MOOCs ADOPTION IN HIGHER EDUCATION: A MANAGEMENT PERSPECTIVE

Khalid B., Chaveesuk S., Chaiyasoonthorn W.*

Abstract: The purpose of this research is to investigate the factors affecting the Behavioral Intention (BI) to use Massive Open Online Courses (MOOCs) in Thailand. The study adopted the Unified Theory of Acceptance and Use of Technology (UTAUT) Model with an extension to include two variables of Perceived Autonomy (PA) and Absorptive Capacity (AC). The study has also investigated the moderating effects of Culture (CUL) on the relationship between the independent and dependent variables. The study was conducted using primary data collected from 490 respondents, who were university students and intended to use MOOCs. The study used structural equation modelling (SEM) to evaluate the relationship between study variables in AMOS 26. The findings of the study indicated that Perceived Autonomy (PA) was found to have a positive and significant effect on Behavioral intention to use MOOCs (BI); Facilitating Conditions (FCS) has a positive and significant effect on Behavioral intention to use MOOCs (BI). Absorptive capacity (AC) has a positive and significant effect on Behavioral intention to use MOOCs (BI); Social Influence (SI) has a positive and significant effect on Behavioral intention to use MOOCs (BI). However, the results indicated that Performance Expectancy (PE) and Effort Expectancy (EE) have a non-significant effect on BI. Additionally, Perceived Autonomy has a positive and significant effect on Performance Expectancy and Effort Expectancy. The results of interaction between Culture and independent variables (PE, EE, SI, FC, AC, & PA) indicated that CUL does not moderate any relationship with dependent variable (BI). This research is considered very critical during the period of COVID-19 pandemics, where most learning is being conducted online. Therefore, the policymakers in the education sector in Thailand, and the heads and management of institutions of higher learning could benefit from the findings of this research.

Keywords: Behavioral Intention, Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions

DOI: 10.17512/pjms.2021.23.1.15

Article history:
Received February 23, 2021; *Revised* March 27, 2021*; Accepted* April 07, 2021

Introduction

Massive Open Online Courses (MOOCs) are among the recent technological advancement in the education sector. It is a modern method of learning that takes place in the online environment. MOOCs major characteristic is that it provides open access to unlimited participants, enabling more than the traditional modes and materials, such as lectures, quizzes, communities and interactive forums. The

* **Bilal Khalid**, KMITL Business School, Bangkok, Thailand **Singha Chaveesuk**, KMITL Business School, Bangkok, Thailand **Wornchanok Chaiyasoonthorn**, KMITL Business School, Bangkok, Thailand
✉corresponding author: singha@it.kmitl.ac.th

MOOCs are revolutionizing the higher education system and gaining a great deal of attention from educational professionals, entrepreneurial vendors, media, and the technologically literate section of the society (Jung & Lee, 2018; Stuss, et al., 2019). The cutting edge of this system is that they provide free access, unlimited tutorial courses, which could decrease the cost of university and college-level education, and potentially disrupt the existing higher education model (Weinhardt & Sitzmann, 2019; Sinaga et al., 2019). This has encouraged many universities to put their courses online using open learning platforms, such as edX. It has also led to the establishment of commercial start-ups like Coursera and Udacity, which collaborate with universities to offer online courses for free or charging a small fee for certification.

With MOOCs becoming increasingly popular, their management and associated managerial aspects are significant to consider. The reason is that it is difficult to find high-quality and relevant training materials, which are authentic and less costly. MOOCs offer the learner an opportunity to benefit from the collective power it offers. Sein-Echaluce et al. (2017) advise that the management of the MOOCs should ensure that the platforms are developed to address four major aspects: interests of learners, knowledge increase, updating the previous subjects and contributing to professional development. The technology has been completely absorbed in the education system as a new learning technique of the digital era (Nagy & Siemek, 2016). From their technology management perspective and content delivery, the most prominent MOOCs platforms include Udacity, Coursera and edX. There are other platforms in different countries, such as Miriada in Spain, Iversity in Germany, FutureLearn in England, XuetangX in China, Khan Academy in North America, Open2Study in Australia, Fun in France, Veduca in Brazil and Schoo in Japan. By the end of the year 2017, MOOCs platforms offered more than 9,400 courses and registered more than 81,000 000 students worldwide. According to the recent survey conducted by Coursera, the course offered at MOOCs are hugely beneficial to those students who complete their courses. From the study statistics, 61% indicated educational benefits from the courses, and among them, 72% stated that they gained career benefits (Zhenghao, Alcorn, Christensen, Eriksson, Koller & Emanuel, 2015). The MOOCs are disruptive because they significantly affect the management, business, and delivery model of higher education institutions. The aspects affected include an untapped audience, replacing the accredited university courses, and disrupting the traditional credit-hour system. The absence of teacher-student direct interaction is a critical issue since it lacks some critical features such as assessment of students' understanding, and students are not able to ask an immediate question to their teachers where they have queries (Hew & Cheung, 2014).

