

# The Comprehension Theories Of Continuous Intention To Use Tel With E-Learning Models In Educations

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## ABSTRACT

This study analyses comprehensive of the existing theories that validate the accuracy of technology acceptance models (TAM). Also, examining the adopted TAM factors in conjunction with massive open online course (MOOC) features for continuous intention to use. The main problem phased TAM is the adoption of the right factors used for modelling design. The objective is to come out with the common factors could be used in e-learning. The method of this study is based on the combination between the application of technology-enhanced learning (TEL) techniques factors and the facilities of e-learning factors. This combination can be tested by adopted model as it provides flexibility to both lecturers and students. The finding shows the variety additional factors used as of academic performance, and TAM factors with continuous intention to use e-learning are significant positive values for e-learning in educations.

**Keywords: TEL, E-Learning, Continuous Intention, MOOC.**

## INTRODUCTION

Over the years Technology Enhancement Learning (TEL) services have improved the continuous intention to use e-learning in educational institutions. E-learning has many definitions, one of provides lecturers with a medium to easily disseminate their knowledge with interactivity that provides effective learning skills freely without being constrained to a specific space and time (Hone & El said, 2016). The e-learning mechanism is suitable for high education students that have experience in using technology and familiar with filling its needs (Hamidi, & Chavoshi, 2018). The overall use of e-learning is to help increase the level of continuous intention to use through satisfaction of student's communications and interactivity factors with technology acceptance model (TAM) factors.

In academic teaching and learning development process, e-learning has become one of the most common methods used in the educational learning process. However, e-learning process is faced with several issues that affect lecturer and student satisfaction on continuous intention to use. Thus, there is a need for institutions to evaluate their educational learning process towards improving the

academic performance of their students through development the continuous intention to use e-learning system. Similarly, the literature on the continuous intention to use e-learning system is in infancy and there are fewer studies that developed electronic/trusted of use, assist, assessment and continuous intention to use e-learning system that is in line with Higher Education Institutes (HEI) requirements to ensure that all quality assurance elements are properly implemented. These studies depend on independent and control factors. Accordingly, the control factors are the most related to effectiveness, and student satisfaction towards attaining lecturer and student continuous intention to use, while, the independent factors include interactivity, course content, technology integration, student perception, and teacher subject knowledge (Larsen, 2009, Tawafak, et al., 2019). In this study, factors of perceived usefulness, perceived ease of use, and behavior intention from (TAM) were integrated into the identified independent and control factors (Tawafak, Romli, Arshah, 2018).

Historical development of educational institutions from the year 2000 to 2018 shows that there have been changes that are closely linked to differences in technology development. These changes started with simple training in classical education to virtual education where the educational system reflects the educational needs of technology learning. Therefore, technology-enhanced learning (TEL) applications is an important area that requires in-depth study in higher educational institutions (Wang & Hannafin, 2005). Moreover, there is the growing popularity of TEL as a new type of e-learning system practice which is utilized nowadays to mediate, support active learning and further create collaboration among students via web-based technologies. Many application learning systems like Wiki and Web 2.0 based, offer association between lecturers and learners towards continuous intention to use application system. Also, it gives the learner to study with confidence in improving their learning methods and their skills. This paper divided into five parts. First, the literature review to explain the previous studies related to e-learning and TEL development. Second, the comprehensive acceptance theories used in e-learning continuous intention to use with shows different methodologies proposed by other studies for testing the acceptance model. Third, the regression tools that pointed out to use TAM as the best theoretical model. Fourth, the results of the pilot study applied at Al-Buraimi College (BUC) in Oman. Fifth, the conclusions and contribution of this study.

## **LITERATURE REVIEW**

In this section, there are 5 studies collected from an open database of journals and conferences proceeding related to the acceptance models for using e-learning with TEL approaches to enhance the continuous intention to use e-learning system. Many studies used Massive Open Online Courses (MOOC), which is the most world common use of platform utilized by universities (Huang, Zhang, & Liu, 2017; Wu, Chen, 2017). These electronic applications provide information to lecturer and administrators on the current state of their students in terms of learning achieved (Tawafak, et al., 2018). Thus, it should include the continuous intention to use e-learning system through the whole of learning identification items.

