



UNIVERSITI PUTRA MALAYSIA

***PREDICTIVE MODEL OF STUDENTS' CONTINUANCE INTENTION IN
MASSIVE OPEN ONLINE COURSE AMONG UNIVERSITY STUDENTS***

DANEJI AISHA AMINU

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By

DANEJI AISHA AMINU

**Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia,
in Fulfilment of the Requirements for the Degree of Master of Science**

December 2017

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DEDICATION

Dedicated to My parents, My beloved Family and the Entire Muslim Ummah.



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Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfillment of the requirement for the degree of Master of Science

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By

DANEJI AISHA AMINU

December 2017

Chairman : Associate Professor Ahmad Fauzi Mohd Ayub, PhD
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Rapid development of digital technologies creates innovative ways of learning known as Massive Open Online Course (MOOC) which has been introduced at most universities. However, previous study have shown that low course completion rate and limited amount of studies to examine factors that influence students' continuance intention towards using MOOC.

Therefore, the main purpose of this study is to predict factors that influence students' continuance intention towards using MOOC among university students based on Expectation-Confirmation model and Technology Acceptance Model. By means of reviewing the related literature, factors namely perceived usefulness, perceived ease of use, expectation-confirmation, satisfaction and MOOC continuance intention were examined.

This study implemented a survey research design. The instrument used was an online questionnaire. To measure the reliability of the instrument, a pilot study was conducted prior to the actual study towards 32 UPM students whereby a Cronbach alpha values ranged from .738 to .821 was obtained. The actual study was conducted on a sample of 368 undergraduate students. The data was analyzed descriptively using SPSS 22 and Analysis of Moment Structures (AMOS) 21.

The outcome of testing the model revealed that among the nine paths of the structural model, seven paths were significant and two were not. The paths that reflected significant effects were as follows: (1) students' perceived ease of use have effects perceived usefulness of MOOC ($\beta = .481, p < .001$); (2) students' expectation-

confirmation have effect on perceived usefulness ($\beta = .367, p < .005$); (3) students' expectation-confirmation have effect perceived ease of use of MOOC ($\beta = .918, p < .001$); (4) perceived usefulness have effect on MOOC continuance intention ($\beta = .374, p < .001$); (5) students' expectation-confirmation have effect on satisfaction with MOOC ($\beta = .800, p < .001$); (6) students' perceived ease of use of MOOC have effect MOOC continuance intention ($\beta = -.310, p < .001$); (7) students' satisfaction have effect on MOOC continuance intention ($\beta = .840, p < .001$). Besides, the paths with non-significant effects were: students' perceived usefulness does not have effect on satisfaction with MOOC ($\beta = .058, p > .05$); students' perceived ease of use does not have effect on satisfaction with MOOC ($\beta = .074, p > .05$). The empirical results of the study indicates that perceived usefulness, perceived ease of use and satisfaction with the use of MOOC are strong predictors of MOOC continuance intention. The overall structural model with nine paths has explained 79.4% percent of the variance for MOOC continuance intention among public university students.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Master Sains

**MODEL PERAMAL NIAT BERTERUSAN DALAM MASSIVE OPEN
ONLINE COURSE DALAM KALANGAN PELAJAR UNIVERSITI**

Oleh

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Perkembangan pesat teknologi digital telah mencipta satu pembelajaran inovatif yang dikenali sebagai *Massive Open Online Course* (MOOC) yang mula diperkenalkan di kebanyakan universiti. Namun begitu, kajian lepas menunjukkan kadar penyempurnaan yang rendah dan bilangan kajian terhad bagi mengenalpasi faktor yang mempengaruhi niat berterusan terhadap penggunaan MOOC.

Oleh itu, tujuan utama kajian ini adalah untuk meramal faktor yang mempengaruhi niat berterusan pelajar menggunakan MOOC dalam kalangan pelajar universiti berdasarkan model Jangkaan-Pengesahan dan model penerimaan teknologi. Dengan mengkaji kajian literatur, faktor iaitu persepsi terhadap kebergunaan, persepsi mudah digunakan, jangkaan-pengesahan, kepuasan dan niat berterusan menggunakan MOOC di kaji.

