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The E-learning Centralised Systems Adoption During The COVID-19 Pandemic

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Abstract

Online learning had become more important than ever during the unprecedented COVID-19 pandemic worldwide as the series of Movement Control Order (MCO) implemented by the Malaysian Government had restricted face-to-face teaching and learning sessions. The online learning system in Politeknik Mukah Sarawak (PMU) namely the Curriculum Information Document Online System (CIDOS) was implemented based on the Centralised System (CS) routed through one major central hub under the Department of Polytechnic Education and Community College Education (JPPKK). This centralised systems (CS) however forbids educators to share information and documents with the other higher institutions. Hence, this study aims to examine the level of ICT Knowledge and Skills and Access to the Internet and the relationships between centralised systems (CS) towards the adoption of e-learning among the lecturers in Politeknik Mukah Sarawak (PMU). The Unified Theory of Acceptance and Use of Technology (UTAUT) was employed in this study. Both descriptive and correlation analysis were conducted to explain the finding of the study. A total number of 103 lecturers from seven academic departments participated in this study. The results of this study indicate that the adoption between the Centralised Systems and CIDOS was significantly positive. The outcomes of this research can benefit the decision-maker of Malaysian polytechnics in enhancing and strengthening the quality of online learning and teaching delivery as well as promoting its effectiveness.

Keywords: - e-learning, centralised system, polytechnics, Sarawak

1. Introduction

Polytechnics, as one of the higher institution divisions in Malaysia was introduced in Malaysia, with the funding from World Bank in 1969 (Education Projects Division Asia, 1974) are not left behind in adopting the hybrid learning approach in their teaching and learning activities. The online learning system has been developed and implemented in the 36 polytechnics in Malaysia since 2010. Current situations, faced by the education sector affected by COVID-19 in around the world causing schools, colleges, and universities to close indefinitely (Mulenga and Marban, 2020; Naciri et al., 2020 and Sintema, 2020) emerged teaching and learning move to fully online to control the COVID-19 pandemic. Hence, the lecturer and students must have ICT knowledge and skills in e-learning. CIDOS is an e-learning application that has huge potential to promote efficient and effective control over curriculum document inventory and teaching and learning (P&P) materials, as well as to encourage knowledge sharing among polytechnics all over Malaysia. Another benefit of centralization is the ease of maintaining updated lists of data accurately, which can be accessed easily from all points.

Through CIDOS, teaching and learning can take place anywhere and at any time using an online platform that is not bonded by class time and physical presence (Razali and Shahbodin, 2014). Findings from Politeknik Sultan Abdul Halim Mu'adzam Shah (POLIMAS) Jitra Kedah indicated that the highest percentage in disagreement was students who did not like to communicate with friends and lecturers through CIDOS (Romli, 2016). Moreover, few studies have focused on investigating the e-learning centralised systems among lecturers. Hence, the first objective of this study is to examine the ICT knowledge and skills and access of Internet. Secondly, to examine the relationship between centralised systems towards the utilization of e-learning among lecturers in Politeknik Mukah.

2. Literature Review

2.1 ICT Knowledge and Skills

In today's world, mastering the ICT knowledge and skill is highly crucial as it facilitates, fastens, and enhances the process of changing ideas and information among different parties, in this case among educators and learners in the education field. According to UNESCO (2002), ICT can be

interpreted as multi-disciplines and management techniques comprised of science, technology, and engineering which are used in handling information and its application with regards to various issues ranging from social, economic, and cultural. Numerous studies have been conducted previously to gauge the level of ICT knowledge and skills among educators as they are considered important for educators to explore, access, and manage information effectively for the convenience of the teaching and learning process in institutions (Ahmad et al., 2016). Different researchers employed various approaches to access ICT knowledge and skills among educators. Kaarakainen et al. (2017) studies that used a new performance-based methodology to examine the ICT skills among teachers in Finnish schools found that teacher's educational level influences their ICT skills. A prior finding in Awaatif and Norizan (2011) studies stated that a low mastery of ICT skills among teachers has caused them incapable to apply ICT in their teaching and learning activities. Thus, this study is conducted to investigate the level of ICT knowledge and skills among PMU lecturers.

