INTERNATIONAL JOURNAL OF ACADEMIC RESEARCH IN BUSINESS & SOCIAL SCIENCES

Vol 10, Issue 5, (2020) E-ISSN: 2222-6990

Students' Acceptance for E-Learning and the Effects of Self-Efficacy in Malaysia

Muhammad Safuan Abdul Latip
Faculty of Hotel and Tourism Management, Universiti Teknologi MARA Cawangan Terengganu, 23000 Dungun, Terengganu, Malaysia, Universiti Tun Abdul Razak, 50400, Wilayah Persekutuan Kuala Lumpur, Malaysia

Ismayaza Noh
Faculty of Hotel and Tourism Management, Universiti Teknologi MARA Cawangan Selangor, Puncak Alam, 42300, Kuala Selangor, Selangor, Malaysia.

Masliana Tamrin
Faculty of Business and Management, Universiti Teknologi MARA Cawangan Melaka, 78000, Alor Gajah, Melaka, Malaysia

Siti Nur Nadhirah Abdul Latip
Universiti Teknologi MARA Cawangan Melaka, 75350, Melaka, Malaysia.
Email: safuanlatip@uitm.edu.my

To Link this Article: http://dx.doi.org/10.6007/IJARBSS/v10-i5/7239 DOI:10.6007/IJARBSS/v10-i5/7239

Published Date: 27 May 2020

Abstract

The study investigated the e-Learning acceptance among Malaysian higher education students. There are three exogenous variables involved, namely, performance expectancy, social influence, and perceived enjoyment. A mediating effect of self-efficacy was correspondingly tested to build a different connection point on the research area. The target population of the study are active students of Malaysia higher education institutions. Data was collected using an online platform, and out of the 557 responses received , only a total of 414 were valid and subsequently used for data analysis. The results indicated that, performance expectancy, social influence, perceived enjoyment, and self-efficacy have a positive direct statistically significant relationships with e-Learning acceptance among students. Additionally, there was a partial mediating effect of self-efficacy between performance expectations and perceived enjoyment on e-Learning acceptance. Meanwhile, social influence was found to have no mediating effect, since there was no statistically positive relationship between social influence and self-efficacy. Students with a positive feeling about the usefulness of e-Learning tend to have a positive acceptance of the e-Learning method, and this, in turn, will affect their self-efficacy, thus resulting in an excellent

understanding of the lessons. Lecturers and students will be benefited from this study by considering significant factors and the importance of individual self-efficacy towards achieving an excellent understanding of the lessons. Hence, it is expected that, institutions and regulatory bodies can contribute towards a more productive and acceptable learning system to improve the quality of the education to be delivered.

Keywords: E-Learning, Self-efficacy, Students Acceptance, Malaysia Higher Education, Technology Acceptance Model (TAM), Unified Theory of Acceptance and use of Technology (UTAUT)

Introduction

Technological advancement has transformed the ways daily activities are performed. From the past decade, the world of tertiary education has been rapidly involved in the advancement of internet technologies and the revolution of computer software (Tayebinik & Puteh, 2012). Like other developing countries, Information Communication Technology (ICT) in Malaysia has become a significant part of the national initiatives to maintain and improve the quality of public education, while fast becoming a competitive advantage for the institutions of higher learning. The development of ICT and the positive society response resulted in the adoption of e-Learning in the local education system, and Malaysia higher education began implementing it in the late 1990s (Hussin, Bunyarit, & Hussein, 2009).

E-Learning is one of the technical-based tuition and training platforms in telecommunication technology used to deliver information in education. Along with the progressive information and communication development, e-Learning is considered a paradigm in modern education. The e-Learning mode is offered for formal and informal education programmes in some local universities, such as University Tun Abdul Razak, Malaysia (UNIRAZAK), and Open University Malaysia (OUM). It has proven to be practical to address the concern of time and space limitation for interactions between learner and instructor, through asynchronous and synchronous network models (Katz, 2002; Katz, 2000).

E-Learning is one way of learning methods, where students can learn individually at their preferred time, unlike the traditional classroom learning method. It is home-based and the courses designed can be altered to suit learners' needs and preferences (Al-Rahmi et al., 2018). However, The absence of face-to-face communication among learners and the new e-Learning environment are challenges which must be overcome by the learners (Tayebinik & Puteh, 2012). Therefore, individual effort and readiness are vital to ensure an excellent delivery of knowledge. As self-efficacy is related to individual belief in own capabilities to organize and execute the courses of action required to produce given attainments (Bandura, 1997), it builds a bridge of potential connections on the e-Learning acceptance. People who have high self-efficacy in technology will have a higher perception that, learning by the use of technology is useful to themselves. In contrast, those with low self-efficacy perceive using learning by technology as a burden and this could negatively affect their acceptance of e-Learning. This is a critical issue to address, as it could potentially hinder students' understanding and adaptability to e-Learning, while the actual usage of e-Learning is determined by the self-efficacy factor (Lwoga & Komba, 2015).

As e-Learning in Malaysia is still at the infancy stage, addressing the factors that influence students' acceptance to it is vital. The continued usage of this method is mainly because of performance expectancy, self-efficacy, social influence, and other factors (Lwoga & Komba, 2015). Importantly, demand for e-Learning continually increases as this approach can reach a global audience, unique functionality, accessibility, and flexibility in a long time (Azhari & Ming, 2015). Moreover, as the globe embarks on Industrial Revolution 4.0 (IR 4.0),

it is clear that technology in learning enables students to be more dependent in acquiring knowledges which meet industry requirements (Chee, Ab Jalil, Ma'rof, & Saad, 2020).

