LEARN FROM ANYWHERE, ANYTIME: FACTORS INFLUENCING THE ADOPTION OF E-LEARNING SYSTEM IN MALAYSIAN PRIVATE UNIVERSITY

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Abstract

E-learning utilization and implementation between many users is a significant challenge for many universities in both developed and developing nations. This study aims to examine the indirect effect of E-learning System Quality on the E-learning system adoption, through trust and self-efficacy. The data were collected via self- administered questionnaires, yielding 129 usable responses from the students of Manipal International University in Nilai, Malaysia. This study revealed that e-learning system quality has a positive effect in building the students' trust and self-efficacy. The positive effect of trust and self-efficacy on e-learning system adoption were also confirmed. In addition, this study found the mediation effect of trust and self-efficacy in the relationship of the e-learning system quality and e-learning system adoption. The findings from this study are expected to benefit both practitioners, the tertiary education industry, specifically universities and colleges that interested to explore elearning system and researchers that specialize in education study.

Keywords: E-learning system quality, Trust, Self-efficacy, E-learning system adoption

Paper type: Empirical article

Introduction

The usage of e-learning systems is growing more popular across all industries, but notably in the field of higher education. This is due to the fact that applications of ICT continue to give a range of teaching and learning possibilities for both instructors and students. In light of the COVID19 pandemic, e-learning systems play a significant part in the operations of any business, even those operating in the international arena (Nair and Sa'dom, 2022). As a direct consequence of this, the study of the phenomenon known as the adoption of e-learning systems has developed into its own separate and important field of inquiry.

The widespread adoption of e-learning by many users is a basic challenge for many educational institutions, including those in industrialized and developing countries. However, it's probable that the eagerness of their peers to identify and use the e-learning system will be less of a worry in more

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developed nations since factors like further actions have probably already been decided to implement. However, underdeveloped countries are likely to be more concerned about their students' willingness to accept and use the e-learning system (Almaiah et al. 2016). In addition, past research also indicates that people's system preferences, degrees of internet expertise, and computer self-efficacy pose the biggest barriers to Malaysia's successful adoption of an e-learning system (Kanwal& Rehman, 2017). Eltahir (2019) claims that the digital gap between developed and developing countries is still very much a reality, making it difficult for less developed nations to embrace an e-learning approach. Through the use of an elearning system, which also aids in the development of cognitive abilities and the accumulation of knowledge, people may get tailored educational materials. However, several studies have concluded that e-learning and the many technologies it uses will help in addressing or eliminating the considerable issues that educational institutions in developing countries face (Eltahir,2019). Considering this, the present study tested the indirect effect of e-learning system quality on the E-learning system adoption, mediated by trust and self-efficacy among the students of Manipal International University in Malaysia.

The rest of the paper is structured as follows. The literature review and conceptual framework was presented. Next, the methodology, results and findings are outlined. Finally, the discussion, limitation and future research direction are presented.

Literature Review

TAM model was used in this study to explain computer user behavior. The purpose of Davis' (1989) TAM is to explain the general drivers of computer adoption, which leads to understanding users' behavior across a wide variety of end-user computing technology and user groups. This goal was stated in the introduction to the TAM. Two particular beliefs, referred to as perceived usefulness (PU) and perceived ease of use, were a part of the fundamental TAM paradigm and were subjected to testing (PEU). The potential user's subjective likelihood that the use of a certain system (such as a single platform E-payment System) will improve his or her action is what is meant by the term "perceived usefulness," and the degree to which the potential user expects the target system to be effortless is what is meant by the term "perceived ease of use." Both of these terms can be found in the definitions of "perceived usefulness" and "perceived ease of use," respectively (Davis, 1989). Other elements, which are referred to as external variables in TAM, may have an effect on a person's belief on a system.

