 demonstrate a significant association between Subjective Norms and intentions to use E-learning at (β= 0.410, t= 5.737, p-value< 0.05) supporting hypothesis 3. Hypothesis 4 postulated that Attitude has significant association with intentions to use E-learning. Figure 3 and Table 5 demonstrate a significant association between Attitude and intentions to use E-learning at (β= 0.247, t= 3.136, p-value< 0.05) supporting hypothesis 4. The R^2 value of 0.491 and 0.375 are higher than 0.26 value, as suggested by Cohen (1988) indicates that the current model is substantial. The value of Q^2 of Intention to use E-learning is 0.242, and attitude is 0.327are considerable above zero cut-off value that shows the model is predictive relevance.

Table 5 Hypothesis Testing (Direct Relationships)

Hypothesis	Relationship	Std. Beta	Std. Error	T value	P Values	2.50%	97.50%	Decision	R^2
H1	PU -> ATT	0.408	0.067	6.057	0.000	0.277	0.535	Supported	
H2	PEOU -> ATT	0.355	0.075	4.758	0.000	0.191	0.484	Supported	0.491
H3	SN -> IE	0.410	0.071	5.737	0.000	0.272	0.552	Supported	
H4	ATT -> IE	0.247	0.079	3.136	0.002	0.090	0.383	Supported	0.375

Mediation Analysis

Current research utilized the bootstrapping method to examine the indirect effects recommended by (Preacher & Hayes, 2004) where a single inferential test of indirect effect is required. The bootstrapping analysis results shown in Table 6 represents the indirect effect (β=0.101) is significant with a t-value of 2.672 of hypothesis 5. The indirect effect confidence interval bias-corrected [LL=0.035, UL=0.185] does not straddle a zero in between indicating that Attitude has significantly mediated the relationship between perceived usefulness and intentions to use E-learning supporting the hypothesis 5. While the indirect effect (β=0.088) is significant with a t-value of 2.278 of hypothesis 6. The indirect effect confidence interval bias-corrected [LL=0.024, UL=0.166] does not straddle a zero in between indicating that Attitude has significantly mediated the relationship between perceived ease of use and intentions to use E-learning supporting the hypothesis 6.

Table 6: Hypothesis Testing (Indirect Relationship)

Hypothesis	Relationship	Std. Beta	Std. Error	T value	2.50%	97.50%	Decision
H5	PU -> ATT -> IE	0.101	0.038	2.672	0.035	0.185	Supported
H6	PEOU -> ATT -> IE	0.088	0.038	2.278	0.024	0.166	Supported

DISCUSSION AND CONCLUSION

The present study utilized the theory of technology acceptance model (TAM) to analyze the influence of perceived usefulness, perceived ease to use, subjective norms through mediating impact of attitude towards intention to use E-learning. Current study examined total six hypotheses, out of six hypotheses four were direct hypotheses and two were indirect hypotheses that measure the mediating impact of attitude between exogenous constructs and intensions to use E-learning. The results of the current study revealed that perceived usefulness has a significant influence on attitude towards E-learning. Literature also witnessed the same results (Hsia et al., 2014; Mahmodi, 2017). Moreover, these results depicted that perceived ease to use has a positive effect on attitude towards E-learning. These results are consistent with the previous literature (Salloum et al., 2019). Moreover, subjective Norms found significant effect on attitude towards E-learning that consistent with findings of Ameen et al., (2019). The results revealed that attitude plays a vital

mediator role between perceived usefulness and intentions to use E-learning as well as between perceived ease of use and intentions to use E-learning. The outcome of the indirect hypotheses also synchronized with the existing literature (Fisk et al., 2011).

The present study has numerous implications. First, the result of this study shows that the unified model supports all the hypotheses, and the current study has analyzed a mediated model using TAM theory. The current study contributes to the mediated impact of attitude between perceived usefulness, perceived ease of use, and intentions to use e-learning. Second, the present study was carried out in a developing country i.e., Pakistan. Pakistan is the 5th largest country population-wise and e-learning still at infancy stage in Pakistan. so, current study provides valuable insights regarding e-learning growth in the developing country context. In the end, all stakeholders including get benefited from findings of present study to understand the determinants that influence the usage of E-learning. Policymakers make good use of entertainment-and-learning, quizzes, and innovative approaches to increase more interest in the learning process that improve the ease of use and perceived usefulness. Additionally, the director can build an online data communication channels to promote student's relationships and social connections that build their subjective norms and attitude towards E-learning.