Kajian ini menggunakan reka bentuk kajian tinjauan. Instrumen yang digunakan soal selidik secara atas talian. Bagi mengukur kebolehpercayaan instrumen, satu kajian rintis telah dijalankan sebelum kajian sebenar ke atas 32 pelajar UPM dimana nilai Cronbach alpha di antara .738 to .821 di perolehi. Kajian sebenar dilakukan ke atas 368 sampel pelajar pra-siswazah. Data dianalisis menggunakan SPSS 22 dan Analysis of Moment Structures (AMOS) 21.

Hasil pengujian model menunjukkan dalam sembilan laluan model struktural, tujuh laluan adalah signifikan dan dua tidak. Laluan yang menunjukkan kesan signifikan adalah seperti berikut : (1) Persepsi kemudahan mempunyai kesan terhadap persepsi kebergunaan MOOC ($\beta = .481, p < .001$); (2) Jangkaan-pengesahan pelajar

mempunyai kesan terhadap persepsi kebergunaan ($\beta = .367, p < .005$); (3) Jangkaan-pengesahan pelajar mempunyai kesan terhadap persepsi kemudahan ($\beta = .918, p < .001$); (4) Persepsi kebergunaan mempunyai kesan terhadap niat berterusan menggunakan MOOC ($\beta = .374, p < .001$); (5) Jangkaan-pengesahan pelajar mempunyai kesan terhadap kepuasan menggunakan MOOC ($\beta = .800, p < .001$); (6) Persepsi kemudahan mempunyai kesan terhadap niat berterusan menggunakan MOOC ($\beta = -.310, p < .001$); (7) Kepuasan pelajar mempunyai kesan terhadap niat berterusan menggunakan MOOC ($\beta = .840, p < .001$). Selain itu, laluan yang tidak signifikan adalah persepsi kebergunaan pelajar tidak mempunyai kesan ke atas kepuasan menggunakan MOOC ($\beta = .058, p > .05$); persepsi kemudahan tidak mempunyai kesan ke atas kepuasan menggunakan MOOC ($\beta = .074, p > .05$).

Dapatan empirikal kajian menunjukkan persepsi kebergunaan, persepsi kemudahan dan kepuasan menggunakan MOOC merupakan peramal kuat terhadap niat berterusan menggunakan MOOC. Model struktural keseluruhan dengan sembilan laluan dapat diterangkan 79.4 peratus varians untuk niat berterusan menggunakan PutraMOOC dalam kalangan pelajar di universiti awam.

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I certify that a Thesis Examination Committee has met on 22 December 2017 to conduct the final examination of Daneji Aisha Aminu on her thesis entitled "Predictive Model of Students' Continuance Intention in Massive Open Online Course among University Students" in accordance with the Universities and University Colleges Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U.(A) 106] 15 March 1998. The Committee recommends that the student be awarded the Master of Science.

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LISTS OF ABBREVIATIONS

AGFI	Adjusted Goodness of Fit Index
AVE	Average Variance Extracted
CFA	Confirmatory Factor Analysis
C I	Continuance Intention
CR	Critical Ratio
CONF	Expectation-Confirmation
ECM	Expectation Confirmation Model
ECT	Expectation Confirmation Theory
GFI	Goodness of Fit Index
ICT	Information and Communication Technologies
IS	Information System
IT	Information Technology
LMS	Learning Management System
MI	Modification Index
MOOC	Massive Open Online Course
PEOU	Perceive Usefulness
PU	Perceived Ease of Use
RMSEA	Root Mean Squares Error of Approximation
SAT	Satisfaction
SEM	Structural Equation Modeling
TAM	Technology Acceptance Model
TITAS	Tamadun Islam dan Tamadun Asia
UPM	University Putra Malaysi

CHAPTER 1

INTRODUCTION

1.1 Background Information

Technology has brought many changes in our everyday life and education is one of the fields where the impact can be easily noticed (Ferrari, Brecko & Punie, 2014). With digital technologies and the Internet growing rapidly, new ways of learning were created (Redecker & Johannessen, 2014). The developments in technology had reached a stage where new terms and concepts were introduced in the field of education (Baleighi-Zadeh et al., 2014). Education is an area of great importance, where the internet is used widely to promote and improve the quality of the learning process (Alkhanak & Azmi, 2011). It provides a flexible means for educators to create and use the new teaching tools (Teplechuk, 2013)

