

E-learning Satisfaction during the Covid -19 Epidemic: Evidence from a Vietnam-based Law School

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*  <https://doi.org/10.54855/ijte.222311>

Received: 21/04/2022

Revision: 25/05/2021

Accepted: 27/05/2022

Online: 18/06/2022

ABSTRACT

Keywords:

E-learning
Satisfaction,
Integrated model,
Learner Satisfaction

The purpose of this research is to investigate the association between system, information, service quality, perceived ease of use, perceived usefulness, and learner satisfaction with e-learning in Vietnam during the Covid-19 era. The research collected 612 answers from current law students at Ho Chi Minh University of Law using a questionnaire-based survey and sampling by convenience. To validate the hypotheses, structural equation modeling was used. Except for the association between system quality and learner satisfaction, all quality factors were shown to positively impact learner satisfaction. In addition, the present research demonstrated that perceived usability and value moderate the link between quality and students' partial and complete satisfaction. This is the first research to examine the relationship between perceived ease of use, perceived usefulness, and student happiness in a platform-based setting. In addition, this research has major implications for education administrators who want to successfully retain students by bolstering the elements that contribute to student satisfaction with online learning.

Introduction

The term "e-learning" refers to online instruction delivered via a customizable platform. Students' knowledge, abilities, and other outcomes must be enhanced on a continuous basis. E-learning helps students make big progress at their own speed as well as helps to lower the educational costs (Zhang & Zhu, 2008). E-learning is a combination of distant and remote education in which the teacher and student are geographically or temporally separated (Liaw, 2008). Students participating in distance education programs enjoy watching professor-recorded lectures on video-streaming sites such as YouTube and Vimeo (Burke, Snyder, & Rager, 2009). Students can now watch videotaped lectures from their lecturers in a variety of universities and training organizations. Instead of simply viewing or listening to lectures on the

system, students must now participate in the software and course by completing assignments, taking quizzes, and participating in discussion forums (Dixson, 2010). Given the increased interest in lifelong learning, online education programs have the potential to significantly extend the breadth of available on-demand learning options (Akyol & Garrison, 2011). Students and instructors alike have been impacted by the Covid-19 pandemic, from preschool to university. As it turns out, 191 countries have closed their schools, affecting 90.2 percent of the global student population and 1.57 billion children and adolescents. New educational policies and interventions have been implemented to mitigate the pandemic's harmful effects and to ensure that students continue to receive an education during these trying times. It took only a few minutes for the world's educational systems to react. The bulk of online courses in higher education is offered digitally. As a result of COVID-19, students have been compelled to enroll in online continuing education courses (Baber, 2020).

Numerous forms of online learning are being introduced by universities and other higher educational institutions throughout the world, and for the most part, these institutions are pioneering this field (Nguyen & Nguyen, 2021). In the middle of these unplanned changes, administrators, teachers, and students at educational institutions are confronted with a slew of unexpected and unanticipated issues associated with online learning that they had not anticipated (Moorhouse, 2020; M. T. Pham, Luu, Mai, Thai, & Ngo, 2022). This transition comes rapidly and unexpectedly throughout COVID-19; hence, the quality of learning and learner satisfaction becomes the most important study topics to investigate (Lewnard & Lo, 2020; N. T. Pham & Van Nghiem, 2022; Tran & Nguyen, 2022). Vietnam was one of the most impacted countries by the Covid-19 outbreak, and the country's educational system is still reeling from the pandemic's consequences. The success of Covid-19 has prompted the Vietnamese government and school system to take proactive measures to address contemporary issues. There has been sufficient study conducted on e-learning, particularly in developed countries, to date to assess the overall quality of the courseware. However, few studies have been done to assess the validity of developed-world research findings for Vietnamese students, particularly in the aftermath of the Covid-19 outbreak. As a consequence, the primary purpose of this research is to evaluate how different e-learning elements influence the system, information, and service quality, as well as the ease of use and usefulness in relation to student satisfaction at Ho Chi Minh University of Law. The findings may assist institutions and governments in better understanding the challenges confronting the Vietnamese higher education sector in the aftermath of the Covid 19 outbreak.

Literature review

This study generated a unique model that integrates the Technology Acceptance Model (TAM) (Davis, 1989) and Information System Success (ISS) (DeLone & McLean, 2003) constructs. The quality, ease of use, and usefulness of an e-learning platform may affect student satisfaction. The following sections discuss the numerous components that comprise the model described in this study.

System Quality (SYS) is a statistic that is used to quantify the level of service that users should anticipate from an information system (DeLone & McLean, 1992). When Rai, Lang, and Welker (2002) consider IS models, they consider their ease of use as a component of system quality (Rai, Lang, & Welker, 2002). Gable et al. and Seddon all evaluate the effectiveness of D&M models by examining system quality (DeLone & McLean, 2003, 2004). This is one of the most critical notions in theoretical models of the success of information systems (Gable, Sedera, & Chan, 2008; Seddon, 1997). According to this study, the more advanced the new technology, the more likely students will be satisfied with its ease of use and usefulness. This suggests that the system quality has a direct effect on students' satisfaction. As a result, it generates the following hypothesis:

H1a: SYS has a favorable effect on EU.