LIMITATIONS AND FUTURE RESEARCH RECOMMENDATIONS

The current study has certain limitations. The first issue is the common method biases effect as all questionnaires were filled from the same respondent. The predictor and dependent variables must be analyzed from different respondent's perspectives to limit the issue of common method biases in the survey. Further studies may include two levels of responses; one may be from teachers and others from students. Second the generalizability of the result is limited due to data collected only from Pakistan. Future research can consider data collection from different country for cross country comparison. Third, current study only considers mono data collection method, survey through a close-ended questionnaire. The future researcher can consider mixed methods for data collection including interviews. Moreover, present study utilizes the cross-sectional data which has been taken in one-shot through a sample of students at Public Sector University. A future investigator can use longitudinal data for in-depth findings. The final limitation current study uses the mediating variable of attitude to find intentions of E-learning usage among students. A future researcher can use another mediating variable instead of an attitude to better understand the intentions to use E-learning.

REFERENCES

Ajayi, I. H., Iahad, N. A., Ahmad, N., & Yusof, A. F. (2017). A Conceptual Model For Flipped Classroom: Influence On Continuance Use Intention. 1–6.

Alfraih, M. M., & Alanezi, F. S. (2016). Accounting Students' Perceptions Of Effective Faculty Attributes. Journal Of International Education In Business.

Alhumaid, K., Ali, S., Waheed, A., Zahid, E., & Habes, M. (2020). COVID-19 &Elearning: Perceptions &Attitudes Of Teachers Towards E-Learning

Acceptancein The Developing Countries. Multicultural Education, 6(2).

Al-Qaysi, N., Mohamad-Nordin, N., & Al-Emran, M. (2020). A Systematic Review Of Social Media Acceptance From The Perspective Of Educational And Information Systems Theories And Models. Journal Of Educational Computing Research, 57(8), 2085–2109.

Alshehri, A. F. (2017). Student Satisfaction And Commitment Towards A Blended Learning Finance Course: A New Evidence From Using The Investment Model. Research In International Business And Finance, 41, 423–433.

Ameen, N., Willis, R., Abdullah, M. N., & Shah, M. (2019). Towards The Successful Integration Of E-Learning Systems In Higher Education In Iraq: A Student Perspective. British Journal Of Educational Technology, 50(3), 1434–1446.

Ardiansah, M., Chariri, A., Rahardja, S., & Udin, U. (2020). The Effect Of Electronic Payments Security On E-Commerce Consumer Perception: An Extended Model Of Technology Acceptance. Management Science Letters, 10(7), 1473–1480.

Beaunoyer, E., Dupéré, S., & Guitton, M. J. (2020). COVID-19 And Digital Inequalities: Reciprocal Impacts And Mitigation Strategies. Computers In Human Behavior, 106424.

Cain, M. K., Zhang, Z., & Yuan, K.-H. (2017). Univariate And Multivariate Skewness And Kurtosis For Measuring Nonnormality: Prevalence, Influence And Estimation. Behavior Research Methods, 49(5), 1716–1735. Https://Doi.Org/10.3758/S13428-016-0814-1

Chang, C.-T., Hajiyev, J., & Su, C.-R. (2017a). Examining The Students' Behavioral Intention To Use E-Learning In Azerbaijan? The General Extended Technology Acceptance Model For E-Learning Approach. Computers & Education, 111, 128–143.

Chang, C.-T., Hajiyev, J., & Su, C.-R. (2017b). Examining The Students' Behavioral Intention To Use E-Learning In Azerbaijan? The General Extended Technology Acceptance Model For E-Learning Approach. Computers & Education, 111, 128–143.

Clark, R. C., & Mayer, R. E. (2016). E-Learning And The Science Of Instruction: Proven Guidelines For Consumers And Designers Of Multimedia Learning. John Wiley & Sons.

Cohen, J. (1988). Statistical Power Analysis For The Behavioral Sciences, (L. Erlbaum Associates, Hillsdale, NJ).

Davis, F. D. (1989). Perceived Usefulness, Perceived Ease Of Use, And User Acceptance Of Information Technology. MIS Quarterly, 319–340.

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User Acceptance Of Computer Technology: A Comparison Of Two Theoretical Models. Management Science, 35(8), 982–1003.

Elkaseh, A. M., Wong, K. W., & Fung, C. C. (2016). Perceived Ease Of Use And Perceived Usefulness Of Social Media For E-Learning In Libyan Higher Education: A Structural Equation Modeling Analysis. International Journal Of Information And Education Technology, 6(3), 192.

Fishbein, M., & Ajzen, I. (1977). Belief, Attitude, Intention, And Behavior: An Introduction To Theory And Research.

Fisk, R. P., Patricio, L., Lin, J. C., & Chang, H. (2011). The Role Of Technology Readiness In Self-Service Technology Acceptance. Managing Service Quality: An International Journal.

Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equation Models With Unobservable Variables And Measurement Error. Journal Of Marketing Research, 39–50.

