

Technology Adoption of Online Learning Platform at Higher Learning Institution

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Abstract: In today's global world, online learning has become one of the main channels of teaching and learning methods at the institution. One of the most popular online learning medium today is MOOCs or Massive Open Online Courses. MOOCs offer a medium in the field of e-Learning, and this trend will continue to grow rapidly especially in distance education. This platform provides open educational resources to people all over the world. MOOCs in Malaysia are practiced through blended learning by most institutions of higher learning. Nevertheless, there is no such model developed to know the extent to which this technology can be accepted and practiced. Therefore, this study aims to examine the adoption of MOOCs technology among students in public universities, especially in UKM. Factors influencing the use of MOOCs are also examined. The methodology used in this study is quantitative approach where 400 respondents were involved to respond to a survey questionnaire. The results of the model found that the factors of effort expectations, facilitating condition, social influence, and course design significantly influenced the use of MOOCs in UKM. Meanwhile, the factors of performance expectations is not significant to influence the use of MOOCs among students in UKM. The results of the model are also very useful to understand the adoption and use of MOOCs in teaching and learning as well as give a practical impact to the parties involved such as lecturers, students and course designers. The contribution of this study also looks at the importance of the use of technology in e-Learning especially MOOCs in the era of industrial revolution 4.0.

Keywords: online learning, MOOC, adoption, model

1. Introduction

MOOCs are open and large online courses aimed at unlimited participation and access as well as open to internet users through website links (Al-Rahmi et al. 2018). However, users can access MOOCs via a smartphone, they need to download the MOOCs application from the google store. In institutions of higher learning, MOOCs are courses or learning modules that are uploaded together with learning notes in the form of slides in the form of text and pictures, video and audio. MOOCs are usually practiced in blended learning in most institutions of higher learning.

In this study, MOOCs were used as key variables or dependent variables to study and examine the factors influencing their use. The same goes for examining the acceptance and challenges of MOOCs. Massive Open Online Courses (MOOCs) are courses that can be accessed by users with a large capacity (Koutropoulos & Zaharias 2015). Usually the courses offered are free and can be accessed with computer and internet facilities (Pelet & Papadopoulou 2015). Open access to MOOCs means



that students do not need to be enrolled either in a particular college, university or campus as a prerequisite for enrollment (Pelet & Papadopoulou 2015).

The word MOOCs itself has such a unique meaning. According to Conole (2016), the word Massive carries the meaning of liberation or large participation. The word Open means open which is free in terms of registration, content and in terms of access. The word Online is to use the internet as a medium of interaction and can be carried out directly without face to face. Meanwhile, the word Courses means courses or programs that carry credit for certification.

This concept plays a key role in the development and direction of MOOCs. MOOCs were developed as an extension of the Open Educational Resources (OER) movement, which has evolved in recent years yet still retains certain aspects (Altinpulluk & Kesim 2016). The purpose of the development of MOOCs relies on the philosophy of openness in education which is to promote such knowledge should be shared freely and voluntarily regardless of constraints whether from demographic, economic, social and geographical terms (Pireva et al. 2016).

Thus, the purpose of this paper is to study the technology adoption, especially MOOC at Universiti Kebangsaan Malaysia (UKM).

2. Literature Review

MOOC

Massive Open Online Courses (MOOCs) are courses that can be accessed by users with a large capacity (Koutropoulos & Zaharias 2015). Usually the courses offered are free and can be accessed with computer and internet facilities (Pelet & Papadopoulou 2015). Open access to MOOCs means that students do not need to be enrolled either in a particular college, university or campus as a prerequisite for enrollment (Pelet & Papadopoulou 2015). The word MOOCs itself has such a unique meaning.

In general, MOOCs can be categorized into two (2) types or models namely cMOOCs and xMOOCs. cMOOCs are a first generation model i.e. it started in 2008. Basically, cMOOCs are an earlier or older type or model, as developed by Siemens (Kay et al. 2013). Its main purpose is to create and generate knowledge through interaction among participants or users. In cMOOCs, students take a greater role in shaping their learning experience than in traditional online courses, while facilitators focus on fostering space for learning connection to take place (Marsaglia et al. 2014; Aharony & Bar-Ilan. 2016).

This is because of cMOOCs are the first models to be developed by previous researchers. According to Veletsianos and Shepherdson (2015), the term Massive Open Online Courses (MOOCs) describes an evolving ecosystem of open online learning environments, spanning the spectrum of course design ranging from distributed online resource networks (cMOOCs) to platform -centered structured learning pathways digital (xMOOCs). cMOOCs are platforms that focus on the generation of distributed knowledge while xMOOCs are on centralized knowledge (Aharony & Bar-Ilan 2016). Both these types and models of MOOCs have their respective advantages and disadvantages. According to Nordin et al. (2016), cMOOCs are based on network theory (connectivism) while xMOOCs are based on behaviorist theory (behaviourist). This statement is supported by Abu-Shanab and Musleh (2018) that the concept of MOOCs is based on two (2) pedagogical foundations in education namely connectivism and behaviorism. In this model of cMOOCs, participants or users are encouraged to use a variety of technologies that can reflect their learning, following the principle of



connectivism which considers intense interaction between participants as the basis for knowledge construction (Bozkurt & Keefer 2017).

UTAUT

Now days, theory of technology acceptance has been widely used to evaluate the adoption of technology. The popular one is the UTAUT model which aims to explain technology acceptance, is based on eight technology acceptance theories or model (Khalid et al. 2014). The full acronym of UTAUT is a Unified Theory of Acceptance and Use of Technology. In particular, the UTAUT pulls on the Theory of Reasoned Action (TRA), the Technology Acceptance Model (TAM), the Motivational Model, the Theory of Planned Behaviour (TPB), the combination of TAM and TPB, the model of Personal Computer Utilization, the Innovation Diffusion Theory and the Social Cognitive Theory (Hamdan et al. 2015). Figure 1 illustrates the UTAUT Model which is also promotes by Venkatesh.