H1b: SYS has a favorable effect on PUS.

H1c: SYS has a favorable effect on LES.

Information Quality (INQ) evaluates a system's precision, comprehensiveness, relevance, and coherence (DeLone & McLean, 1992). It is important to note that the definition of information quality varies among systems (Sedera, Gable, & Chan, 2004). The DeLone and McLean conceptual frameworks for IS success include information quality as well as system quality (DeLone & McLean, 1992). The study claims that better information quality new technologies will increase student satisfaction. As so, the following theory is advanced:

H2a: INQ has a favorable effect on EU.

H2b: INQ has a favorable effect on PUS.

H2c: INQ has a favorable effect on LES.

Service Quality (SEQ): the system user receives information technology and information technology assistance (DeLone & McLean, 2003, 2004). According to DeLone and McLean, it is a notion in the D&M model (DeLone & McLean, 2003). Thus, service quality can be added as a new concept to the paradigm of information system success (DeLone & McLean, 2016). As so, the following theory is advanced:

H3a: SEQ has a favorable effect on PEU.

H3b: SEQ has a favorable effect on PUS.

H3c: SEQ has a favorable effect on LES.

Perceived ease of use (PEU) is a critical factor in determining whether new technology-based applications are immediately accepted (Davis, 1989; Venkatesh, Morris, Davis, & Davis, 2003). Numerous past researches have demonstrated the effect of perceived ease of use on the intention to engage in e-learning (Chen & Tseng, 2012; M. Chow, Herold, Choo, & Chan, 2012; Islam, 2013; Šumak, Heričko, & Pušnik, 2011). Thus, the easier it is for learners to utilize an e-learning system, the more satisfied they are, and thus the more likely it will be used. PUS may also affect intent to use in an e-learning environment through PEU (Chen & Tseng, 2012). The user-

friendliness of the system may have an effect on the satisfaction of learners.

H4. PEU has a favorable effect on PUS.

H5. PEU has a favorable effect on LES.

Perceived usefulness (PUS) is a critical aspect of intention when it comes to encouraging customers to adopt more advanced and user-friendly technology that gives people greater influence over their lives (Pikkarainen, Pikkarainen, Karjaluoto, & Pahlila, 2004). Indeed, a person's willingness to use a particular information system is contingent upon their assessment of its utility (Mohammadi, 2015). It has been demonstrated that perceived utility contributes to learner satisfaction with e-learning services (Chen & Tseng, 2012; M. Chow et al., 2012; Islam, 2013; Šumak et al., 2011). Therefore, the greater a learner's preference for an e-learning system, the greater the likelihood that it will be implemented.

H6. PUS has a favorable effect on LES.

The model's hypothesized variables and their correlations were obtained from the previously discussed models and ideas. Figure 1 illustrates the merged model. PEU and PUS are both predictors and determinants of learner satisfaction, according to the suggested model. Using PEU and PUS as antecedent factors to user satisfaction, the proposed integrated model evaluates the direct and indirect link between quality and learner pleasure during the Covid-19 outbreak. The model puts out six hypotheses.