E-learning System Quality and Trust

A trust is a kind of fiduciary relationship in which one party, known as the trustor, gives another party, known as the trustee, the authority to retain title to property or assets for the benefit of a third person who is referred to as the beneficiary of the trust. The conclusions of this research indicate that the trust component is comprised of system dependability, data privacy, and system security. Almaiah, Al-Khasawneh, and Althunibat (2020) found that the trustworthiness of the internet is one of the primary factors that may play a big part in assuring a high level of user trust. According to the findings of Cuong (2020), trust has a considerable beneficial influence on the propensity to buy. Trust is connected with both e-learning system and customer satisfaction (Cuong, 2020). Riandi, Respati, & Hidayatullah (2021) found that good service quality certainly will bring a positive impact on user satisfaction, performance and trust.

H1: E-learning System Quality has a significant influence on Trust.

Trust and E-learning system adoption

Recent findings reveal that the quality of service has a significant impact on trust (Sharma & Patterson, 1999). The importance of trust is also becoming increasingly crucial in relation to web services. According to McKnight et al. (1998), the quality of the website will have a beneficial effect on the confidence that users have in the website. They can switch service providers at any time, which is

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especially true in the increasingly competitive online world; thus, in order to improve this scenario, businesses need to maintain a consistent level of overall service quality in order to earn the trust of customers (Eisingerich &Bell, 2008).

H2: Trust significantly has influence on E-learning system adoption.

E-learning System Quality and Self-efficacy

The elements that impact one's sense of self-efficacy in an online learning environment are the subject of the research question that is being asked. The environmental, cognitive, and behavioral factors that a person encounters in the course of their day-to-day existence can and can cause shifts in their judgments of their own level of self-efficacy, and these shifts do occur. The findings of this study describe particular characteristics that have been documented in the literature as having an observed influence on a learner's sense of self-efficacy in an online learning environment. According to the findings of Bates and Khasawneh (2007), students' sense of self-efficacy was affected by their prior experience with online education, the skills that their instructors had learned, the feedback they received from those instructors, and their concern about using online learning systems.

H3: E-learning System Quality has a significant influence on Self-efficacy.

Self-efficacy and E-learning System adoption

Belief in one's capacity to exert control over personal and environmental events required to create desired behavioral results is the definition of self-efficacy (Selzler et al, 2020). "self-belief with one's potential to execute specific active learning making use of an e-learning system" was how the concept of self-efficacy was described when it came to the context of e-learning. In the study that found that self-belief had a positive effect, the researchers used the term "self-belief in one's capacity to engage definite active learning making use of an e-learning system." The ability to function independently with a given piece of technology is a crucial factor in determining whether or not a content remote education programming will be successful.

H4: Self-efficacy has a significant influence on E-learning System adoption.

Mediating impact of trust

The degree to which a student trusts their instructor impacts the extent to which they will be receptive to learning from that instructor. Trust is also an essential component of the student-instructor interaction for students to achieve their full potential in terms of learning (Wooten & McCroskey, 1996). To ensure the continued growth and development of e-learning, it is essential to earn and keep the confidence of students when they participate in online classes. This construct is used to assess the quality of education features that are available through e-learning. Some of the elements that are included in this construct include applicability, adaptability, conversing, forums, media, as well as other collaboration features (Almaiah et al., 2020; Alksasbeh et al., 2019).

H5: Trust mediates the impact of E-learning System Quality towards E-learning system adoption.

Mediating effect of self-efficacy

Student self-efficacy as well as the perceived utility of the system were found to be significant predictors of perceived concentration value, happiness, overall learning success, according to Johnson and colleagues. Students that have a high level of self-efficacy have higher levels of confidence in their ability to engage in face-to-face as well as online learning. Components of successful self-regulation, such as self-efficacy as well as an intrinsic motivational orientation, in relation to learning outcomes.