Hasan, N., & Bao, Y. (2020). Impact Of "E-Learning Crack-Up" Perception On Psychological Distress Among College Students During COVID-19 Pandemic: A Mediating Role Of "Fear Of Academic Year Loss." Children And Youth Services Review, 118, 105355.

Hsia, J.-W., Chang, C.-C., & Tseng, A.-H. (2014). Effects Of Individuals' Locus Of Control And Computer Self-Efficacy On Their E-Learning Acceptance In High-Tech Companies. Behaviour & Information Technology, 33(1), 51–64.

Hussein, Z. (2017). Leading To Intention: The Role Of Attitude In Relation To Technology Acceptance Model In E-Learning. Procedia Computer Science, 105, 159–164.

Indarsin, T., & Ali, H. (2017). Attitude Toward Using M-Commerce: The Analysis Of Perceived Usefulness Perceived Ease Of Use, And Perceived Trust: Case Study In Ikens Wholesale Trade, Jakarta–Indonesia. Saudi Journal Of Business And Management Studies, 2(11), 995–1007.

Islam, A. N. (2016). E-Learning System Use And Its Outcomes: Moderating Role Of Perceived Compatibility. Telematics And Informatics, 33(1), 48–55.

Khan, A., Niazi, S., & Saif, S. (2020). Universities Unprepared For Switch To Remote Learning.

Kim, B., & Park, M. J. (2018). Effect Of Personal Factors To Use Icts On E-Learning Adoption: Comparison Between Learner And Instructor In Developing Countries. Information Technology For Development, 24(4), 706–732.

Krishnan, K., & Hussin, H. (2017). E-Learning Readiness On Bumiputera SME's Intention For Adoption Of Online Entrepreneurship Training In Malaysia. Management, 7(1), 35–39.

Lee, B.-C., Yoon, J.-O., & Lee, I. (2009). Learners' Acceptance Of E-Learning In South Korea: Theories And Results. Computers & Education, 53(4), 1320–1329.

Lee, M.-C. (2010). Explaining And Predicting Users' Continuance Intention Toward E-Learning: An Extension Of The Expectation–Confirmation Model. Computers & Education, 54(2), 506–516.

Liaw, S.-S. (2002). An Internet Survey For Perceptions Of Computers And The World Wide Web: Relationship, Prediction, And Difference. Computers In Human Behavior, 18(1), 17–35.

Liaw, S.-S., Huang, H.-M., & Chen, G.-D. (2007). Surveying Instructor And Learner Attitudes Toward E-Learning. Computers & Education, 49(4), 1066–1080.

Mahmodi, M. (2017). The Analysis Of The Factors Affecting The Acceptance Of E-Learning In Higher Education. Interdisciplinary Journal Of Virtual Learning In Medical Sciences, 8(1).

Moreno, V., Cavazotte, F., & Alves, I. (2017). Explaining University Students' Effective Use Of E-Learning Platforms. British Journal Of Educational Technology, 48(4), 995–1009.

Preacher, K. J., & Hayes, A. F. (2004). SPSS And SAS Procedures For Estimating Indirect Effects In Simple Mediation Models. Behavior Research Methods, Instruments, & Computers, 36(4), 717–731. Https://Doi.Org/10.3758/BF03206553

Preacher, K. J., & Hayes, A. F. (2008). Assessing Mediation In Communication Research. The Sage Sourcebook Of Advanced Data Analysis Methods For Communication Research, 13–54.

Salloum, S. A., Alhamad, A. Q. M., Al-Emran, M., Monem, A. A., & Shaalan, K. (2019). Exploring Students' Acceptance Of E-Learning Through The Development Of A Comprehensive Technology Acceptance Model. IEEE Access, 7, 128445–128462.

Samsudeen, S. N., & Mohamed, R. (2019). University Students' Intention To Use E-Learning Systems. Interactive Technology And Smart Education.

Talukder, M. S., Chiong, R., Bao, Y., & Malik, B. H. (2019). Acceptance And Use Predictors Of Fitness Wearable Technology And Intention To Recommend. Industrial Management & Data Systems.

Tarhini, A., Hone, K., Liu, X., & Tarhini, T. (2017). Examining The Moderating Effect Of Individual-Level Cultural Values On Users' Acceptance Of E-Learning In Developing Countries: A Structural Equation Modeling Of An Extended Technology Acceptance Model. Interactive Learning Environments, 25(3), 306–328.

Taylor, S., & Todd, P. (1995). Assessing IT Usage: The Role Of Prior Experience. MIS Quarterly, 561–570.

Zaineldeen, S., Hongbo, L., & Hassan, B. M. A. (2020). Technology Acceptance Model'Concepts, Contribution, Limitation, And Adoption In Education. Universal Journal Of Educational Research, 8(11), 5061–5071