Continuance Intention to Use eLearning (CIDOS) System Among Educators in Northern Polytechnic, Malaysia

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ABSTRACT

Online learning and teaching have become an increasingly popular method around the world. In addition, many higher education institutions in Malaysia have used LMS as their popular choice for electronic learning and communicating. In Polytechnic, Curriculum Information Document Online System (CIDOS) platform has been used as online learning method in LMS which provide learning and teaching process that are simpler and flexible. However, the successful of the implementation on LMS in Malaysia Higher Learning Institution (HLI) had been measured by the continuance of usage of the facility for teaching and learning. This study aims to determine the factors that have significant relationship towards the continuance intention to use LMS among lecturers in northern polytechnic by using the Unified Theory of Acceptance and Use of Technology (UTAUT) theory, namely performance expectancy, effort expectancy, social influence and facilitating condition. A total of 248 questionnaires were distributed to polytechnic lecturers using simple random sampling. The results showed that effort expectancy, social influence, and facilitating conditions significantly affect the continuance intention to use LMS, while performance expectancy had no significant influence. Facilitating conditions had the strongest influence.

Keywords: *Unified Theory of Acceptance and Use of Technology (UTAUT) theory, continuance intention to use LMS, Northern Polytechnic*

1.0 INTRODUCTION

The challenge of integrating Information and Communication Technology (ICT) in education is a prominent issue in the 21st century, with Malaysia striving to enhance its Technical and Vocational Education and Training (TVET) programs to achieve global recognition (Minghat et al., 2013). As part of the Malaysia Education Development Plan 2015-2025 (2023), it was projected that by 2020, 50% of courses across the nation would be delivered online, a shift further accelerated by the COVID-19 pandemic.

E-learning has been a key feature of Malaysia's educational landscape for nearly two decades, with the introduction of the Curriculum Information Document Online System (CIDOS) in 2010 as an online learning tool for polytechnics (Makzin, 2016). Aligned with these efforts, the Department of Polytechnic Studies mandated that 50% of courses in public higher education institutions (IPTAs) be offered online, promoting a blended learning approach that integrates 30- 70% online content with traditional classroom teaching (Zainal Abidin et al., 2014).

The flexibility provided by e-learning, particularly through Learning Management Systems (LMS), has revolutionized teaching and learning by allowing both educators and students to select optimal times and locations for their engagement (Chang & Chang, 2012; Rani & Kant, 2013. The success of LMS in Malaysian Higher Education Institutions (HEIs) is contingent upon the continued usage by educators, with factors influencing this behavior often analyzed through models such as the Technology Acceptance Model (TAM) (Ramayah et al., 2010). Popular LMS platforms, such as Moodle and CIDOS, are recognized for enhancing the learning process by providing accessible resources and promoting interaction (Makzin, 2016).

While TAM has been widely used to assess the acceptance and usage of e-learning systems in HEIs worldwide (Almulla, 2021 & Salloum, 2018), there is growing interest in applying the Unified Theory of Acceptance and Use of Technology (UTAUT) to explore educators' continuance intention to use LMS. For instance, Moonsamy & Govender (2018) applied the UTAUT model to examine LMS usage among academics at a South African university. Other studies have also utilized UTAUT to analyze the continued usage of LMS, including research by Muruthy & Yamin (2017) on both students and lecturers, and Islam & Azad (2015), who compared satisfaction and continuance of LMS usage between students and educators.

According to a report by the Malaysian Communications and Multimedia Commission (1 Internet Users Survey 2018, 2018), 61.9% of Internet users leveraged the digital platform for work-related tasks, and 60.2% utilized the Internet for educational purposes. This underscores the pivotal role of ICT in shaping the educational landscape, emphasizing the need for continued exploration of factors influencing the effective and sustained use of LMS in Malaysian higher education. Figure 1 shows the barrier using LMS among lecturers in Polytechnic Tuanku Syed Sirajuddin.

