

Exploring University Students' Acceptance in Online Learning Using Technology Acceptance Model (TAM)

Che Soh Said¹, Ahmad Bakhtiar Jelani², Nazre Abd Rashid³,
Mohamad Akramin Kamarulzaman⁴, Mohd Hishamudin Abdul
Rahman⁵, Norazman Ismail⁶, Ahmad Firdaus Mohd Noor⁷,
Juriah Mohd Amin⁸

^{1,4,5}Department of Computing, Faculty of Art, Computing and Creative Industry, Universiti Pendidikan Sultan Idris, 35900 Tanjong Malim, Perak, ²Academy of Contemporary Islamic Studies (ACIS), Universiti Teknologi Mara Perak, Perak Branch Tapah Campus, 35400, Tapah Road, Tapah, Perak, ³Department of Islamic Study, Faculty of Social Science, Universiti Pendidikan Sultan Idris, 35900 Tanjong Malim, Perak, ⁶School of Computing, Engineering Faculty, Universiti Teknologi Malaysia, 81310 Skudai, Johor Bahru, Johor, ^{7,8}Academy of Contemporary Islamic Studies (ACIS), Universiti Teknologi Mara Perak, Perak Branch, Seri Iskandar Campus, 32610, Seri Iskandar, Perak

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Abstract

This study aims to examine the factors affecting behavioural intention to use video-based learning among higher education's students. The study used technology of acceptance model (TAM) to identify the factors that predict intention to use video-based learning. These study used a cross-sectional quantitative study design involving 243 university students. The data was collected using an online survey due to the COVID-19 restrictions. The proposed hypotheses were analysed using correlation and multiple linear regression. Results of this research revealed that perceived ease of use and perceived usefulness have a significant effect on the intention to use video based learning. The practical implications inform policymakers and educational institutions on how video-based adoption can be enhanced. In this context, perceived ease of use and perceived usefulness are identified as predictors of intention to use video-based learning among higher education's students.

Keywords: University Students', Online Learning, Technology, Model (TAM).

Introduction

The Covid-19 outbreak was first identified in December 2019 in Wuhan, China. This outbreak has spread worldwide, affecting almost all countries and territories and the countries around the world cautioned the public to take responsive care (Beaunoyer et al., 2020; Adedoyin & Soykan, 2020; Zhu & Liu, 2020). The public care strategies have included handwashing, wearing face masks, physical distancing, and avoiding mass assemblies. Lockdown and staying home strategies have been put in place as the needed action to flatten the curve and control

the transmission of the disease (Sintema, 2020). Lockdown and social distancing measures due to the COVID-19 pandemic have led to closures of schools, training institutes and higher education facilities in most countries (Pokhrel & Chhetri, 2021; Muthuprasad et al., 2021). Governments announced the closure of schools as a way to reduce the further spread of the COVID-19 virus. This restrictions imposed by governments across the world such as the closure of schools had a tremendous impact on educational institutions. This directive placed a huge responsibility on educational administrators in developing countries to migrate their curricula online to ensure continuous learning and teaching. More than 1 billion and 575 million students in approximately 188 countries around the world are reported to have been affected by the closure of schools and universities due to preventive measures taken by countries against the spread of COVID-19 (UNESCO, 2020). The Malaysian higher education ministry also has issued the order to close the public school and higher education closure as an emergency measure to stop spreading the infection (Shahzad et al., 2020).

In response to school and universities closure, the ministry of education and universities administration opted to implement online learning as the alternative to traditional teaching methods. Online learning guarantees students' learning without physically sitting in a real classroom. There is a paradigm shift in the way educators deliver quality education—through various online platforms. The online learning, distance and continuing education have become a panacea for this unprecedented global pandemic, despite the challenges posed to both educators and the learners. Transitioning from traditional face-to-face learning to online learning can be an entirely different experience for the learners and the educators, which they must adapt to with little or no other alternatives available (Pokhrel & Chhetri, 2021).