There is not much research work has been performed in the context of behavioral intention to use MOOCs in Thailand from a management perspective. This study will address this issue discussed above and fill the gap by investigating the factors that influence the behavioral intention of the user to adopt MOOCs in Thailand,

and how these factors are mediated by culture, from a management perspective. By adopting MOOCs, various changes will be made in the existing education system of Thailand. These include increased interest in education for non-traditional students, provision of another option for skills training, investment in alternative credentials, and reduced online learning stigma.

Literature Review

The idea of MOOCs is rooted in education openness, which advocates that knowledge should be shared openly and freely, and the learning inspirations should be met without economic, geographic, or demographic constraints (Suen, 2014), core determinants of the knowledge-based economy (Grebski & Grebski, 2019) to gain competitive advantage. Since the year 2000, the concept of open education and its associated MOOCs technology has experienced a rapid evolution. In 2002, the Massachusetts Institute of Technology (MIT) opened an OpenCourseWare, and in the year 2006, the Open University established OpenLearn (Evans, Baker & Dee, 2016). Influenced by these open learn developments, other elite institutions established MOOCs in 2012, such as MIT, edX, and OU's FutureLearn. The United Kingdom Open Educational Resource that was launched in 2009, has made significant progress in availing a wide range of free teaching and learning resources worldwide (McGill, 2010). In the higher education sector, MOOC is currently offered by high-prestige name-brand universities. It is also taught in both high-profile and low-profile faculty in diverse topics. The list of the worldwide higher learning institutions offering MOOCs is growing exponentially. Currently, there are more than 50 institutions listed in the US News top 25 best colleges rankings for 2018 offer MOOCs. These institutions include Harvard, Yale, Duke, University of Virginia, Dartmouth, MIT, among others. More importantly, prestigious institutions in Asia, Canada, Australia, and the Middle East have also adopted MOOCs.

Thailand has adopted the MOOCs technology in their educational system. Considering that it is a developing country, the system is not fully integrated but has proved beneficial, especially to the institutions of higher learning. In Thailand, the MOOCs platform was launched in the year 2017. The platform is known as ThaiMOOC, which is the official MOOC platform in Thailand. It is not for profit platform where the courses are offered for free. The platform has been developed on Open edX, currently offering more than 50 different courses. Its initiation is marked with the first summit of the Asian-Pacific MOOCs stakeholders, which was held in Thailand in the year 2017 (Karnasuta, 2018). The summit was organized by UNESCO Bangkok and the other three national partners, which include JMOOC, K-MOOC and ThaiMOOC. Another MOOC platform in Thailand is Thailand Cyber University Project (TCU), which was established by the Ministry of Education in collaboration with universities. It offers more than 800 lessons in various courses (Nasongkhla et al., 2015). There are other MOOCs in Thailand, such as Chula MOOC, MUx, SkillLane, and Taladpanya (Karnasuta, 2018).

Education levels are a critical determinant of the progress and development of the education sector in terms of technology adoption and implementation, including MOOCs. Considering Thailand, the government has invested heavily in education. Currently, the government of Thailand has a universal education system, which guarantees education to all Thai children, under the 1999 Education Act (Lathapipat, 2015). As a result, access to education has increased consistently over the two decades. The net enrollment rate for pre-primary school for the year 2017 was 53%, and the net enrollment for primary school was 98%. The primary school completion rate in Thailand for 2017 was 93%, which is recommended compared to its enrollment rate. The net enrollment for secondary school is 77% (Lathapipat, 2015). The government expenditure on education as a percentage of total government expenditure was 19.1%, while GDP was 4.1%, which was relatively high (Lathapipat, 2015).

With the continuous worldwide technological advancements, its user adoption and acceptance has been a management challenge. It has also occupied researchers so that the extent of technology adoption, diffusion and application is considered among the more mature areas of research (Venkatesh et al., 2003). As a result, there has been a broad level of exploration research in this aspect, contributing to a wide body of literature on the same. The exploration has revealed various stakeholders' perspectives, units of analysis, theories, technology and context, and research methods. In this context, Venkatesh et al. (2003) developed a comprehensive model that unites various alternative models, Unified Theory of Acceptance and Use of Technology (UTAUT), and its associated latent variables shown in Figure 1.