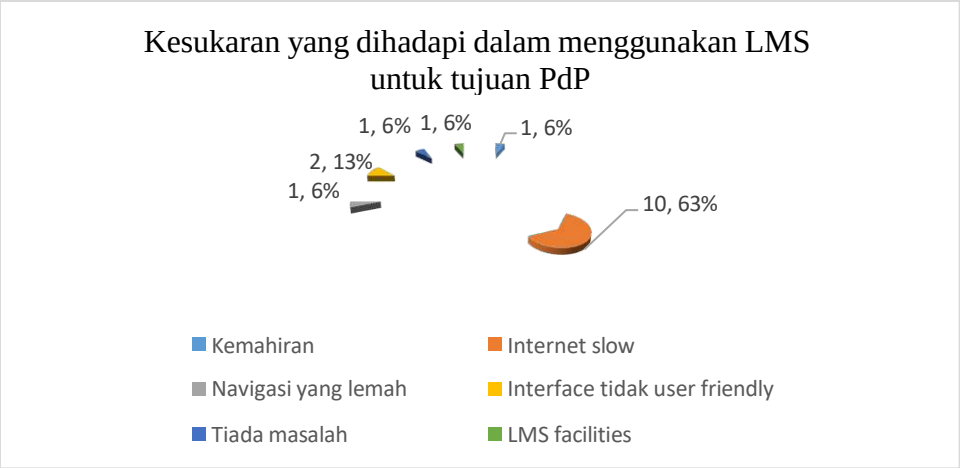

Figure 1: Barriers using LMS among lecturers in Polytechnic Tuanku Syed Sirajuddin

An empirical study at Politeknik Tuanku Syed Sirajuddin (PTSS) identified several barriers to LMS usage, including inadequate internet speed, lack of skills, and insufficient training (Al-alak & Alnawas, 2011). The Ministry of Education's push for online learning in response to COVID-19 highlights the need for better infrastructure (Gouëdard et al., 2020). Research suggests UTAUT is effective in understanding e-learning adoption (Samsudeen & Mohamed, 2019).

Therefore, the purpose of this study is to fill the gap by conducting the continuance intention of Learning Management System (LMS) among lecturers in Northern Polytechnic using UTAUT's theory. The reason for using UTAUT theory compared to other theory like Technology Acceptance Model (TAM), Theory of Planned Behaviour (TPB) and etc., is because UTAUT theory is construct from several of behavioural theories which predict user's behaviour and intention Information Technology (IT). Furthermore, UTAUT accounted for 70 percent of the variance in usage intention better than TAM studies (Marchewka & Kostiwa, 2007) and TAM2 studies that is 60 percent (Venkatesh & Davis, 2000).

This is because there are several previous researches that showed a positive relationship towards their selected system mentioned but for surely there is no research that study the relation of self-efficacy towards the continuance intention of LMS among lecturers in Polytechnic so far.

The UTAUT will focus on social influence, facilitating condition, performance expectancy and effort expectancy in LMS continuance intention.

2.0 LITERATURE REVIEW

2.1 Learning Management System (LMS)

Learning Management Systems (LMS) have garnered substantial investment from the Malaysian Ministry of Education, emphasizing their significance in higher education (Ramayah et al., 2010; Mohd Fisol et al., 2016). LMS, such as CIDOS in polytechnics, provides an integrated platform for content, delivery, and management, promoting accessibility (Abdul Rahman et al., 2010; Makzin, 2016). Popular choices like Moodle have been extensively used in Malaysian higher education (Tatiparthi, 2014). The focus on CIDOS in polytechnics reflects a commitment to e-learning's future expectations. While studies emphasize the positive influence of LMS on teaching and learning (Mohd Fisol et al., 2016), challenges like infrastructure issues and the need for a fast internet connection are acknowledged (Makzin, 2016).

2.2 Underpinning Theory

The UTAUT by Venkatesh et al. (2003) combines eight models to understand technology adoption. In this context, performance expectancy (PE), effort expectancy (EE), social influence (SI), and facilitation conditions (FC) directly influence usage intention. Previous studies using UTAUT have shown varied impacts on technology adoption. The degree to which a person expects that using the system will improve their ability to perform their job is known as their performance expectation. The age and gender of the user moderate PE.