Therefore, this study aimed to establish the determinants of e-Learning acceptance and to understand the potential effects of students' self-efficacy for a better understanding and development of e-Learning in Malaysia using the unified theory of acceptance and use of technology (UTAUT) and technology acceptance model (TAM) as a basis of the study. The objectives of the study are as stated below:

- To investigate the predictors of e-Learning acceptance among students in Malaysia.
- To examine the mediating effects of self-efficacy between predictors and e-Learning acceptance.

Literature Review

E-Learning

E-Learning is a method of learning and teaching which encompasses fully or partially education models, based on the use of electronic media and devices as a tool for increasing access for communication and interaction, training, and it facilities new ways to understand and establish learning (Selvarajah, Krishnan, & Hussin, 2017). It can be used and accessed using several types of technology without specific time and barriers. Any electronic media web technologies can deliver e-Learning efficiently, making it to be more readily accepted by academic institutions and business organizations, compared to web-based media (Hiltz & Turoff, 2005). Indeed, e-Learning has become the most crucial part of competitive educational service. Besides, to meet the huge demand of educational customers, learning institutions offer online lessons, online tests, and online educational consulting (Lee, Yoon, & Lee, 2009).

E-Learning, similar with other education platforms, contains its own strength, weakness, opportunity, and threats (Schroeder, Minocha, & Schneider, 2010). It can be used to establish a good community spirit among the learners, to reduce cost (travelling cost), to improve communication among learners and instructions, and to improve independent problem-solving skills among students. However, it has a limitation of interaction quality that leads to less trust in terms of feedback and team activities, compared to traditional learning methods. E-Learning also increases the workload of students and instructors, especially the time and efforts taken for the preparation purposes. Indeed, it is difficult to ensure the reliability of the learning services provided (Schroeder et al., 2010). That is the reason it is vital to assess students' acceptance of the e-Learning method. In addition, fear of technology, lack of technical skills, lack of technical support for both students and lecturer may also cause some concerns (Ali & Magalhaes, 2008). Nevertheless, e-Learning enables students to produce high-quality work and to be actively involved in alumni community activities. Educational institutions too benefit from it, by gaining an exposure and adding values to their programmes around the globe, besides responding towards IR 4.0 (Schroeder et al., 2010).

Underline Theory

Technology Acceptance Model (TAM).

The technology acceptance model (TAM) was been developed in 1989 and has since become the most popular research model to determine and predict use and acceptance by an individual regarding information systems and technology. It is an adaptation from the previous model, the Theory of Reasoned Action (TRA), to the field information system. For this study, one relevant variable, namely, perceived enjoyment was adopted.

Unified Theory of Acceptance and Use of Technology Model (UTAUT).

The unified theory of acceptance and use of technology (UTAUT) has received significant attention in e-Learning and technology in education, as it provides a reliable basis to investigate individual perceptions related to technology in education (Venkatesh, Morris, Davis, & Davis, 2003). It is used to evaluate the success of new technology applications and it was derived from previous models of technology acceptance (TAM). The UTAUT has been used extensively in past studies to investigate user's technology acceptance (Tagoe, 2012). It was applied in this study via two relevant variables, namely, performance expectancy and social influence as independent variables.

Variables of the Study

Performance Expectancy

Performance expectancy is an individual's belief from the advantage and usefulness they gain through the use of technology and system (Venkatesh et al., 2003). By adjusting performance expectancy in the e-Learning context, it can be great assistance, because learners can complete their learning activities and directly enhance their education skills and performance (Salloum & Shaalan, 2018). Performance expectancy has become one of the factors which influences behavioural intention among students to use e-Learning in their studies (Mahande & Malago, 2019; Zawaideh, 2017). It has been proven to produce the most impact on student's positive acceptance toward usage intention and the highest significance, compared to the other variables in UTAUT (Chung, Shen, & Qiu, 2019). Another study reported that, performance expectancy was an essential contributor in foretelling students' intention to use the mobile learning system (Bharati & Srikanth, 2018). Thus, it is critical for the study to verify the relationships between social influence and e-Learning acceptance.

Social Influence

Social influence refers to how much an individual perceives that others believe themselves should use the system as people around influence, individual action, and reaction (Venkatesh et al., 2003). Thus, social influence potentially affects e-Learning acceptance, as the technology in education is affected by social rather than technological factors. Relatively, social behaviour could affect a user's opinion, adoption, and performance, especially in a collectivist culture (AlMarshedi, Wanick, Wills, & Ranchhod, 2017). A previous study revealed that, social influence affects individual intention to use technology (Tan, 2013; Yoo, Han, & Huang, 2012). Based on the findings in some past studies, social influence has positive relationships with the students' perception and attitude towards their readiness to use e-Learning.(Mahande & Malago, 2019; Ngampornchai & Adams, 2016). Indeed, social influence has been found to be an important influence on students' decision to use e-Learning (Lwoga & Komba, 2015) continuously. Thus, it is critical for the study to investigate the relationships between social influence and e-Learning acceptance.

Perceived Enjoyment

Perceived enjoyment is defined as the extent, to which the activity of using a system is perceived to be enjoyable in its own right, aside from consequences resulting from the system. It can explain behavioural intention as being an acceptance to use information systems (Punnoose, 2012). Students' subjective feelings of joy, relaxation, and positive experience also play roles in explaining user acceptance and usage behaviour of e-Learning. If students do not enjoy the e-Learning process, they will certainly not be involved again and

this will negatively affect their learning performance. Perceived enjoyment directly has its impacts on behaviour attention and indirectly affects influences through attitude (Lee, Cheung, & Chen, 2005). However, some other studies also highlighted that, perceived enjoyment has no direct influence on intention to use (Venkatesh et al., 2003; Yi & Hwang, 2003), Thus, it is critical for this study to investigate the relationships between perceived enjoyment and e-Learning acceptance.