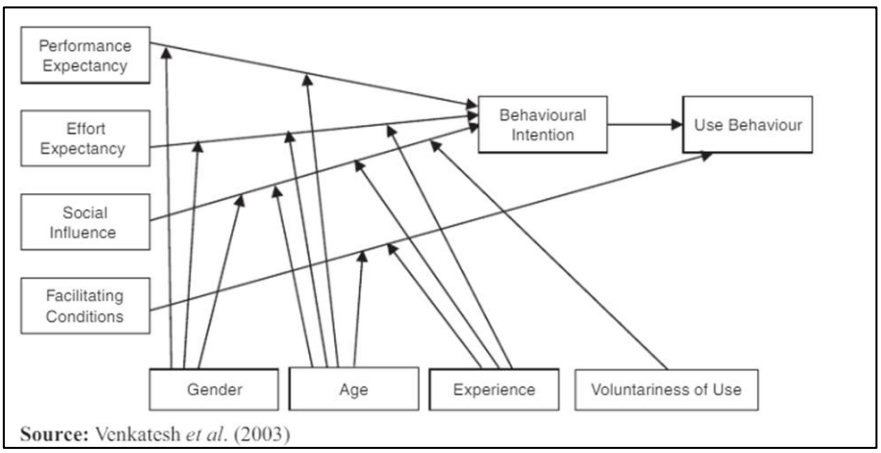

Figure 1: Unified Theory of acceptance and use of Technology (UTAUT)
Source: Venkatesh et al. (2003)

BI implies the individual's intention to perform an act, which could predict a given behavior when an individual acts voluntarily. It implies the subjective probability

of a person conducting in a certain behavior, and the cause of certain usage behavior (Yi, Jackson, Park & Probst, 2006). PE implies the degree to which an individual believes that using a system could be helpful to do better in job performance (Venkatesh et al., 2003). Zainol Yahaya, Yahaya, and Zain (2017) investigated the factors that influenced the use of mobile learning among higher education students in Malaysia. According to the findings of the study, there is a positive relationship between performance expectancy and the rate of acceptance of the learning, where the coefficient of correlation is significant at r = 0.226. Cheok and Wong (2015) investigated the aspect of performance expectancy or perceived usefulness by analyzing the predictors of e-learning satisfaction in secondary school teachers teaching and learning in Malaysia. According to Venkatesh et al. (2003), EE implies the degree of ease that is associated with the use of a particular technological system. This concept is developed by merging three concepts: ease of use, complexity, and ease of use. Lakhal et al. (2013) investigated the BI of the students to use desktop video as in a distance course by analyzing the impact of PE and EE as a construct of UTAUT model. The study found that PE, FCS, SI, and PA influence the PE, and EE influences the decision to use desktop video conferencing. Venkatesh et al. (2003) have described SI as the degree to which a person perceives the importance of others' beliefs that he or she should use the new technology system. This idea was developed as a combination of three different concepts derived from three different models. Based on the UTAUT model, researchers have investigated the influence of social influence on the BI to use technology and the actual use of technology. FCS imply the perception of an individual regarding the available resources and support to perform a behavior (Venkatesh et al., 2003). According to the UTAUT model, the FCS influence the technology used directly, based on the fact that in an organizational environment, FCS could serve as a proxy for actual behavioral control as well as a direct influence of behavior. This is because of the availability of the aspects of the FCS, such as training and support, which could be readily available to the users. From literature, autonomy implies the degree to which an individual experiences or exercises the freedom of choice in terms of the ability to lead a self-determined life. Various authors have presented various definitions of PA, as discussed in the table hereunder. Yang (2014) investigated the MOOCs concerning its extension in relation to the extension of aspects of the program and developing the future aspects of the MOOCs technology. The study indicated that there is a significant association between MOOCs engagement and online discussion. The findings of the study showed that the factors that influence students' adoption of online discussion and the resultant use of MOOCs include perceived process, perceived autonomy, perceived competence and perceived relatedness. AC implies the ability to locate and apply new ideas, technology and innovation, and incorporates them within the organization process (Cohen and Levinthal, 1990). AC is considered a great contributor and determinant of an organization's success (Cohen and Levinthal, 1990; Zahra and George, 2002). Cohen and Levinthal (1990) coined the

concept of 'AC', which was defined as the firm's ability to identify, assimilate and exploit knowledge from the environment. According to Cohen and Levinthal (1990), AC is critical in the context of MOOCs utilization as a means of supporting the individual's innovation capabilities, as well as success in the innovative learning process. According to Hofstede (1980), CUL implies the collective programming of the mind, which distinguishes the members of a particular group from the others. This study has considered two dimensions of CUL; these include Uncertainty Avoidance, Individualism/Collectivism as they are related to technology adoption Jung and Lee (2019). Based on the above literature review, the following research questions have been developed.

Research Questions

-What is the effect of Performance Expectancy on Behavioral Intention to use MOOCs in Thailand from a technological management perspective?

-What is the effect of Effort Expectancy on Behavioral Intention to use MOOCs in Thailand from a technological management perspective?

-What is the effect of Social Influence on Behavioral Intention to use MOOCs in Thailand from a technological management perspective?

-What is the effect of Facilitating Conditions on Behavioral Intention to use MOOCs in Thailand from a technological management perspective?