Findings from researchers such as Wu & Tai (2016); Wang & Hannafin (2005); Tawafak et al., (2018); Lee (2010); Wu & Chen (2017) suggested that the use of technologies such as Wiki chat, multimedia program, and e-learning system are only applicable to describes the outcomes of individual variables in providing the continuous intention to use of each approach. However, the authors mentioned that the aforementioned approaches are less applicable in explaining the effect of the factors from different theories to enhance continuance intention to use e-learning system (Wu & Tai, 2016; Tawafak, et al, 2018).

A lot of studies utilized technology acceptance theory (TAM) in exploring factors that influence in TEL and e-learning system adoption (Wang & Hannafin, 2005; Tawafak et al., 2018; Lee ,2010). A few theories were constructed in the continuous intention of use. The studies intention on significant factors moreover than an intention on continuous intention to use. There are many theories presenting the technology theories adoption, including Theory of Planned Behavior (TPB) by Ajzen (1991), Theory Acceptance Model (TAM) by Davis (1989), Theory of Reasoned Action (TRA) by Ajzen (1973), Task-Technology Fit (TTF) by Islam (2016), and Unified Theory of Acceptance and Use of Technology (UTAUT) by Venkatesh (2003). In this paper, the authors focus on two models TAM and UTAUT. Also, explain with more adoption to TAM and new constructs as healthy factors in e-learning system (Wu, & Chen, 2017; Mullen et al., 2017; Ifinedo, Pyke, Anwar, 2018).

As such, recent studies (Huang, Zhang & Liu, 2017; Hone & El said, 2016) related to MOOC have been published to examine how Massive Open Online Courses (MOOC) as an educational model attempt to go extend the direct factors proposed in TAM model. Both studies have been published that focused on the learning process involved factors like course content, teacher-subject knowledge with the interactivity to improve the effectiveness of continuous intention to use e-learning. These studies are mainly focused on exploring how lecturer, student, and technology are contribute to improve the continuous intention to use e-learning system. The identified factors from the Technology Acceptance Model (TAM) by Davis (1989) include perceived usefulness, perceived ease of use, and behavior intention. These factors help to investigate the differences between the individual’s implementation of e-learning.

Furthermore, prior studies (Huang, Zhang & Liu, 2017; Hone & El said, 2016) examined MOOC in an attempt to examine the main factors proposed in TAM in conjunción with task-technology-fit (TTF). Conversely, this research integrates continuous tintention to use factors of TTF and TAM to develop an improved comprehensive model of the factors required to examine continuous intention to use e-learning. Findings reveal the suggest that several technologies aimed to investigate the continuous intention to use e-learning for higher educational students. Besides, findings from previous studies are mostly focused on the impact of students, lecturer, and technology on continuous intention to use e-learning system.

## ACCEPTANCE THEORIES WITH E-LEARNING

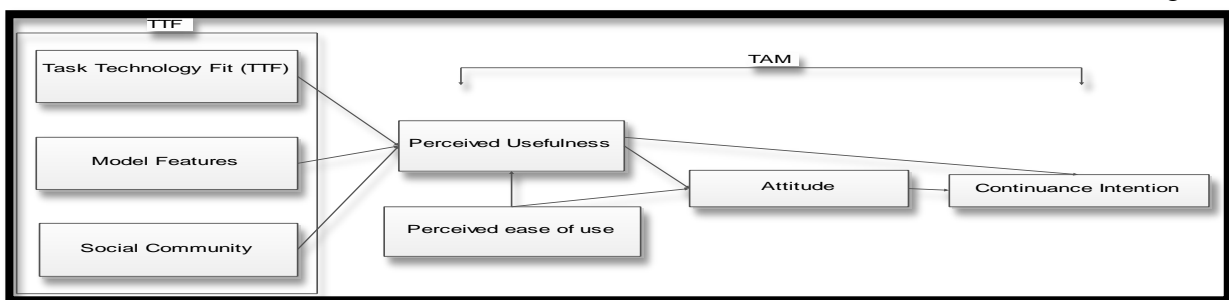
There are many types of theories that used e-learning for validating and testing the continuous intention to use. Additionally, e-learning system can be employed to measure the lecturer experience and student satisfaction in acceptance of a variety of application systems used to improve the continuous intention to use. Table 1 shows the potential of different acceptance theories used for the continuous intention to use e-learning.