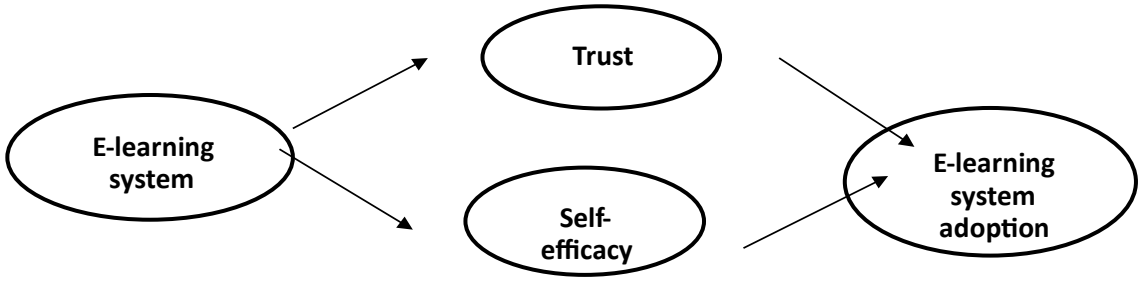
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As a result, learners who receive more support and guidance throughout the learning process to help them develop a positive attitude toward the Internet are more likely to increase their frequency of use and confidence in mastery of the Internet environment (Ren, 1999; Wu & Tsai, 2006).

H6: Self-efficacy mediates the impact of E-learning System Quality towards E-learning system adoption. **Conceptual framework**

The proposed relationships among the study variables are shown in Figure 1.

Figure 1. Proposed conceptual framework



Methods and Materials

A. Measurement

The quantitative survey method will be used as the research method in this study. E-learning system quality was measured by using seven items adapted from Alsabawy et al. (2016) and trust was measured by using three items adapted from Pivato et al. (2008). To measure self-efficacy, this study used eight items adapted from Chen et al., (2001) and e-learning system adoption was measured by using two items adapted from Islam (2013). The objective of the research is to seek accurate measurement and analysis of target concepts such as surveys, questionnaires and so on. A five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) was used to assess the items. Content validity was carried out to ensure that the study scale items to measure the correct construct (Cavana et al., 2001). As such, three academician and experts' opinion were asked to validate the measurement item for this study. Next, face validity was performed to ensure that questionnaire was clear, readable, and understandable for the potential respondents (Cavana et al., 2001). To ensure face validity, questionnaires were distributed to 10 postgraduate students.

B. Sample and data collection

Non-probability judgmental sampling was used to collect data from students, specifically those enrolled at Manipal International University, Nilai. The selection of these respondents for my studies is justifiable because, following the pandemic, most students prefer e-learning systems to physical classes. (Almusharraf, N. & Khahro, S. 2020). A web-based survey was designed to collect the data. The application of online survey can be considered as appropriate especially for data collection pertaining to respondents' perception, attitude, and behavioral intention (Evans and Mathur, 2005; Tiamiyu et al., 2020). The questions are written in straightforward language that anyone can understand, allowing respondents to respond quickly and on the spot. In addition, this study used questionnaires as a data collection tool for this study, sending the Google survey and Microsoft form via platforms such as WhatsApp, email, and Facebook. The survey's primary goal was to determine whether or not an individual's behavior influences the use of an E-learning system.

Results

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A. Respondents profile

Based on Table 1, majority of respondents were female with 59.7% as compared to 40.3% of male respondents. The majority of the respondents 93.8% are Malaysian, with the remaining is 6.2% is non-Malaysian. In terms of age, the data shown that respondents for this study were mainly represented 35.7% and 37.2% from total survey sample. This shown that most of the students in Malaysia were from this age group category (below 20 years old and 21-25 years old). In regard to educational level, majority of respondents for this study had a degree qualification (56.6%) and followed by respondents had SPM/STPM (20.2%), diploma (13.2%) and master is 10.1%.

Table 1. Demographic profile of the respondents

Demographic variables	No of respondents = 129	(%)
Gender		
Male	52	40.3
Female	77	59.7
Nationality		
Malaysian	121	93.8
Non-Malaysian	8	6.2
Age		
Below 20 years old	46	35.7
21 – 25 years old	48	37.2
26 – 30 years old	23	17.8
31 – 35 years old	5	3.9
36 – 40 years old	4	3.1
41 – 45 years old	2	1.6
51 years old and above	1	8
Education Level		
SPM/STPM	26	20.2
Diploma	17	13.2
Degree	73	56.6
Master	13	10.1

