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The Factors that Influence the Adoption of E-Learning among UTHM Students

Nirmawi Kepar[1] & Juzaimi Nasuredin[1,*]

[1]Department of Management and Technology, Faculty of Technology Management and Business, Universiti Tun Hussein Onn Malaysia, 86400 Batu Pahat, Johor, MALAYSIA

*Corresponding Author

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Abstract: E-learning is the distribution of educational information using electronic media. One sector experiencing a rapid digital change is higher education globally, as COVID effects have disrupted the reality of the new normal. Disruptive educational innovation changes the current educational approaches and modes of learning by providing new options for learning. Also, more students are opting to complete their coursework online because traditional classroom instruction is strict, inflexible, and ineffective from the student's perspective. Therefore, this study explained the factors (performance expectancy, effort expectancy, social influence, and facilitating conditions) that influence the adoption of e-learning among UTHM students using the unified theory of acceptance and use of technology (UTAUT). A set of questionnaires were distributed to 800 UTHM students using Google Forms via email and social media platforms and managed to obtain 241 responses, equivalent to a 30.13% of response rate. This study found that performance expectancy, effort expectancy, social influence and facilitating conditions have a significant relationship towards the adoption of e-learning. Thus, this study managed to identify the factors that influence the adoption of e-learning among UTHM students. The future researcher could widen the scope of this study to other universities in Malaysia.

Keywords: Adoption, E-Learning, Online Learning, UTAUT

1. Introduction

The use of online learning has increased significantly in the past few years (Taylor *et al.*, 2011). Institutions will continue to benefit from the numerous advantages of online learning. Online learning is a practical way to increase student enrolment from the institution's point of view and income without making infrastructure expenditures. Online learning also offers the ability to increase accessibility to education for a much wider audience while addressing the needs of a global, fast-paced society by reducing the need for physical presence in the classroom. Students benefit from the flexibility of online

**Corresponding author: juzaimi@uthm.edu.my*

and hybrid degree programmes, which enable them to maintain their competitiveness in businesses that are undergoing fast change while balancing their professional and personal lives (Taylor *et al.*, 2011).

Information Technology (IT) advancement has impacted teaching and learning and has become increasingly sophisticated and broad (Mamattah, 2016). Information and communication technology (ICT) has spread into all facets of our lives due to the emergence of affordable ubiquitous technology gadgets. This technological revolution is viewed as a constant force that alters our lives on a daily basis. According to predictions, the extraordinary rate of change in information management will continue. It will not go down anytime soon; rather, it will expand to cover the majority of the world's countries (Chinn & Fairlie, 2006).

Students have turned to the internet as a valuable resource for improving their grades. As a result of the emergence and development of the internet, traditional educational institutions such as direct teaching, hard books, and library usage have been reduced dramatically (Mailewa *et al.*, 2020). According to Mamattah (2016), E-learning is the distribution of educational information using electronic media such as the internet. Others define E-learning as web-based learning that incorporates web-based communication, collaboration, knowledge transfer, and training to provide value to individuals and businesses (Kelly & Bauer, 2004). Due to new technology, one no longer needs to be in a traditional classroom in order to learn. Technology can be used to help with teaching and learning (Mamattah, 2016). More students choose to take an online course. They see the traditional classroom mode of instruction to be not flexible, and not effective (Paul & Jefferson, 2019). This research will study the adoption of E-learning in influencing the students' learning outcomes.

One sector experiencing a rapid digital change is higher education globally, as COVID effects have disrupted the reality of the new normal (Dwivedi *et al*., 2020). Disruption is something that abruptly ends or is interrupted. When referring to education, disruption is departing from established, conventional frameworks for the transfer of knowledge (Carolan *et al.*, 2020; Mishra *et al.*, 2020). Innovations that shift education's focus displace or replace pre-existing paradigms. They alter the way that current educational models operate in unanticipated ways, first enhancing the model and then providing fresh perspectives on how to comprehend how it is evolving through time. By providing new learning options, disruptive educational innovation replaces the current approaches and means of information transfer (García-Morales, 2021).

Both developed and developing nations have difficulties with user adoption of e-learning, but developed countries are likely to face less issues with students' readiness to accept and use the e-learning system due to major advancements previously made in this area (Almaiah *et al.*, 2020). According to Tarhini *et al.* (2017), research on the adoption of e-learning is still in its early stages and has not fully analysed the students' opinions. Universities can better understand the demands of their students by researching e-learning adoption, which will ultimately result in a successful e-learning system. Almaiah *et al.* (2020) also claimed that although online learning systems were established in some universities almost 3 years ago, there had yet to be a detailed analysis of the difficulties and factors impacting its use during the COVID-19 epidemic.