This concept has been shown by Venkatesh et al (2003) to be the best predictor of behavioral intention. Effort expectancy pertains to the level of convenience that comes with utilizing the system. In the early stages of new behavior, users may perceive certain barriers associated with the use of technology (Davis et al (1989), Thompsom et al (1991), and Venkatesh et al. (2003)).

Bellaaj et al (2015) stated that the intention to continue using the e-learning system is also determined by the effort expectancy.

Nonetheless, once the consumer has a better online experience with the system, the effort expectancy (EE) will drop. Next, social influence is defined as the degree to which an individual perceives the importance of others believe, he or she should use the new system and it has a direct determinant of behavioral intention (Venkatesh et al., 2003). Social influence usually appears important only in the early stages of individual experience using technology and it's become nonsignificant with sustain usage (Vankatesh & Davis, 2000).

A study conducted by Moonsamy & Govender (2018) indicated that Social Influence (SI) is not an important factor that influences system use. Hence, according to Venkatesh et al. (2003), the degree to which a person feels that an organizational and technical infrastructure exists to facilitate use of the system is known as the Facilitation Conditions. According to a study by Shiferaw and Mehari (2019), participants' actual usage of an EMR system in a scenario with limited resources was most predicted by their self-efficacy and enabling condition. Furthermore, conducive conditions were found to positively increase behavioral intention (BI), which was regulated by experience rather than actual usage (Al Mansoori et al, 2018).

It was demonstrated to have a favorable link with the intention to utilize the technology or system (Hoque & Sorwar (2017); Rahi et al (2018); and Bellaaj et al (2015)). For instance, PE and EE are key determinants in fitness wearable adoption (Reyes-Mercado, 2017), while facilitating conditions influence e-government service usage (Al Mansoori et al., 2017). This study hypothesizes positive relationships between PE, EE, SI, FC, and the continued intention to use eLearning (CIDOS) system among educators in Northern Polytechnic, Malaysia

2.3 Research Framework

Independent variable (IV)

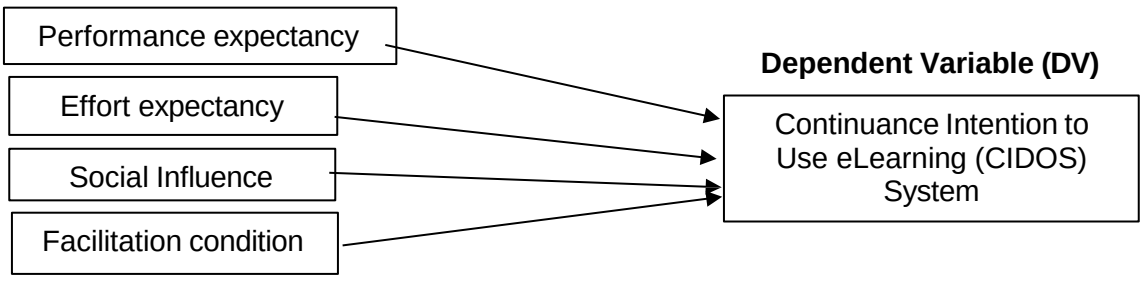

Figure 2: Research Framework for the study

3.0 METHODOLOGY

The research design, employing a descriptive approach to understand the current state of eLearning (CIDOS) system usage, aligns with the quantitative nature of the study (Malhotra, 2012). Utilizing a survey method for data collection through questionnaires allows for efficient gathering of information from a large population (Hair et al, 2010). This approach is known for producing reliable and valid data suitable for statistical analysis (Sekaran & Bougie, 2013). The use of multi-item scales in surveys enhances specificity in measuring the current situation (Lyonet al, 2000), contributing to the deductive reasoning employed in this quantitative research design. The research focuses on continuance intention to use eLearning (CIDOS) system among lecturers in northern Polytechnic, Malaysia in teaching and learning. Among the six polytechnics in the Northern region, three were selected as representatives: Polytechnic Tuanku Syed Sirajuddin (PTSS), Politeknik Sultan Abdul Halim Mu'azam Shah (POLIMAS), and Polytechnic Seberang Perai (PSP). The total population of educators in these three polytechnics is 1,441, and they were chosen due to factors like representativeness and logistical feasibility (Web based Staff Information System (ESIS), 2020) as shown in figure 3.