-What is the effect of Absorptive Capacity on Behavioral Intention to use MOOCs in Thailand from a technological management perspective?

-What is the effect of Perceived Autonomy on Behavioral Intention to use MOOCs in Thailand from a technological management perspective?

-How does Culture moderate the effect of the independent variables (PE, EE, SI, FCS, AC, & PA) on Behavioral Intention to use MOOCs in Thailand from a technological management perspective?

Conceptual Framework

From a critical review of the literature and the hypotheses developed and listed below, the conceptual framework is graphically illustrated in Figure 2. There are 8 variables in the model, which include Performance Expectancy (PE) adopted from Rabaa'i (2017), Effort Expectancy (EE) adopted from Sung, Jeong, Jeong & Shin (2015), Perceived Autonomy (PA) adopted from Lakhal, Khechine, & Pascot (2013), Social Influence (SI) adopted from (Gupta & Dogra, 2017), Facilitating Conditions (FCS) adopted from Nordin, Norman, & Embi (2016), Absorptive Capacity (AC) adopted from García-Morales, Behavioral Intention to use MOOCs (BI) adopted from Joo, Park & Lim (2018) and the moderating variable Culture (CUL) adopted from Jung & Lee (2019).

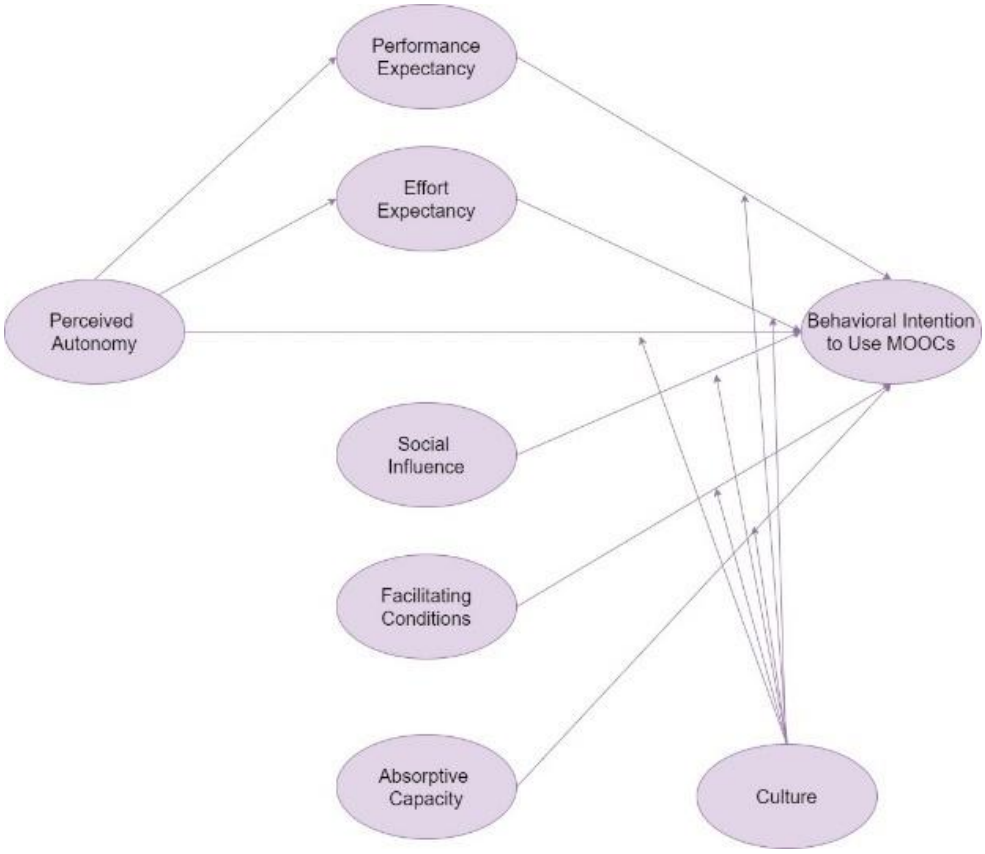

Figure 2: The Conceptual Framework

From the above conceptual framework, the following hypotheses were developed:
H1: Performance Expectancy has a positive effect on Behavioral Intention to use MOOCs in Thailand.
H2: Effort Expectancy has a positive effect on BI to use MOOCs in Thailand.
H3: Social Influence has a positive effect on Behavioral Intention to use MOOCs in Thailand.
H4: Facilitating Conditions has a positive on Behavioral Intention to use MOOCs in Thailand.
H5: Absorptive Capacity has a positive effect on Behavioral Intention to use MOOCs in Thailand.
H6: Perceived Autonomy has a positive effect on Behavioral Intention to use MOOCs in Thailand.
H7: Culture moderates the effect of all the Independent Variables (PE, EE, SI, FCS, AC and PA) on Dependent Variable (BI) to use MOOCs in Thailand.