Along with the quick spread of the web and personal computers, higher educational institutions have progressively embraced e-learning (Ma et al., 2010). E-learning is any type of situation where learning in the education context is delivered through the use of computer technology to the network via the internet (Bondarouk & Ruël, 2010) to thousands of students in a single learning environment (Clarke, 2013). E-learning is also a technological medium that allows individuals to participate in online learning (Lvovskaya & Lamprou, 2015) and utilize the systems such as email, online interactive classes and other multimedia contents (Zhang & Hong, 2010). Though the interaction in e-learning is environment is typically different from face-to-face classes, as students need to learn independently (Terzieva et al., 2009). Thus, it is a method of empowering students to have access to their own particular educational materials with guidance from teachers who serve as their mentors (Alshammari et al., 2015). E-learning industry has grown internationally with a great view for further expansion (Clarke, 2013). It provides various opportunities for learners and teachers to increase their experience. These systems that organize and carry out e-learning have different names such as virtual systems, online systems or learning management systems (LMS) (Baleighi-Zadeh et al., 2014). All these refer to the management of teaching and learning through the internet using the same common tools or software and away from the actual classes (Alshammari et al., 2015).

The increase utilization of e-learning in advanced higher education has led to the establishment of Massive Open Online Course (MOOC) that seemed to be a very reasonable outcome of digitization (Haggard, 2013; Clarke, 2013). This could be seen in various spots where advanced education suppliers began opening their own MOOC activities. In Malaysia, higher education institutions (HEIs) are developing to address the issues of students in this new digital realm(MOOC), the educators have incorporated ICT tools into the instructional process through the Learning Management System (LMS) (Al-Busaidi & Al-Shihi, 2010). It is now common to

find the LMS is being used in all the public and private universities as it is a widespread software that allows e-learning to be implemented . E-learning has therefore become an essential facilitator in teaching-learning process. According to Global Industry Analysts, the value of the global e-learning sector is estimated to hit \$107 billion by the year of 2015 (Virtual College, 2012). Malaysia has the second highest growth rates for e-learning upshots in the world, at the record of 39.4%, which is more than four times the total global growth rate (Sawahel, 2013). For example in 2013, Taylor's University Malaysia started to offer courses through MOOC, University Putra Malaysia had additionally as of late propelled it's MOOC activity "putraMOOC" in April 2014, (Juhary, 2014). MOOC differ from other online educational platforms with a particular timeline, traditional curriculum, structured discussion and evaluation (Thu-Houng, 2014). They are merged with social networks, accessible online materials and are encouraged by leading experts in the field of study (McAuley, Stewart, Siemens & Comier 2010).

All these have made possible the spread of communication tools, the affordable internet that is easily accessible with new progress in high-speed data such as the wireless everywhere and at anytime.

1.2 Massive Open Online Course (MOOC)

MOOC have lately pulled in the attention of many individuals around the globe (Rai & Chunrao, 2016) through various MOOC providers such as Coursera, edX, Udacity and others (Fowler, 2013). These boast hundreds of classes developed by reputed universities including Massachusetts Institute of Technology in Harvard, Stanford and Berkeley (Gaebel, 2013). MOOC are now changing the face of education by providing ways in which all concepts of learning are employed by hundreds of universities (Teplechuk, 2013) and are offered in an online domain with a clear difference from the past online education (Alraimi et al., 2015).

According to Gordon and Mora (2013), MOOC is a recent improvement in distance and online education with an option of free open-ended outcomes. Downes and Siemens (2009) defined MOOC as a natural by-product of teaching and open learning. It also refers to a model for delivering learning content to anyone who wants to enroll in an online course whereby there is an unlimited participation (Marques, 2013). MOOC is an academic category that represents a wide variety of online program concepts and approaches (Morris, 2014). Participation is optional, as they mostly have no basic requirements, charges, accreditation, or predefined required level of interests (McAuley et al., 2010). Generally, MOOC sets to provide free online educational contents that are equivalent to the contents given through traditional classroom (Sahimi et al., 2016).