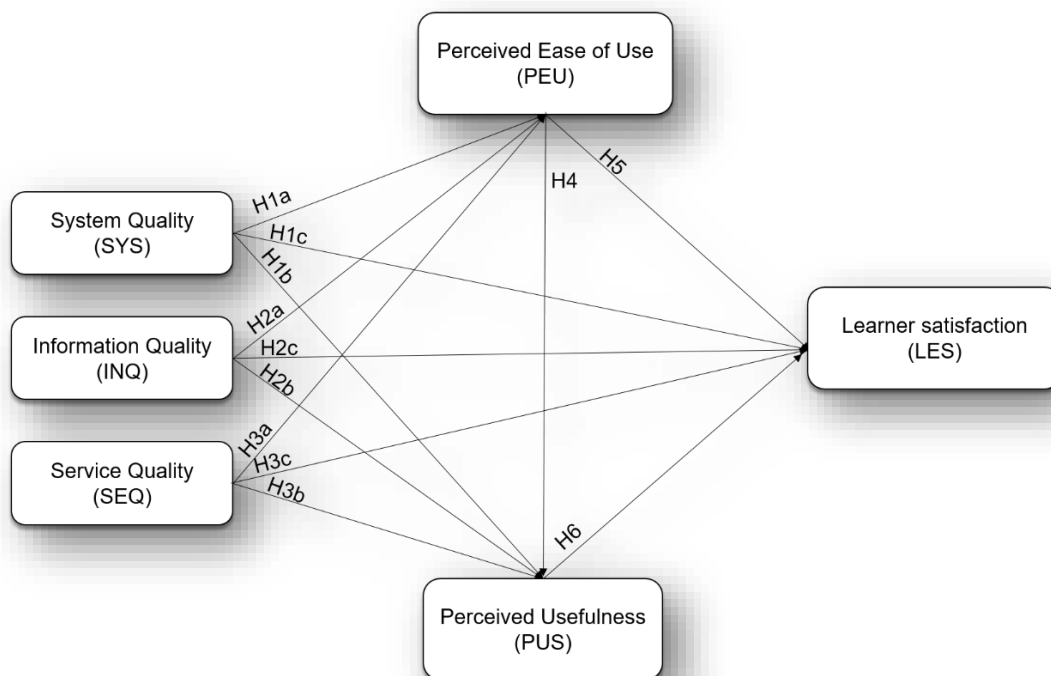


Figure 1 Model for research

Methods

Research Method

The study is divided into two stages: a preliminary qualitative stage and a formal quantitative stage. Students who used the e-learning system at Ho Chi Minh City University of Law during the COVID-19 epidemic supplied a preliminary experimental scale for investigation. This study used a 26-item questionnaire to administer a multi-item Likert scale. As a method for assessing agreement and disagreement, a Likert Scale was used, with 5 being the highest agreement and 1 representing the weakest. We required a precise English to Vietnamese translation due to the nature of our responses. We surveyed students who used or were utilizing e-learning systems at Ho Chi Minh City University of Law from April to December 2021 using Google Forms. 612 (out of 630) of the 26 variables gathered were usable.

Descriptive analysis

These descriptive statistics enable the identification of students who used e-learning. Around 81.9 percent of the population is female, whereas only 19.1 percent is male. 42.5 percent of respondents claimed less than five years of ICT experience, 35.3% reported less than 10 years, and the remaining respondents indicated more than ten years of ICT experience.

Results and discussion

Partial Least Squares-Variance-Based Modeling for Structural Equations Using the SmartPLS 3.0 program for Structural Equation Modeling, we assessed our study model's performance (SEM-VB). Following the descriptive analysis, the analytical methodologies given by Anderson & Gerbing (1988), which included model validation (validity and reliability), and Hair et al. (2017), which included model structure validation, were applied (testing the hypothesized relationships) (Anderson & Gerbing, 1988; Hair Jr, Sarstedt, Ringle, & Gudergan, 2017). Measurements and structural models are combined in a two-step assessment technique discovered to be superior to the one-step evaluation procedure by Schumacker and Lomax (2004) and Hair et al. (2010) (Hair, Black, Babin, & Tatham, 2010; Schumacker & Lomax, 2004). Hair and co-authors define measurement models as defining how each construct is measured, whereas structural models define the relationships between these variables. In comparison to other statistical techniques, PLS gives more exact estimates by assessing both the observed data and the structural model concurrently (Barclay, Higgins, & Thompson, 1995).

Measurement model assessment

We tested the reliability and validity of the measuring approach's constructs (including convergent and discriminant validity). Using Cronbach's alpha coefficients, construct reliability was determined for each of the primary variables of the measurement model. There was a wide range in Cronbach's alpha coefficients for individual participants, with values between 0.85 and 0.94. (Kannan & Tan, 2005). This shows that there is a high level of build dependability, with composite reliability (CR) values that range from 0.901 to 0.960 (Kline, 2015). As a result of

this analysis, the Cronbach's Alpha and CR values obtained for all constructs were judged error-free. The indicator's dependability was determined using factor loading. Due to the fact that the build involves several loadings, the associated indications appear to have a great deal in common, as the construct records (Hair Jr et al., 2017). Statistical significance was attributed to factor loadings in excess of 0.50 percent (Hair et al., 2010). In each case, the loadings exceeded the required value of 0.5, and the goods complied with all applicable standards. All AVE values were more than 0.50, with values ranging from 0.694 to 0.856. Using the average variance of the data, convergence validity, or the degree to which one measure coincides well with another assessing the same concept, was examined (Hair et al., 2010). Convergent validity was successfully fulfilled across the board, as evidenced by the appropriate convergent validity in Table 1 of the results.

Table 1.

Outer loading, Cronbach alpha, Convergent validity and Average variance extracted