2.2 Centralised Systems and Adoption of CIDOS

Abundant prior investigations have been conducted to scrutinize the significance of various antecedents towards the level of e-learning adoption among educators in higher education institutions. The previous study has shown the importance of sharing information and idea. Information is available worldwide and not only centralised at one point. This study has been supported by Bruno et al. 2012, where the usage of e-learning as a platform for the production and management of learning objects comes as a solution for storage and sharing. Centralised systems in online learning can be regarded as a unified e-learning system that employ the use of web-based database application software that allows easy access and content sharing between learners and educators from different institutions (Matar et al., 2009). In a larger context of study, the exploration of e-learning adoption was extended to more complex antecedents of technological, organizational, environmental, and the nature of course determinants (Ansong et al., 2017). A study suggested that a centralised online learning system that allows the effortless access and sharing of educational information such as lecture notes and class materials will enhance the learning activities to the effective and swift learning and teaching process thus encourage more interested users to utilize the e-learning platform (VeeraManickam and Mahonapriya, 2016). An earlier study by Alanazi et al., 2014 also indicated a similar finding where the benefit of e-learning

usage in educational institutions can be enhanced when an intelligent centralised online learning repository is deployed.

3. Research Methodology

This research was conducted among lecturers from various educational backgrounds at seven academic departments in PMU including Commerce Department, Information Technology and Communications Department, Mathematics, Science and Computer Department, General Studies Department, Civil Engineering Department, Electrical Engineering Department, and Mechanical Engineering Department. The questionnaire was developed by adopting the Unified Theory of Acceptance and Use of Technology (UTAUT) which is an acceptance and adoption model created by Venkatesh, Morris, and Davis by using 5 Likert Scale. Virtuous results can be achieved if the questionnaires are distributed to all lecturers in PMU, however, due to some limitations, a table by Krejcie and Morgan (1970) was used as the sampling method. Since the information from the sample is used to generalize or make a conclusion about the population, the sample must be selected in such a way that it will accurately represent the population. In order to ensure the accuracy of the sampling process, appropriate sampling techniques must be used. The questionnaires were personally distributed to all lecturers, and they were given a week to complete the questionnaire. The complete questionnaires were collected after one week. In total, up to 150 questionnaires have been distributed to all lecturers in PMU, where only 103 or 69% of them returned the questionnaire. This study utilized few common statistical tools to analyse the data. SPSS Version 26 was used for this purpose. The reliability tests on the identified variables for this study were found to be acceptable and reliable as the Cronbach's Alpha values for all the variables are above 0.60. The following are the outcomes from the reliability tests: CIDOS Adoption (7 items; Cronbach's Alpha= 0.928); and Centralised Systems (5 items; Cronbach's Alpha= 0.825).

4. Analysis and Findings

A total number of 103 respondents participated in the survey. The survey response rate is 69%. Table 1 presents the respondents' demographic profiles. The majority of our respondents were female (56.3%) and male respondents were 43.7%. Overall, about 34% of the respondents were between 35 and 40 years old, and about 39.8% of the respondents were reported having teaching experience of more than 12 years. In relation to the distribution of survey respondents according to the teaching departments, the study obtained feedback from the Mechanical Engineering Department

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(9.7%); the Commerce Department (27.2%); the Electrical Engineering Department (12.6%); the Information Technology and Communication Department (3.9%); the Mathematics, Sciences and Computer Department (26.2%); the General Studies Department (7.8%); and the Civil Engineering Department (12.6%). Also, 61.2% of the respondents obtained their first degree while the remaining 35% and 3.9% of the respondents have master's degrees and Ph.D. respectively.

Table 1: Respondents' demographic profile.