Self-efficacy

In general, self-efficacy refers to an individual's belief in his or her ability to perform a particular behaviour (Bandura, 1997). Self-efficacy in the online learning context refers to an individuals' judgement on his or her ability to use online learning in daily activities, including the use of the internet, computers, web-based instructional, and learning tools. People who have high self-efficacy in technology will have a positive perception of e-Learning and vice versa. Students' computer anxiety is one of the critical factors affecting their satisfaction. Once dissatisfied, their belief to use the technology as a medium will be directly affected (Sun, Tsai, Finger, Chen, & Yeh, 2008). Self-efficacy has a positive relationship with and is a significant factor for students' intention to use e-Learning (Al-Rahmi et al., 2018). Despite the potential of self-efficacy as a mediator towards e-Learning acceptance among students, there is a lack of study to test this relationship. Thus, this study is essential to investigate the mediating effect of self-efficacy between potential relevant variables affecting e-Learning acceptance and the e-Learning acceptance itself.

Methodology

Research Design

The study adopted a correlational research design to investigate potential relationships between variables involved without manipulating them. SPSS and AMOS software were used to examine the causal relationships between these variables.

Study Population and Sampling Procedure

The study was conducted in higher education institutions in Malaysia. The target population of the study encompassed active students currently enrolled in undergraduate and postgraduate levels (N - 1,343,830) (Ministry of Education Malaysia, 2018).

To calculate the required sample size, a 95% confidence level and a 5% margin of error were applied as it is acceptable in education research and categorical data use (Ary, Razavieh, & Jacobs, 1996). The minimum sample size, according to the population of the study, is 384 (Sekaran & Bougie, 2016). The data was collected using convenience sampling. An online self-report questionnaire was used to ensure broad accessibility and generalizability. An online approach has increasingly become important because people are more inclined towards technology with their desires to know more about a wide range of topics (Brick, 2011). The online survey is also able to reduce the social desirability bias associated with the traditional face-to-face survey.

The link of the survey was subsequently distributed through social media and the participating students' online group. Filter questions were used to verify that the respondents are currently active students of higher institutions before they could proceed to the next question. The data was collected in a period of almost one week, with a total of 557 responses received, out of which, 414 responses were found to be valid, still meeting the minimum required sample size of 384.

Respondent Profile

Based on the descriptive analysis in Table 1, the majority of respondents are female (77.3%), compared to males (22.7%). They are mainly aged between 18 – 21 years old (67.9%), pursuing undergraduate courses (Diploma and Bachelor's Degree). The students are mostly from public institutions of learning, including Colleges and Universities.

Table 1
Respondent profile

Variables	Sub	Frequency	Per cent
Gender	Male	94	22.7
	Female	320	77.3
Age	18-21 years old	281	67.9
	22-25 years old	122	29.5
	26-29 years old	9	2.2
	30-33 years old	1	0.2
	34-39 years old	1	0.2
Education level	Diploma	193	46.6
	Bachelor Degree	210	50.7
	Master	7	1.7
	PhD	4	1
Institution	Public institution	375	90.6
	Private institution	39	9.4
	Total	**414**	**100**

Measurement and Instrumentation

The questionnaire used in this study was adapted from previous literature obtained through an in-depth analysis of literature addressing the research objectives. The demographic profiles instrument of the study was developed based on the research objectives. Meanwhile, of the five remaining instruments, four of them, namely, (i) Performance expectancy, (ii) Social influence, (iii) Perceived enjoyment and (iv) E-Learning acceptance were adapted from well-established instruments and fairly tested for validity and reliability (Efiloğlu Kurt & Tingöy, 2017; Ngampornchai & Adams, 2016; Niehaves & Plattfaut, 2014). while the last one, namely, (v) Self-Efficacy, the mediator variable of the study, was adapted from the development and validation of a students' self-efficacy scale (Schmitz, 2013).

Data Analysis and Results

Data Screening

Before a further analysis was conducted, the raw data was coded, and the missing value analysis had been conducted through a minimum and maximum analysis to ensure that, the data was coded accurately. The normality of the data had been tested using Box Plot analysis in SPSS and outlier analysis in AMOS to remove extreme values that could affect the result to be obtained. The final number of valid respondents was 414 out of 557 of the total responses received.

Full Measurement Model

The full measurement of the research model was conducted to test the model's fitness and validity. The Confirmatory Factor Analysis (CFA) with scores of model fitness is as presented in figure 1. The CFA reported a good model fit score with CMIN/DF = 2.673; CFI = .951; TLI = .946 and RMSEA = .064 (Awang, Hui, & Zainudin, 2018). The validity of the construct on Table 2 indicates a good convergent validity with the AVE score of all construct score of 0.50 and above. Similarly, construct validity as the model fitness scores a good result. The reliability test of CR similarly achieves a good reliability with a CR score 0.60 and above. Therefore, the construct is validated.

