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## Perceived Ease of Use and Perceived Usefulness of MOOC TITAS Platform in The Era of Revolution Industri 4.0

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### Abstract

The Massive Open Online Course (MOOC) platform used in the Islamic and Asian Civilization (TITAS) course is a transformation of new teaching and learning methods that increase students' interest to deepen their knowledge in civilization and current global issues. This study will measure the level of public university student's acceptance of perceived ease of use, perceived usefulness and attitude towards the MOOC TITAS platform. The study employed a quantitative approach and was conducted among the first-year students in 19 Malaysian public universities by distributing online questionnaire instruments in the google form. The study used the purposive sampling technique and a total number of 1373 university students from five different zones (North Zone, Central Zone, South Zone, East Zone, and Sabah/Sarawak Zone) were involved as respondents. The value of Cronbach's Alpha for the pilot test was 0.972 and data were analysed using SPSS 25.0. This study found that public university students have a good level of acceptance of the perceived ease of use, perceived usefulness and attitude towards the MOOC TITAS platform with mean value of 4.0. As a competent and effective platform, the MOOC TITAS platform corresponds to the online learning especially during the Covid-19 pandemic. MOOC platform also provides opportunities for students to have quick access to their lecture notes, activities and assessment regardless of time and location constraints.

**Keywords:** MOOC, TITAS, Perceived Ease of Use, Perceived Usefulness and Attitude

### Introduction

At present, the education system has been changed in line with the Industrial Revolution 4.0 (IR 4.0) which was marked by the increasing connectivity, virtual, interaction, artificial intelligence and development of the digital systems. To adapt to this situation, every educational institution must prepare for the new information and literacy in the field of education. Nowadays, education 4.0 has arisen to create creative and innovative ways of

learning in terms of obtaining the solutions and solve various problems faced (Lase, 2019). Therefore, both computerized education and mixed instructional method is crucial to sustain the learning in this era such as learning through Massive Open Online Courses (MOOCs) and other e-learning platforms (Shahroom & Hussin, 2018). The concept of e-learning is no stranger to the educational sector where it helps to overcome shortcomings in the process of learning and teaching in the classroom. The teaching and learning process becomes more active, interactive and effective through the concept of e-learning where classes and lectures can be conducted virtually online. Thus, teachers are encouraged to master skills in e-learning such as MOOCs so that the global knowledge of this digital era can be utilized in the process of teaching and learning with students (Penny et al., 2011). In this regard, education sector in Malaysia also transform to remain competitive in this digital era where various innovations and transformations have been made on teaching and learning methods in the education system to prevent teachers and students from being marginalized. Mahajan and Kalpana (2018) perceived that the use of e-learning for educational purpose can motivate the users at the same time it is useful and interactive. Therefore, e-learning setting brought a positive impact on both students and lecturers on the learning perseverance, behaviour, collaboration and learning engagement (Chen & Tseng, 2012; Ozdamli & Uzunboylu, 2014).