B. Data analysis and results

The data was analysed using the structural equation modelling - partial least squares (PLS-SEM) technique with SmartPLS (Ringle et al., 2015) software. PLS-SEM can evaluate both the measurement model and the structural model at the same time, resulting in more accurate results (Hair et al., 2017). Anderson and Gerbing recommended a two-stage approach for this study (1998), which is structural model and measurement model. The structural model was measured first, then the measurement model. The measurement model is evaluated by assessing its reliability, convergent validity, and discriminant validity. Whereas, the structural model is assessed in term of path coefficient, coefficient of determination (R2) and effect size (f2).

C. Assessment of the measurement model Reliability and validity

Reliability of construct can be assessed by using factor loading. Cronbach Alpha and composite reliability (Henseler et al., 2009). As depicted in Table 2, the value of Cronbach's Alpha (CA) and composite reliability (CR) is above 0.7, indicating the reliability of all constructs (Hair et al., 2014; Hair et al., 2019). The loadings of each item on all constructs were greater than 0.5, in line with the recommended value of factor loadings as suggested by Anderson and Gerbing, 1998. This confirmed the reliability of the research model (Hair et al., 2019).

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The convergent validity was measured by using AVE (Average Variance Extracted), which represents the number of variances in the construct. As shown in Table 4.2, AVE values for all constructs are above the threshold of 0.5, confirmed the convergent validity for all constructs.

Table 2. Reliability and validity

Constructs	Items	Loadings	AVE	CR	CA
ELSQ	ELSQ1	0.800	0.666	0.91	0.917
	ELSQ2	0.790			
	ELSQ3	0.828			
	ELSQ4	0.843			
	ELSQ5	0.822			
	ELSQ6	0.819			
	ELSQ7	0.811			
TRUST	TRUST1	0.935	0.891	0.9	0.919
	TRUST2	0.947			
	TRUST3	0.950			
SE	SE1	0.897	0.773	0.915	0.918
	SE2	0.866			
	SE3	0.910			
	SE4	0.935			
	SE5	0.846			
	SE6	0.770			
	SE7	0.907			
	SE8	0.894			
ESA	ESA1	0.924	0.861	0.925	0.839
	ESA2	0.931			

Notes: ELSQ = e-learning system quality; TRUST = trust; SE = self-efficacy; ESA = e-learning system adoption.

The discriminant validity was evaluated by using Fornell-Larcker (1981) Criterion and (Heterotrait – Monotrait Ratio) HTMT assessment (Hair et al., 2014; Henseler et al., 2015). As depicted in Table 3, all of the square root of AVE of each construct is higher than its correlation with other constructs in the model. Hence, based on the FornellLarcker (1981) criterion, the discriminant validity is achieved.

Table 3. Fornell-Larcker criterion

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Construct	ELSQ	ESA	SE	TRUST
ELSQ	0.816			
ESA	0.664	0.928		
SE	0.743	0.679	0.879	
TRUST	0.712	0.664	0.765	0.944

Then, as shown in Table 4, all of the HTMT values are less than the cut-off value of 0.85, indicating that discriminant validity is ascertained.