Research Methodology

This study was an empirical investigation of the factors affecting the students' intention to use MOOCs in Thailand, with consideration of the moderating effect of culture. The research was designed to adapt the adjusted UTAUT model by incorporating additional variables of PA, AC and a moderating variable of CUL. The mixed-method (qualitative and quantitative) was used to carry out the research study. With regard to quantitative research, the primary data were collected using questionnaires from a sample size of 490 respondents. The questionnaire was made of 2 sections. The first section collected data on demographics statistics, which include age, gender, internet consumption and internet usage per day. The second section collected data on the study constructs, such as Behavioral Intention (BI), Performance Expectancy (PE), Effort Expectancy (EE), Perceived Autonomy (PA), Social Influence (SI), Facilitating Conditions (FCS) and Absorptive Capacity (AC)), developed from literature review and discussed in the conceptual framework. To collect the data, a 5-point Likert scale was applied, which included the measurement ranging from 1 – strongly disagree to 5 -- strongly agree. The questionnaire was developed in a "Thai language" to make sure there were no barriers and to guarantee the quality of data. The SEM was applied to analyze the data. The data collected from the respondents were cleaned/filtered, tested for reliability and validity, and an analysis was conducted. The SEM analysis was used via AMOS version 26. Regarding the qualitative research, the research has consulted the available secondary data related to the study. The secondary sources used in this study were peer-reviewed journals, articles, books and relevant dissertations. The research population was the students who intend to use MOOCs for studying different courses in Thailand. It comprised of the students who had enrolled or are planning to get enrolled in learning MOOCs. Data was collected using a stratified random sampling technique from a sample size of 490 respondents. The data was collected between January and April 2021 from ten major universities in Thailand. The data was collected by asking the student to fill the questionnaire online on Google Forms, where they were required to select the case that applied to them to the best of their knowledge.

Results and Discussion

From the descriptive statistics of the respondents, male respondents were less (consisted of 41%) than female respondents (consisted of 59%). Considering the age variable, the age category with the highest representation was 21 – 30 years with 71.8%, followed by 18 – 20 with 20.8% and then 31 – 40 years with a representation of 5.3%. This showed that most of the respondents were young in their college studies. The study did not have a respondent who was Older than 60 Years. The income statistics of the respondents indicated that they earned Less than or Equal to 10,000 Baht, represented by 56.7%. Regarding the computer knowledge statistics, most of the respondents, 58% indicated that they had

moderate computer knowledge, while 23.5% indicated they had poor computer knowledge. The study also investigated the internet consumption of the respondents, where most of the respondents (54.5%) have been using the internet for more than 10 years. The last demographic variable was internet usage per day, where 88.0% of respondents indicated that they use the internet for more than 3 hours per day.

The model was evaluated using the Confirmatory Factor Analysis (CFA), reliability and validity analysis of the constructs. The reliability was evaluated using Fornell and Larcker (1981) criteria that the Cronbach's alpha of every construct should be equal to or higher than 0.70, and the average variance extracted (AVE) should be equal to or higher than 0.50. The Cronbach's alpha and AVE for Thailand data are presented in Table 1.

Table 1: Validity and Reliability Analysis

Variable	CR	AVE
BI	0.930	0.816
EE	0.882	0.789
PA	0.911	0.774
SI	0.714	0.556
FCS	0.753	0.605
AC	0.905	0.761
PE	0.883	0.715

Source: Research Data. CR: Construct Reliability; AVE: Average Variance Extracted

From Table 1, Cronbach's alpha ranged between 0.753 and 0.930, while the AVE ranged between 0.605 and 0.816. From the results, all factor loadings, Cronbach's Alpha and AVE values meet the recommended norms and standards..

The CFA results indicated that the chi-square statistic for the model was significant ($\chi 2\ [114] = 354.916$, $p < 0.01$) and $\chi 2$/df ratio = 3.113 (considered acceptable since it was below 5 and was being influenced by sample size) (Schumacker & Lomax, 2004). The CFI is 0.971; TLI is 0.956; NFI is 0.957, and they have provided an excellent fit since the values are more significant than 0.9 or close to 1.0. Additionally, the RMSEA is 0.063 (below the threshold of 0.80) (Schumacker & Lomax, 2010). The results of the CFA for Thailand indicated that it is feasible to move on and conduct the Structural Equation Modeling (SEM).

Structural Equation Modelling (SEM)

After confirming that the model was suitable, the SEM analysis was conducted to evaluate the research hypotheses. Figure 3 shows the path analysis results with the standardized estimates of the loadings and the r-squared values of the indicator variables.