However, MOOC is now changing the face of education by providing an alternative to the one-size fits all learning concept used by hundreds of institutions (Teplechuk, 2013). MOOC provide easy access to potential participants and instructors (De

Waard et al., 2012) because they are free or have low enrolment cost (Ridwan, 2015). Its format offers flexible access, which gives a learner a chance to make learning flexible in his/ her own time frame (Teplechuk, 2013; Gaebel, 2013). In addition, MOOC give access to many similar courses taught at many of the world's leading Universities by highly professional scholars in all aspects of the study such as computer science, economics, medicine, agriculture and the like (Hoy, 2014). It allow learners to obtain knowledge not only more cheaply but also more conveniently (Shrivastava & Guiney, 2014). So also, MOOC have not been restricted to college students, and/or experts, but even youthful students can partake in the MOOC experience.

Despite the controversy over the concept of MOOC, there were several studies where the important contributions of these courses were stated (Ridwan, 2015). Among them were to increase interest and awareness of online learning (Allen & Seaman, 2011). Krause and Lowe (2014) presented a useful synthesis of the assertions made about the promise and issues of MOOC. They revealed that MOOC have the potential to challenge the closed and privileged nature of academic knowledge in traditional universities. In a study to examine undergraduate students' preferences and opinions about learning in MOOC and its educational values, it was found that most of the students had a good experience in learning with MOOC. It seemed interesting to them and a good way to acquire new knowledge (Abeer & Miri, 2014).

As a result, many higher education institutions that wanted to keep up with other prestigious institutions, followed the wave of popularity of this educational phenomenon (MOOC). Although the MOOC stages had distinctive objectives, the main focus however was on building this phenomenal incredible learning systems outside the usual teaching environments (Jacobs, 2013). It was clear the intention was to come up with inventive approaches to enhance classroom instructions but not to replace them (Kolowich, 2013). It can therefore be concluded that, the concept of online or distance learning had been extended to incorporate a developing number of MOOC, which are free and open to all web users. Several prestigious Universities worldwide have geared the pattern in web learning in the MOOC context.

Expectation Confirmation Model

Bhattacharjee (2001) had built up the Expectation-Confirmation Model (ECM) by extending the Expectation-Confirmation Theory (ECT) with Technology Acceptance Model (TAM). The ECM theorizes that perceived usefulness and user satisfaction lead to the continuance of the intention to use the service. Perceived usefulness along with confirmation of expectations from the initial use of the products or service lead to user satisfaction and confirmation which likewise influence perceived usefulness (Bhattacharjee, 2001).

ECM was applied to a variety of studies, including the information systems and e-learning. Halilovic and Cicic (2013) extended the ECM to examine the antecedents of the information systems user behavior. Lee (2010) also extended the ECM to study students' use of e-learning. Similarly, Lee and Kwon (2011) used the ECM to examine web-based services. Meanwhile, Stone and Baker-Eveleth (2013) used the ECM to study students' intention continuance regarding electronic textbooks.

Technology Acceptance Model

Davis (1989) initially presented the Technology Acceptance Model (TAM) as a hypothetical addition to the Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1977) and found it could clarify better users' acceptance. Davis (1989) assumed the perceived usefulness (PU) and perceived ease of use (PEOU) of a system had an impact on users' behavior intention (BI) while receiving information technology (Barrio-García, Montaña & Romero-Frías 2015) because they were the essential drivers of technology acceptance.

The application of TAM on various studies had shown its original constructs were highly reliable and had good predictive validity (Wu & Chen, 2017). It had also been used to examine students' acceptance of educational technology (Yeh et al., 2010). It could therefore be used in a variety of contexts just as in MOOC (Sanchez-Franco 2010).

1.3 Statement of the Problem

The social equality of education has reinforced education providers to spread out their administrations to anyone without due thought or consideration of his / her locations (Juhary, 2014). This is why MOOC is increasingly utilized as a new model in technology to communicate and educate a large number of individuals (Yuan & Powell, 2013). MOOC have been widely used in North America and Europe compared to the developing world regions such as Africa and Asia (Liyaganawardena et al., 2013).