Societal changes and the rapid transformation of high-tech society have changed how people perceive education, especially in the aspects of learning and teaching (Hirsch & Ng, 2011). Instead of resisting to maintain a status quo, it is a challenge for the educational field to adapt to these changes so that education can fit the new educational landscape and allow students to maximise the advantages of new technologies as well as the skills they obtained with them. Society should maximise the benefits of information technology (Hirsch & Ng, 2011).

According to Uppal (2017), the exponential increase in the number of individuals who own smartphones, tablets, wireless technologies, 4G networks, as well as social media has ushered in some incredible developments in the online learning environment. However, excessive internet usage might

lead to an addiction to the internet, and when it is seen in the context of a student's academic progress, it can be an issue (Mailewa *et al.*, 2020).

In a typical classroom, how teaching materials are created and/or used differs significantly from how learning materials are offered online. Second, students in an e-learning environment can choose when and where they want to learn, what they want to learn, and how the learning material will be given (Uppal, 2017).

Apart from that, in some cases, some students find it awkward to raise their hands to ask questions; with smart education technologies, students can send their questions electronically to the teachers instantly (Obaid & Omar, 2020). It might be difficult to gauge how much students are participating in online activities like discussion forums. (Hussein *et al.*, 2018). Therefore, this research aims to study the adoption of e-learning in influencing UTHM students' learning experiences.

The research questions that arise in this study are what is the relationship between performance expectancy and the adoption of E-learning? What is the relationship between effort expectancy and the adoption of E-learning? What is the relationship between social influence and the adoption of E-learning? Moreover, what is the relationship between facilitating conditions and the adoption of E-learning?

Therefore, to achieve the research objectives to determine the relationship between performance expectancy and the adoption of E-learning, to determine the relationship between effort expectancy and the adoption of E-learning, to determine the relationship between social influence and the adoption of E-learning, and to determine the relationship between facilitating conditions and the adoption of E-learning are identified. Consequently, the factors that influence the adoption of e-learning is analysed.

This study focuses on the students' adoption of UTHM towards E-learning. The research is conducted among undergraduate students at Universiti Tun Hussein Onn Malaysia. This survey is to explore the student's adoption of e-learning. This study distributed the questionnaire online via Google Forms to email and several social media platforms. The collected data then has been analysed by using SPSS software.

This study contributes to both students and higher learning institutions in terms of adopting e-learning among its students, especially in UTHM. This study shows how e-learning has effectively influenced the students' learning experience in a good way. On the other hand, this study will also help create new information, awareness and knowledge regarding adopting e-learning in the educational field. It could be an indicator for the policymakers to understand better and enhance Malaysia's educational level.

As for the researcher, this study would help explore the existing teaching and learning trend as it is widely adopted in many countries. This study would also help the researcher to get the idea of whether the theory used in this contemporary study can obtain a good result in determining the factors that influence the adoption of e-learning.

2. Literature Review

2.1 Introduction

A literature review is more than just a list of useful sources. To acquire a wide understanding of the area, reviewing entails analysing individual sources as well as elaborating on them. Previous papers, opinions, and empirical findings on student learning experience and e-learning discussed by numerous scholars and researchers are discussed in this chapter. Scientific papers, journals, theses, and books connected to the research title were used to compile the research data.

This study wants to identify the adoption of e-learning among UTHM students. A literature review has been conducted to understand this area further and see these things clearly. With this, the researcher can place their study in the context.

2.2 Adoption of E-Learning

E-learning is a type of education in which students and instructors communicate, exchange knowledge, and engage through computerised communication networks (Bermejo, 2005). The adoption of e-learning depends on a learner's decision to utilise the technology, referred to as behavioural intention in the literature (Davis *et al.*, 1989).

Learning is the process by which efficient environmental contact through the senses leads to the development of a reasonably stable modification in stimulus-response relationships. Learning is a relatively long-term change in behaviour induced by experience. On the other hand, learning as a process should be distinguished from behavioural outcomes. Learning does not always result in a change in behaviour; in other cases, the behaviour may remain essentially constant while the stimuli that elicit it alter in efficacy (Lachman, 1997).

Today, the method of e-learning has become common because it is a valuable method for increasing the efficiency of students and educators to supplement or substitute formal schooling (Aloia & Vaporciyan, 2019). Students may access ICT materials available in such web networks to gain a large variety of methods to obtain information in terms of educational content. This approach can also help students engage with different learner experiences rendered online, such as the content of previous articles, thereby promoting knowledge sharing. As such, online learning provides students with a culturally and personally oriented learning experience that the traditional school framework cannot deliver.