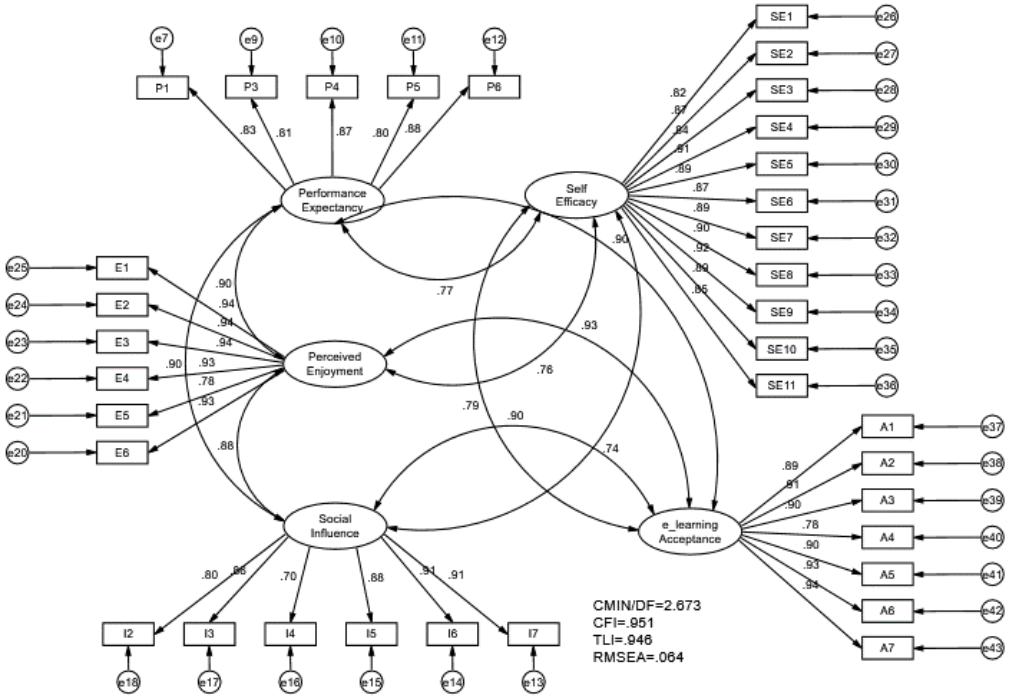

Figure 1. The full measurement model of study

Table 2
Reliability and validity test of items

Construct	Item	Questions	Load. factor	CR	AVE
Performance expectancy	P1	The e-Learning method improves my study performance.	0.806	0.922	0.703

	P3	E-Learning enables me to learn more quickly.	0.870		
	P4	Using e-Learning increases my chances of achieving important things in my study.	0.804		
	P5	E-Learning makes it easier to do my assignment.	0.826		
	P6	In general, e-Learning fulfils my study requirement	0.884		
Perceived enjoyment	E1	I experience fun using the e-Learning method	0.941	0.967	0.832
	E2	It is exciting to use the e-Learning method.	0.931		
	E3	The use of the e-Learning method is enjoyable.	0.94		
	E4	The experience of using e-Learning is interesting.	0.941		
	E5	The internet provides many enjoyable applications.	0.779		
	E6	In general, I enjoy using e-Learning	0.928		
Social influences	I2	People I trust thought that I should have used the e-Learning method.	0.915	0.937	0.715
	I3	My friends would think using e-Learning is a good idea.	0.908		
	I4	My lecturers encouraged me to use the e-Learning method.	0.878		
	I5	People who are important for me think that it is good for me to use the e-Learning method.	0.698		
	I6	People who influenced my attitudes recommend the e-Learning method in learning.	0.855		
	I7	In general, my peers have supported the use of e-Learning.	0.799		
Self-Efficacy	SE1	I am convinced that I am able to successfully learn all relevant subject content even if it is difficult.	0.867	0.937	0.769
	SE2	I know that I can maintain a positive attitude towards this course, even when tensions arise.	0.841		
	SE3	When I try really hard, I am able to learn even the most challenging content.	0.906		
	SE4	I am convinced that, as time goes by, I will continue to become more capable of learning the content of the course.	0.886		
	SE5	Even if I get distracted during learning, I am confident that I can continue to learn well.	0.872		
	SE6	I am confident in my ability to learn, even if I am having a bad day.	0.889		

	SE7	If I try hard enough, I can obtain the academic goals I desire.	0.897		
	SE8	I am convinced that I can develop creative ways to cope with the stress that may occur while taking this course	0.919		
	SE9	I know that I can stay motivated to participate in the course.	0.854		
	SE10	I know that I can finish the assigned projects and earn the grade I want, even when others think that I cannot.	0.824		
	SE11	Overall, I can succeed if I believe in myself.	0.889		
e-Learning Acceptance	A1	The use of the e-Learning method makes learning easier.	0.895	0.965	0.798
	A2	I find e-Learning is easy to use	0.908		
	A3	E-Learning method is useful	0.904		
	A4	I use the e-Learning method frequently.	0.775		
	A5	I will use e-Learning regularly in the future.	0.900		
	A6	I will strongly recommend others to use the e-Learning,	0.925		
	A7	Overall, I like using the e-Learning method.	0.936		

Structural Equation Modelling (SEM) Analysis

To examine the direct relationships and the mediation effect of the construct to describe the effect of performance expectancy, perceived enjoyment, social influence, and self-efficacy toward e-Learning acceptance. As illustrated in Figure 2, the result of model fitness shows that, the data collected fitted the model, where a minimum fitness required was achieved with CMIN/DF =2.673; CFI=.951; TLI .946 and RMSEA =.064 (Awang et al., 2018). Therefore, a further analysis can be administered using the structural model.