### **Blended Learning at the International Level**

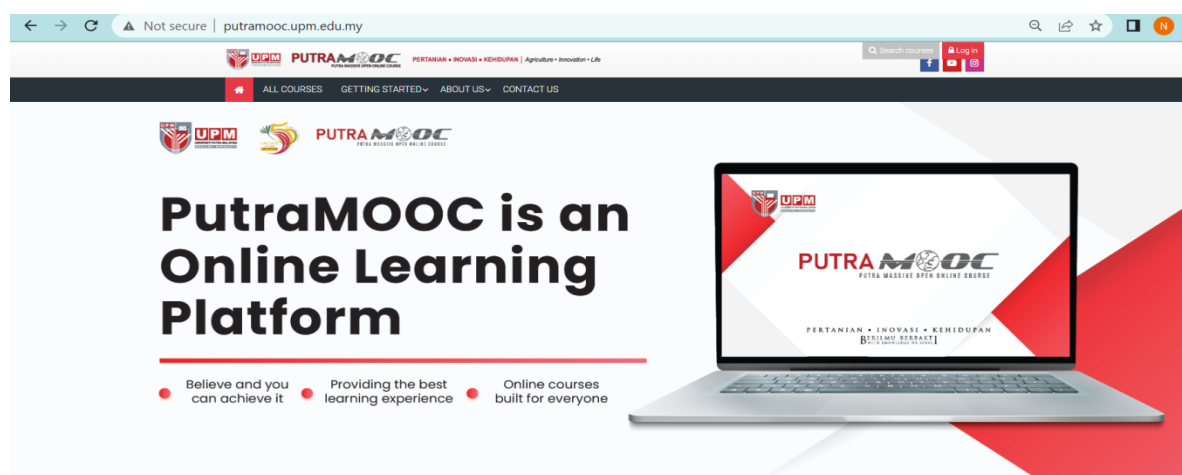
Blended learning is an integration between virtual and asynchronous learning with face-to-face classroom instruction. The blended learning also referred as hybrid, mixed-mode or flexible learning where these terms often used interchangeably (Muller & Mildenerger, 2021). According to Bazelais and Doleck (2018), there is a positive association between blended learning and academic performance on the standardized final exam of mechanics course at CEGEP College. The research involved the first semester students and the comparison is made between the students' academic performance using blended learning versus traditional instruction. The study revealed that blended learning experienced more conceptual change and higher performance compared to the students in the traditional lecture approach. Similarly, research done by Chen et al (2020) proved that the performance of medical students at Guilin Medical University on the laboratory quizzes is higher when implemented in blended learning environment. This is because blended learning improved the students' interest in experimentation operations, hands-on abilities, confidence, and other factors compared with the traditional teaching model (face to face).

AlKhaleel (2019) opined that the use of blended learning in teaching English language is very advantageous. This research proved that blended learning helped students increase their language proficiency skills. In addition, students were satisfied with the blended learning method in learning the computer programming course since it is easy to use and suitable for writing code and practical for homework submissions which positively improve their performance (Demaidi et al., 2019). Further research has introduced MOOC-based blended learning to show the effectiveness of MOOCs integrated into blended learning in the discipline Fundamentals of Administration at a Brazilian university. The study performed by de Moura et al (2021) shows that the used of MOOC as a blended learning is more attractive to the students where they being an active learner and improve their involvement in the class. Moreover, MOOC-based blended learning also able to optimize the use of the time in the classroom, developing different teaching methods and reducing the pressure on the teacher to deliver all the content.

### Massive Open Online Courses (MOOCs)

According to McAuley, Stewart, Siemens and Cormier (2010) “MOOC is an online course with the option of free and open registration, a publicly shared curriculum, and open-ended outcomes”. There are many online programs available either paid or free is based on college or institution that offers it. MOOCs courses often give opportunities for the participants to earn badges or a certificate of completion (Yuan & Powell., 2013). Moreover, some of these courses can be counted as a credit for degree qualification, while others have value in the job market. There are three features categorization of MOOCs which includes free to use, different high-quality courses and lifelong learning. In this case, MOOCs can be registered or joined based on the participants’ interest or depending on their necessities respectively regardless of time and pre-requisites. This continuous learning approach not only simple, affordable and customizing but also offered lifelong learning to all participants (Yue & Attaran., 2017).

In line with the recommendations of the Ministry of Higher Education Malaysia (MOHE) in the Redesign Education System towards IR 4.0, MOOCs has become a new initiative in delivering teaching and learning approaches in institutions of higher education throughout Malaysia to meet the elements of Global Online Learning (*Pembelajaran Dalam Talian Tahap Global*) (Albelbisi & Yusop, 2020). Since 2014, MOHE has been spearheading the development of MOOCs at Malaysian public universities (Yusop et al., 2020) and till now many of the public universities have developed their own MOOCs courses which can be accessible locally and globally. This phenomenon had showed that the government itself are determined to make MOOCs development as an approach to increase the quality of tertiary education for all Malaysians. There are more than 60 MOOC platforms worldwide since 2014 which has been reported by (Li et al., 2014). A few examples of MOOCs platforms are Coursera, edX FutureLearn, OpenLearning etc. Public university in Malaysia for example Universiti Malaya (UM), has been using Futurelearn and Openlearning platforms for their MOOC platforms which has attracted a large number of global participants and learners (Yusop et al., 2020). Similarly, Universiti Putra Malaysia (UPM) also used the Openlearning for the MOOC courses and at the present UPM had introduced their own MOOC platform called as “PutraMOOC”, which is ready to be enrolled by students, community, industry and public.