The intersection of these multiple factors, such as spaces and practices, educational activities, and students' subjective experiences in various learning environments, demonstrates how these multiple elements overlap and influence students' learning experiences (Closs *et al.*, 2022).

2.3 The Factors Influencing the Adoption of E-Learning

(a) Performance Expectancy

The degree to which a person expects that using the system would help him or her to improve performance at work is known as performance expectancy. Performance expectancy is correlated with perceived utility, intrinsic motivation, work fit, relative advantage, and outcome expectations in all five models. As these constructs emerged in the literature, some authors recognised the connections between them, such as the connections between usefulness and extrinsic motivation, usefulness and work fit, usefulness and relative advantage, and usefulness and outcome expectations (Davis *et al.*, 1989).

(b) Effort Expectancy

Effort expectancy refers to people's perceptions of how easy or difficult it is to use technology (Waheed *et al.*, 2015). According to Vinodh and Mathew (2012), there is a link between effort expectation and behavioural intention to adopt the technology of electronic governance. Similarly, Raman and Don (2013) stated how effort expectancy positively influenced preschool teachers' acceptance of using the Learning Management System.

TAM and UTAUT have been used to investigate how students and teachers in higher education embrace e-learning and how employees in business accept vocational e-learning. However, research has primarily been undertaken in wealthy countries, with contradictory results: the importance of perceived ease of use is greatest in vocational contexts, while the model's application in developing

countries still needs to be tested. Effort expectancy is similar to the ease of use (TAM), and it measures how easy it is to use a system (Mehta *et al.*, 2019).

(c) Social influence

The social influence measures how much a person believes influential individuals should employ the new approach. The social influence is reflected as a subjective norm in TAM2, social components in, and image in IDT as a direct predictor of behavioural intention. Thompson *et al*. (1991) selected the term "social norms" to represent this concept and acknowledged its similarity to the subjective norm established in TRA. Although having varied names for it, each of these structures has the idea that the person's behaviour is influenced by how they believe others will see them as a result of having utilised the technology.

(d) Facilitating Conditions

The availability of enough resources and assistance are referred to as facilitating conditions for technology use (Venkatesh *et al*., 2003). Lack of direction, delayed support, insufficient information, and limited resources may make it more difficult for students to accept web-based technologies (Nanayakkara, 2007). UTAUT was designed in the organisational setting, enabling elements to directly affect the real usage of technology because constant assistance and training were provided to each individual (Venkatesh *et al*., 2012).

Facilitating conditions refer to users' idea that a system like mixed learning, exists in an organisation and the technological and organisational infrastructure necessary to support its use (Moorthy *et al.*, 2019). This means that if a person thinks his or her company has the resources to implement blended learning, he or she will create behavioural intentions to do so. Rudhumbu (2019), in his study, stated that students who feel that their institution has enough suitable technological and organisational infrastructure to enable mixed learning will develop behavioural intents to employ the learning mode in their academic pursuits.

2.4 Unified Theory of Acceptance and Use of Technology (UTAUT)

The Unified Theory of Acceptance and Use of Technology (UTAUT) has been utilised in a number of studies as a baseline framework to assess technology use and adoption. The UTAUT concept incorporates four categories as antecedents of behavioural intention and use behaviour: performance expectancy, effort expectancy, social influence, and facilitating conditions (Ul-Ain *et al.*, 2015).

This study uses the UTAUT model to provide contemporary information on the adoption of E-learning among UTHM student in order to understand and further facilitate how E-learning has affected these students in their studies. According to Raza *et al.* (2020), UTAUT is a nicely designed model that accounts for almost 70% of the diversity in technology adoption.

2.5 Hypothesis Development

Performance expectancy is concerned with people's perceptions of how useful technology is for carrying out certain tasks (Waheed *et al.*, 2015). According to Sumak *et al.* (2010), behavioural intention to use LMS is significantly affected directly by performance expectancy. El-Gayar and Moran (2006) demonstrated how performance expectancy has a substantial impact on people's behaviour, including their decision to accept tablet PCs. It is thought that in the context of this study, students' behavioural intention to utilise LMS is based on their favourable assessment of LMS's use in carrying out their educational activities. Based on the mentioned studies, the following hypothesis was formed:

Hypothesis 1: Performance expectancy has a significant relationship on the UTHM student's adoption of E-learning.

The "degree of simplicity and ease of use of a system" is known as effort expectancy (Venkatesh *et al.*, 2003). It is therefore based on how simple users think a system will be to utilise in carrying out their activities (Huang & Kao, 2015). There was a connection between the effort expectations and the behavioural intents of technology users to adopt flipped courses (Abu Gharrah & Aljaafreh, 2021). Moreover, Rudhumbu's study from 2022 discovered that students' behavioural intents to use mixed learning as a technique of learning were greatly influenced by their expectation of effort. Based on the previous research, the following theory was developed:

Hypothesis 2: Effort expectancy has a significant relationship on the UTHM student's adoption of E-learning.