Item	Question	Outer loading (>0.7)	α (>0.7)	CR (>0.7)	AVE (>0.5)
SYQ1	E-learning is simple to utilize.	0.846	0.853	0.901	0.694
SYQ2	E-learning facilitates response time optimization.	0.870			
SYQ3	E-learning is a convenient method of instruction.	0.798			
SYQ4	E-learning provides a number of appealing features.	0.817			
INQ1	E-learning makes knowledge and information available on a continuous basis.	0.862	0.873	0.913	0.725
INQ2	E-learning supplies me with information that is pertinent to my situation.	0.835			
INQ3	E-learning enables me to access structured knowledge and information.	0.879			
INQ4	E-learning makes it possible to access a wealth of information.	0.829			
SEQ1	E-learning enables me to interact with the lecturer.	0.784	0.907	0.931	0.730
SEQ2	The personnel of the e-learning department responds cooperatively.	0.879			
SEQ3	E-learning enables the provision of appropriate online support and clarification.	0.883			
SEQ4	E-learning is constantly updated and upgraded.	0.856			
SEQ5	Excellent and precise support from the support department.	0.867			
PEU1	E-learning is a straightforward process.	0.878	0.877	0.916	0.731
PEU2	E-learning is a simple process to master.	0.889			
PEU3	E-learning is simple to utilize.	0.810			
PEU4	It's simple to comprehend e-learning.	0.840			
PUS1	I am more self-reliant as a result of e-learning.	0.901	0.944	0.960	0.856
PUS2	Cost-cutting through e-learning.	0.936			
PUS3	My performance is improved as a result of e-learning.	0.937			
PUS4	The effectiveness of e-learning.	0.927			
LES1	E-learning meets my educational requirements.	0.893	0.891	0.920	0.696
LES2	I am happy with the e-learning platform in general.	0.831			
LES3	E-learning has boosted my confidence.	0.852			
LES4	I believe that online education is vital both today and in the future.	0.806			
LES5	I am pleased with the quality of my instruction in an online context.	0.786			

Note: α = Cronbach's alpha; CR = Composite Reliability, AVE = Average Variance Extracted.

The discriminant validity of the model was determined using the Fornell-Larcker and heterotrait-monotrait ratios (the degree to which items differentiate across conceptions or assess independent concepts) (HTMT). Cross-loading analyses are frequently used to determine an

indicator's discriminant validity (Hair Jr et al., 2017). Results show that AVE square roots on diagonals are larger than correlations between constructs based on the Fornell-Larcke criterion, as shown in Table 2. (corresponding row and column values). To summarize, this demonstrates that constructions have a higher degree of discriminant validity than other components in the model since they are more closely related to their respective indicators (Fornell & Larcker, 1981; Hair Jr et al., 2017). Correlation coefficients for external constructions are less than 0.85. Thus, all of the constructions demonstrate discriminant value.

Table 2.

Discriminant validity results using the Fornell-Larcker criterion

Factors	INQ	LES	PEU	PUS	SEQ	SYQ
INQ	0.852					
LES	0.691	0.834				
PEU	0.702	0.658	0.855			
PUS	0.560	0.828	0.576	0.925		
SEQ	0.685	0.664	0.644	0.597	0.855	
SYQ	0.746	0.618	0.764	0.501	0.668	0.833

Henseler et al. (2015) assert that the Fornell-Larcker criterion fails to adequately represent the absence of discriminant validity in typical research contexts because, in their opinion, it does not adequately signal the absence of discriminant validity. Using the multitrait-multimethod matrix, they devised a new approach to correlations known as the heterotrait-monotrait ratio (HTMT). An evaluation of HTMT's discriminant validity is carried out in this study since HTMT values more than or equal to 0.90 are considered to be unfavorable for discrimination (Gold, Malhotra, & Segars, 2001), it may be concluded that discriminant validity was maintained in the data shown in Table 3 (Henseler, Ringle, & Sarstedt, 2015).

Table 3.

Results of HTMT's discriminant validity

Factor	INQ	LES	PEU	PUS	SEQ	SYQ
INQ						
LES	0.785					
PEU	0.797	0.737				
PUS	0.617	0.898	0.619			
SEQ	0.767	0.735	0.713	0.645		
SYQ	0.861	0.710	0.885	0.557	0.755	

Evaluation of structural models

In order to evaluate the structural model, Hair and colleagues (2017) suggested investigating the beta (β), R^2 , and associated t-values using a 5,000-resample bootstrapping approach. Additionally, they suggest reporting impact sizes (f^2) as well as predicting importance (Q^2). According to Sullivan & Feinn (2012), the p-value just reveals whether or not an influence happens, but not its magnitude (Sullivan & Feinn, 2012).

Hypotheses tests

The assessment of the structural model, as depicted in Fig. 2 and Table 4, indicates the hypothesis testing. System quality (SYQ) has a strong correlation with perceived ease of use (PEU). Thus, with ($\beta = 0.484$, $t = 9.939$, $p < 0.001$), H1a is accepted. SYQ, on the other hand, has no significant effect on perceived usefulness (PUS) or learner satisfaction (LES). As a result, H1b and H1c are denied. PEU, PUS, and LES are significantly predicted by information quality (INQ). Thus, H2a, H2b, and H2c are all accepted with ($\beta = 0.228$, $t = 4.432$, $p < 0.001$); ($\beta = 0.189$, $t = 2.711$, $p < 0.05$) and ($\beta = 0.211$, $t = 5.32$, $p < 0.001$), respectively. Similarly, service quality (SEQ) has a strong predictive value for PEU, PUS, and LES. As a result, H3a, H3b, and H3c are supported ($\beta = 0.165$, $t = 4.49$, $p < 0.001$); ($\beta = 0.339$, $t = 6.12$, $p < 0.01$) and ($\beta = 0.083$, $t = 2.582$, $p < 0.05$), respectively. PEU is a major predictor of PUS. As a result, H4 is justified ($\beta = 0.295$, $t = 6.12$, $p < 0.001$). These are comparable to PEU and PUS, which were discovered to have a major effect on LES. As a result, H5 and H6 are both approved with ($\beta = 0.079$, $t = 2.184$, $p < 0.05$) and ($\beta = 0.590$, $t = 18.734$, $p < 0.001$), respectively.