Characteristics		N	(%)
Age	21 to 25	1	1.0
	26 to 30	33	32.0
	31 to 35	17	16.5
	35 to 40	35	34
	Above 40 years old	17	16.5
Gender	Male	45	43.7
	Female	58	56.3
Education Level	Degree	63	61.2
	Master's degree	36	35
	PhD	4	3.9
Department	Department of Civil Engineering (JKA)	13	12.6
	Department of Commerce (JP)	28	27.2
	Department of Electrical Engineering (JKE)	13	12.6
	Department of General Studies (JPA)	8	7.8
	Department of Information Technology & Communication (JTMK)	4	3.9
	Department of Mathematics, Sciences & Computer (JMSK)	27	26.2
	Department of Mechanical Engineering (JKM)	10	9.7
Teaching Experience	1 - 3 years	6	5.8
	10 - 12 years	12	11.7
	4 - 6 years	3	2.9
	7 - 9 years	6	5.8
	Below 1 year	35	34.0
	More than 12 years	41	39.8

Table 2 presents the survey findings in relation to the respondents' ICT knowledge and skills as well as the Internet access. 58.3% of the respondents reported possessing "Good" ICT knowledge and skills meanwhile only 14.6% of the respondents reported possessing "Very Good" ICT knowledge and skills. In addition, 83.2% of the respondents have the Internet access at home and 74.3% of the respondents have access to the Internet via mobile.

Table 2: ICT knowledge and skills and access to the internet.

Characteristics		N	(%)
ICT Knowledge & Skills	Very Good	15	14.6
	Good	60	58.3
	Moderate	25	24.3
	Poor	3	2.9
Have Internet Access	Yes	84	83.2
	No	19	18.4
Internet Access via Mobile	Yes	77	74.8
	No	26	25.7

As shown in Table 3, the centralised systems of CIDOS which can make the announcement to the students have the highest mean value of 4.029 whereas the centralised systems feature of CIDOS which can share information with other polytechnics has the lowest mean value of 2.65.

Table 3: Mean and Standard Deviation (SD) for identified factors and CIDOS adoption.

Item	Mean	SD
Centralised systems		
Share information with other polytechnics	2.650	.8255
Share document with PMU colleague	3.874	1.0066
Chats with colleagues and students	3.825	.8903
Makes announcement to students	4.029	.8907
Enables lecturer online teaching using Big Blue Button	3.854	.9331
CIDOS Adoption		
A user is provided with very good infrastructure access.	3.845	.8717
CIDOS is better than conventional method delivery without CIDOS.	4.019	.8743
CIDOS design is good.	3.748	.9468
CIDOS is useful for teaching.	3.883	.8552
ICT skills and knowledge are important in using CIDOS.	4.233	.8069
Trainings are needed in using CIDOS.	4.495	.6549
A user can obtain good organizational support when using CIDOS.	3.913	.7810

The level of adoption among the lecturers at PMU was moderately high, with the mean values ranged between 3.74 to 4.49. For this category, the highest mean value is 4.49, which is related to the needs of training. Overall, most of the respondents agreed with regards to the CIDOS usefulness in facilitating teaching and learning activities in PMU.

Table 4: Relationship between centralised systems with CIDOS adoption among lecturers in PMU.

Variables	Significant value (p)	Pearson Correlation (r_s)
Centralised systems	0.000	0.663

Note: Significant value with $p \leq 0.05$

By using the Pearson Correlation Coefficient test, this study found that all the identified factors have significant relationships with the CIDOS adoption. In this case, Table 4 shows that the correlation coefficient obtained was 0.663 and the p-value for this correlation was smaller than 0.05. This shows that there is a significant relationship between the levels of centralised systems and the CIDOS usage among the lecturers in PMU, based on the correlation value that is moderate and positive. This also means that the CIDOS adoption among lecturers can be increased when they are provided with a high-quality or good centralised system.

5. Conclusion and Recommendations

Overall, most of the lecturers in PMU had good ICT Knowledge and Skills and possessed accessibility to the Internet in conducting online teaching and learning during the COVID-19 pandemic. An explanation might be that lecturers are willing to adopt beneficial applications of e-learning. The results of this study prove that UTAUT can be used to explain the lecturers' adoption of e-learning technology. The second objective which is the relationship between centralised systems and effective adoption of CIDOS among the lecturers in PMU also shows a significantly positive relationship. This objective is supported by Liu (2009), that in order to promote the social knowledge construction, a learning environment must provide a variety of communication tools, such as synchronous (e.g., chat rooms and video conferencing) or asynchronous (e.g., discussion forums and e-mail) facilities. With all these tools, students can join others or teachers to discuss an issue and express their views.

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