Table 4. (Heterotrait – Monotrait Ratio) HTMT

HTMT				
Construct	ELSQ	ESA	SE	TRUST
ELSQ				
ESA	0.751			
SE	0.79	0.755		
TRUST	0.759	0.748	0.803	

Assessment of The Structural Model

The assessment of the structural model comprise of the determination of R^2, f^2 and the standardized beta coefficient and their corresponding t-values using a bootstrapping procedure with 5,000 resample (Hair et al., 2017, 2019). R^2 values is the number of variances in the endogenous construct that can be explained by all the exogeneous constructs associated with it. R^2 value closes to 1 is suggested for high predictive accuracy (Astrachan et al., 2014; Hair et al., 2014). R^2 values of 0.02, 0.13 and 0.26 is considered as weak, moderate, and substantial, respectively (Cohen, 1988). As depicted in Figure 4.5 and Table 4.5, R^2 for ESA is 0.511, suggesting that 51.1% of variance can be explained by SE and TRUST. This result showed a substantial effect of predictors, TRUST and SE on ESA (Cohen ,1988). In adddition, the R^2 for TRUST and SE is 0.507 and 0.552 respectively. Thus, suggesting that ELSQ can explain 50.7% and 55.2% variance in TRUST and SE respectively. R^2 values are greater than 0.13 indicating the moderate effect (Cohen, 1988). Effect size (f^2) represents that magnitude of a specific exogenous construct on the endogenous construct (Hair et al., 2014). As suggested by Cohen (1988), f^2 values of 0.02, 0.15 and 0.35 is considered as small, medium, and large effect size respectively. As depicted in Table 4.5, all of the effect size in the structural construct is medium effect.

Besides, hypotheses testing involves the assessment of the direct relationship and indirect relationship (mediation analysis). First, the sizes of the path coefficients were examined to determine if they were statistically significant. As illustrated in Table 5, E-learning system quality has positive effect on trust ($\beta = 0.712$, $p < 0.01$) and self-efficacy ($\beta = 0743$, $p < 0.01$). Hence, H1 (e-learning system quality positively affects trust) and H2 (e-learning system quality positively affect self-efficacy) is supported. These findings suggested that e-learning system quality enhances trust and self-efficacy. In addition, trust ($\beta = 0.349$, $p < 0.01$) has a positive effect on the e-learning system adoption, supporting, H3 (self-efficacy positively affect e-learning system adoption). It implied that when the individuals have trust on the online learning, it will lead into e-learning system adoption. Then, self-efficacy ($\beta = 0.412$, $p <$

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0.01) has positive effect on e-learning system adoption, supporting H4 (self-efficacy positively affect e-learning system adoption).

Table 5. Direct relationship

Hypotheses	Relationship	Path coefficient	Standard error	T value	R2	Result
H1	ELSQ -> TRUST	0.712	0.04	17.593	0.507	Supported
H2	ELSQ -> SE	0.743	0.048	15.463	0.552	Supported
H3	TRUST -> ESA	0.349	0.109	3.191	0.511	Supported
H4	SE -> ESA	0.412	0.103	3.993		Supported

Notes: ELSQ = e-learning system quality; TRUST = trust; SE = self-efficacy; ESA = e-learning system adoption

To examine the mediating effects of trust and self-efficacy in the e-learning system quality and e-learning system adoption link, this study bootstraps the indirect effect with 5,000 resamples as suggested by Preacher and Hayes (2008). As presented in Table 6, the indirect effect of $\beta 1 = 0.248$ was significant with a t-value of 2.973, 95% Boot CI: (LL = 0.052, UL = 0.441). Also, $\beta 2 = 0.306$ was significant with a t-value of 3.556, 95% Boot CI: (LL = 0.124, UL = 0.533). Therefore, these findings confirmed the mediating effect of trust and self-efficacy, supporting H5 (trust mediates the relationship between e-learning system quality and e-learning system adoption) and H6 (self-efficacy mediates the relationship between e-learning system quality and e-learning system adoption) respectively.