Despite the fact that MOOC is used everywhere throughout the world, it was however reported in many studies, MOOC have poor completion rate compared to the traditional university courses (Siemens, 2013). MOOC also had high dropout rate, particularly among low-performing students (Halawa et al., 2014). As reported, only 10% of the enrolled students completed the courses on MOOC (Breslow et al., 2013; Kolowich, 2013). Clarke (2013) also reported there was always a high drop-out rate among students in the MOOC where only about 7 to 8% completed the courses. As revealed by Jordan (2014), the maximum completion rate accomplished by 24 MOOCs in March 2013, was only 19.2% on courses offered by Coursera. MOOC is much criticized for the high dropout rates, because only a small percentage of the starters completed the courses. The low completion rates implied there were limited active learners taking part in MOOC learning. Hence, the dropout rate and low

completion rate were considered as problems for questions were raised regarding the effectiveness of the MOOC. Hence, researches need to be conducted to identify the reasons behind the ineffectiveness of MOOC.

Al-Atabi (2013), suggested that one of the effective tools to attain an educational hub in the country is by implementing MOOC as it can help to brand Malaysian universities globally. The shift nine (9) of 'Globalised Online Learning' in Malaysia focuses upon *"building capabilities of the academic community, and explore the establishment of a national e-learning platform to co-ordinate and spearhead content development"* (Malaysian Education Blueprint 2013-2025, 2012). Amongst the plans to achieve this is launching of MOOC in Malaysian Higher Institutions. This will then be used as a blended learning model where students will have an advantage from the current new technologies of learning (MOOC) together with face-to-face learning method. Although a lot studies have been conducted on e-learning in Malaysia, most the literatures concentrated on the initial acceptance of the technology and leaving a gap for a large exploration of the continuous intention issue (Huang et al., 2017). According to Godoe and Johansen (2012), adopting new technology is important to improve the efficiency and effectiveness of various processes. Involving this concept in studying students' behavior in the adoption of MOOC, researchers have suggested that the actual factors of success depend on the continued use rather than first time use (Greene, Oswald & Pomerantz, 2015; Ouang et al., 2017). In similar vein, Bhattacharjee et al., (2008) point out that it is less expensive for technology suppliers to retain active users' than to attract new ones; meaning that the sustenance and success of a technology-enabled service is dependent on a supplier's ability to attract new customers while retaining older ones. The aforementioned scholars' view suggests that an investigation into possible factors that can influence continuance use intention with MOOC would serve as a cornerstone for supporting the MOOC students.

Meanwhile, some other researchers applied various theories to study on MOOC. For example, Zhou (2016) incorporated the theory of planned behavior (TPB) and self-determination theory (SDT) to investigate factors that might influence students' decisions to use MOOC. Similarly, Wu and Chen (2017) employed technology acceptance model (TAM) and task fit technology (TTF) model along with MOOC elements and social motivation to study continuance intention to use MOOC. Theoretically, this study implements ECM and TAM model to study on continuance use intention in MOOC. Studies reported that some students were dissatisfied with their participation in MOOC, as they found the activities in MOOC platform not easy and useful for their learning (Hew & Cheung, 2014; Alraimi et al., 2015). As such, studying on the perceived usefulness, perceived ease of use and satisfaction using MOOC will be of great importance. Also, students' experiences with using MOOC were found to be negative based on their expectation-confirmation with MOOC use (Lin & Ong, 2010; Agarwal, 2012; Frank, 2012). Therefore, it became very important to investigate on MOOC and the said factors that influence its continuance use intention since it is considered as a continuance trend of modernization with advanced technologies initiated by e-learning (Siemens, 2013).

MOOC is still new in the Malaysian higher institutions thus; it is a new technology that is used for learning with its unique characteristics when compared to other current online education. Specifically, the MOOC recently implemented by UPM (putraMOOC) had brought a great change to the e-learning environment in the university. Besides, the researcher is not aware of any extant study conducted regarding the use of putraMOOC, as such the factors related to students' continuance intention to use MOOC remain unclear.

Hence, based on the aforementioned discussion and knowledge gap, it becomes very important for MOOC to be evaluated from the students' perception as it will determine their intention towards its use for learning. A predictive model is also needed in order to predict the future outcomes of MOOC by informing the strategies required to sustain MOOC students. Moreover, it will provide the MOOC evaluators with valuable informations that will help to improve the MOOC platform. The outcomes of this study might be beneficial to students, lecturers, faculty members and the University management of UPM.