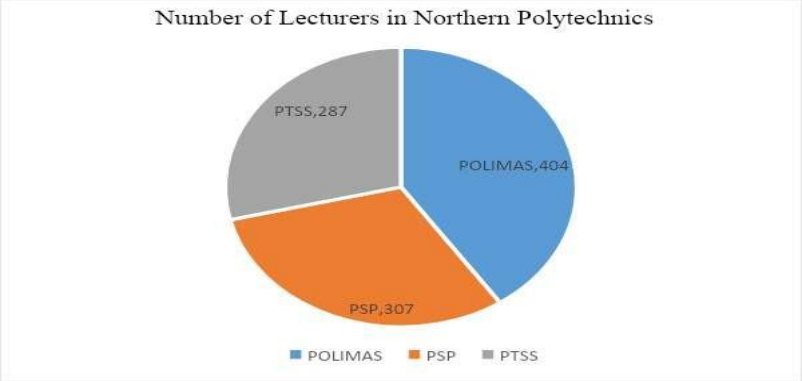

Figure 3: Number of Educators in Northern Polytechnics

Source: Web Based Staff Information System, 2020

The appropriate sample size for conducting research should be greater than 30 and less than 500. This is important for the researchers to avoid engaging in type ii error, which is a tendency to accept statistical results instead of rejecting them (Roscoe, 1975 in Sekaran and Bougie, 2010). According to Krejcie & Morgan (1970), for the population of 16,507, the sample size should be at least 377. In this study, the total population of educators in the three chosen northern polytechnics in Malaysia is around 998. The population size is determined based on the Krejcie & Morgan (1970) table. Based on the table, the appropriate number is minimum 277 sample size. As shown

in Table 1 the number of samples was chosen from the three polytechnics are 300 which means 100 educators for each polytechnic.

Table 1: Sample Size

Name of Polytechnic	Educator's Population (N)	Percentage of sample (%)	Number of Sample (n)
POLIMAS	404	40.48	**112**
PSP	307	30.76	**85**
PTSS	287	28.76	**80**
Total	998	100.00	**277**

The chosen sampling technique for this research is simple random sampling, providing each of the 998 educators aged between 21 to 60 in the three selected northern polytechnics with an equal chance of being included in the study. This method aims to avoid biases and errors in data collection, ensuring a representative subset of the larger population for the research (Sekaran and Bougie, 2010). According to Yip et al (2018), the questionnaire consists of three sections. The first section is about the profile of the respondents, where demography related questions were asked. Then, in Section 2, seeks an opinion regarding the continuance intention to use eLearning (CIDOS) system among educators in Northern Polytechnic, Malaysia.

Following in Section 3 is the questions related to the satisfaction of educators in using LMS. The research incorporates a total of 25 questions across five variables, adapted from previous studies to suit the context of continuance intention to use eLearning (CIDOS) System. The primary focus is on users' continuance intention, with independent variables including performance expectancy, effort expectancy, social influence, and facilitation conditions. Responses are recorded on a five-point Likert scale (1=strongly disagree, 5=strongly agree) for each of the 25 items (Alharbi & Sayed, 2017). By choosing a questionnaire as the data collection method, the scales of measurement are predictable. There are four levels of measurement involved in this study such as nominal, ordinal, interval, and ratio. The questionnaire was also used to collect demographic information, including age, gender, institution, and career.

The primary data collection method is questionnaire distributed through Google Forms for efficiency and cost-effectiveness. Educators' official email addresses obtained from each Polytechnic's Information Technology unit are used to send the questionnaire links.

