Level of Technology Acceptance and Factors That Influences the Use of MOOC at Public Universities

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Abstract---The aim of these studies is to investigate the acceptance level of MOOC and factors that might influence the use of MOOC at Public Universities. A quantitative technique which is a survey method was conducted at the selected public university where data were collected from 400 respondents. The analysis was then conducted by using Smart PLS software. Meanwhile, the Technology Acceptance Model was implemented as to obtain the findings of this study. The results showed that effort performance, social influence, facilitating condition, interest, motivation and course design are factors influencing MOOC usage among students at the particular university. The findings also show that the acceptance level of MOOC learning at this particular university was substantial due to some factors might influence the usage and encouragement of these technologies. The result also shows that there is an area of improvement in term of MOOC learning at these universities in order to make the technologies useful and can be beneficial for long term sight and lifelong learning especially in the context of distance education.

Keywords--- MOOC, Technology Acceptance, Smart PLS, Lifelong Learning, Distance Education.

I. INTRODUCTION

One of the latest technologies that offers lifelong learning and open-sources education is a course called *Massive Open Online Courses* or MOOC. MOOC are the course provided to learners in the way of at distance. The Malaysian Commission also recommends that open learning be integrated into the national e-Learning policy of Institutions of Higher Learning. In fact, the Ministry of Education in the Malaysian Education Development Plan of 2015 until 2025 also encourages Institutions of Higher Learning in Malaysia to incorporate lifelong learning in order to gain a more meaningful life. In addition, globalized online learning also wants to be applied in education in our country to capitalize on the use of internet access to something more scientific and to offer a variety of learning to suit individual interests (Fadzil et al., 2016).

The appearance of Massive Courses as culture trends in the arena of open distance education lead to the huge scenarios. It is an emerging trend practice in e-learning. As the culture of teaching and learning is often challenging and changing over time, so these trends is a must. Advances in developments in the modern technological era have also indirectly impact and changed the teaching and learning system, especially at the tertiary level (Ain et

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al., 2015). MOOC technology is an emerging technology and has been a topic of intense conversation in research especially in the field of Technology Enhanced Learning. MOOC has grown rapidly and is a free online course offered in the current age of learning. According to Daud et al. (2015), MOOC is an innovation where access to courses offered is open and free online and in large numbers of 10,000 to 100,000 students at a time. MOOCs popularity is growing rapidly regardless of its novelty and age. MOOCs attracted attention and quickly acquired an interest of academics (Abu-Shanab & Musleh, 2018). In general, MOOC can be divided into two categories. cMOOC and the xMOOC are two different types of MOOCs (Haron et al., 2019).

The first MOOC which is a concept that has principles developed by George Siemens where it was created based on the learning theory of Connectivism (Fianu et al., 2018). Meanwhile, the second category was xMOOCs. xMOOCs which is in the second category are online versions of traditional learning which applying a knowledge diffusion model using such as video recordings of lectures (Kocdar et al., 2017). Its look like the structure of courses at MOOC will fully setup by the lecturer or instructor. Moreover, the xMOOCs comes with a specifies syllabus from the instructor of recorded lectures and also self-assessment. They also employ the original elements of MOOC but it affects the branded IT platforms which offer content distribution partnerships to institutions (Al-Shami et al., 2018).

Now days, theory of technology acceptance has been widely used to evaluate the acceptance of technology. The UTAUT model which aims to explain technology acceptance, is based on eight technology acceptance theories or model (Khalid et al., 2014). In precise, the UTAUT draws on several theory and model such as the Theory of Reasoned Action (TRA), the Technology Acceptance Model (TAM), the Motivational Model, the Theory of Planned Behaviour (TPB), the model of Personal Computer Utilization, the Innovation Diffusion Theory and the Social Cognitive Theory (Hamdan et al., 2015).

Thus, the objective of this research is to investigate the level of technology acceptance and factors that might influence the use of MOOC at Public Universities. A quantitative technique which is a survey method was conducted at the selected public university where data were collected from 400 respondents. he analysis was then conducted by using Smart PLS 3.0 version of the software. Meanwhile, the Technology Acceptance Model was implemented as to obtain the findings of this study. The result also shows that there is an area of improvement in term of MOOC learning at these universities in order to make the technologies useful and can be beneficial for long term sight and lifelong learning especially in the context of distance education.