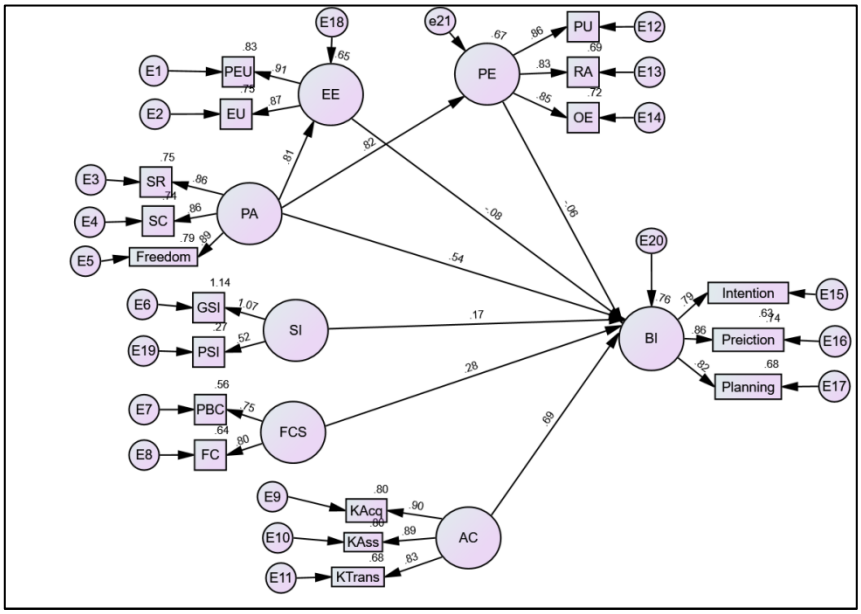

Figure 3: Evaluation of the Research Model

The direct effects of the path relationship from the independent variables to the dependent variables, their beta values (β) and p-value significance are shown in Table 2.

Table 2. Evaluation of the study hypotheses

Paths			***β***	**S.E.**	**C.R.**	**p-value**	**Significance**
Direct Effects							
PE	<---	PA	.705	.037	19.022	***	
EE	<---	PA	.821	.045	18.396	***	
BI	<---	PA	.359	.064	5.589	***	
BI	<---	FCS	.196	.030	6.448	***	
BI	<---	EE	-.051	.043	-1.178	0.239	
BI	<---	PE	-.048	.054	-.896	0.370	
BI	<---	AC	.478	.031	15.365	***	
BI	<---	SI	.155	.029	5.277	***	
Indirect Effects							
BI <---EE <---PA			-0.042	-0.133	0.042	0.405	
BI <---PE <---PA			-0.034	-0.131	0.055	0.511	

Note: *** significant at 0.01; ** significant at 0.05; BI = Behavioral intention to use; PE = Performance Expectancy; EE = Effort expectancy; PA = Perceived Autonomy; SI = Social Influence; FSC = Facilitating Conditions; AC = Absorptive Capacity

From Table 2, four variables have a significant and positive effect on behavioral intention to use (BI). PA is found to have a positive and significant effect on BI ($\beta = 0.359$, $p < 0.01$). This confirmed H6 that PA has a positive effect on BI to use MOOC in Thailand. The results implied that an increase/decrease in the PA aspects (sense of responsibility, self-confidence, and freedom) results in an increase/decrease of BI to use MOOCs by the students. These findings are supported by the previous study (Sierens, Vansteenkiste, Goossens, Soenens & Dochy, 2009), which found that there is a positive relationship between perceived autonomy and behavioral intention to undertake self-regulated learning.

FCS has a positive and significant effect on BI ($\beta = 0.196$, $p < 0.01$), which confirmed H4 of this research. It implied that an increase in the observed aspects of facilitating condition (perceived behavioral control, facilitating condition) would increase the BI to use MOOCs by the students. These findings agree with that of Sam & Baharin (2018), who showed that facilitating condition significantly and positively impacts the users' behavioral intention to use the online booking system.

AC has a positive and significant effect on BI ($\beta = 0.478$, $p < 0.01$), which has supported H5 that AC has a positive impact on BI to use MOOCs in Thailand. While comparing these findings, this study observed that an increase in the level of AC (Knowledge Acquisition, Knowledge Assimilation, Knowledge Transformation) would increase the BI of the students to use MOOCs. These findings are in line with the study of Scuotto, Del Giudice & Carayannis (2016), which indicates that AC has a significant influence on the behavioral intention to use SME innovations. Similarly, Mayeh, Ramayah & Popa (2014) found out that AC has a significant influence on the intention to use ERP systems.

SI has a positive and significant effect on BI ($\beta = 0.155$, $p < 0.01$). As results, H3 is confirmed, which implies that an increase in the level of SI (general social influence and peer social influence) would increase the BI of the students to use MOOCs. These findings are similar to that of Morosan and DeFranco (2016), whose study revealed that SI significantly affects NFC- Mobile purchase in hotels. However, on the centrally, Jeng & Tzeng (2012), SI does not significantly influence the BI to use a Clinical Decision Support System (CDSS) for medical professionals.