1.4 Research Objectives

The primary aim of this study was to predict a model on factors that might influence the continuance intention of higher education students in using putraMOOC. Therefore, the specific objectives are as follows:

1. To identify students' perceived usefulness, perceived ease of use, expectation-confirmation, satisfaction and continuance intention in using MOOC.
2. To determine the effects of the perceived ease of use and expectation-confirmation on perceived usefulness in using MOOC.
3. To determine the effects of expectation-confirmation on perceived ease of use in using MOOC.
4. To determine the effects of perceived usefulness, perceived ease of use and expectation-confirmation on satisfaction in using MOOC.
5. To determine the effects of perceived usefulness, perceived ease of use and satisfaction on the continuance intention in using MOOC.
6. To develop a model to predict factors that influence putraMOOC continuance intention.

1.5 Research Hypotheses

- H₁: Perceived ease of use has a significant effect on perceived usefulness of MOOC.
- H₂: Expectation-Confirmation has a significant effect on perceived usefulness of MOOC.
- H₃: Expectation-Confirmation has a significant effect on Perceived ease of use of MOOC.
- H₄: Perceived usefulness has a significant effect on MOOC continuance intention.
- H₅: Perceived usefulness has a significant effect on satisfaction with MOOC.
- H₆: Expectation-Confirmation has a significant effect on satisfaction with MOOC.
- H₇: Perceived ease of use has a significant effect on satisfaction with MOOC.
- H₈: Perceived ease of use has a significant effect on MOOC continuance intention.
- H₉: Satisfaction has a significant effect on MOOC continuance intention.

1.6 Significance of the Study

Online learning is an important aspect of the Malaysian Higher Education Blueprint 2015-2025. The Minister of Higher Education YB Dato' Seri Idris bin Jusoh has launched the Government's pledge in leveraging technologies like MOOC and innovations such as blended learning to make sure that students have a transformative learning experience in Malaysian Higher Institutions. Considering the increased attention on MOOC in higher education institutions currently, enhancing the quality and outcomes through further research on MOOC will be of great importance to the possible roles that MOOC might play especially in the aspect of continuance usage. This study, however, attempts to provide the factors that influence the continuance intention of MOOC usage by incorporating the constructs in the Expectation Confirmation Model (ECM) and Technology Acceptance Model (TAM) and to develop a model with the aim of enhancing awareness and understanding in the range of MOOC continuance intentions both theoretically and practically.

This study theoretically contributes to the general knowledge by enhancing the understanding regarding MOOC use by establishing a framework for increasing students' continuance intentions in Malaysian context. The proposed model of the study adds the variable of students' perceived ease of use to ECM model. The integrated model explains the roles of perceived usefulness, expectation-confirmation, satisfaction and perceived ease of use in putraMOOC continuance intention. The study makes an important contributions to the literature concerning continuance intentions of MOOC usage by providing potential useful data and information on MOOC use in Malaysian Higher Institutions. Empirical evidence has shown that out of the few studies on MOOC continuance use intention, no studies were found to be conducted in Malaysian context. To fill this gap, this study aims at predicting a model on factors influencing MOOC continuance intention use.

This research also contributes for practice as well. Here, the MOOC model shows some main factors that plays some major role in individual level to continue using the MOOC platform. Therefore, considering these factors would be beneficial for MOOC providers to understand and manage MOOC users. In addition, by investigating, the influencing factors of continuance intention to use MOOC, it will give a wise strategy for the universities to extend their e-learning platforms. Moreover, MOOC could be a candidate solution to manage the limited education resources in countries where the MOOC is currently developing, such as Malaysia. Students can explore and choose their field of interest and acquire more knowledge based on their university subjects or other aspect of life.

A predictive model putraMOOC continuance intention may be of help to universities in differentiating important influencing factors and to create suitable plans to promote the continuance use of the MOOC by students. Thereby, the universities will have the capability to overcome the problems which might influence students' continuance intention in MOOC and to boost the excellence of the learning activities. These may include; the course content, video lectures or interactive forums.