According to Venkatesh *et al.* (2003), social influence is the influence of other people's (peers, instructors, and friends) opinions on a person's intention or usage behaviour. According to Al-Shafi *et al.* (2009), Peer perceptions of e-government services have a social influence on employees, which in turn affects their behaviour and intention to use e-government services. Fidani and Idrizi (2012) also backed the strong connection between social impact and behavioural intention to adopt learning management system. This study found that professors' or friends' perceptions of learning management systems have an impact on students' intentions to use them. The third hypothesis consequently formed:

Hypothesis 3: Social influence has a significant relationship on the UTHM student's adoption of E-learning.

According to Abu-Gharrah and Aljaafreh (2021), there is a relationship between facilitating conditions and users' willingness to accept a learning system like blended learning. A study by Rudhumbu (2019) found that the facilitating conditions significantly affected university students' behavioural intentions to adopt blended learning as a learning style. This implies that a supportive atmosphere with the required infrastructure (technical and administrative) is critical in the development of students' behavioural intents to adopt blended learning as a learning method. A study by Lu *et al.* (2020) and Sattari *et al.* (2017) shows that facilitating environments support a learning environment that allows students to establish behavioural intents to embrace systems in their studies, such as blended learning. Therefore, the fourth hypothesis was formed:

Hypothesis 4: Facilitating conditions has a significant relationship on the UTHM student's adoption of E-learning.

2.6 Conceptual Framework

This study uses the UTAUT model to provide contemporary information on the adoption of E-learning among UTHM students. This study evaluates students' experiences with online learning in this advanced technology era, with characteristics such as students' learning experience, effort expectations, enabling conditions, and motivation that appears in this theory.

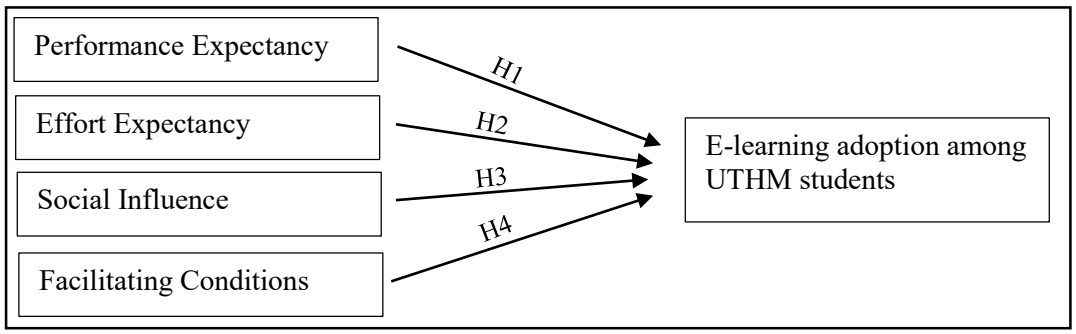

Figure 1: Conceptual framework

3. Research Methodology

The quantitative method was used as the primary methodology in this study. The research methodology outlined the process that was followed while doing this study. The reason for the research design, research instruments, data collection technique, and other aspects was briefly presented.

3.1 Research Design

This study used survey methods to collect data using a quantitative approach. According to Mukherjee (2017), research design aids in determining the problem that will be addressed in the study, such as when, how much, and where, among other crucial questions for a research project.

3.2 Research Population and Sampling

In this study, the targeted population is the students of UTHM. The total population of UTHM, according to PPA as of the year 2022, is estimated to be around 13,639 undergraduate students in the main campus of UTHM.

In this study, the sampling design used is probability sampling, which is simple random sampling. According to Krejcie and Morgan (1970), the sample size is 370 respondents. Hence, the targeted respondents are 370 students, and the questionnaires have been distributed to the students of UTHM.

3.3 Research Instrumentation

Questionnaires have been used as the research tool for the respondents in this study. Following the formulation of the hypothesis, the instrument is created. This study's research tool is a self-administered questionnaire. Section A, Section B, Section C, Section D, Section E, and Section F comprise up the five parts of the study's tools. The survey from the previous study has been adopted in this study. The questionnaires from several studies by Chen (2022), Mehta *et al*. (2019), Rudhumbu (2022), Ul-Ain (2015) and Venkatesh *et al*. (2003) are used and adjusted based on how well they fit the objectives of the research topic.