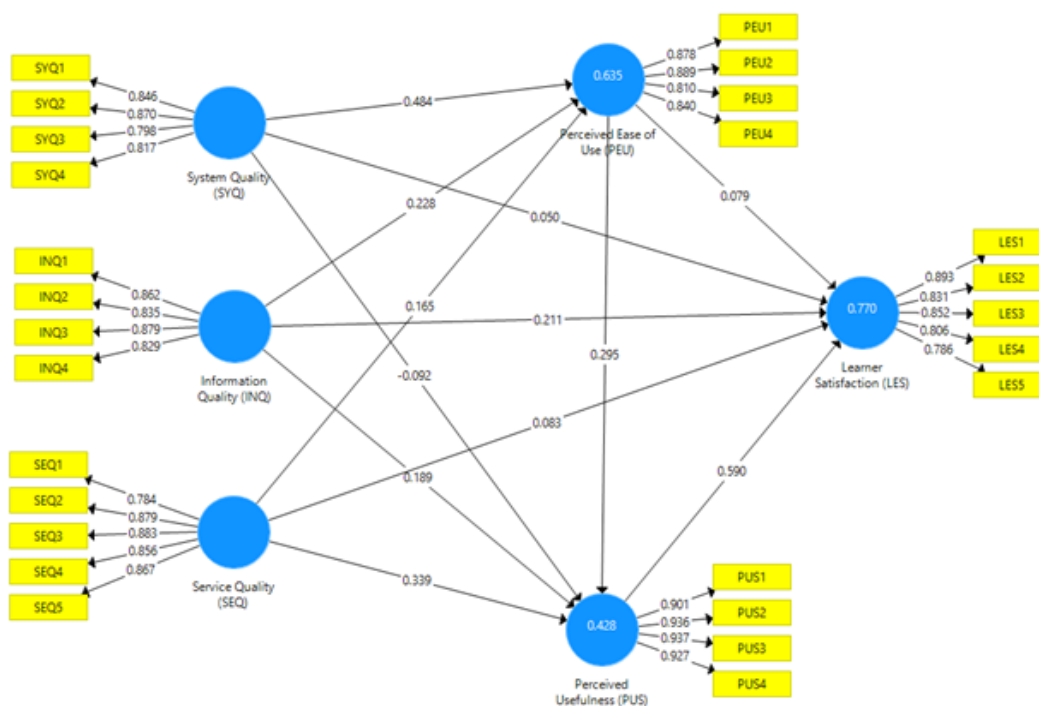


Figure 2 Result of PLS algorithm

Table 4.

Analysis of the structural path.

Hypothesis	Path	Original Sample (O)	STDEV	T Statistics	P Values	Supported or not
H1a	SYQ → PEU	0.484	0.049	9.939	0	Yes
H1b	SYQ → PUS	-0.092	0.066	1.403	0.161	No
H1c	SYQ → LES	0.05	0.041	1.215	0.224	No
H2a	INQ → PEU	0.228	0.052	4.432	0	Yes
H2b	INQ → PUS	0.189	0.07	2.711	0.007	Yes
H2c	INQ → LES	0.211	0.04	5.32	0	Yes
H3a	SEQ → PEU	0.165	0.037	4.49	0	Yes
H3b	SEQ → PUS	0.339	0.055	6.12	0	Yes
H3c	SEQ → LES	0.083	0.032	2.582	0.01	Yes
H4	PEU → PUS	0.295	0.055	5.399	0	Yes
H5	PEU → LES	0.079	0.036	2.184	0.029	Yes
H6	PUS → LES	0.59	0.031	18.734	0	Yes

Mediation assessment

To examine the relationship between SYQ, INQ, SEQ, PEU, PUS, and LES, a mediation study using the bootstrapping method was conducted and the findings were reported (Preacher & Hayes, 2008). The research developed a bias-corrected confidence interval with a 95% level of confidence and comprised 5,000 bootstrap samples. According to my results, SYQ has no impact on PUS, despite the fact that PUS has a major effect on the LES; INQ has no effect on PEU, despite the fact that PEU has a significant effect on the LES; and SEQ has no effect on PEU, despite the fact that PEU has a big effect on the LES. Additionally, my study demonstrated that PEU was a partial mediator in the favorable relationships between INQ and PUS, INQ and LES, SEQ and LES, and PEU and LES. Additionally, PEU had a role in the favorable connections between INQ and LES, SEQ and LES, and PEU and LES. Furthermore, PEU and PUS operate as serial mediators in the interaction of SYQ, INQ, SEQ, and LES, as well as a connection between SYQ and INQ. (See details result from the Table 5)