Teaching and learning in an online learning environment mainly depend on the communications between students and instructors, to support face two face instructions. Computer-mediated communications (CMC) tools such as video conferences, e-mail, chat, and online forums were always used to support student-instructor communications in online learning environments. In traditional online learning, a face to face teaching method was used concurrently with the computer-mediated communications tools. However, in the era of the Covid-19 pandemic, the students and instructors are pushed to using full online learning with face to face teaching replacing it with video-based learning. Video conferencing such as Google Meet, Zoom and Cisco Webex were used to support online teaching. All this application enabled the instructor to record and share the online lecture instantly after the class.

Alongside the online conferencing, a pre-recorded video is also used in online teaching. Video-based learning (VBL) is gaining increased attention as an educational means in settings such as the flipped classroom and massive open online courses (Mikalef et al., 2016). A flipped classroom teaching method always employs a pre-recorded video. The flipping approach uses didactic lecture video and activity-based classroom sessions to advocate education for students, and it significantly improves students' knowledge (McEvoy et al., 2016).

Formulating a pre-record video always take a lot of determination due to the complexity process of designing and producing a higher quality video. Replacement of face to face teaching with the video-based learning is a new experience for the students in higher institutions. Due to this challenge, a study is need to be done permissible to comprehend student's acceptance towards this new technology. Acceptance study is essential in order to warrant that the enactment of video-based learning not to distract the achievement of learning outcome. Following this argument, this study was initiate permissible to explore student acceptance towards the usage of video-based learning in online learning. The idea to

investigate the student's acceptance inductee based on the unprecedented change in teaching and learning process in higher education institutions due to the covid-19 pandemic. These studies have used the various determinants derived from Technology Acceptance Model (TAM). The Technology Acceptance Model which proposed by Davis (1989) is widely used by scholars to predict the acceptance of technology in information systems (Abdullah & Ward, 2016; Alyoussef, 2021; Chaveesuk et al., 2018; Tarhini, 2017). The studies conducted by various scholars empirically support the robustness of the TAM model in assess the student's acceptance of online learning applications. Consistent with the foregoing argument, the study intentions to accomplish a primary objectives which is to understand the role of perceived of usefulness and perceived ease of use in video-based learning acceptance.

Technology Acceptance Model

Davis (1989) was proposed a technology acceptance model (TAM) based on the theory of reasoned action from Ajzen and Fishbein. This TAM predicts behavioural intentions to use a new technology with perceived usefulness (PU) and perceived ease of use (PEOU). Perceived usefulness is defined here as *"the degree to which a person believes that using a particular system would enhance his or her job performance"* (Davis, 1989). This follows from the definition of the word useful: *"capable of being used advantageously"* (Davis, 1989). Perceived ease of use, in contrast, refers to *"the degree to which a person believes that using a particular system would be free of effort"* (Davis, 1989). This follows from the definition of "ease": *"freedom from difficulty or great effort"* (Davis, 1989). Since the inventions of this model, technology acceptance model (TAM) become the most widely employed and best known model to measure acceptance of various technologies (Estriegana, Medina-Merodio, & Barchino, 2019, Foroughi et al., 2019; Habibi et al., 2020).

Material and Method Participants

The participants in this study consisted of computing students from public universities in Malaysia. Participation of the respondents in this study was voluntary. A total of 239 students (176 females and 63 males) completed the survey during the data collection time which is from August, 2021 – October, 2021.

Study Design

The independent variables (IV) in this study were Perceived of Usefulness (PU) and Perceived Ease of Use (PEOU), whilst the dependent variable is Behavioural Intention Towards Use (BITU). PU, PEOU and BITU, which are the three core factors of the TAM (Davis, 1989). Figure 1 shows the design of this study included the independent, and dependent variable.