II. METHODOLOGY

This study intends to:

1. Investigate the level of technology acceptance of MOOC among students at Public Universities.

2. Identify the factors that might influence the use of MOOC at Public Universities.

Meanwhile, the framework of this research take place as follow:

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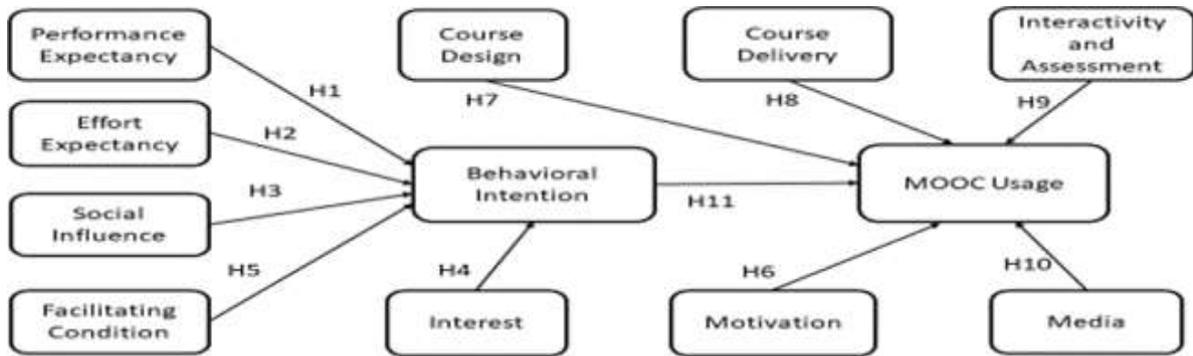*Corresponding Author Email: afieza.8227@gmail.com*

Figure 1: Research Framework

1) Sample

The total sample consists of 400 respondents of the survey. It took students as a sample and the survey being administered at Universiti Kebangsaan Malaysia (UKM).

2) Tool

The instrument used in this survey is a questionnaire which consist a few parts of the item regarding technology acceptance and other variables such as interest, motivation, course design, course delivery, interactivity & assessment and media. The Likert-Scale was used in the measurement of the item in the variables and construct used in the questionnaire.

III. RESULTS AND ANALYSIS

From Table 1, the first result from the analysis reveal that the value of Composite Reliability and Cronbach's Alpha of all the construct were appropriate. The value of Cronbach's Alpha where it is in a range of 0.7 until 0.9 which is considered good for items used in the questionnaires.

Table 1: Composite and Reliability Statistics

Variable	Alpha Cronbach	Rho_A	Composite Reliability
Interactivity & Assessment	0.90	0.91	0.93
Performance Expectancy	0.91	0.91	0.94
Effort Expectancy	0.86	0.87	0.90
Facilitating Condition	0.82	0.82	0.89
Media	0.93	0.93	0.94
Interest	0.83	0.84	0.90
Motivation	0.92	0.92	0.94
Behavioural Intention to Use	0.91	0.91	0.94
Social Influence	0.90	0.90	0.94
MOOC Usage	0.90	0.90	0.94
Course Delivery	0.90	0.91	0.93
Course Design	0.85	0.86	0.91

By using Smart PLS software to perform structural equation modelling (SEM), a few stages have been running to analysed the construct used in the proposed model. Meanwhile, Figure 2 illustrates the measurement model in SEM of all the construct used in the proposed model. After performing convergent validity test, the second step