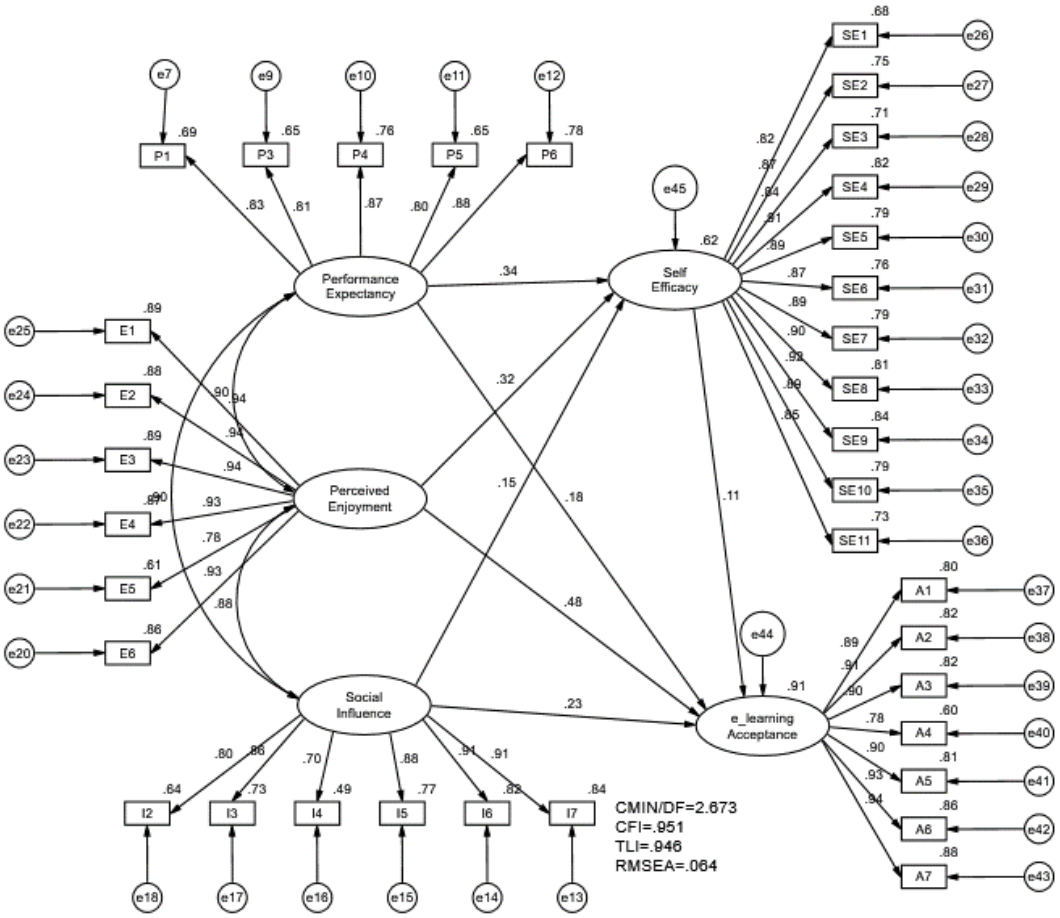

Figure 2. Structural model of the study

The Direct Effects Hypothesis

The summary of the results obtained as attached in Table 2. The results revealed that, performance expectancy had a positive and statistically significant effect on self-efficacy (β = .342; C.R = 3.098; p = .002). When performance expectancy went up by 1 standard deviation, self-efficacy went up by .342. Thus, H1 was accepted (The performance expectancy has a significantly positive relationship with students' self-efficacy). H2 was also accepted (The perceived enjoyment has a significantly positive relationship with students' self-efficacy). The analysis indicated a positive and statistically significant relationship of the H2 (β = .320; C.R = 3.511; p = .000). When perceived enjoyment went up by 1 standard deviation, self-efficacy went up by .320. Somehow, the result revealed that, social influence was statistically insignificant with self-efficacy (β = .155; C.R = 1.637; p = .102). Thus, H3 was rejected (The social influence has a significant positive relationship with students' self-efficacy).

H4 was accepted (Self-efficacy affects e-Learning acceptance positively). The analysis indicates a positive and statistically significant relationship of the H4 (β = .115; C.R = 3.640; p = .000). When Self efficacy went up by 1 standard deviation, e-Learning acceptance went up by .115. Besides, Table 2 shows a positive and statistically significant effect of social influence on e-Learning acceptance (β = .226; C.R = 4.120; p = .000). When social influence went up by 1 standard deviation, e-Learning acceptance went up by .226. Thus, H5 was accepted (Social influence affects e-Learning acceptance positively).

Correspondingly, H6 was also accepted (Perceived enjoyment affects e-Learning acceptance positively). The analysis indicates a positive and statistically significant relationship of the H6 (*β* = .484; C.R = 8.871; *p* = .000). When perceived enjoyment went up by 1 standard deviation, e-Learning acceptance went up by .484. Lastly, the analysis showed a positive and statistically significant effect of performance expectancy on e-Learning acceptance (*β* = .179; C.R = 2.768; *p* = .006). When performance expectancy went up by 1 standard deviation, e-Learning acceptance went up by .179. Thus, H7 was accepted (Social influence affects e-Learning acceptance positively).

Table 3
Analysis of the Direct Relationship

Relationship tested			**B**	**S.E.**	**β**	**C.R.**	**P**
Performance Expectancy	→	Self-Efficacy	.358	.115	.342	3.098	.002
Perceived Enjoyment	→	Self-Efficacy	.275	.078	.320	3.511	.000
Social Influence	→	Self-Efficacy	.136	.083	.155	1.637	.102
Self-Efficacy	→	e-Learning acceptance	.125	.034	.115	3.640	.000
Social Influence	→	e-Learning Acceptance	.216	.052	.226	4.120	.000
Perceived Enjoyment	→	e-Learning Acceptance	.453	.051	.484	8.871	.000
Performance Expectancy	→	e-Learning Acceptance	.204	.074	.179	2.768	.006

Note: B (unstandardized regression weight); S.E (standard error); β (standardized regression weight; C.R (critical ratio).

The Bootstrapping and Hypothesis of the Mediation Effect

The bootstrapping test was applied to examine the mediating effect of self-efficacy purposely to assign measures of accuracy to sample estimates (Darren & Paul, 2020). The study selected a 2000 bootstrap sample with 90% of the bias-corrected confidence interval. The summary of the results is as in Table 4. Generally, all three independent variables tested (Performance expectancy, perceived enjoyment, and social influence) had a statistically significant relationship with e-Learning acceptance (**x → y)** with a p-value of less than 0.05. However, to confirm the mediation effect, the indirect effect and the significant value between any relationship must be assessed. The first mediation relationship (self-efficacy) to be tested was between performance expectancy and e-Learning acceptance. There was a positively standardized indirect effect with a score of 0.037 (*p* = .000) which supports H8 (Self-efficacy mediates the relationship between performance expectancy and e-Learning acceptance). Thus, there is a partial mediation effect of the first mediation relationship tested.