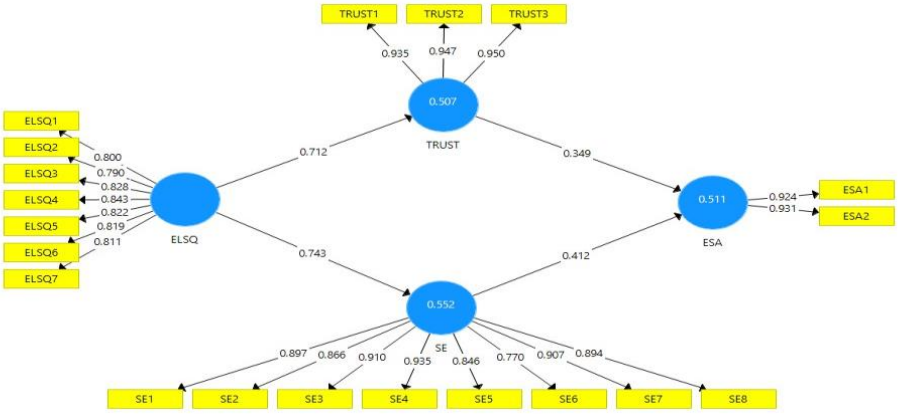
Table 6. Result of mediation analysis

Hypotheses	Relationship	Indirect effect	Standard error	t value	95% confidence level		Result
					LL	UL	
H5	ELSQ -> TRUST -> ESA	0.248	0.084	2.973	0.052	0.441	Supported
H6	ELSQ -> SE -> ESA	0.306	0.086	3.556	0.124	0.533	Supported

Notes: ELSQ = e-learning system quality; TRUST = trust; SE = self-efficacy; ESA = e-learning system adoption

Figure 2. Structural model

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Discussion

Findings of this study provide understanding of the role of e-learning system quality toward e-learning system adoption among students in universities. This study confirmed that e-learning system has a positive effect in building the students trust and self-efficacy. This finding is aligned with the past study, which suggests that trustworthiness of the internet is one of the primary factors that has a considerable beneficial influence on the elearning system quality (Almaiah, Al-Khasawneh, and Althunibat, 2020). The findings also have responded to Almaiah et al., (2020), where the implementation of an e-learning system quality is contingent on software firms having the requisite resources to efficiently deploy electronic services and being capable of safeguarding such systems. In consonance with a study by Bates and Khasawneh (2007) pointed out that good e-learning system quality has positive effect on self-efficacy. This study revealed the positive effect of trust on e-learning system adoption. This is an agreement with past studies that found that trust as a driver of e-learning system adoption in a different context (Sharma & Patterson, 1999). Similarly, the finding of this study revealed that the quality of service has a significant impact on trust. The importance of trust is also becoming increasingly crucial in relation e-learning system. In addition, Akter et al. (2013) proposed that the quality of the service provided has a substantial effect on the level of trust in an online context. This is an accordance with the past studies that suggest the positive effect of self-efficacy on e-learning system adoption (Selzler et al, 2020).

The findings of this study also found the mediating effect of trust and self-efficacy in the e-learning system quality and e-learning system adoption link. These results are in line with the past studies, which said that to increase student adoption of e-learning systems, universities must constantly update security systems to keep the system fully secure from viruses and to ensure that all learning activities are legally run-in accordance with applicable policies and privacy laws (Almaiah et al., 2020). Additionally, this finding implies that internet trust is one of the key elements that can play a significant role in ensuring high trust for users. The finding of the present study is in congruent with the finding revealed by Almaiah et al., (2020). Taking consideration of all the findings, universities should better strategize the quality efforts of their e-learning systems by focusing on the creation of good participation from both students and lecturers. In doing so, e-learning allows students and lecturers to participate in class from the comfort of their own homes, with the basic amenities they require, as opposed to traditional teaching methods, where these necessities are sometimes unavailable for conducive learning. Universities should also encourage students to participate in online learning programmes so that they can actively adapt to the e-learning system. Thus, adoption of an e-learning system for universities will improve knowledge efficiency because students and lecturers will have easier access to a large amount of information within the global village.

Conclusion

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Whilst interesting findings are presented in this article, they are bound by certain limitations. However, the limitations may provide an opportunity for the future research. For example, in this study, respondents only had two weeks to respond to the questionnaire due to the short timeframe that the study was offered, it was noticed this could prompt a predisposition particularly because of the little example size. It was accepted that with extra time, the number of members would be bigger. Second, the target population of this study were students in Manipal International University, Nilai. As a result, the current study's findings cannot be generalized to students at all Malaysian universities because the samples were drawn from only one of the universities.

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Conflict of interest

The authors declare no conflict of interest.

Data availability

Data supporting the findings of this study are available from the corresponding author upon request.

Ethics declaration

Formal ethical approval was not obtained for this study. However, established ethical principles were followed throughout the research, including voluntary participation, informed consent, confidentiality, privacy protection, and responsible data management.

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