3.4 Pilot Test

Before refining the research design and questionnaire, a group of 25 UTHM students was given a set of questionnaires to answer as a pilot study. The researchers improved the quality of those questions that were judged to be doubtful and perplexing. This is to ensure that respondents can simply complete the questionnaire.

Table 1: Cronbach's alpha value for pilot test

Instrument	No. of items	Value of Cronbach's Alpha
E-learning adoption among UTHM students	8	0.741
Performance expectancy	6	0.828
Effort expectancy	5	0.780
Social influence	4	0.792
Facilitating conditions	6	0.844

3.5 Data Collection

The methods employed in research to gather relevant data are referred to as the data collection method. Primary and secondary data are the two types of data that are commonly used. For this study, the primary data were collected using structured questionnaires via Google Forms, and the questionnaire was distributed to email and social media platforms. In comparison, the secondary data were obtained from published studies such as journals, articles and theses.

3.6 Data analysis

Analysing data involves investigating the obtained component via the use of analytical and logical reasoning. To determine whether the study's goal was achieved, the data would be analysed. The Statistical Package for the Social Sciences (SPSS) tool was used to analyse the data once they had been gathered and the pilot test was completed.

(a) Reliability Analysis

The minimum acceptance estimate of reliability is in between 0.60 to 0.70. The extent to which an instrument measures what we wish to measure is referred to as an instrument's validity (Creswell, 2003). In contrast, a concept's internal stability and consistency are frequently used to describe instrument reliability (Creswell, 2003). In addition, Sekaran and Bougie (2016) add that a measure's validity depends on whether it measures the intended outcome and not anything else.

(b) Descriptive analysis

The SPSS statistical program was used to evaluate the data collected from the questionnaire about the use of e-learning in influencing the learning experience of UTHM students. The demographics in this study are analysed using descriptive analysis based on the respondents' responses, including gender, age, current year of study, faculty, and current CGPA. Additionally, descriptive analysis was utilised to calculate the frequency, percentage, mean and standard deviation of the data.

(c) Normality test

The purpose of the normality test is to guarantee that the data obtained is evenly distributed. Data from a normal distribution should exhibit a symmetrical bell-shaped curve with the same mean, median, and mode. As a result, the researcher used graphical or numerical tools to conduct a normality test. To test data normality, numerical approaches were used in this study. The Kolmogorov-Smirnov (K-S) and Shapiro-Wilk (S-W) tests compare data to a normal distribution to determine if it is normal.

(d) Correlation analysis

The statistical method for determining the strength of a relationship between two quantitative variables is known as correlation analysis. While a moderate correlation denotes that the variables are only tangentially related, a high correlation indicates a significant link between two or more variables (Shoba Ranganathan *et al*., 2019). The relationship between the independent variables (performance expectancy, effort expectancy, social influence, and facilitating conditions) and the dependent variable (students' adoption of e-learning) was examined in this study using correlation analysis.

4. Results and Discussion

This chapter discusses the results and the analysis of the information gathered from the respondents' answers to the survey used for the study. The information received from the questionnaire was evaluated in order to respond to the research question and accomplish the study's objective. The analysis was carried out utilising version 26 of the Statistical Package for Social Science (SPSS).

4.1 Response Rate

13,639 students make up UTHM's undergraduate student population (PPA, 2022). For this study, a total of 370 sample sizes for the targeted respondent were chosen. The questionnaire through Google Forms was sent to over 800 UTHM students via email and social media platforms. As a result, 241 out of the over 800 valid questionnaires were gathered. Thus, the number of respondents that have answered the questionnaire is 241 respondents.

4.2 Reliability Analysis

The Cronbach's alpha should be between 0 and 1, according to suggestions made by Hair *et al*. (2006, 2010). To ensure validity, a reliability test was carried out on an actual study. Cronbach's alpha coefficient was used to evaluate each questionnaire component's reliability and examine the internal consistency of each scale item for each primary construct.

The Cronbach's alpha value for the UTHM students' adoption of E-learning was 0.662, while it was 0.645 for the performance expectancy, 0.672 for effort expectancy, 0.763 for social influence and 0.701 for facilitating conditions, according to the reliability test results. An acceptable value is often indicated by an alpha value better than 0.6. If the Cronbach Alpha is more than 0.6, a construct or variable is considered dependable (Bryman and Bell, 2007). Cronbach's alpha values for each instrument are shown in Table 2 below.

Table 2: Cronbach's alpha value for each instrument

Instrument	No. of items	Value of Cronbach's Alpha
E-learning adoption among UTHM students	8	0.662
Performance expectancy	6	0.645
Effort expectancy	5	0.672
Social influence	4	0.763
Facilitating conditions	6	0.701

4.3 Descriptive Analysis

(a) Gender

The demographic responses from UTHM students are broken down by gender in the table below. A total of 117 males and 124 females participated in this study. Male respondents comprised 48.5% of the total respondents, compared to 51.5% of female respondents. According to the gender distribution of respondents, females make up the majority of UTHM students.