Welcome To **PUTRAMOOC**  
PUTRA MASSIVE OPEN ONLINE COURSE

Source: <http://putramooc.upm.edu.my/>

Figure1: Main Page of PutraMOOC UPM

### TITAS as a MOOC Course

The Islamic and Asian Civilization (TITAS) is one of the MOOCs courses that has been introduced in MOOC application by the Malaysian Ministry of Education in Malaysian public universities since 2014 (Yusoff, 2019; Mokhtar et al., 2019). Through this MOOC TITAS application, lecturers can practice the concept of blended learning as one of the added values which able to increase the effectiveness at the same time making the learning and teaching sessions become more interesting, interactive and active (Ab. Halim et al., 2019) at the same time reduce the issues of isolation and lacking skill among students when fully e-learning platform is used (Osman & Hamzah, 2017). According to Mokhtar et al (2018), the students from Universiti Malaysia Sabah (UMS) positively accept the MOOC TITAS learning module as blended learning approach due to the factors of perceived usefulness, perceived ease of use and social influence. MOOC TITAS course offers many ways to understand and deepen into the course such as providing the information through the lecture notes, lecture videos, create some activities and quizzes and also provide the assessment and references for the users (Ab. Halim et al., 2021). Therefore, it is worthy to investigate the perception of students towards MOOC TITAS application in terms of ease of use and usefulness which significantly important in this digital era of IR4.0 as well as give an insight to others who share the responsibility of developing the MOOC TITAS application.

### Technology Acceptance Model (TAM)

Rapid technological advances have an impact on the educational system where the technology adopted is able to enhance student learning performance in a more positive direction. According to Davis (1996), Technology Acceptance Model (TAM) is a framework used to investigate how and when users adopt emerging technology. Basically, TAM which derived from the Theory Reasoned Action (TRA) is a well-known theory that has proven efficient in explaining individual's behavior to use computing technology and their acceptance of information technology (Teo, 2016; Olumide, 2016). Davis (1989) state that attitude toward use influence the behavioural intention in which both directly and indirectly affected by perceived usefulness and perceived ease of use. Thus, both perceived usefulness and perceived ease of use are the key indicators that act as the influential factor in computer acceptance behaviors. This theory indicates the relationship among Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Attitude Toward Use (AT) and Intention of Use (IOU) as shown in Figure 2.

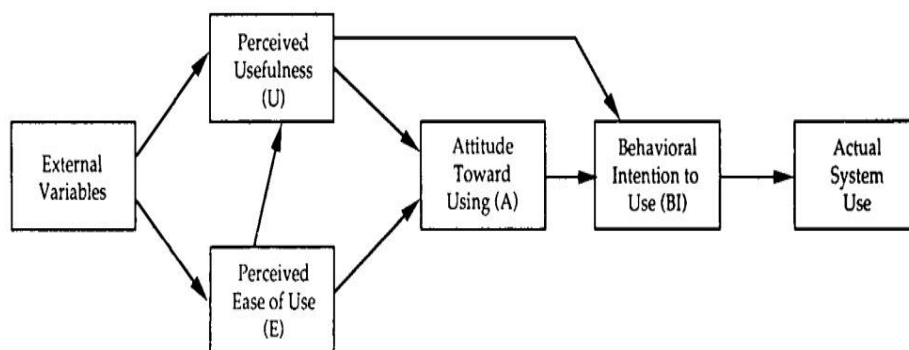


Figure 2. The TAM by Davis (1989)