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was to conduct a discriminant validity test for all items of construct. By the way, the rule of thumb of convergent validity stated that the average variance extracted (AVE) should be greater than 0.5 values for each latent construct (Henseler et al., 2009). Moreover, it can be determined that the result of measurement model is appropriate. Other than that, discriminant validity test was also measured. This is done by using the Fornell-Larker criterion. In this technique, it states that the AVE of each latent construct should be greater than the highest squared correlations between any other construct. Based on these, we also determine that the result was good. The detail can be seen from Table 2.
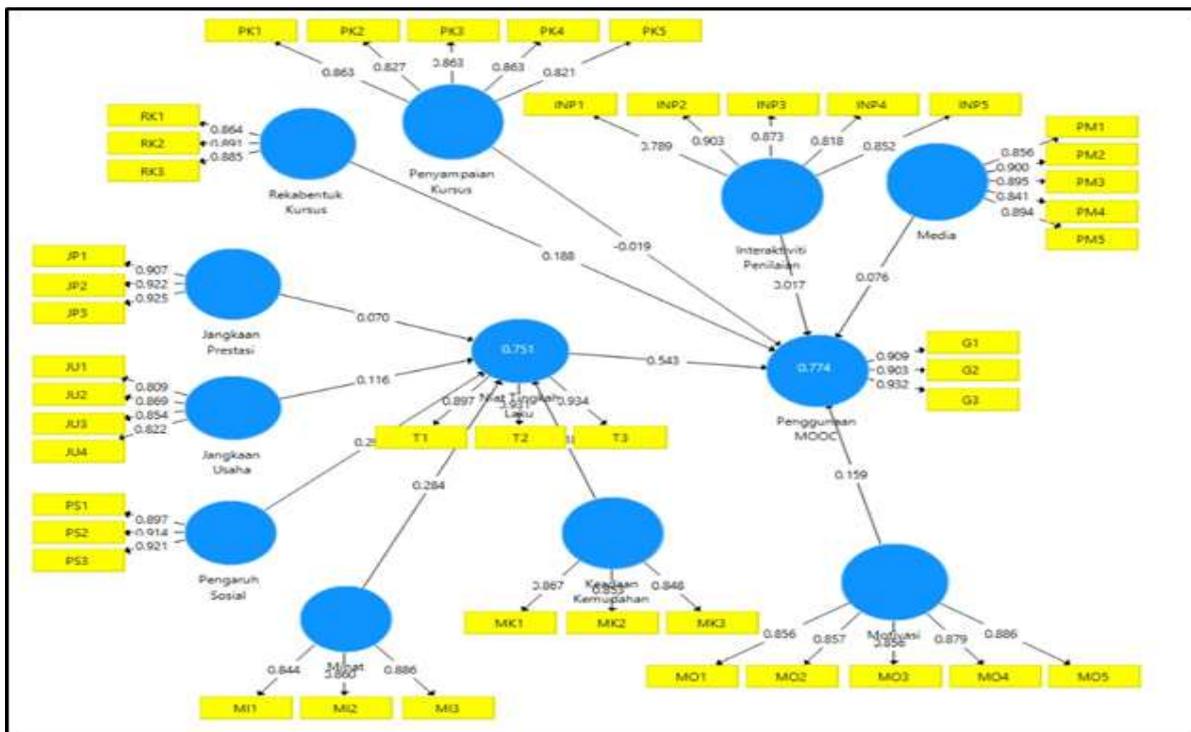

Figure 2: Measurement Model

Table 2: Discriminant Validity Test Using Fornell-Larcker Criterion

	AVE	INP	JP	JU	MK	PM	MI	MO	T	PS	G	PK	RK
Interactivity & Assessment	0.72	0.848											
Performance Expectation	0.84	0.602	0.918										
Effort Expectation	0.70	0.596	0.786	0.839									
Facilitating Condition	0.73	0.658	0.668	0.720	0.856								
Media	0.77	0.765	0.672	0.660	0.704	0.878							
Interest	0.75	0.652	0.686	0.701	0.705	0.736	0.863						
Motivation	0.75	0.699	0.688	0.732	0.701	0.774	0.827	0.867					
Behavioral Intention	0.85	0.609	0.719	0.749	0.752	0.688	0.774	0.772	0.921				
Social Influence	0.83	0.631	0.743	0.757	0.696	0.682	0.708	0.764	0.785	0.911			
MOOC Usage	0.84	0.631	0.706	0.742	0.735	0.706	0.758	0.775	0.847	0.784	0.915		
Course Delivery	0.72	0.722	0.560	0.620	0.693	0.685	0.624	0.657	0.589	0.594	0.599	0.848	
Course Design	0.77	0.675	0.623	0.673	0.737	0.708	0.689	0.735	0.687	0.688	0.731	0.681	0.880

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From Table 3, the result of hypothesis testing reveals that four variables or construct was found not to have a significant positive effect on Behavioural Intention or MOOC usage. The variables are performance expectancy, course delivery, interactivity & assessment and media. Meanwhile, the rest of variables were found to have a significant positive effect on Behavioural Intention. There are Effort Expectation, Social Influence, Interest, Facilitating Condition, Motivation and Course Design. Lastly, as expected, Behavioural Intention was found to have a significant positive effect on MOOC Usage where (β = 9.692, p = 0.000).

Overall, the proposed model accounted for 77.4 percent of the variance in MOOC Usage, and 75.1 percent of the variance in Intention to Use (R^2 of 0.774 and 0.751 respectively). R^2 or the coefficient of determination is to predict the endogenous constructs and use to determine the explanatory power of the structural model. This could be also the level of technology acceptance at the particular area. Detailed results for the structural model is also presented in Table 3.