(b) Age

The majority of respondents come from the 19-24 age group, which are 195 respondents (80.9%), followed by 25 - 34 years old, 45 respondents (18.7%). In contrast, the minority of the respondents were those over 35 years old and above, consisting of 1 respondent (0.4%). The higher percentage was found in the age category of 19 to 24 years, as observed.

(c) Year of Study

According to the respondents' current academic year, 206 (85.5%) of the respondents in this survey are fourth-year students, who make up the majority of respondents. 33 respondents (13.7%) are third-year students. In comparison, 2 (0.8%) respondents are second-year students. Based on the current year of study distribution, it can be inferred that the majority of responses among UTHM students are fourth-year students.

(d) Faculty

According to the respondents' faculty, 125 (51.9%) respondents are FPTP students, who make up the majority of respondents—followed by 34 respondents (14.1%) from FSKTM, 29 (12%) respondents from FPTV, 26 (10.8%) respondents from FKAAB, 16 (6.6%) respondents from FKMP and 11 (4.6%) respondents from FKEE. Based on the faculty distribution, it can be seen that the majority of responses among UTHM students are from FPTP.

(e) Current CGPA

Out of 241 respondents, most of respondents, 177 respondents (73.4%) obtained a CGPA of 3.5 and above. In comparison, 64 respondents (26.6%) obtained a CGPA between 2.5 to 3.4. It can be seen that most of the respondents have a CGPA of 3.5 and above.

(f) Central Tendencies Measurement of Construct

Based on the mean measurement level, the mean value range is between 1.00 and 2.33, and it is categorised as low level. A mean value between 2.34 and 3.66 is considered to be the median level. A high level is defined as the mean value between 3.67 and 5.00. (Wiersma, 2000). The calculation of the mean and standard deviation for each component in each variable are shown in Appendix C.

(g) Mean and Standard Deviation of E-Learning Adoption

The e-learning adoption question has a high mean value. The highest mean value (M=4.32; SD=0.476) is the question of EA4. Many respondents chose e-learning as one of their favourite technologies for learning purposes.

(h) Mean and Standard Deviation of Performance Expectancy

The performance expectancy question has a high mean value. The highest mean value (M=4.39; SD=0.522) is the question of PE4. Many believe that e-learning would be easier for them to complete any of their tasks.

(i)Mean and Standard Deviation of Effort Expectancy

The effort expectancy question also has a high mean value. The highest mean value (M=4.35; SD=0.504) is the question of EE1. Many students perceive it is easy to learn how to use the e-learning mode.

(j) Mean and Standard Deviation of Social Influence

Social influence also has a high mean value. The highest mean value (M=4.30; SD=0.478) is the question of SI4. Many students agree that their university, which is Universiti Tun Hussein Onn Malaysia (UTHM), supports the use of e-learning in their education.

(j) Mean and Standard Deviation of Facilitating Conditions

The facilitating conditions questions have a high mean value as well. The highest mean value (M=4.46; SD=0.507) is the question of FC3. Many students stated that the e-learning mode is compatible with the other Information and Communications Technology that they used in their studies.

4.4 Normality Test

The normality test determines a parametric test's applicability. By comparing our data to a normal distribution, the Kolmogorov-Smirnov test (K-S) and Shapiro-Wilk test (S-W) are intended to determine whether our data are normal. Due to the 241 respondents, a Kolmogorov-Smirnov test is used in this study. The data are considered to be normal if the value of p is greater than 0.05, and non-normal if the value of p is less than 0.05. Based on the table below, the significant value is 0.000 which is less than 0.05. This shows that the data of this study is not normal.

Table 3:Test of normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
E-Learning Adoption	.188	241	.000	.874	241	.000

a. Lilliefors Significance Correction

4.5 Correlation Analysis

Correlation analysis was utilised to examine whether there was a correlation between independent and dependent variables. Due to the non-normal data in this study, Spearman's rho was used. To analyse the numbers between 0(no relationship) and 1(perfect relationship), Cohen's (1988) advice was used. When r is between 0.1 and 0.29, there is only a weak relationship; between 0.30 and 0.49, there is a moderate relationship; and at 0.50 and above, there is a strong relationship.