PU refers to the extent to which an individual believes that the use of technology is able to improve task performance while PEOU refers to the extent to which individual believe that

using technology will be effortless (Davis, 1989). Meanwhile, IOU refers to users' willingness to perform a behavior where it has a close link with actual behavior (Kiraz & Ozdemir, 2006). On the other hand, behavioral intentions using the precise system are influenced by computer usage, which is determined simultaneously by PU and PEOU. Previous studies acknowledge that users are expected to realize that the precise system are useful when they realize the precise system is easy to use (Lau, 2008; Adams et al., 1992). Besides, previous studies also state that both PU and PEOU has strong significant influence on IOU and user's attitude toward the use of particular system also determine by these factors. TAM can be easily integrated with external factors that are more likely lead to practical implications in technology design and implementation. Therefore, TAM model has been widely used around the globe and consistently shown to be able to explain the acceptance of technology in different contexts where this model has also been tested and developed in MOOCs and other e-learning applications.

### Methodology

The study employed a quantitative approach and was conducted among the first-year students in 19 Malaysian public universities by distributing online questionnaire instruments in the google form. The study used the purposive sampling technique and a total number of 1373 public university students from five different zones (North Zone, Central Zone, South Zone, East Zone, and Sabah/Sarawak Zone) were involved in the study as respondents. The research instrument as included questionnaires for the section of perceived ease of use and perceived usefulness among respondents upon Islamic and Asian Civilization MOOC platform. The value of Cronbach's Alpha for the pilot test was 0.972.

This section contains three main elements, i.e. perceived ease of use, perceived usefulness and attitude (intention). The first element (perceived ease of use) refers to the student's understanding and acceptance on the applicability of Islamic and Asian Civilization MOOC, while the second element (perceived usefulness) implies the convenience, effectiveness and usefulness of the similar MOOC. The third element (attitude and intention) signifies the feelings, thoughts, aim, approach and outlook while experiencing Islamic and Asian Civilization MOOC. Each item in this section is measured using the Likert Scale consisting of five items: 5-point Likert Scale ranging from 1 (strongly disagree) to 5 (strongly agree). Table 1 shows the number of items for each element and a total number of 15 items constructed in the questionnaire form.

Table 1

*The distribution of items in questionnaire instruments*

Section	Elements	The Number of Items
Students' perceived ease of use, perceived usefulness and attitude towards Islamic and Asian Civilization MOOC platform	Perceived ease of use	4
	Perceived usefulness	6
	Attitude and intention	5
The total number of items		15

The students' perceived ease of use, perceived usefulness and attitude towards Islamic and Asian Civilization MOOC platform has been analyzed based on the items in the questionnaire

form. The data were analyzed by using SPSS 25.0 software for descriptive and correlation analysis. The scale for those 3 elements (ease of use, perceived usefulness and attitude) was measured by classifying the intervals for each scale which is 1.33, as shown in Table 2.

Table 2

*The level of MOOC platform perceived ease of use, perceived usefulness and attitude*

Level	Scale
Applicable	3.68 - 5.00
Moderate	2.34 - 3.67
Less Applicable	1.00 - 2.33

### Results and Findings

This section discusses students' perceived ease of use, perceived usefulness and attitude towards Islamic and Asian Civilization MOOC. The findings of the study were divided into 3 themes, i.e. perceived ease of use, perceived usefulness and attitude (intention). The results revealed that public university students have a good acceptance on the perceived ease of use, perceived usefulness and attitude towards MOOC platform that implemented in Islamic and Asian Civilization Course with a mean score of 4.04 as shown in Table 3.