However, the results indicated that PE and EE have a non-significant effect on BI. Additionally, PA has a positive and significant effect on PE (($\beta = 0.705$, $p < 0.01$) and EE ($\beta = 0.821$, $p < 0.01$), and this finding is supported with the study conducted by Lakhal, Khechine, & Pascot (2013). This led to the rejection of H1 and H2 of this research. It is observed that PE (perceived usefulness, relative advantage and outcome expectancy) does not have any significant effect on BI of the students to use MOOCs. These results contradict previous studies conducted in the same area. The study conducted by Gupta & Dogra (2017) found out that PE has a significant influence on traveller's intention and habit to use technology. A study by Alkhunaizan & Love (2012) indicated that effort expectancy has a

significant influence on the behavioral intention to use mobile commerce technology.

Moderation Effects of Culture Variable

In this analysis, there are eight variables, the independent variables (PE, EE, SI, FCS, AC, & PA), dependent variable (BI to use MOOC) and moderating variable (CUL). The relations between the independent variables and the moderator variables were calculated using the variables standardized values. The moderation effects of culture are presented in Figure 4.

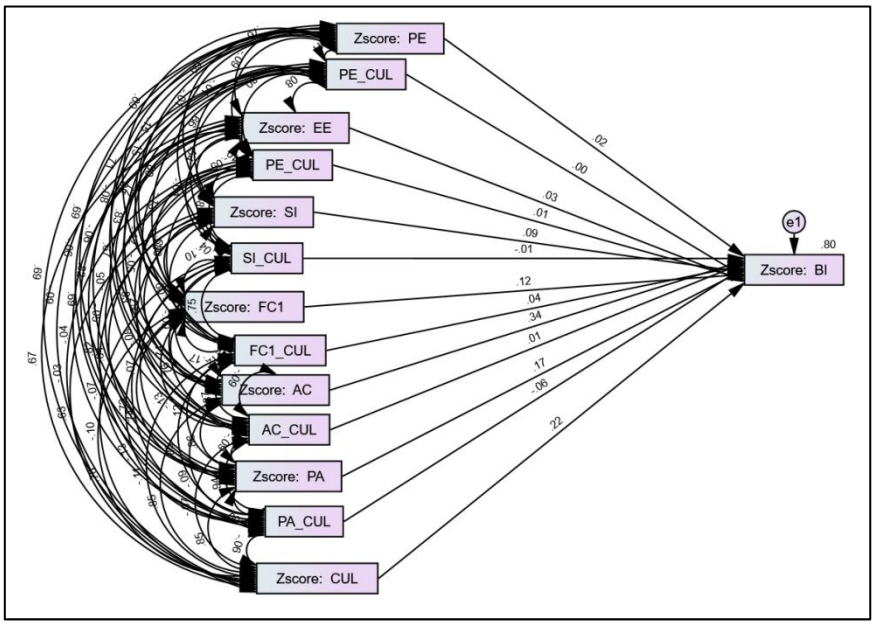

Figure 4: Moderation Analysis

The moderation effects of culture are presented in Table 3.

Table 3. Moderation Analysis

	Estimate	S.E.	C.R.	P
Direct Effects				
ZBI <--- ZSI	.093	.030	3.094	**
ZBI <--- ZFC1	.122	.037	3.288	**
ZBI <--- ZAC	.336	.047	7.162	***
ZBI <--- ZPA	.168	.046	3.649	***
ZBI <--- ZCUL	.223	.045	4.930	***
ZBI <--- ZEE	.033	.035	.942	.346
ZBI <--- ZPE	.016	.036	.440	.660
Interaction Effects				

			Estimate	S.E.	C.R.	P
ZBI	<---	PE_CUL	.000	.031	-.005	.996
ZBI	<---	EE_CUL	.006	.034	.182	.856
ZBI	<---	SI_CUL	-.005	.028	-.184	.854
ZBI	<---	AC_CUL	.008	.052	.144	.885
ZBI	<---	PA_CUL	-.046	.048	-.953	.341
ZBI	<---	FC1_CUL	.029	.035	.850	.395

Note: *** = significance at 99% CL; ** significant at 95% CL; ZBI = Standardized Behavioral intention to use; ZPE = Standardized Performance Expectancy; ZEE = Standardized Effort expectancy; ZPA = Standardized Perceived Autonomy; ZSI = Standardized Social Influence; ZFC1 = Standardized Facilitating Conditions; ZAC = Standardized Absorptive Capacity