Figure 1: UTAUT Model (Venkatesh et al. 2003)

3. Methodology

The research model or framework of the study has been suggested and illustrated in Figure 2. The Unified Theory of Acceptance and Use of Technology (UTAUT) is used in this research where a few variables act as independent variables and dependent variables (Venkatesh et al. 2016). Meanwhile, the course design act as additional construct in this study as it is beneficial in the MOOC.



Figure 2: Research Model using UTAUT



Then, the analysis of the collected data was prepared using the partial least squares approach which is a structural equation modelling (PLS-SEM) on Smart PLS version 3. By using PLS SEM, two approach were conducted which is the measurement model and structural model of the framework. Before that, a few techniques applied in the first measurement which is to ensure that the items used in the framework was beyond the standard of measurement.

For instance, Table 2 shows Cronbach's α values are higher than the threshold of 0.7. Its mean that the value of items used as construct in the model was in better reliability. Then, the convergent validity was applied in the model to ensure that the latent construct should be greater than 0.5. It was assessed based on recommendations by Henseler et al. (2009) that the average variance extracted (AVE) must achieve the standard towards the technique used.

Table 1: Reliability Statistics							
Construct	Number of	Composite	Cronbach's α				
	Item	Realibility					
Performance Expectancy	3	0.922	0.804				
Effort Expectancy	4	0.878	0.850				
Social Influence	3	0.888	0.802				
Facilitating Condition	3	0.866	0.801				
Course Design	3	0.898	0.825				
Behavioral Intention	3	0.894	0.880				
MOOC Usage	3	0.900	0.889				

Figure 3 illustrates the measurement model of the framework which is set in Smart PLS software.



Figure 3: Measurement Model



Construct	AVE	CD	EE	FC	BI	PE	SI	MU
Course Design	0.764	0.874						
Effort Expectancy	0.688	0.653	0.830					
Facilitating Condition	0.723	0.742	0.691	0.850				
Intention To Use	0.843	0.689	0.738	0.734	0.918			
Performance Expectancy	0.843	0.600	0.777	0.630	0.685	0.918		
Social Influence	0.829	0.683	0.749	0.683	0.773	0.714	0.910	
Usage Behaviour	0.824	0.735	0.727	0.713	0.838	0.659	0.763	0.908

Table 3: Discriminant Validity Using Fornell-Larcker Criterion

Thus, Table 3 shows that AVE values for all constructs are higher than the 0.5 inception. This concludes that the convergent validity of the model was beyond the standard. After that, the discriminant validity was measured using the Fornell-Larker criterion. From the Table 3 also shows that the square root of the AVEs for each construct is greater than the cross-correlation with other constructs. Based on these results, we also determine that the measurement model exhibits good discriminant validity. For the final stage of the analysis state that the second approach used to validate the model which is structural approach were applied. The results for the structural model assessment are presented in Table 4 below.

Table 4: Hypothesis Testing						
Hypothesis Path	Path	Т	Р	Results		
	Coefficient	Statistics	Values			
	(β)					
Course Design -> Usage Behaviour	0.299	6.807	0.000	Supported		
Effort Expectancy -> Intention To Use	0.192	3.065	0.001	Supported		
Facilitating Condition -> Intention To Use	0.298	5.809	0.000	Supported		
Intention To Use -> Usage Behaviour	0.632	15.020	0.000	Supported		
Performance Expectancy -> Intention To Use	0.091	1.368	0.086	Not Supported		
Social Influence -> Intention To Use	0.361	6.167	0.000	Supported		
<i>R</i> square (Intention to Use) = 0.701						
<i>R square</i> (Usage Behaviour) = 0.749						

4. Conclusion

As for the conclusion, the result of the research attempted to study new finding regardless of technology adoption of online platform especially at UKM. The study indicates that the intention to use MOOC is predisposed by all variables attached in the framework such as effort, social encouragement and aiding circumstance. The study also showed that usage behaviour of MOOC is influenced by course design and intention to use.

All six hypotheses stated were supported, excluding for the Performance Expectancy. This could be due to individuals strongly do not believe that using MOOC will help them in job performances. Another reason is that they might have another system such as a Learning Management System (LMS) at their campus. So that they did not rely much in MOOC for attaining gain in their job performance.



Nevertheless, another five variables in the framework, were initiated to be significant to Intention to Use and Use Behaviour of MOOC adoption. The study supposed to support all relationships, including extended variables. But however, the performance expectancy was found to insignificant for the stated hypothesis.

In the meantime, social influence and course design, the factors that supported by the MOOC usage was possibly due to individual believes that he or she must use a MOOC as a new technology as online tools for teaching and learning. Furthermore, a good course design conducted by the instructor that being used in MOOC would be the factor which was very essential in the university setting. Furthermore, it would be a the most determining factor for MOOC adoption. Effort expectancy is also found to have an influencing role in the adoption of MOOC.

This finding indicates that learners find easy to use MOOC platform. More study need to be conducted in order to inspect the technology adoption especially at online platform. As for now, the country has been involved in Covid 19 pandemic and yet into endemic phase, so that all parties such as instructor and course designer must work together to inspire the student in order to use online platform in their teaching and learning activities. The support and encouragement from the management team of universities is also important. Thus, a better improvement and suggestion can be proposed to improved teaching and learning activities in that environment. As we might have several tools and platform to conduct teaching and learning online, but nevertheless the long term benefit of MOOC can't be taken for granted especially to support a lifelong learning concept in the modern era of Education 4.0.

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