**Table 1. Comparisons between existing Theories**

Authors/Year	Research Objective	Theories Used	Mechanism Applied
Chen (2010)	Examine factors that influence e-learning adoption	TAM	Develop students learning outcomes and enhancing academic performance.
Islam (2016)	moderate student learning and lecturers teaching outcomes	TAM	Used different constructs and teacher experience as a moderator
Larsen (2009)	Examine the acceptance of	TTF	Use of different technologies to

	model use.		evaluate the continuity
<b>Papastavrou, et al., (2016)</b>	Use of UTAUT toward engagement of technology continuous intention to use.	UTAUT	Survey distribution. Application model test Web 2.0 technology, and Blog tool
<b>Ajzen, 1973</b>	Understanding of major factors of belief and behaviour towards continuous intention to use.	TPB	Use of internet connection and web 2.0 technology.
<b>Wu, Chen (2017)</b>	Integrate TAM and MOOC for continuous intention use	TAM&TTF	Survey and web 2.0 technology

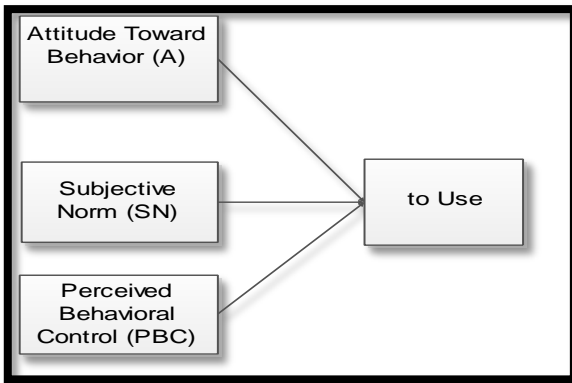
Figure 1. shows combined models of TAM and TTF factors to enhance the continuous intention to use e-learning system. TAM factors include perceived usefulness of using e-learning to get better information technology for students, perceived ease of use refers to the student predict to select the easy way of learning to understand the course offered in e-learning system. Attitude refers to the acceptance level of students influence positively towards continuous intention to use e-learning system. On the other type of testing models is Task-Technology Fit (TTF). This model used influence between the social community and TTF, and model feature influence to perceived ease of use in TAM. The outcome from this model is to test the continuous intention to use e-learning.



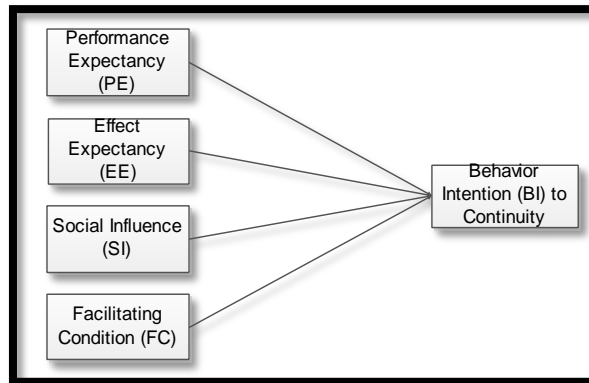
**Figure.1.** TAM and TTF Model for continuous intention to use (Wu, & Chen, 2017)

Figure 2. shows TPB theory that have different types of factors here their influence relationships between attitude toward behavior (A), subjective norm (SN), perceived behavior control (PBC) toward intention then results moved to behavior (Ajzen, 1973). This theory tests the acceptance of continuous intention to use but its work for organizational level for individual as this paper works on student in individual context. Therefore, this theory not highly recommended in this paper to use its factors to test continuous intention to use e-learning system in educational sector.