Correspondingly, the analysis in Table 4 supports H9 of the study (Self-efficacy mediates the relationship between perceived enjoyment and e-Learning acceptance). There

is a positive standardized indirect effect of the relationship tested for H9 with a score value of 0.039 (p = .05). Hence, there was a partial mediation effect of the second mediation relationship tested. However, H10 of the study was rejected (Self-efficacy mediates the relationship between performance expectancy and e-Learning acceptance) because of the standardized indirect effect score of 0.018 (p = .126). As the p-value score is more than 0.05, the relationship is insignificant. In conclusion, there is no mediation effect of the third mediation analysis tested.

Table 4
Summary result of bootstrapping, direct and indirect effect

Hypothesis	**Standardized Direct effect (x → y)**	**Standardized Indirect effect**	**Result**
Performance expectancy → Self-efficacy → e-Learning Acceptance	0.484***	0.037***	Partial mediation
Perceived enjoyment → Self-efficacy → e-Learning Acceptance	0.179*	0.039*	Partial mediation
Social influence → Self-efficacy → e-Learning Acceptance	0.226***	0.018 (p = .126)	No mediation effect

*Note: ***=p<0.001;* =p <0.05*

Conclusion and Discussion

Based on the analysis, performance expectancy, perceived enjoyment, and social influence were found to be significant with students' acceptance of e-Learning. Meanwhile, only performance expectancy and perceived enjoyment were found to be significant with students' self-efficacy. Correspondingly, self-efficacy was significant with students' acceptance of e-Learning, and mediating effects of self-efficacy were identified between performance expectancy and perceived enjoyment toward e-Learning acceptance.

The results showed that, performance expectancy has significant effects on students' acceptance of e-Learning, in agreement with findings from other studies which revealed that, performance expectancy has significant effects on students' intention to use e-Learning (Salloum & Shaalan, 2018; Masa'deh, Tarhini, Bany Mohammed, & Maqableh, 2016). Theoretically, students with a positive feeling about the usefulness of e-Learning will have more intention to use it (Tarhini, Hone, Liu, & Tarhini, 2016). Thus, when the performance of e-Learning meets students' perceived performance, it is considered useful.

Similarly, social influence was found to be significant towards e-Learning acceptance. Social influence and facilitating condition positively influence continuance intention to use e-Learning among higher education students, and this explains the results obtained (Bakar, Zaidi, & Abdul, 2014), which might be due to a cultural setting of Malaysia as a collectivist country as the technology in education is influenced by social rather than technological factors. Relatively, social behaviour could affect a user's opinion, adoption, and performance, especially in a collectivist culture (AlMarshedi et al., 2017).

Meanwhile, perceived enjoyment was found to significantly influence students' acceptance of e-Learning. According to Al-Gahtani (2016), there is a significant relationship

between perceived enjoyment with perceived ease to use. Students with a high perceived ease to use will have positive effects on their intention to use e-Learning. However, this is in contrast with the finding in a study by Hussein (2018), which showed that, perceived enjoyment was not a significant factor in students' engagement with e-Learning. Similarly, for the intended use of e-Learning, previous studies highlighted the insignificant effect of perceived enjoyment (Venkatesh et al., 2003; Yi & Hwang, 2003). Somehow, perceived enjoyment does not just directly affects individual behaviour, it also indirectly gives influences through attitude (Lee et al., 2005). Thus, this explains the contradictions in the findings.

Besides, the mediator analysis confirms the significant effect of the direct relationship between self-efficacy and e-Learning acceptance. The finding is in agreement with that in a previous study in an analysis between factors of student acceptance and intention to use e-Learning (Al-Rahmi et al., 2018; Lwoga & Komba, 2015). People who have high self-efficacy in technology will have a positive perception of e-Learning and vice versa. However, only performance expectancy and perceived enjoyment have a partial mediation effect upon self-efficacy toward e-Learning acceptance. High self-efficacy will enhance students' acceptance of e-Learning. However, social influence is not directly significant towards self-efficacy and this leads to a no mediating relationship. The self-efficacy effect as a mediator is supported by a previous researcher who found the impacts of students' belief to use the technology as a medium for their learning (Sun et al., 2008). As self-efficacy mainly concerns on individual belief and internal self-control rather than social belief, this thus explains the insignificant mediating effect of self-efficacy on social influence.

Recommendation and Implication

This study donates toward a new theoretical contribution by incorporating self-efficacy as a mediator in between the field of e-Learning research theories of TAM and UTAUT. An additional theoretical link was developed from the hypothesis derived from a rationale application of self-efficacy. Subsequently leading to the improvement of the rational theory by giving a new contribution for the current study. Besides that, a theoretical linkage was tested with the exogenous construct and self-efficacy construct. A test which had been minimally tested in previous researches. The result of the test has produced an empirical contribution for the current study. Furthermore, the current study had correspondingly determined the degree of self-efficacy which mediated the relationship between exogenous variables and endogenous variables. Thus, by employing the suitable sampling procedure which increased the generalisability of research and the targeted population, who are students of Malaysian higher institutions. As such this has essentially contributed towards the methodological gap of the current study.

In the current digital era, students are very confident in the digital domain and they are now searching similar exposure and ease in their academic life (Newland & Byles, 2014). Their acceptance is influenced by their perception that this system can improve their performance in study, support from people around them, and their feeling towards this system. Thus, internal self-control factors, such as self-efficacy are critical to be investigated in an online learning environment (Alqurashi, 2016). However, a study of e-Learning acceptance and self-efficacy is deficient in the Malaysia setting, and it could affect e-Learning acceptance positively or negatively (Alqurashi, 2016). Thus, it is expected that, this study will contribute towards new theoretical and practical contributions for related stakeholders.

