Online learning: Readiness for Using MOOCs by Postgraduate Students

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The education system applies great effort in strengthening the potential of individuals as a balanced, harmonious and literate generation. The direction needs to be strengthened from all aspects of innovation in teaching and learning pedagogy. The purpose of this study is to identify the readiness, barriers and their relationship for postgraduate students by using MOOCs as an innovative platform for online learning. There were 306 respondents involved in this survey. The results show that postgraduate student have a high level of readiness and no barriers in using MOOCs as a new learning platform. Educators nowadays should be dynamic, proactive and responsive to any changes in technology strategies to their teaching. They should to be more creative and diversify delivery methods to their students'. This can help to increase students' motivation and interest towards learning.

Key words: *online learning, MOOC readiness and barriers, innovative platform*

Introduction

The Malaysian Education Development Plan (Higher Education) MEDP (HE) 2015-2025 has documented 10 strategies that are expected to indicate the use of technology in education for achieving a national advancement status globally. The basis for recognition of an institution should be to promote aspects related to the publication, research outcomes and quality of the institution as well as increasing the number of international students to pursue their education in the institution. In line with these developments, the Ministry of Education (MOE) Malaysia is aware of the improvement in quality to stay competitive with global trends. In the 9th Malaysian Plan, global online learning (GOL) was outlined for the future of the national education system. This online teaching delivery system provides responsiveness to the needs of various types of students from all over the world (MOE, 2015). From these strategies, there are several strategies that need to be addressed to achieve these objectives. Global quality standards are a benchmark for the future of the Malaysian higher education system, which makes online learning accessible and equitable in ensuring that

underprivileged students can benefit from it. Online learning and blended learning innovations have become the basis for enabling the education system curriculum in Malaysia to achieve this goal (MOE, 2015).

The high internet usage rates among the public, based on data from the Official Website of the Malaysian Communications and Multimedia Commission (MCMC), shows that 28.7 million internet users, are focussing on seeeking information (a percentage of 85.5%) (MCMC, 2018). What kind of information does the internet user search for? The world today is talking about open and free online teaching and learning materials. Various platforms used to develop Massive Open Online Learning Courses or MOOCs (Sanchez-Vera & Prendes-Espinosa, 2015; Atenas, 2015; Catherine, 2013). The MOE also focus aggressively in encouraging MOOC as a learning innovation where access to courses offered is open and free (Norazah et al., 2016; Andrew & Timmerman, 2015). The concept of the MOOC was introduced to review online learning methods in higher learning institutions (Marshall & Shepherd, 2016; Rodriguez, 2013). Various types of courses are offered through MOOCs in a flexible online learning environment and new framework (Schoenack, 2013) which depends on the student's own learning pace (Nur Yasmin Khairani et al, 2018; Helmi & Norazah, 2015). Courses are also not tied to time (Cripps, 2014), where every student has access to the learning materials regardless of the time and place. MOOCs also play a role in promoting the continuation of education (Kerrison et al, 2016; Mackness, et al, 2010).

Research Background

Massive Open Online Courses (MOOC) have three policies. The formulation of this policy has been the used as a platform for the comprehensive application and integration of online learning among the majority of institutions in higher learning in Malaysia. Based on these policies, the use of MOOCs focuses on student achievement, as well as the curriculum in teaching and learning today. Over the years, MOOCs learning has continued to expand as more and more different countries around the world develop MOOCs including Malaysia. The development of MOOCs was developed in Malaysia in 2013 when courses through MOOCs were first offered by Taylor's University (Baturay, 2015). In line with MOOC's development, the Ministry of Higher Education commenced the implementation of MOOCs in Malaysia, collaborating with four public universities as MOOC content developers which included, the Universiti Kebangsaan Malaysia (UKM), Universiti Putra Malaysia (UPM), Universiti Teknologi MARA (UiTM), and Universiti Malaysia Sarawak (UNIMAS). MOOCs in Malaysia began to grow in early 2014 when these four higher learning institutions began offering courses within the MOOCs platform. Open online learning is the preferred learning platform for MOOCs implementation in Malaysia. And now, there are more than 59 MOOC courses registered under the Open Learning platform pioneered by 203,306 students in Malaysia (Mansor et al, 2015).