Table 5

Analysis of Mediation Products

Path	Original Sample (O)	(STDEV)	T Statistics	P Values	Result
SYQ → PEU → LES	0.038	0.018	2.162	0.031	Full mediation
SYQ → PEU → PUS	0.143	0.03	4.764	0	Full mediation
SYQ → PEU → PUS → LES	0.084	0.018	4.626	0	Full mediation
SYQ → PUS → LES	-0.055	0.039	1.383	0.167	No mediation
INQ → PEU → PUS	0.067	0.02	3.398	0.001	Partial mediation
INQ → PEU → PUS → LES	0.04	0.012	3.406	0.001	Partial mediation
INQ → PUS → LES	0.112	0.042	2.651	0.008	Partial mediation
INQ → PEU → LES	0.018	0.01	1.863	0.062	No mediation
SEQ → PEU → PUS	0.049	0.014	3.439	0.001	Complementary Partial mediation
SEQ → PEU → PUS → LES	0.029	0.009	3.369	0.001	Partial mediation
SEQ → PUS → LES	0.2	0.034	5.853	0	Partial mediation
SEQ → PEU → LES	0.013	0.007	1.917	0.055	No mediation
PEU → PUS → LES	0.174	0.033	5.226	0	Partial mediation

Discussion

According to the findings of this research, there are several ways in which an e-learning system might affect the happiness of its users. The study model displays strong direct, indirect, and combined impacts of the primary variables, as shown in Tables 4 and 5. The results indicated that PUS was strongly affected by SYQ, INQ, and SEQ via the PEU component. Moreover, these data indicate that PEU mediates the connection between each of these three features (SYQ, INQ, SEQ) and PUS, which is similar to findings from other studies (W. S. Chow & Shi, 2014; Estriegana, Medina-Merodio, & Barchino, 2019; Sun, Tsai, Finger, Chen, & Yeh, 2008). Likewise, PEU and PUS operate as mediators between the three variables (SYQ, INQ, and SEQ) and LES. The INQ, SEQ, PEU, and PUS all had an influence on LES. This finding is consistent with prior research (W. S. Chow & Shi, 2014; Cidral, Oliveira, Di Felice, & Aparicio, 2018; Ozkan & Koseler, 2009; Sun et al., 2008).

In addition, this research has important implications for more precisely measuring students' pleasure in an online learning environment during the COVID-19 pandemic. This is one of the first empirical research to illustrate the sequential mediating roles of perceived ease of use and

usefulness in the link between SYQ, INQ, and SEQ and online learning satisfaction. In this way, the results of the research contribute to our knowledge of the connection between online learning quality and student satisfaction. As with any new technology, managers and policymakers are worried about the time and effort necessary to learn and administer an e-learning system. Benefits will be limited if e-learning is difficult to use, sluggish to react, and difficult to grasp and learn from. During the early phases of adoption, when process concerns provide challenges that must be addressed, the significance of the ease-of-use construct becomes more apparent, according to the results of this research. As with previous research on technology adoption, perceived usefulness is the most significant factor to consider when selecting whether or not to use an e-learning service. Throughout the Covid-19 epidemic, learners are likely to be confident in the advantages and ease of e-learning and to utilize it to meet their educational needs. Consequently, students who already value the service are more likely to use it.

Conclusion

This research provides a better knowledge of the factors that influence the satisfaction of students with e-learning platforms in Vietnam during the Covid-19 epidemic. I suggested a causal model based on a number of theories that have been demonstrated to be beneficial in the field of e-learning. Moreover, this research has been experimented in a Vietnamese law school. Using a structural equation model, the hypotheses indicated before in the research model were evaluated.

According to the statistics, perceived usefulness, information quality, service quality, and perceived ease of use significantly influenced learner satisfaction. Institutions of higher learning should place a higher premium on the quality of their learning platforms. While my study gives an overview of the components that contribute to learner satisfaction, it does have limitations. To begin, the data in this study were gathered from a random sample of students using an online form and should not be construed as typical of the population. Second, this study did not investigate the effects of demographic variables, which is something that future research should address.