Figure 3. shows the unified theory of acceptance and use of technology (UTAUT) (Venkatesh et al., 2003). This model constructed on four factors. The influence relations between performance expectancy (PE), effort expectancy (EE), social influence (SI) toward behavior intention. Besides, the facilitating conditions (FC) influence positively towards use behavior (UB). The performance expectancy and social influence, produce the UTAUT model with a high level of acceptance on continuous intention to use e-learning system. Besides, UTAUT is connected to MOOC to investigate the factors of the Wiki system on behavior intention to continuance intention to use. This study came with approving of using Wiki for continuance intention to use e-learning system.

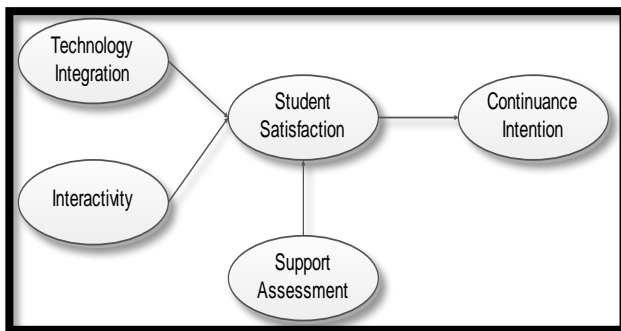


**Figure 2. TPB Model**

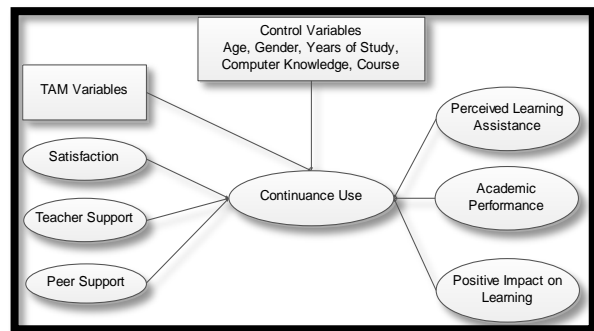


**Figure 3. UTAUT Model**

Moreover, Figure 4 shows adopted task-technology-fit (TTF) model, where the finding reveals the technology integration and interactivity are required to address the limitation to achieve more development for improving continuous intention to use MOOC as type of e-learning system (Mullen, et al., 2017).



**Figure 4. Satisfaction of Continuous use**



**Figure 5. Model of Continence Use Impacts**

Figure 5 shows another adapted TAM with extra factors used commonly in e-learning model. The relationship suggests that when the student participates in an e-learning system their academic performance is improved. The relationship further states that as the number of engagement students increases, their learning outcomes improve due to the effectiveness of sharing of course materials online. These additional factors include satisfaction, teacher support, peer support and closed work with TAM factors to enhance the continuous intention to use e-learning system (Ifinedo, Pyke, Anwar, 2018; Tawafak, Romli, Arshah, 2018).

**E-LEARNING REGRESSION ON ACCEPTANCE MODEL FACTORS**

The regression of e-learning system has a different effect on learning feedback and acceptance accuracy. The relationship between using TEL tools and e-learning system will be converted to the right effect on which theory proposed to use for sure the continuous intention to use e-learning system. Table 2 shows the connection between applications and best theory model for this. This relationship has significant result with continuous intention to use. Table 2, refer to nominated TAM as the most common theory used to enhance continuous intention to use e-learning system.

**Table 2.** Connected Application Attributes and Reflection on Model Acceptances

Application	Attributes	Reference	Theory
Peer-2-peer observation	-Sharing information's objectives -Submit advice from expert learners -Consultant the assignments with best outcomes -Corporate learning procedure -World wild channel between learners	Wu, Chen (2017)	TAM
Wiki program	-Online discussion -Review course material -Guidelines of assignment previous samples -A large number of contacting teacher-student	Tawafak, Romli, Alsinani 2018	TTF, TAM
Video Blog	-Linked related to specific topics -Open access learning -Allow feedback collaboration	Wu, Chen (2017)	UTAUT
E-textbook	-Download PDF, slide-presentation, assignments word reports	Chen (2010)	TAM
Online Assessment	-Evaluation of submitted reports complexity, Similarity, Ideal, Correctness	Islam (2016)	TAM, TTF
Online quiz	-Testing knowledge skills -Timer and Right answers selection -Knowledge acquis	Wu, Chen (2017)	TPB, TAM, TRA