The data analysis involves both descriptive and inferential procedures using SPSS. Descriptive analysis includes frequency distributions for personal data like age, gender, and education level. Inferential analysis steps include reliability testing using Cronbach's alpha (>0.70), normality

testing through skewness and kurtosis (within ±1 and ±2, respectively), and Pearson's correlation analysis to assess linear relationships between variables. Multiple linear regression analysis is conducted, ensuring fulfillment of tests for normality, linearity, and multicollinearity. The coefficient of determination (r2) gauges the model fit, with a p-value <0.05 indicating significance in predicting the dependent variable based on independent variables (Zhang, 2017).

4.0 DATA ANALYSIS

4.1 Response rate

The questionnaire, spanning 5 pages, garnered good cooperation from respondents, who shared their perspectives on continuous intention to use eLearning (CIDOS) system in teaching and learning based on personal experiences. The targeted sample was 277, but due to some limitations, 248 responses were received (89.5%). The study included educators from all departments across three northern polytechnics, collected through official emails and various social media platforms (including Telegram, WhatsApp, Facebook). The response rate is presented in Table 2.

Table 2: Response rate

Description	Result
Distribute questionnaire	277
Received questionnaire	248
Questionnaire not returned	29
Overall response rate	**89.5%**

4.2 Result Analysis

4.2.1 Reliability Test

By referring to Table 3, it can be concluded that survey items used are reliable and consistent since their Cronbach’s alpha value is greater than 0.50, with a range from 0.823 to 0.922. Cronbach’s alpha has higher internal consistency with a value between 0.5 to 1. Cronbach's is a reliable scale reliability index, but its use and interpretation can be influenced by myths and the range of 0 to 1 (Streiner, 2003). According to Nunnally (1978), the reliability coefficient between 0.50 and 0.60 is sufficient for early stage of research. Therefore, the questionnaire used in this study is a reliable instrument.

Table 3: Reliability Test

Independent Variables	Cronbach's Alpha	Dependent Variables	Cronbach's Alpha
PE	0.914	CI	0.937
EE	0.922		
SI	0.830		
FC	0.823		

4.2.2 Pearson Correlation

Table 4: Inter-correlation on variables study

Variables	PE	EE	SI	FC	CI
PE	1				
EE	.813**	1			
SI	.723**	.656**	1		
FC	.740**	.691**	.699**	1	
CI	.706**	.684**	.678**	.748**	1

Note: ** Correlation is significant at the 0.01 level (2 tailed)

Table 4 presents the Pearson correlation analysis that indicated the strength of the relationship between the independent variables and dependent variables. Based on the results, all the predictors had significant relationships to CI, as the p-value is 0.000, which is less than 0.01. Evans (1996) classified 0.40 to 0.59 as moderate correlation and 0.60 to 0.79 as strong correlation. Consequently, PE, EE, SI, and FC had a strong positive correlation (0.706, 0.684, 0.678, 0.748) towards CI.

4.2.3 Multiple Linear Regression Analysis

Table 5: Model Summary

Model	R	R-Square	Adjusted R-square	Std. Error of the Estimate
1	.799 [a]	.639	.633	.48288

Regression analysis is a technique used to determine the statistical relationship between two or more variables. It indicates the changes in the independent variable, usually associated with the

changes in the dependent variable. A regression analysis is needed when one or more independent variables are hypothesized to affect the dependent variable (Sekaran and Bougie, 2013). Multiple regression analysis has been used for this study to analyze the relationship between the five variables. Based on the multiple regression analysis of Table 4.4, the regression outcome of all four independent variables indicates R is 0. 799 [a], which showed the association between independent variables and dependent variable. The R-square value 0.633 indicates that 63% of the educator's continuance intention to use eLearning (CIDOS) system could be influence by the four predictors (PE, EE, SI, FC) in this conceptual model. The balance of 37% may be explained by other predictors that are excluded in this study.