References

- Akyol, Z., & Garrison, D. R. (2011). Assessing metacognition in an online community of inquiry. *The Internet and Higher Education*, 14(3), 183-190. <https://doi.org/10.1016/j.iheduc.2011.01.005>
- Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin*, 103(3), 411. <https://doi.org/10.1037/0033-2909.103.3.411>
- Baber, H. (2020). Determinants of students' perceived learning outcome and satisfaction in online learning during the pandemic of COVID-19. *Journal of Education and e-*

- Learning Research*, 7(3), 285-292. DOI: 10.20448/journal.509.2020.73.285.292
- Barclay, D., Higgins, C., & Thompson, R. (1995). *The partial least squares (PLS) approach to causal modeling: personal computer adoption and use as an Illustration*. DOI: 10.4236/ti.2011.21002
- Burke, S. C., Snyder, S., & Rager, R. C. (2009). An assessment of faculty usage of YouTube as a teaching resource. *Internet Journal of Allied Health Sciences and Practice*, 7(1), 8. DOI: 10.46743/1540-580X/2009.1227
- Chen, H.-R., & Tseng, H.-F. (2012). Factors that influence acceptance of web-based e-learning systems for the in-service education of junior high school teachers in Taiwan. *Evaluation and program planning*, 35(3), 398-406. <https://doi.org/10.1016/j.evalprogplan.2011.11.007>
- Chow, M., Herold, D. K., Choo, T.-M., & Chan, K. (2012). Extending the technology acceptance model to explore the intention to use Second Life for enhancing healthcare education. *Computers & Education*, 59(4), 1136-1144. <https://doi.org/10.1063/1.5005405>
- Chow, W. S., & Shi, S. (2014). Investigating students' satisfaction and continuance intention toward e-learning: An Extension of the expectation–confirmation model. *Procedia-Social and Behavioral Sciences*, 141, 1145-1149. <https://doi.org/10.1177/21582440211059181>
- Cidral, W. A., Oliveira, T., Di Felice, M., & Aparicio, M. (2018). E-learning success determinants: Brazilian empirical study. *Computers & Education*, 122, 273-290. <https://doi.org/10.1016/j.compedu.2017.12.001>
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 319-340. <https://doi.org/10.2307/249008>
- DeLone, W. H., & McLean, E. R. (1992). Information systems success: The quest for the dependent variable. *Information systems research*, 3(1), 60-95. DOI:10.1080/07421222.2003.11045748
- DeLone, W. H., & McLean, E. R. (2003). The DeLone and McLean model of information systems success: a ten-year update. *Journal of management information systems*, 19(4), 9-30. <https://doi.org/10.1080/07421222.2003.11045748>
- DeLone, W. H., & McLean, E. R. (2004). Measuring e-commerce success: Applying the DeLone & McLean information systems success model. *International journal of electronic commerce*, 9(1), 31-47. <https://doi.org/10.1080/10864415.2004.11044317>
- DeLone, W. H., & McLean, E. R. (2016). Information systems success measurement. *Foundations and Trends® in Information Systems*, 2(1), 1-116. DOI: 10.12691/ajis-7-1-2
- Dixson, M. D. (2010). Creating Effective Student Engagement in Online Courses: What Do

- Students Find Engaging? *Journal of the Scholarship of Teaching and Learning*, 10(2), 1-13. DOI: 10.4236/ojbm.2019.74115
- Estriegana, R., Medina-Merodio, J.-A., & Barchino, R. (2019). Student acceptance of virtual laboratory and practical work: An extension of the technology acceptance model. *Computers & Education*, 135, 1-14. <https://doi.org/10.1016/j.compedu.2019.02.010>
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of marketing research*, 18(1), 39-50. <https://doi.org/10.2307/3151312>
- Gable, G. G., Sedera, D., & Chan, T. (2008). Re-conceptualizing information system success: The IS-impact measurement model. *Journal of the association for information systems*, 9(7), 18. DOI:10.17705/1JAIS.00164
- Gold, A. H., Malhotra, A., & Segars, A. H. (2001). Knowledge management: An organizational capabilities perspective. *Journal of management information systems*, 18(1), 185-214. DOI:10.1080/07421222.2001.11045669
- Hair, J. F., Black, W. C., Babin, B. J., & Tatham, R. L. (2010). *Multivariate Data Analysis*. Seventh Edition. In: Pearson Education, Inc.
- Hair Jr, J. F., Sarstedt, M., Ringle, C. M., & Gudergan, S. P. (2017). *Advanced issues in partial least squares structural equation modeling*: saGe publications.
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the academy of marketing science*, 43(1), 115-135. <https://doi.org/10.1007/s11747-014-0403-8>
- Islam, A. N. (2013). Investigating e-learning system usage outcomes in the university context. *Computers & Education*, 69, 387-399. <https://doi.org/10.1016/j.compedu.2013.07.037>
- Kannan, V. R., & Tan, K. C. (2005). Just in time, total quality management, and supply chain management: understanding their linkages and impact on business performance. *Omega*, 33(2), 153-162. <https://doi.org/10.1016/j.omega.2004.03.012>
- Kline, R. B. (2015). *Principles and practice of structural equation modeling*: Guilford publications.
- Lewnard, J. A., & Lo, N. C. (2020). Scientific and ethical basis for social-distancing interventions against COVID-19. *The Lancet infectious diseases*, 20(6), 631-633. DOI: 10.1016/S1473-3099(20)30190-0
- Liaw, S.-S. (2008). Investigating students' perceived satisfaction, behavioral intention, and effectiveness of e-learning: A case study of the Blackboard system. *Computers & Education*, 51(2), 864-873. <https://doi.org/10.1016/j.compedu.2007.09.005>
- Mohammadi, H. (2015). Investigating users' perspectives on e-learning: An integration of TAM and IS success model. *Computers in Human Behavior*, 45, 359-374.