Table 4: Spearman's rho

Correlations					
	E-learning Adoption	Performance Expectancy	Effort Expectancy	Social Influence	Facilitating Conditions

Spearman's rho	E-learning Adoption	Correlation Coefficient	1.000	.492**	.303**	.421**	.482**
		Sig. (2-tailed)	.	.000	.000	.000	.000
		N	241	241	241	241	241
	Performance Expectancy	Correlation Coefficient	.492**	1.000	.532**	.294**	.372**
		Sig. (2-tailed)	.000	.	.000	.000	.000
		N	241	241	241	241	241
	Effort Expectancy	Correlation Coefficient	.303**	.532**	1.000	.185**	.407**
		Sig. (2-tailed)	.000	.000	.	.004	.000
		N	241	241	241	241	241
	Social Influence	Correlation Coefficient	.421**	.294**	.185**	1.000	.360**
		Sig. (2-tailed)	.000	.000	.004	.	.000
		N	241	241	241	241	241
	Facilitating Conditions	Correlation Coefficient	.482**	.372**	.407**	.360**	1.000
		Sig. (2-tailed)	.000	.000	.000	.000	.
		N	241	241	241	241	241

**. Correlation is significant at the 0.01 level (2-tailed).

4.6 Hypothesis testing

(a) Hypothesis 1:

H1: Performance expectancy has a significant relationship on the UTHM student's adoption of E-learning.

Referring to table 4, performance expectancy was positively significant correlated, (0.492), p (0.000). This study proves that the performance expectancy and the adoption of E-learning has a moderate positive significant relationship Hence, H1 is accepted.

(b) Hypothesis 2

H2: Effort expectancy has a significant relationship on the UTHM student's adoption of E-learning.

Referring to the table 4.14, effort expectancy was positively significant correlated, (0.303), p (0.000). This study proves that the effort expectancy and the adoption of E-learning has a moderate positive significant relationship Thus, H2 is accepted.

(c) Hypothesis 3

H3: Social influence has a significant relationship on the UTHM student's adoption of E-learning.

Referring to the table 4.14, social influence was positively significant correlated, (0.421), p (0.000).

This study proves that the social influence and the adoption of E-learning has a moderate positive significant relationship Hence, H3 is accepted.

(d) Hypothesis 4

H4: Facilitating conditions has a significant relationship on the UTHM student's adoption of E-learning.

Referring to the table 4.14, facilitating conditions was positively significant correlated, (0.482), p (0.000). This study proves that the facilitating conditions and the adoption of E-learning has a moderate positive significant relationship Hence, H4 is accepted.

Table 5: Summary of the results of hypotheses testing

	Hypothesis	Result
H1:	Performance expectancy has a positive significant relationship on the UTHM student's adoption of E-learning	Accepted
H2:	Effort expectancy has a positive significant relationship on the UTHM student's adoption of E-learning	Accepted
H3:	Social influence has a positive significant relationship on the UTHM student's adoption of E-learning	Accepted
H4:	Facilitating conditions has a positive significant relationship on the UTHM student's adoption of E-learning	Accepted

5. Discussion and Conclusion

This chapter offers a synopsis of the research work, a review and interpretation of the findings, and suggestions for further investigation. Additionally, it summarises the limitations, potential areas for future research, and some recommendations. The conclusion of the entire research investigation is then delivered.

5.1 Discussion based on objectives.

(a) Identifying the relationship between performance expectancy and student's adoption of e-learning

H1: Performance expectancy has a significant relationship on the UTHM student's adoption of E-learning

The correlation coefficient size for performance expectancy is 0.492, according to Spearman's rho. The significant value below 0.05, or 0.000, of the correlation coefficient, which is correlated to the student's acceptance of e-learning, is 0.000. As a result, H1 is accepted. The outcomes are consistent with a study by Islam (2013) where it explains why some students think they will adopt an online learning system in their study courses if they find it advantageous for carrying out educational tasks. The findings were in line with other research that indicated the association between performance expectancy and behavioural intention in the context of Moodle (Sumak *et al*., 2010). AbuGharrah and Aljaafreh (2021), discovered that Performance Expectancy had a substantial impact on university students' behavioural intents to accept blended learning that comprises e-learning. Students will embrace the e-learning mode as a learning style if they believe it will help them reach their primary learning objective, which is to do better academically. Also, this finding is in line with those of earlier

research by Rudhumbu (2022), which discovered that students will accept e-learning in their academic studies once they perceive it as beneficial.

(b) Identifying the relationship between effort expectancy and student's adoption of e-learning

H2: Effort expectancy has a significant relationship on the UTHM student's adoption of E-learning.

The correlation coefficient size for effort expectancy is 0.303, according to Spearman's rho. The significant value below 0.05, or 0.000, of the correlation coefficient, which is correlated to the student's adoption of e-learning, is 0.000. As a results, H2 is accepted. According to a number of previous studies, users who think a system, like online learning, will be simple to use in carrying out their duties are more likely to create behavioural intentions to adopt it as a learning mode (Huang & Kao, 2015). Research by Abu-Gharrah and Aljaafreh (2021) that indicated users' behavioural intentions to adopt a system like online learning at universities were greatly influenced by their expectations of effort provided additional support for this.