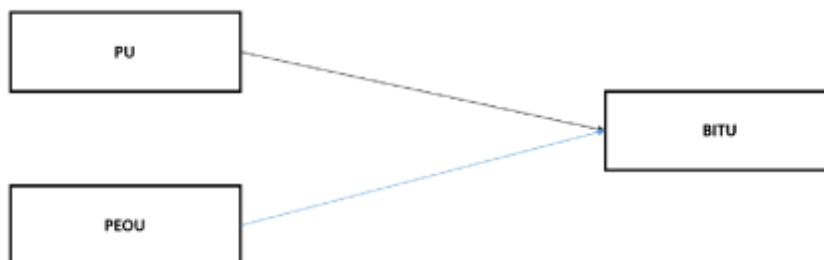


Figure 1: Video-Based Learning Research Framework

Based on the design of this study, four hypotheses were formulated which are:-

H1 : PU significantly affects users' BITU

H2 : PEOU significantly affects users' BITI

Procedures

This research used a quantitative research method with a cross-section survey design. Due to the Covid-19 pandemic, an online questionnaire was used to collect data among the participants. An online form in Google Form was distributed among computing students from four different institutions through social media (WhatsApp and Telegram). A convenience sampling technique was employed in this study. The instrument was adapted from a Davis (1989), and Pal, Patra & Perspective (2021). A questionnaire was built consisting of two parts. In the first part the respondents were asked about their demographic characteristics (e.g. gender, age, internet access method). The second part included questions regarding personal beliefs and perceptions based on the constructs identified from the literature review which is perceived of usefulness, perceived ease of use and behavioural attitude towards use. A five-point Likert scale was used to measure all items with anchors ranging from 1 (=“strongly disagree”) to 5 (= strongly agree”). Two hundred thirty-nine (239) respondents were returned to this questionnaire completely. Table 1 presents the detailed demographics of the final sample. Reliability of the questionnaire was assessed with the use of the Cronbach α indicator, requiring it to be higher than 0.6 for each construct (Hair et al., 2019). The reliability for three constructs used in the study is .86 for perceived ease of use, .85 for perceived usefulness and .84 for attitude towards use respectively.

Data Analysis

This section begins by presenting descriptive statistics for demographic data and finding for each item and constructs in the questionnaire. Then, it continues with the inference statistics for explaining the relationship between variables in this research framework. A version 23 SPSS software was used to analyse the data in this research.

Descriptive Analysis

Table 1 shows the demographic data of this research. Two hundred thirty-nine (239) respondents have participated in this research with a breakdown of 63 males, and 176 females. 146 respondents live in the cities, while 93 living in the rural areas. 163 respondents accessed the internet using smartphones, and 76 people used computers. The descriptive statistics of mean and standard deviation were calculated for the items and constructs measured (see Table 2). The means of all constructs were rated above 3.0 on the one-to-five scale, ranging from 3.57 (perceived usefulness; SD =.62), 4.98 (perceive of ease of use, SD=1.23), and 3.77 (behaviour attitude towards, SD=.66)

Table 1
Demographic Data

	N	Percentage
Gender	239	100
Male	63	26.4
Female	176	73.6
Access Internet	239	100
Laptop	76	31.8
Smart-Phone	163	68.2
Living Area		100
Rural	146	61.1
Town	93	38.9

N= 239

Table 2
Descriptive Statistics

	N	Mean	SD	Skewness	Kurtosis
Perceived Usefulness	239	3.57	.62	.16	.07
Perceived ease of Use	239	4.98	1.23	.48	.05
Behaviour Attention Towards Use	239	3.81	.54	.01	.05

Hypothesis Test

Pearson's correlation and linear regression were used to test the hypothesis in SPSS Version 23. The results of the correlation analysis are illustrated in Table 3, and Table 4 presented the multiple linear regression analysis. Results of the Pearson correlation indicated that there was a significant positive association between perceived usefulness with behavioural intention to use, ($r(239) = .72, p = .000$) and, perceived ease of use with behavioural intention to use ($r(239) = .70, p = .000$). Multiple linear regression was calculated to predict behavioural intention towards use video-based learning based on the perceived usefulness ($b=.444, t(239)=7.79, p<.001$) and perceived ease of use ($b=.397, t(239)=6.96, p<.001$). This multiple linear regression test shows that perceived usefulness and perceived ease of use significantly predicted participants' behavioural intention towards use video-based learning (See Table 4). The results of the regression indicated the two predictors explained 59.3% of the variance (Adjusted $R^2 = .593, F(2, 236) = 174.88, p < .01$).