However, the development of MOOCs in the National Education system has yet to fully realised in teaching and learning. According to the Malaysian Education Blueprint 2013-2023, this problem is the attitude of some educators who are not interested in teaching using technology (MOE, 2013). This group of teachers are still comfortable using conventional methods when conducting classroom teaching and learning (Helmi et al, 2013). This problem is often associated with incomplete infrastructure facilities (Aziz et al, 2013). The use of the internet provided by institutions of higher learning is not fully optimised by students in sharing learning materials online. In addition, there are also cases of lack of exposure to the way technology operates. Apparently, teachers or lecturers are more comfortable using one-way communication methods when giving lectures and face-to-face class sessions (Helmi et al, 2013). Most teaching and learning sessions still use conventional methods that focus on teachers and students, making teachers or lecturers the main source of reference in the lecture.

The integrated and complimentary technology nowadays, makes conventional methods no longer relevant to today's teaching and learning styles. However, there are still problems with students being less interested and not responding positively to teaching and learning sessions (Wan Khairuzzaman & Seyed Ali, 2014). The readiness of using a newly introduced technology can be analysed using The Unified Theory of Acceptance and Use of Technology (UTAUT) Model through four key constructs namely Performance expectancy, Effort expectancy, Social influences and Facilitating conditions. The use of MOOCs is based primarily on the theory of social learning, which is the interaction between an individual's behavior and the learning environment based on intrinsic motivation (Siemens, 2012). There is a significant relationship between consumer demographics and environmental influences that includes conditions and social pressures (Bandura 1977).

The UTAUT model was validated when tested on previous data from the Theory Acceptance Model (TAM) research (Venkatesh et al., 2003). The UTAUT model is intended to explain technological acceptance, based on eight theories of technology acceptance or model. The UTAUT model creates four direct variables to determine the intended use of technology and the direct determinants of usage behavior in facilitating the situation. The model integrates four moderating factors (gender, age, experience, and volunteerism) that have multiple effects on the main constructs. In conclusion, the UTAUT model is a combination of the 32 variables found in eight existing models into four main effects and four moderating factors.

Figure 1 shows the UTAUT Model, the four constructs tested in the UTAUT model are Performance Expectancy (PE) defined as the degree to which students believe that using the MOOC will help them to complete various academic tasks at the university. Venkatesh et al.(2003) states that Performance Expectations is the most influential construct among of the four constructs in his model. This theory is supported by the publication of other researchers'

papers on acceptance models (Agarwal & Prasad, 1998; Compeau & Higgins, 1995). Effort Expectancy (EE) is defined as something associated with the use of MOOC. Social Influence (SI) is the degree to which an individual believes others should use the new system. These constructs together with the perception of the individual's behavior are influenced by the belief that the other person is capable of earning the result of using the system. Facilitating Conditions (FC) is defined as the degree to which an individual believes that a technical organisation and infrastructure exists to support the use of this study. This study is based on three main objectives as follows:

Research Objectives

- Identify the readiness of postgraduates student using MOOCs in terms of performance expectancy, effort expectancy, social influence and facilitating condition in learning based on UTAUT Model
- Identify the barriers that faced by postgraduates student in using MOOCs.
- Identify the relationship between readiness and barriers among postgraduate students in using MOOC.

Methodology

Data Collection

Quantitative research methods were used for data gathering process involving questionnaires. The study received 306 completed questionnaire forms in return. The questionnaire is divided into three sections. Section I shows the respondents demographic information that involves questions about gender, age and name of courses. In the 'UTAUT' model, the items are identified as moderator to variables. Analysis of this part will be analysed using percentage value. Section II contains questions on factors that influence the readiness of the postgraduate students in using MOOCs. The variables used in the study were Performance Expectancy (item 1 to 3), Effort Expectancy (item 4 to 7), Social Influence (item 8 to 10), and Facilitating Conditions (item 11 to 14). Section III contains eight question on factors that influence the barriers or obstacles in using MOOC. All results from the questionnaires will be analysed using the median and standard deviation. Each variable was measured using the Likert scale from one to five, namely (1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree and 5=Strongly Agree).

Results
Demographic Respondents

The respondents in this study were randomly selected. Table 1 shows that a total of 306 respondents were involved in this study and the respondents' information refers to their

gender, age and courses. Based on gender, more respondent are female than male whereby 218 (71.2%) are female and 88 (28.8 %) respondents are male respectively.

Table 2 shows that 109 respondents or 35.6% of respondents were between the ages of 21 to 25; 81 or 26.5% of respondents were aged between 26 and 30; 69 respondents or 22.5% were aged between 31 and 35 and 47 or 15.4% of respondents were between 36 and 40 years old. There were no respondents aged 40 and above.