Table 6: Summary of Coefficients

Model	**Standardize Coefficients Beta**	**T**	**Sig.**
(Constant)		-1.737	.084
Performance Expectancy	.129	1.682	.094
Effort Expectancy	.182	2.657	.008
Social Influence	.190	3.170	.002
Facilitating Condition	.394	6.324	.000

Note. ** p<0.05

This study investigated the relationships between five independent variables (PE, EE, SI, FC, SE) and the dependent variable (CI) to assess educators' use of eLearning (CIDOS) system. The analysis revealed that performance expectancy (PE) did not show a positive relationship with continuance intention, leading to the rejection of Hypothesis 1. In contrast, effort expectancy (EE) exhibited a significant positive relationship with continuance intention, supporting Hypothesis 2. Social influence (SI) was found to have a positive impact on continuance intention, supporting Hypothesis 3. Facilitating condition (FC) also demonstrated a positive relationship with continuance intention, confirming Hypothesis 4. Therefore, this study provides valuable insights into factors influencing the use of eLearning (CIDOS) system among northern polytechnic educators.

Table 7: Summary of Hypothesis Results

Model	Standardized Beta's Coefficients	Result	Direction of Influence
Performance expectancy	.129	Rejected	Negative influence
Effort expectancy	.182	Supported	Positive influence
Social Influence	.190	Supported	Positive influence
Facilitating Condition	.394	Supported	Positive influence

Note. **p<0.05

4.0 CONCLUSION

Findings revealed that performance expectancy did not positively affect the continuance intention, effort expectancy, social influence, and facilitating conditions demonstrated significant positive relationships.

Theoretically, this study contributes to the field of lecturer's continuance intention to use LMS. UTAUT is constructed with four determinants which are performance expectancy, effort expectancy, social influence and facilitating condition. It is demonstrated the fact that three hypotheses out of four are confirmed to have positive relationship on the continuance intention to use LMS among lecturers in northern polytechnic. Meanwhile, performance expectancy found to be no positive relationship on the continuance intention to use LMS among lecturers in northern polytechnic. Garone & et al (2019), stated that performance expectancy has lower correlation towards behavioral intention to use LMS. Throughout this finding, we can learn that most northern polytechnic lecturer's might indicate that the use of LMS is not useful and not increasing their performance in teaching and learning process. In addition, the performance expectancy seems to have strong correlation with effort expectancy. This relationship might be stated the system might assist one's in doing job if one finds the system is easy to use (Moonsamy & Govender, 2018). However, this current study shows that performance expectancy is unrelated with the effort expectancy. Therefore, from the findings we can indicates that most lecturers in northern polytechnic found that LMS that apply in polytechnic very helpful in terms saving times and ease to use while preparing their lecture but still the LMS did not really improvised their work performance in teaching and learning.

Practically, the findings of this study provide valuable insights for e-learning stakeholders, particularly senior management in polytechnics, to identify factors that influence lecturers' continuance use of Learning Management Systems (LMS). Although performance expectancy did not show a significant positive relationship with the intention to continue using the LMS, this issue should not be overlooked by polytechnic management. According to Moonsamy & Govender

(2018), performance expectancy is strongly correlated with effort expectancy, suggesting that a system's effectiveness is often linked to its ease of use. Therefore, enhancing the user- friendliness of the LMS is crucial to encourage greater adoption among lecturers for teaching and learning purposes.

This study provides valuable insights for policymakers in e-learning planning. According to Sija (2020) stated that unclear policies and governance hinder e-learning implementation. Facilitating conditions positively influence LMS usage, but performance and effort expectancy were not significant. Management should focus on quality factors like infrastructure, system software, and training. While social influence positively affects LMS usage, government digital education initiatives boost academic confidence and encouraging continued usage.

Recommendations for future research include broader geographical studies, comparisons between different user groups, and longitudinal studies employing interviews for more accurate data. The study's limitations include a focus on northern polytechnics and a one-time data collection, while its contributions extend to both academic research and practical guidance for CIDOS implementation and improvement.

Overall, this study identifies key factors influencing lecturers' continuance intention to use LMS in northern polytechnics, emphasizing the positive impact of effort expectancy, social influence, and facilitating conditions. Findings offer practical insights for academic research and polytechnic management to enhance LMS implementation, ensuring better alignment with lecturers' needs and expectations.

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