## EXPERIMENT AND RESULTS

A pilot test was conducted before the final version of the questionnaire was distributed to the respondents on first semester 2017'18. Tawafak, et al., (2018) have suggested that before collecting data; applicable statistics from the original study is to be calculated to ascertain reliability. The pilot questionnaires were sent to the participants via email. Table 3, shows out of all questionnaires distributed, 12 questionnaires were responded to be usable responses representing a response rate of 80%. The internal consistency of the items was measured by using Cronbach 's alpha analysis. Since the Cronbach 's alpha fell within the acceptable range (0.731 to 0.953) > 0.7), the reliability of the scale was confirmed. In this study many constructs are tested, some of these constructs that added from Mullen, et al, 2017 and the constructs that tested by Ifenido, et al., 2018, are also tested in this study by different items and with alpha Cronbach's results in all constructs above 0.7. table 3, explains results of PU=0.916, PEOU= 0.953, TI= 0.873, SA=0.759, AP= 0.845, BI=0.889, and SAT= 0.731, respectively.

The participant that was selected for data collection received a preliminary declaration stating that the analysis is voluntary and that their anonymity will be guaranteed if they chose to complete the study. Likewise, a panel of four experts consisting of English department members checked the grammar errors, while qualified and expert members of the IT department checked the understanding and meaning of the terms used in the survey.

**Table 3.** Pilot Study Using SPSS Alpha Cronbach's Evaluation

Construct	No. of Items	Alpha Cronbach's
Perceived Usefulness (PU)	2	0.916
Perceived Ease of Use (PEOU)	2	0.953
Technology Integration (TI)	2	0.873

<b>Academic Performance (AP)</b>	2	0.845
<b>Behavior Intention (BI)</b>	2	0.889
<b>Satisfaction (SAT)</b>	2	0.731

The SPSS was used to analyse the results from Al-Buraimi College (BUC) in Oman. The data were confined through both the hard copy distribution-based data survey with an online survey link to be filled by participants. The survey is utilized with BUC scientific sections.

**Table 4.** Questionnaire of the Study

<b>Variable</b>	<b>Code</b>	<b>Measures</b>	<b>References</b>
<b>Perceived Usefulness</b>	PU1	E-Learning systems enhance my effectiveness	Ifinedo, et al,2018, Wu & Chen, 2017
	PU2	E-earning systems improves my academic learning performance	
<b>Perceived Ease of Use</b>	PEOU1	E-earning systems is easy to use	Ifinedo, et al, 2018
	PEOU2	It's easy to get materials from E-Learning systems	
<b>Technology Integration</b>	IT1	The interactive content of E-Learning systems effectively communicated from the same course	Peltier et al., 2003, Hone, 2016
	IT2	The interactive content of E-Learning systems included information not covered in printed material of the same course	
<b>Academic Performance</b>	AP1	I anticipate good grades in courses where Learning systems is used heavily	Ifinedo, et al, 2018
	AP2	I anticipate better grades in classes where E-Learning systems is used heavily compared to where they are not used	
<b>Behavioral Intention</b>	BI1	I found myself considering the new information with E-Learning systems when taking action related to the topic.	Hwang, et al, 2018,
	BI2	It is worth to recommend the E-Learning systems for other students.	
<b>Student Satisfaction</b>	SS1	E-Learning systems is user-friendly	Ifinedo et al, 2018
	SS2	I am really happy with E-Learning systems after using it	

## CONCLUSION

This paper explained the comprehensive methods used in e-learning system in the educational area. Previous studies used to analyse the selected variables that have a high effect on the continuous intention to use e-learning. Many theories are used to enhance continuous intention to use e-learning that seen in the literature review. This paper contributes the recommendation to use TAM with adoption to enhance continuous intention to use e-learning system. This adopted TAM with many adjusted constructs as student satisfaction, continuous intention, academic performance, and technology integration with perceived usefulness, perceived ease of use, and behaviour intention give significant results for continuous intention to use e-learning system. The SPSS program showed high reliability and validity of the examined survey. This paper is part of a doctorate in Computer Science and Software Engineering at UMP- Pahang-Malaysia.

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