Table 3 shows that there were 20 respondents or 6.5% of the Master of Resources Education and Information Technology, 25 of the respondents or 8.2% comprised of a Master in Psychology Education and 22 respondents or 7.2% were students of the Master in Teaching English as Second Language (TESL). There were 78 respondents or 25.5% who attended the Master of Mathematics Education course, 81 respondents or 26.5% of the Master on Sports Management students while the other 75 or 24.5% were from Master in Education Administration. There were 5 respondents or 1.6% were from other courses.

Readiness for Using MOOCs for Postgraduate Students

Student readiness refers to students' expectations of using MOOCs platform as a learning method. Individuals with high levels of readiness in using MOOCs will have less barriers to the use of MOOCs as a learning platform.

Table 4 shows the items for postgraduate students' readiness to use MOOCs. There are 14 items which was expressed in each question from item 1 to item 14. The items in the postgraduate student readiness are a combination of the items discussed in the UTAUT model for Performance Expectancy (Items 1 to 3), Effort Expectancy (Items 4 to 7), Social Influence (Items 8 to 10) and Facilitating Conditions (Item 11 up to 14).

Referring to Table 4 in Performance Expectancy, all items had high levels of expected readiness. Item 1 with the statement "I found that teaching and learning process were more effective by using MOOC" recorded mean of 4.22. Whereas, for the Effort Expectancy all items recorded a mean level of readiness from 3.64 to 4.27. Item 6 shows the highest mean score of 4.27 with the statement, "Courses conducted in MOOC are easy to use". Accordingly, the expectation of the social influence of the respondent with the highest mean value is in the statement for item 9 "The person who influences my behavior thinks that I need to learn using MOOC" with score 4.01. Meanwhile, item 10 had the lowest mean of 3.64 with the statement "The person whose their ideas I appreciated, grateful when I use MOOC". The social influence factor becomes more apparent when the people need other opinions influenced by the environment (Venkatesh & Davis, 2000). In mandatory adoption settings, social influence is viewed only as an early stage with its eroding effect over time.

Furthermore, items for convenience state the expectation of readiness at a moderate level. Item 14, "I can get help from others when I have difficulty using MOOC," recorded a mean of 3.94. The overall readiness of the postgraduate students at a mean of 3.87, is at a moderate level. This indicates that postgraduate students are in the process of initiating and using the MOOC platform in teaching and learning.

Comparison of Readiness Competancy in MOOC Usage

Table 5 shows the comparison in Readiness Compentancy for using MOOCs. There are four main constructs namely: performance expectancy, effort expectancy, social influence and facilitating condition. Among the four constructs, effort expectancy was the highest mean score recorded at 3.10. The facilitating conditions recorded the lowest with mean score of 2.57. Performance expenctancy and social Iifluence were averaged 2.97 and 2.86 respectively.

Postgraduate Students Barriers In Using MOOC

Barriers are defined as obstacles faced by students that will negatively impact them when using the MOOC platform. Learning barriers are found to have an impact on an individual's learning and disrupt the level of readiness (Jolie, 2014). Table 6 shows 8 items related to barriers or obstacles faced by postgraduate students in using MOOC. The items were the combination of items for situation barriers, learning style barriers, personality barriers, referral barriers, organisational barriers and technological barriers. The item with the highest mean was item 7, which was 3.36. This item is about the standard score allocated for achivement in the MOOC., making it the highest barrier for postgraduate students to use MOOCs. The item with the lowest mean is item 4 which states "Unable to commit online consistanly". This means the item is not a major obstacle to MOOCs usage. Overall, the barriers to using MOOCs are at a moderate level. The overall mean is 2.88. This shows that barriers still exist and actions need to be taken to overcome the barriers.

The relation between level of readiness and barriers in usage of MOCC .

Table 7 below indicates the relation between level of readiness and the barriers in usage of MOOC. The results show that the correlation coefficients values for the variables of the barriers and the readiness regarding MOOC readiness are low because it is in between the range from 0.20 to 0.40 (Wiersma, 2000). A negative correlation coefficient indicates that the relationship that exists between the two variables is a negative relationship. This indicates that a person who has high performance expectancy in using a MOOC will be less problematic when using a MOOC in teaching and learning sessions. The results also show

that there is a significant correlation between the variables of barriers and t readiness where the values socre was 0.0000 which is less than the significant level.