The results of this study highlighted several implications for stakeholders involved. This study can benefit researchers to increase their understanding regarding e-Learning and

the relationship of self-efficacy that could be used to potentially build a bridge for a more in-depth study on the area, to ensure the effectiveness of e-Learning. It can encourage more studies related to e-Learning, and perhaps this can be a source of reference for future research to respond towards the shifting of learning approach preferences and development of technology aligned with IR 4.0. Lecturers and students can be facilitating the effectiveness of e-Learning sessions by considering significant factors and the importance of individual self-efficacy towards achieving an excellent understanding about the taught lessons. This study also provided an overview for the institutions of higher learning on what can be done to ensure that, this learning system is more effective and acceptable to students as they can be influenced by lecturers and their institutions. Indeed, it is also able to increase student satisfaction that is vital in the current competitive era to ensure institution sustainability (Latip, May, Kadir, & Kwan, 2019). Lastly, this research can help increase the number of studies related to e-Learning, besides being a source of reference for future research work.

References

Al-Gahtani, S. S. (2016). Empirical investigation of e-learning acceptance and assimilation: A structural equation model. *Applied Computing and Informatics*, *12*(1), 27–50. https://doi.org/10.1016/j.aci.2014.09.001

Al-Rahmi, W. M., Alias, N., Othman, M. S., Alzahrani, A. I., Alfarraj, O., Saged, A. A., & Rahman, N. S. A. (2018). Use of e-Learning by university students in Malaysian higher educational institutions: A case in Universiti Teknologi Malaysia. *IEEE Access*, *6*, 14268–14276. https://doi.org/10.1109/ACCESS.2018.2802325

Ali, G. E., & Magalhaes, R. (2008). Barriers to implementing e-learning: A Kuwaiti case study. *International Journal of Training and Development*, *12*(1), 36–53. https://doi.org/10.1111/j.1468-2419.2007.00294.x

AlMarshedi A., Wanick V., Wills G.B., Ranchhod A. (2017) Gamification and Behaviour. In: Stieglitz S., Lattemann C., Robra-Bissantz S., Zarnekow R., Brockmann T. (eds) Gamification. Progress in IS. Springer, Cham

Alqurashi, E. (2016). Self-efficacy in online learning environments: A literature review. *Contemporary Issues in Education Research*, *9*(1), 45–52. https://doi.org/10.19030/cier.v9i1.9549

Ary, D., Razavieh, A., & Jacobs, L. C. (1996). *Introduction to research in education*. Fort Worth, Texas: Harcourt Brace College Publication.

Awang, Z., Hui, L. S., & Zainudin, N. F. S. (2018). *Pendekatan mudah SEM - Structural equation modelling*. Selangor: MPWS Rich Resources Sdn. Bhd.

Azhari, F. A., & Ming, L. C. (2015). Review of e-learning practice at the tertiary education level in Malaysia. *Indian Journal of Pharmaceutical Education and Research*, *49*(4), 248–257. https://doi.org/10.5530/ijper.49.4.2

Bakar, A. A., Zaidi, F., & Abdul, B. (2014). The role of facilitating condition and social influence towards continuance intention to use e-learning. *International Journal of Technical Research and Applications*, *2*(1), 12–14. https://doi.org/E-Issn: 2320-8163

Bandura, A. (1997). *Self-efficacy the exercise of control*. New York: W.H.Freeman Company.

Bharati, V. J., & Srikanth, R. (2018). Modified UTAUT2 model for m-learning among students in India. *International Journal of Learning and Change*, *10*(1), 5–20. https://doi.org/10.1504/IJLC.2018.089532

Brick, J. M. (2011). The future of survey sampling. *Public Opinion Quarterly*, *75*(5), 872–888.

https://doi.org/10.1093/poq/nfr045

Chee, L. L., Ab Jalil, H., Ma'rof, A. M., & Saad, W. Z. (2020). Self-regulated learning as a mediator in the relationship between peer learning and online learning satisfaction: A study of a private university in Malaysia. *Malaysian Journal of Learning and Instruction*, *17*(1), 51–75.

Chung, C. H., Shen, C., & Qiu, Y. Z. (2019). Students' acceptance of gamification in higher education. *International Journal of Game-Based Learning*, *9*(2), 1–19. https://doi.org/10.4018/IJGBL.2019040101

Darren, G., & Paul, M. (2020). *IBM SPSS statistics 26 step by step: A simple guide and reference* (16th editi). New York: Taylor & Francis.

Efiloğlu Kurt, Ö., & Tingöy, Ö. (2017). The acceptance and use of a virtual learning environment in higher education: An empirical study in Turkey, and the UK. *International Journal of Educational Technology in Higher Education*, *14*(1). https://doi.org/10.1186/s41239-017-0064-z

Hussein, Z. (2018). Subjective norm and perceived enjoyment among students in e-learning. *International Journal of Civil Engineering and Technology*, *9*(13), 852–858.