(c) Identifying the relationship between social influence and student's adoption of e-learning

H3: Social influence has a significant relationship on the UTHM student's adoption of E-learning.

The correlation coefficient size for social influence is 0.421, according to Spearman's rho. The significant value below 0.05, or 0.000, of the correlation coefficient, which is correlated to the student's adoption of e-learning, is 0.000. As a results, H3 is accepted. A study by Ain *et al*. (2016) stated that peer impact was also mentioned as being significant in every decision about technology adoption. Fidani and Idrizi (2012) reported similar findings, asserting that social influence significantly affected behavioural intention to embrace online learning. The results of this study corresponded with those of earlier studies. People are more likely to accept and use a system when they believe important people in their social network believe they should, according to research by Venkatesh *et al*. (2012). Moreover, studies by Morton *et al*. (2016) and Kiviniemi (2014) demonstrated a significant relationship between social influences and users' behavioural intentions to embrace an online learning system.

(d) Identifying the relationship between facilitating conditions and student's adoption of e-learning

H4: Facilitating conditions has a significant relationship on the UTHM student's adoption of E-learning.

The correlation coefficient size for facilitating conditions is 0.482, according to Spearman's rho. The significant value below 0.05, or 0.000, of the correlation coefficient, which is correlated to the student's adoption of e-learning, is 0.000. Therefore, H4 is accepted. Sattari *et al*. (2017) and Lu, Le and Vu (2020) found that favourable settings encouraged a learning environment that allowed students to form behavioural intents to embrace online learning systems. According to Rudhumbu (2022), it is simpler for students to develop the behavioural intentions to accept online learning as a mode of instruction if a university environment has adequate and suitable ICT infrastructure as well as qualified technical support groups to assist students in successfully engaging with their studies using the online learning mode. The supporting circumstances significantly affected how university students behaved and whether they intended to use blended learning as a learning method.

5.2 Limitation of the study

Even though this study provides new information about e-learning use from the viewpoint of the students, the study's limitations were unavoidable. The fact that the study focused on just one university could have had an impact on how generalisable the findings were. It would be advantageous to broaden the sample to include other universities in Malaysia and possibly in other nations in order to generalise results and make comparisons based on universities, fields of study, prior experience with online learning, and the presence of educators training programmes at this transitional time.

However, this study is not being undertaken over an extended period of time. Consequently, it would be very helpful to conduct a longitudinal study or long-term research that would allow us to see how universities adapted to primarily online teaching and learning, whether and how educators adapted the teaching style, and whether or not the students' viewpoints toward online learning are changing from more than one point in time, particularly during this fast-paced new digital era.

Other environmental, system and organisational influences that could have changed how e-learning was used were not considered in this study. Although this study's results are significant, further research is required to validate the framework in various organisational contexts.

It is also necessary to look into the potential effects of the cultural influences of various developing and developed countries viewpoints where the use of Information and Communication Technologies varies from country to country which could significantly affect the result of this study.

5.3 Recommendations

In order to provide students with the necessary and sufficient ICTs for online learning that may successfully augment traditional physical learning in universities, IT infrastructure needs to receive greater funding from universities. Students might be motivated to utilise it and may develop positive attitudes towards it, which may lead to the creation of behavioural attitudes to embrace it, if there is an adequate and acceptable ICT infrastructure for online learning. If universities want to use ICT for online learning and teaching, they must improve both groups' ICT proficiency.

In order to improve the study, the researcher would like to recommend some suggestions that can be considered. This research only collected the data in UTHM, Batu Pahat, Johor. Hence, the future researcher could wider the scope to other higher education institutes in the other state of Malaysia to reduce the bias and enhance the reliability and accuracy of the data. On the other hand, the same study also could be done in different countries according to their economic development to get an insight into how it affects the adoption towards digital technologies, particularly online learning technologies.

5.4 Conclusion

This study aims to study the adoption of E-Learning among UTHM students. This study has identified that the independent variables, which are performance expectancy, effort expectancy, social influence and facilitating conditions, have a significant relationship to the dependent variable, the student's adoption of e-learning. Many of the past studies on this study's topic have also shown positive results, and this study has managed to answer the research questions and managed to meet and fulfil its research objectives.

The study's primary conclusions should be summed up in the conclusion, and it should reiterate the most important points deduced from trends seen and raised in relation to the data. To encourage the continuation of the current research, certain recommendations ought to be mentioned.

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