Conclusion

The level of readiness among postgradute student will influence the use of MOOCs as one of the learning platforms. The level of readiness is based on the self-confidence and ability to use MOOCs in everyday learning process. There are four aspects of self-readiness that are applied in this study, namely: performance expentancy, effort expectancy, social influence and facilitating condition. According to the study of Eastin & LaRose (2000), low levels of self-efficacy in using online learning will affect students' confidence and readiness when using MOOCs. The results show that postgraduate students have a high level of readiness for using MOOCs as a new learning platform. Student readiness overall recorded a mean of 3.87. This indicates that postgraduate student in the University Kebangsaan Malaysia were in the process of initiating and using the MOOC platform in teaching and learning. The results show that most respondents have a high degree of readiness in the use of MOOCs where these respondents meet the expectations set by the researcher. Students with high performance expectancy, high effort expectancy, positive social influence from the surrounding community and conducive facility conditions have further enhanced their readiness in using MOOCs as a new platform in the education world. MOOCs are one of the most advanced forms of online teaching and learning. They contain teaching and learning that begins with face-to-face or traditional one-way learning, then develops with the use of online resources, leading to blended learning (Sandra, 2015). Quality education with a clear teaching demonstration in learning outcomes offered over the last 10 years (Sandra, 2015), clearly shows that online education is the direction for the development of the global education system.

Referring to the results of the effort expectancy, all items recorded a moderate level of readiness. The highest mean note with a value of 4.26 is based on the statement, "Courses conducted in MOOCs are easy to use". On that thought, it clearly shown that MOOCs are a revolution in the global education system that is not only technologically advanced, it is a platform that is easy to learn and use. The MOOC had evolved towards the emerging gobal-institutional space as an elite institution and global classroom (Firmansyah, 2018) where as the courses offered were synchronised (Rodriguez, 2013). The learning process only conducted online where each of the MOOC participants have access to learning resources at their fingertips regardless of time and place (Manallack & Yuriev, 2016). The barriers or obstacles related to MOOC readiness need to address this to overcome it as soon as possible. The results show that the major problems faced by students during MOOCs are related to assessment. This indicates that MOOC developers need to provide standardised facilities to enable every student access to MOOCs fairly.

The findings on correlation coefficients show that the relation between barriers and readiness in useing MOOCs are low with value scores of -0.384. This indicates that if the user's readiness for the MOOC is high then the problems in using the MOOC as a virtual learning platform are less. Campeau & Higgins (1995) state that users with high levels of self-efficacy have less barriers when using virtual or online learning. The results of the study also indicate that there is a significant relationship between the barriers' variables and student readiness.

Overall, the use of MOOCs gives postgradute students freedom to participate in the learning process for each subject. Students are free to study at their own level of ability and can repeat any part of the subject that is not understood according to their needs and level of understanding. The MOOC application enables graduates to communicate directly with their lecturers or their peers group through internet services such as chatboxes, newsletters and discussions or forums that are provided through the MOOC platform. Student can also ask questions about topics that they do not understand. Teachers and or the lecturers can also provide additional guidance and description to help students understand the topic studied through the MOOC platform. Educators nowadays should be dynamic and proactive plus responsive to any current educational developments. They should also be more creative and diversify delivery method to their students'. This can help to increase students' motivation and interest towards any subject given. All parties need to play a role in addressing the obstacles faced by the MOOC in order to achieve to a satisfactory level. This is because the world of education has become a k-comodity .'Competitive edge' became a big challange for all higher education institutions. The programs offered must have added value and a 'niche area'. This allows the higher institutions to compete among each others in order to offer the courses related to the implementation of the technology. The competition nowadays is no longer between the countries, but it is regarding the future job market place globally.