<https://doi.org/10.1016/j.chb.2014.07.044>

- Moorhouse, B. L. (2020). Adaptations to a face-to-face initial teacher education course 'forced' online due to the COVID-19 pandemic. *Journal of Education for Teaching*, 46(4), 609-611. <https://doi.org/10.1080/02607476.2020.1755205>
- Nguyen, T. K., & Nguyen, T. H. T. (2021). The Acceptance and Use of Video Conferencing for Teaching in Covid-19 Pandemic: An Empirical Study in Vietnam. *AsiaCALL Online Journal*, 12(5), 1-16. <https://asiacall.info/acoj/index.php/journal/article/view/77>
- Ozkan, S., & Koseler, R. (2009). Multi-dimensional students' evaluation of e-learning systems in the higher education context: An empirical investigation. *Computers & Education*, 53(4), 1285-1296. <https://doi.org/10.1016/j.compedu.2009.06.011>
- Pham, M. T., Luu, T. T. U., Mai, T. H. U., Thai, T. T. T., & Ngo, T. C. T. (2022). EFL Students' Challenges of Online Courses at Van Lang University during the COVID-19 Pandemic. *International Journal of TESOL & Education*, 2(2), 1-26. <https://doi.org/10.54855/ijte.22221>
- Pham, N. T., & Van Nghiem, H. (2022). Online Teaching Satisfaction amid the Covid-19 Pandemic: Evidence from a Vietnamese Higher Education Context. *International Journal of TESOL & Education*, 2(1), 310-326. <https://doi.org/10.54855/ijte.222119>
- Pikkarainen, T., Pikkarainen, K., Karjaluoto, H., & Pahlila, S. (2004). Consumer acceptance of online banking: An extension of the technology acceptance model. *Internet research*. <http://dx.doi.org/10.1108/10662240410542652>
- Preacher, K. J., & Hayes, A. F. (2008). *Assessing mediation in communication research: The Sage sourcebook of advanced data analysis methods for Communication Research* (pp. 13-54). Thousand Oaks, CA: Sage. <https://doi.org/10.4135/9781452272054.n2>
- Rai, A., Lang, S. S., & Welker, R. B. (2002). Assessing the validity of IS success models: An empirical test and theoretical analysis. *Information systems research*, 13(1), 50-69. <http://dx.doi.org/10.1287/isre.13.1.50.96>
- Schumacker, R. E., & Lomax, R. G. (2004). *A beginner's guide to structural equation modeling*: psychology press.
- Seddon, P. B. (1997). A respecification and extension of the DeLone and McLean model of IS success. *Information systems research*, 8(3), 240-253. <https://doi.org/10.1287/isre.8.3.240>
- Sedera, D., Gable, G., & Chan, T. (2004). *A factor and structural equation analysis of the enterprise systems success measurement model*. Paper presented at the Proceedings of the 10th Americas Conference on Information Systems. <https://aisel.aisnet.org/amcis2004/94>
- Sullivan, G. M., & Feinn, R. (2012). Using effect size—or why the P-value is not enough. *Journal of graduate medical education*, 4(3), 279-282. DOI: 10.4300/JGME-D-12-

00156.1

- Šumak, B., Heričko, M., & Pušnik, M. (2011). A meta-analysis of e-learning technology acceptance: The role of user types and e-learning technology types. *Computers in Human Behavior*, 27(6), 2067-2077. <https://doi.org/10.1016/j.chb.2011.08.005>
- Sun, P.-C., Tsai, R. J., Finger, G., Chen, Y.-Y., & Yeh, D. (2008). What drives a successful e-Learning? An empirical investigation of the critical factors influencing learner satisfaction. *Computers & Education*, 50(4), 1183-1202. <https://doi.org/10.1016/j.compedu.2006.11.007>
- Tran, Q. H., & Nguyen, T. M. (2022). Determinants in Student Satisfaction with Online Learning: A Survey Study of Second-Year Students at Private Universities in HCMC. *International Journal of TESOL & Education*, 2(1), 63-80. <https://doi.org/10.54855/ijte22215>
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 425-478. <https://doi.org/10.2307/30036540>
- Zhang, Q., & Zhu, W. (2008). Exploring emotion in teaching: Emotional labor, burnout, and satisfaction in Chinese higher education. *Communication Education*, 57(1), 105-122. <https://doi.org/10.1080/03634520701586310>

Biodata

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