Table 3

*Students' perceived ease of use, perceived usefulness and attitude towards Islamic and Asian Civilization MOOC platform*

No	Item	Level of agreement (%)					Mean Score	Level of applicable
		SA	A	N	D	SD		
<b>1) Perceived ease of use</b>								
1.	The MOOC TITAS platform is easy to use.	36.5 (501)	39.2 (538)	18.6 (255)	3.9 (53)	1.9 (26)	4.05	Applicable
2.	Information is access easily through MOOC TITAS.	34.9 (479)	41.2 (566)	18.9 (260)	5.0 (52)	1.2 (16)	4.05	Applicable
3.	The use of Bahasa Melayu in MOOC TITAS is convenient.	43.3 (649)	52.7 (55.6)	12.5 (151)	1.2 (12)	0.4 (5)	4.33	Applicable
4.	Systematic arrangement and content of MOOC TITAS ease the user.	4.01 (550)	41.2 (565)	15.4 (211)	2.6 (36)	8 (11)	4.17	Applicable
Mean Score							<b>4.03</b>	Applicable
<b>2) Perceived usefulness</b>								
5.	MOOC TITAS allow me to access learning materials quickly.	38.3 (526)	40.9 (561)	17.1 (235)	2.8 (39)	9 (12)	4.13	Applicable
6.	MOOC TITAS are not improving my learning achievement.	17.6 (242)	19.1 (262)	19.5 (268)	24.2 (332)	19.6 (269)	4.03	Applicable
7.	MOOC TITAS are improving my learning productivity.	33.1 (455)	42.1 (578)	20.2 (277)	3.4 (46)	1.2 (17)	3.99	Applicable
8.	MOOC TITAS are improving my soft skills.(examples: communication skills, teamwork)	32.9 (452)	40.5 (556)	20.5 (282)	4.8 (66)	1.2 (17)	4.16	Applicable

9.	MOOC TITAS allows me to attain the required percentage of course requirements.	35 (480)	45.3 (622)	17.2 (236)	2 (27)	6 (8)	4.12	Applicable
10.	Overall, MOOC TITAS is very useful for me.	39 (356)	41.7 (572)	16.2 (222)	2.1 (29)	0.1 (14)	4.16	Applicable
Mean Score							<b>4.16</b>	Applicable
<b>3) Attitude and intention</b>								
11.	I am satisfied to use MOOC TITAS.	36 (494)	41.4 (568)	18.3 (251)	3.1 (43)	1.2 (17)	4.08	Applicable
12.	I am excited to use MOOC TITAS.	31.9 (438)	37.7 (517)	23.7 (326)	4.9 (67)	1.8 (25)	3.93	Applicable
13.	I am using MOOC TITAS to accomplish course assignment throughout the semester.	31.8 (437)	37.7 (517)	24.0 (330)	4.8 (66)	1.7 (23)	3.93	Applicable
14.	I will always use MOOC TITAS.	27.5 (378)	32.1 (441)	29.5 (405)	8.1 (111)	2.8 (38)	3.74	Applicable
15.	I will recommend my friends to use MOOC TITAS.	31.3 (430)	36.8 (505)	23.9 (328)	5.0 (68)	3.1 (42)	3.88	Applicable
Min Score							<b>4.02</b>	Effective
Total Min Score							<b>4.04</b>	Effective

The 'perceived usefulness' element shows the highest mean value (4.16) for the respondent's acceptance of the MOOC TITAS 2.0 platform is good and applicable. In this study, majority of the respondents agreed that MOOC TITAS 2.0 is very useful for them and applicable to improve their soft skills like communication skills and teamwork. Besides, most of the respondents were also agreed that the platform allowed them to access the learning materials quickly. This is because MOOC TITAS 2.0 application is a learning platform that able to enhance learning and teaching progress among students. Course information i.e. lectures notes, course outlines, activities, videos, assessment, quizzes and references were provided in the MOOC platform.

Next, the 'perceived ease of use' element shows the second highest mean value with a value of 4.03 which is an applicable level of acceptance. This study found that most of the respondents agreed the application of Bahasa Melayu language in MOOC TITAS 2.0 platform is appropriate. This is because of the teaching and learning sessions for the general courses in public universities are delivered by using Bahasa Melayu language and this course are provided for the local students only. Thus, the usage of Bahasa Melayu in the content, activities, pictures, videos and notes in the MOOC TITAS 2.0 application were coincided with the requirements of the course. In addition, the respondents also agreed that the systematic arrangement and the content of the MOOC TITAS 2.0 facilitate them in using the platform.