Finally, it is heartening to know, MOOC is a topic of great interest to many higher education educators as well as to the public, and to students of educational technology, sociology, psychology, all interested individuals in Malaysia, UPM and for the general public. This study will help the educational policy makers and MOOC instructors to regulate and improve the strategies to attain successful completion of MOOC. This research will also serve as a relevant material and an open access for future researches related to this area.

1.7 Limitations of the Study

This study investigated the factors influencing students' continuance intention in UPM's open online learning portal known as putraMOOC. It was developed by the center for Academic Development (CADE) in collaboration with the Faculty of Human Ecology and INFOCOMM Development Center (iDEC) to improve and support e-learning for students in Malaysia online. Hence, the structure and organization of the putraMOOC may possibly be different with other MOOC in other universities in Malaysia. As a result, the findings of this study cannot be generalized to all online learning portals.

This study was conducted based on the MOOC developed by UPM and the courses were meant to be used in a blended learning mode. Findings of this study cannot be generalized to other universities where their MOOC is not utilized in a blended learning mode. In addition, only TITAS courses were chosen in the study on putraMOOC. For that reason, the results of this study cannot be generalized to other courses.

This study examined only five factors (perceived usefulness, perceived ease of use, confirmation, satisfaction and continuance intention) that may influence students to continue using MOOC. Hence, outcomes of this study cannot be generalized to MOOC in any other university, which may have studied other factors such as perceived reputation, perceived enjoyment or task-technology fit.

1.8 Operational Definition of Terms

The following operational terms are defined within the context of this study:

Continuance Intention

Continuance intention is defined as students' intention to continue using the technology (Bhattacharjee 2001; Mathieson 1991). Stone and Baker-Eveleth (2013) also defined continuance intention as the intent to adopt again a technology. Continuance intention in this study refers to the intention of higher education students to continue using putraMOOC. In this study continuance intention was measured by using Bhattacharjee (2001) and Roca et al., (2006) scales.

Perceived Usefulness

Perceived usefulness is defined as the degree to which a person believes when using a certain information system would improve his/her performance in learning or working (Davis, 1989). It is also defined as user's subjective probability views that when utilizing a specific system, it will increase his/her job performance (Anandarajan et al., 2002). Perceived usefulness in this study refers to the degree to which higher education students believe that using putraMOOC will improve their learning performance. In this study perceived usefulness was measured by using Davis (1989); Pituch and Lee (2006); Sanchez and Huerous (2010) scales.

Perceived Ease of Use

Davis et al.,(1989) defined perceived ease of use as the degree to which a person believes that using a technology will be free of effort. It refers to the extent to which a person accepts that using a specific information system would be free of effort (Barrio-García et al., 2015). In the context of this study, perceived ease of use is defined as the degree to which higher education students believe that using putraMOOC will be free of effort. Perceived ease of use in this study was measured by using Davis (1989), Sanchez and Huerous (2010) scales.

Expectation-Confirmation

Expectation-Confirmation is defined as user's perception of the congruence between the expectation of a system use and its actual performance (Bhattacharjee, 2001). It also refers to as users' evaluation towards a product, service or technology item (Alraimi et al., 2015). For this study, expectation-confirmation refers to higher education students' perception on the congruence between the expectation of putraMOOC use and its actual performance. In this study, expectation-confirmation was measured by using the scales of Bhattacharjee (2001), Hsu et al., (2013) and Lee (2010).

Satisfaction

Satisfaction is defined as learners' affect with feelings prior to the use of technology (Bhattacharjee, 2001; Spreng & Mackoy, 1996). Satisfaction is also defined by Deng et al., (2010), as the pleasurable fulfillment response resulting from an appraisal with respective to how well the utilization of an item or service meet a need, desire or an objective. In this study, satisfaction refers to higher education students' subjective evaluation in using putraMOOC. Satisfaction in this study was measured by using Gutierrez-Santiuste et al., (2015) scale.

1.9 Summary

This chapter discusses the background of this study. This begins with the use of internet and the e learning. The history of MOOC and application of MOOC were briefly discussed in this chapter. The problem statement of the study, objectives, the significance of research hypotheses, limitations and operational definition of terms were also discussed in this chapter. The following chapter will discuss the literature reviews related to factors influencing the continuance intention of putraMOOC, the theories supporting the study and the conceptual framework of the study.

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