Figure

Figure 1. UTAUT Model
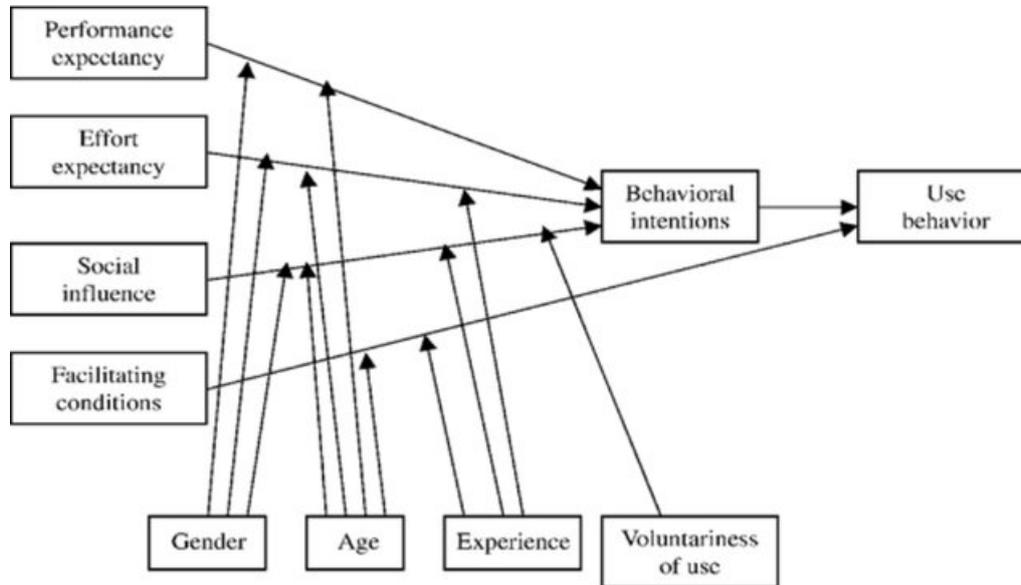
Table

Table 1: Demographic Respondents

Gender	Frequency (N)	Percentage (%)
Female	218	71.2
Male	88	28.8
Total	306	100.0

Table 2: Respondents' Ages

Ages	Frequency (N)	Percentage (%)
Below 21 years old	0	0.0
21 to 25 years old	109	35.6
26 to 30 years old	81	26.5
31 to 35 years old	69	22.5
36 to 40 years old	47	15.4
40 years old and above	0	0.0
Total	306	100.00

Table 3: Name of Courses

Name of Courses	Frequency (N)	Percentage (%)
Master in Resourse Education and Information Technology	20	6.5
Master in Psychology Education	25	8.2
Master in Teaching English as Second Language (TESL)	22	7.2
Master in Mathematic Education	78	25.5
Master in Sports Management	81	26.5
Master in Education Administration	75	24.5
Others	5	1.6
Total	306	100.0

Table 4: Student readiness in using MOOCs

No	Statements	Mean	Standard Deviation	Contruct
1	I found that leaching and learning process were more effective by using MOOC.	4.23	.632	Performance Expectancy
2	By using MOOC it help me to finish yang activity quickly	4.13	.798	
3	By using MOOC it help me to increase my productivity.	4.18	.649	
4	Learning how to use MOOC is easy to be learn.	4.30	.601	Effort Expectancy
5	The courses conducted in MOOC are clear and easy to understand.	4.14	.670	
6	Courses conducted in MOOC are easy to use.	4.27	.560	
7	Learning a course in MOOC can enhance my skills on the subject.	3.64	.688	
8	The person who are important to me think that I need to learn using MOOC.	3.99	.733	Social Influence
9	The person who influence my behavior think that I need to learn using MOOC.	4.01	.552	
10	The person whose their ideas I appreciated, grateful when I use MOOC.	3.64	.688	
11	I have the resources needed to use MOOCs in my learning.	3.26	.840	Facilitating Conditions

No	Statements	Mean	Standard Deviation	Contruct
12	I have the knowledge needed to use MOOCs in my learning.	3.30	.815	
13	The use of MOOC is compatible with other technologies I use.	3.12	.767	
14	I can get other people's help when I have difficulty using MOOC.	3.94	.733	
	Total Means	3.87		

Table 5: Comparison of Readiness Expectancy In MOOC Usage

Readiness Compitency	N	Minimum	Maximum	Mean	Standard Deviation
Performance Expectancy	306	1.00	4.64	2.97	.931
Effort Expectancy	306	1.00	4.67	3.10	.880
Social Influence	306	1.00	5.00	2.86	.740
Facilitating Condition	306	1.00	5.00	2.57	.740
Valid N (listwise)	306				

Table 6: Barriers in using MOOCs

No	Statements	Mean	Standard Deviation
1	Low internet coverage	2.72	1.188
2	Lack of understanding about how to use MOOC	2.89	1.179
3	Limited numbers of equitment needed to use MOOC	3.00	1.208
4	Unable commit on online consistanly	2.67	1.119
5	Low self motivation to involve in learning using MOOC	2.76	1.128
6	Material of MOOC course are not intractive	2.91	1.192
7	No standard scores allocated for achievement in MOOC	3.36	1.321
8	Not all the courses offered in MOOC	2.94	1.197
	Total Min	2.88	

Table 7: The relationship between level of readiness and barriers in using MOOCs.

		Barriers	**Readiness**
Barriers in using MOOC	**Pearson Correlation**	1	-.384(**)
	Sig. (2-tailed)	.	.000
	N	306	306
Level of readiness to use MOOC	**Pearson Correlation**	-.384(**)	1
	Sig. (2-tailed)	.000	.
	N	306	306

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

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