On the other hand, the elements of 'attitude and intention' had recorded the mean value of 4.02 which is also an applicable level of acceptance. Most of the respondents agreed that they are satisfied with the MOOC TITAS 2.0 platform, feel excited to use it and will use this platform throughout the semester in their teaching and learning process. Overall, the respondents also agreed that the TITAS MOOC platform was beneficial to them, allowing quick access to information and learning materials, allowing students to meet course requirements and increasing student productivity in their learning. This indicates that public university students have a good level of acceptance (total mean score of 4.04) of the TITAS 2.0 MOOC platform used in the teaching and learning process in their respective universities.



### Relationship between students' perceived ease of use, perceived usefulness and attitude towards Islamic and Asian Civilization MOOC platform

This section discusses the relationship between three elements namely students' perceived ease of use, perceived usefulness and attitude towards Islamic and Asian Civilization MOOC platform. The result of correlation analysis was shown in Table 4.

Table 4

*Students' perceived ease of use, perceived usefulness and attitude towards Islamic and Asian Civilization MOOC platform*

		1	2	3
Perceived ease of use (1)	Pearson correlation (r)	1	0.789**	0.800**
	Sig. (2-tailed)		0.000	0.000
	N	1373	1373	1373
Perceived usefulness (2)	Pearson correlation (r)	0.789**	1	0.818**
	Sig. (2-tailed)	0.000		0.00
	N	1373	1373	1373
Attitude and intention (3)	Pearson correlation (r)	0.800**	0.818**	1
	Sig. (2-tailed)	0.000	0.000	
	N	1373	1373	1373

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

This study found that there are significant relationships between students' perceived ease of use, perceived usefulness and attitude towards Islamic and Asian Civilization MOOC platform. This study shows significant relationships between students' perceived ease of use and students' perceived usefulness with  $p=0.00$ ,  $r=0.789$ ; students' perceived ease of use and students' attitude towards Islamic and Asian Civilization MOOC platform with  $p=0.00$ ,  $r=0.800$ ; students' perceived usefulness and students' attitude towards Islamic and Asian Civilization MOOC platform with  $p=0.00$ ,  $r=0.818$ . Since the value of  $p<0.01$ , the relationship between the entire variable are significant and the correlation values ( $r$  values) show a positive direction of the relationship (Cohen, 1988). Therefore, the relationship between students' perceived ease of use, perceived usefulness and attitude towards Islamic and Asian Civilization MOOC platform are in a high relationship. This study revealed that the application of Islamic and Asian Civilization MOOC platform in this course positively impacted students perceived ease of use, perceived usefulness and attitude towards Islamic and Asian Civilization MOOC platform.

### Conclusion

This study discovered that the public university students have a good acceptance on the perceived ease of use, perceived usefulness and attitude towards Islamic and Asian Civilization Course MOOC platform. As a competent and effective e-learning platform, MOOC TITAS 2.0 adapted in Islamic and Asian Civilization Course is corresponding to the Revolution Industrial 4.0 especially in previous Movement Control Order (MCO) and pandemic era. The development of this Islamic and Asian Civilization MOOC platform are purposely to integrate

the online learning which is applicable and enable the public university students to have quickly access to the learning materials such as notes, information, videos, quizzes, activities, assessment etc. With this learning platform, the teaching and learning process are more effective, active and interactive. Besides, MOOC TITAS 2.0 platform give the opportunity to the students to learn in more flexible ways, enhance learning performance, signify students' understanding and improving their learning productivity. Moreover, the student also has an opportunity to carry on further discussion among them without any constraints of time and location. Thus, this study strongly advices that this MOOC application to be integrated in learning for all courses in Malaysian public university in order to enhance students' learning, knowledge and understanding particularly during this pandemic era.

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