Hussin, H., Bunyarit, F., & Hussein, R. (2009). Instructional design and e-learning: Examining learners' perspective in Malaysian institutions of higher learning. *Campus-Wide Information Systems*, *26*(1), 4–19. https://doi.org/10.1108/10650740910921537

Katz, Y. J. (2000). The comparative suitability of three ICT distance learning methodologies for college level instruction. *International Journal of Phytoremediation*, *21*(1), 25–30. https://doi.org/10.1080/095239800361482

Katz, Y. J. (2002). Attitudes affecting college students' preferences for distance learning. *Journal of Computer Assisted Learning*, *18*(1), 2–9. https://doi.org/10.1046/j.0266-4909.2001.00202.x

Latip, M. S. A., May, R. Y. Y., Kadir, M. A. A., & Kwan, T. C. (2019). Does program fees affect the relationship between lecturers' competencies and student' satisfaction in the digital era? A case of Malaysia higher education. *International Journal of Academic Research in Business and Social Sciences*, *9*(7), 877–900. https://doi.org/10.6007/IJARBSS/v9-i7/6187

Lee, M. K. O., Cheung, C. M. K., & Chen, Z. (2005). Acceptance of internet-based learning medium: The role of extrinsic and intrinsic motivation. *Information and Management*, *42*(8), 1095–1104. https://doi.org/10.1016/j.im.2003.10.007

Lwoga, E. T., & Komba, M. (2015). Antecedents of continued usage intentions of web-based learning management system in Tanzania. *Education and Training*, *57*(7), 738–756. https://doi.org/10.1108/ET-02-2014-0014

Mahande, R. D., & Malago, J. D. (2019). An e-learning acceptance evaluation through utaut model in a postgraduate program. *Journal of Educators Online*, *16*(2), 1–14. https://doi.org/10.9743/jeo.2019.16.2.7

Masa'deh, R., Tarhini, A., Bany Mohammed, A., & Maqableh, M. (2016). Modeling factors affecting student's usage behaviour of e-learning systems in Lebanon. *International Journal of Business and Management*, *11*(2), 299–312. https://doi.org/10.5539/ijbm.v11n2p299

Ministry of Education Malaysia. (2018). Statistik pendidikan tinggi 2018. In *Higher Education Statistic 2018: Ministry of Education Malaysia*. https://doi.org/10.1002/chem.200802548

Newland, B., & Byles, L. (2014). Changing academic teaching with Web 2.0 technologies.

Innovations in Education and Teaching International, *51*(3), 315–325. https://doi.org/10.1080/14703297.2013.796727

Ngampornchai, A., & Adams, J. (2016). Students' acceptance and readiness for E-learning in Northeastern Thailand. *International Journal of Educational Technology in Higher Education*, *13*(1). https://doi.org/10.1186/s41239-016-0034-x

Niehaves, B., & Plattfaut, R. (2014). Internet adoption by the elderly: Employing IS technology acceptance theories for understanding the age-related digital divide. *European Journal of Information Systems*, *23*(6), 708–726. https://doi.org/10.1057/ejis.2013.19

Punnoose, A. C. (2012). Determinants of intention to use eLearning based on the technology acceptance model. *Journal of Information Technology Education:Research*, *11*(1), 301–337. https://doi.org/10.28945/1744

Salloum, A. S., & Shaalan, K. (2018). Factors affecting students' acceptance of e-learning system in higher education using UTAUT and structural equation modeling approaches. *Proceedings of the International Conference on Advanced Intelligent Systems and Informatics 2018*, *2018*(845), 469–480. https://doi.org/10.1007/978-3-319-99010-1

Schmitz, G. S. (2013). Development and validation of a student self-efficacy scale. *Journal of Nursing & Care*, *2*(1), 1–6. https://doi.org/10.4172/2167-1168.1000126

Schroeder, A., Minocha, S., & Schneider, C. (2010). The strengths, weaknesses, opportunities and threats of using social software in higher and further education teaching and learning. *Journal of Computer Assisted Learning*, *26*(3), 159–174. https://doi.org/10.1111/j.1365-2729.2010.00347.x

Sekaran, U., & Bougie, R. (2016). Research methods for business :A skill building approach. In *John Wiley & Sons Ltd* (7th editio). https://doi.org/10.1007/978-94-007-0753-5_102084

Selvarajah, K., Krishnan, T., & Hussin, H. (2017). E-learning readiness on bumiputera SME's intention for adoption of online entrepreneurship training in Malaysia. *Management*, *7*(1), 35–39. https://doi.org/10.5923/j.mm.20170701.04

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 and Education*, *50*(4), 1183–1202. https://doi.org/10.1016/j.compedu.2006.11.007

Tagoe, M. (2012). Students' perceptions on incorporating e-learning into teaching and learning at the University of Ghana. *International Journal of Education and Development Using Information and Communication Technology*, *8*(1), 91–103.

Tan, P. J. B. (2013). Applying the UTAUT to understand factors affecting the use of english e-learning websites in Taiwan. *SAGE Open*, *3*(4), 1–12. https://doi.org/10.1177/2158244013503837

Tarhini, A., Hone, K., Liu, X., & Tarhini, T. (2016). 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. https://doi.org/10.1080/10494820.2015.1122635

Tayebinik, M., & Puteh, M. (2012). Blended Learning or E-learning? *International Magazine on Advances in Computer Science and Telecommunications*, *3*(1), 103–110.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology:Toward a unified view. *MIS Quarterly*, *27*(3), 425–478.

https://doi.org/10.1016/j.inoche.2016.03.015

Yi, M. Y., & Hwang, Y. (2003). Predicting the use of web-based information systems: self-efficacy, enjoyment, learning goal orientation, and the technology acceptance model. *International Journal of Human–Computer Studies*, *59*(4), 431–449.

Yoo, S. J., Han, S. H., & Huang, W. (2012). The roles of intrinsic motivators and extrinsic motivators in promoting e-learning in the workplace: A case from South Korea. *Computers in Human Behavior*, *28*(3), 942–950. https://doi.org/10.1016/j.chb.2011.12.015

Zawaideh, F. H. (2017). Acceptance model for e-Learning services: A case study at Al-Madinah International University in Malaysia. *International Journal of Academic Research in Accounting, Finance and Management Sciences*, *7*(2), 14–20. https://doi.org/10.6007/ijarafms/v7-i2/2785