Table 3: Hypothesis Testing

Hypothesis Path	Path Coefficient (B)	T Statistics	P Values	Results
Performance Expectation_ -> behavioral intention	0.070	1.245	0.213	Not Supported
Effort Expectation_ -> behavioral intention	0.116	2.198	0.028	Supported
Social Influence -> behavioral intention	0.293	5.099	0.000	Supported
Interest -> behavioral intention	0.284	5.597	0.000	Supported
Facilitating Condition -> behavioral intention	0.218	4.494	0.000	Supported
Motivation -> MOOC Usage	0.159	2.205	0.028	Supported
Course Design -> MOOC Usage	0.188	4.329	0.000	Supported
Course Delivery -> MOOC Usage	-0.019	0.420	0.674	Not Supported
Interactivity & Assessment -> MOOC Usage	0.017	0.387	0.699	Not Supported
Media -> MOOC Usage	0.076	1.633	0.103	Not Supported
Behavioral Intention -> MOOC Usage	0.543	9.692	0.000	Supported
R square (behavioral intention) = 0.751				
R square (MOOC Usage) = 0.774				

IV. DISCUSSION

From the authors point of view regardless of technology acceptance, the results of the study show that intends to use MOOC technology is influenced by certain factors or variables attached to it. The study also indicated that usage behaviour of MOOC is influenced by the important factor such as course design, motivation and absolutely behavioural intention. The behavioural intention act as antecedent for MOOC usage for the variables attached to it such as performance expectations, effort expectancy, social influence, facilitating condition and interest. As far as the concern, the course design is not yet explored in the previous study of the technology acceptance and associated with it. Ruthlessly, this could bring the huge impact of MOOC which is the course design was very important in the context of online learning.

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The courses in virtual environment required an appropriate material design conducted by the lecturer or instructor. It would be the factor which was very overbearing in the university setting especially for MOOC. Lecturer, instructor or even instructional designer could improve such as the materials, learning activities and what so ever task as it surrounded by the virtual technology. Furthermore, they could also enhance interaction together with the asynchronous and synchronous technology in order to access information associated with the course. From the result also, factors that influence the use of MOOC in the particular area where effort expectancy, social influence, facilitating condition, interest, motivation and course design.

Unfortunately, the performance expectancy, course delivery, interactivity & assessment and media would not a factor that contributes to influence the students in order to use MOOC in their learning. This could be due to the students at this university strongly do not believe that using MOOC will help them a lot in their learning. Another intention is that they might have another system such as a Learning Management System (LMS) or tools at their campus that being used in the e-learning process. Thus, they did not rely much in MOOC for accomplishing their teaching and learning process. Surprisingly, this finding also describes that oppose with the literature where performance expectancy is typically found to be the most prominent predictor in technology acceptance. Same goes to insignificant factors in this study where they could not an important factor that influence students to use MOOC in their learning.

However, from the result, it has shown that social influence was found to be an important factor in this study. It is probably due to individual believes that he or she must use a new technology such as MOOC that came across. A significant relationship between facilitating conditions and behavioural intention means that the respondent also believed that the infrastructure exists in order to support the use of MOOC. An enough and convenience resources such as good internet bandwidth and access to MOOC make a good reinforcement to a user's of MOOC within the campus. Effort expectancy is also found to have an influencing role in the technology acceptance of MOOC. This finding designates that learners believe a good degree of ease associated with the use of MOOC technology.

V. CONCLUSION

Technology acceptance is a concept of understanding the adoption of technology in this context where MOOC act as a system for e-learning purposes. Many factors that can be contributed in order to influence the user to use MOOC. In this study, the technology acceptance factors remain performance expectancy, effort expectancy, social influence and facilitating condition. Even though, interest and motivation are common factors or variables instead, they could bring the major impact of technology acceptance for MOOC. These variables are very important as they were significant to the MOOC usage. As for the conclusion, the instructor of MOOC especially lecturer who conduct a course online should be exposed more on how to manage the courses online. The limitation of the study is that the research conducted at selected public university only. For further research it could apply to all the public universities in Malaysia in order to understand the technology acceptance of MOOC, their usage and for long term or lifelong learning. So that a better improvement and solution can be proposed for the long term benefit of these technologies used especially in the Industrial Revolution 4.0 era and in the context of distance education.

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