Table 3

Correlations between Perceived Usefulness and Perceived Ease of Use with Behavioural Towards Use

Constructs	1	2	3
Perceived Usefulness	-		
Perceived Ease of Use	.687*	-	
Behavioural Attention Towards Use	.716*	.702*	-

*p<.001

N=239

Table 4

Summary of Multiple Regression analysis for variables predicting Behavioural Attention Towards Use Video-Based Learning (N = 239)

Variable	B	SE B		p
Perceived Usefulness	.386	.05	.44	<.001
Perceived Ease of Use	.175	.03	.40	<.001

Discussion

The correlation analysis findings show there is a significant relationship between perceived usefulness and perceived ease of use with the behaviour intention towards using a video-based learning among higher education students. Findings of this study are consistent with the technology acceptance model (TAM) which denote that perceived usefulness and perceived ease of use have a relationship with the behaviour towards use. A multiple linear regression analysis showed that perceived usefulness and perceived ease of use were predictors of behaviour intention towards use video-based learning. The findings of this study are in line with the study by previous researcher (Galatsopoulou et al., 2022; Pal et al., 2020; Turan, & Cetintas, 2020). PU was found to have a significant impact on attitudes of Malaysian students. This indicates that Malaysian students intend to use video-based learning if they understand the usefulness of the video system. Malaysian students prefer to use video-based learning systems if they recognize that video-based learning improves their learning performance, enables them to accomplish learning tasks more quickly and makes their learning more productive. PEOU also shows a significant predictor for BITU. This specifies that the student will use the video-based learning with the conditions that video-based learning systems are easy to use and easy for them to play and watch the videos used in the online video-based learning.

Implications and Contribution

This study has important theoretical implications for future studies of video-based learning acceptance among university students during movement control order (MCO). This study indicates a suitable model selection to explain technology acceptance phenomena. The result of this study suggests that the TAM model is also appropriate to explain the acceptance of

video-based learning during MCO. However, the finding from this study also yields that the TAM model only explained almost 60% of factors that affect the adoption of video-based learning. Many other factors which may influence the acceptance of video-based learning still need to be explored and established. On the practical contribution, this study revealed that usefulness and ease of use are the crucial factors influencing students to use a video-based learning product when learning during a movement control order. Video-based learning products must be designed align to the student's computing skills and must be easy to use. The interactions button must be efficiently help students navigate the learning contents in a video-based learning product. The contents of video-based learning also must meet the expectation of the students. The student will not use a video-based learning product if the contents did not help them learn effectively during MCO.

Conclusion

This research generally analysed the factors that affect the acceptance of video-based learning by university students. The study was conducted in the fall semester 2020–2021 at four different universities in Malaysia. In total, 239 students from this country participated in this study. This study is based on TAM which covers perceived usefulness (PU) and perceived ease of use (PEUO) as the main antecedents of students' behavioural intention (BITU) to use video-based learning. The study examined the effects of PU and PEUO factors on the acceptance of video-based learning. PU and PEUO was found to have a significant impact on the attitudes of Malaysian students towards video-based learning. This finding contributes to existing literature by proposing and testing a conceptual model for video-based learning acceptance with a two-predictor model that integrates and accounts for 59.6 % of explained variance in students' intention to adopt video-based learning. PU was found to be a positive indicator for attitudes of Malaysian students towards video-based learning. This indicates that Malaysian students intend to use video-based learning if they understand how to use the system. Following this finding, it was suggested that the instructional video development team must conduct an extensive needs analysis at the early stage of project development. Needs analysis permits the video development team to ascertain the level of readiness for video use among target users. Based on the data from a need analysis, instructional designer and video production team can produce an appropriate video-based learning user interface and appropriate video control features. This study also revealed that PU has a significant impact on the attitudes of Malaysian students towards video-based learning. The results also showed that the perceived usefulness of the videos had a positive influence on the behavioural intentions towards use of video-based learning. These findings denote that it is vital for instructors to guarantee that the contents of the video is aligned with the curriculum and course learning objective. Permissible to warrant that video is complement with the course outline, a systematic instructional design methodology must be employed in designing an educational video. Namely, a few examples of systematic instructional design methodology that can be used to design and develop an instructional video are Morrison, Ross, Morrison and Kalman Designing Effective Instruction Model (2019) or Dick, Carey and Carey Systematic Design of Instruction (2015).

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Corresponding Author

Ahmad Bakhtiar Jelani

Academy of Contemporary Islamic Studies (ACIS), Universiti Teknologi MARA, Perak Branch, Tapah Campus

Email: ahmadbakhtiar@uitm.edu.my

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