The results above indicate that Culture (ZCUL), Perceived Autonomy (ZPA) and Absorptive Capacity (ZAC) have a significant effect on Behavioral intention at 99% confidence levels since their $\beta = 0.223; 0.168; 0.336$, $p < 0.01$, respectively. Additionally, Facilitating Condition (ZFC1) and Social Influence (ZSI) have a significant effect on behavioral intention (ZBI) at 95% CL since their $\beta = 0.122; 0.093$; $p < 0.05$, respectively. However, Performance Expectancy (ZPE) and Effort Expectancy (ZEE) have an insignificant effect on behavioral intention (ZBI). Considering the moderation effects of CUL on the relationship between independent variables (ZPE, ZEE, ZSI, ZFC1, ZAC, ZPA) and dependent variable (ZBI), the results indicate that all the relations between CUL and independent variables have an insignificant effect on the dependent variables at all levels, both at 95% and 99% confidence levels. This leads to the rejection of H7. Further, it concludes that CUL does not moderate any relationship between the independent variables and the dependent variables.

Managerial Implications

The findings of this study provide significant suggestions for developing and improving the application of MOOCs' concepts in higher learning institutions. MOOCs' uses and its importance and prominence were not depicted until the year 2020. In the wake of the COVID-19 pandemic, social distancing and lockdown are among the measures adopted by nations to prevent the spread of the deadly virus. As a result, many institutions of higher learning opted to deliver their learning activities online, a form of MOOCs. The institution of higher learning could use the finding of this research to determine how the students respond to MOOCs' use in terms of the aspects of various aspects included in this study. For instance, the aspects of SI are a significant exogenous variable that affects the BI to use MOOCs. It is also important that during the period of COVID-19 pandemics, this study could prove very beneficial in determining the factors that the officials of higher institutions of learning should consider when implementing MOOCs and associated online learning programs to deliver quality education programs to the

students. This study included the variable of PA and AC in the model to evaluate how the variable influences the BI to use MOOCs, which has turned to be the significant determinants of the BI of students to use MOOCs.

Conclusion

This research aims to empirically investigate students' BI to use MOOCs in Thailand. The study adopted the UTAUT model with an extension to include two additional variables, the PA and AC. The study has been guided with 7 research questions, where 6 of the research questions have focused on investigating how the independent variables (PE, EE, SI, FCS, AC and PA) affect the dependent variable (BI) to use MOOCs, and the seventh research question has focused on investigating how CUL moderates the relationship between the independent variables and dependent variable. The study has applied the quantitative methodology using primary data collected from the university students who intend to use MOOCs. The findings of the study indicate that four variables (SI, AC, FCS and PA) significantly influence the students' BI to use MOOCs. However, two variables (PE and EE) do not affect students' intention to use MOOCs. The research has also found that CUL does not moderate any relationship between the independent variables and the dependent variable. This research is considered critical during the period of COVID-19 pandemics, where most learning is being conducted online. Therefore, the policymakers in the education sector in Thailand and the heads and management of institutions of higher learning could benefit from the findings of this research. This research is limited from two perspectives. First, it has been conducted in Thailand. Therefore, the application of findings in other regions or countries should be made with caution. Secondly, the study has been conducted during a period of COVID-19 pandemic, when most of the studies are being conducted online in Thailand and globally; therefore, if the situations change in the future, this aspect should be put into consideration. This research recommends that future studies may adopt an extended model of UTAUT2 and include other variables, such as experience and voluntary use, to compare the results.

References

Alkhunaizan, A. M., Love, S., (2012). What drives mobile commerce? An empirical evaluation of the revised UTAUT model. *International Journal of Management and Marketing Academy*, *2*(1), 82–99.

Baker, R., Evans, B. and Dee, T., (2016). A Randomized Experiment Testing the Efficacy of a Scheduling Nudge in a Massive Open Online Course (MOOC). *AERA Open*, *2*(4), 233285841667400.

Bing Tan, P., (2013). Applying the UTAUT to Understand Factors Affecting the Use of English E-Learning Websites in Taiwan. *SAGE Open*, 1-12.

Cheok, M. L., Wong, S. L., (2015). Predictors of E-Learning Satisfaction in Teaching and Learning for School Teachers: A Literature Review. *International Journal of Instruction*, *8*(1), 75–90.

Cohen, W. M., Levinthal, D. A., (1990). Absorptive Capacity: A New Perspective on Learning and Innovation. *Administrative Science Quarterly*, *35*(1), 128.

Fornell, C., Larcker, D. F., (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research*, *18*(1), 39–50.

García-Morales, V. J., Martín-Rojas, R. and Garde-Sánchez, R., (2019). How to Encourage Social Entrepreneurship Action? Using Web 2.0 Technologies in Higher Education Institutions. *Journal of Business Ethics*, *161*(2), 329–350.

Grebski, W., Grebski, M., (2018). Keeping Higher Education Aligned with the Requirements and Expectations of the Knowledge-Based Economy. *Production Engineering Archives*, *21*(21), 3–7.

Gupta, A., Dogra, N., (2017). Tourist Adoption of Mapping Apps: UTAUT2 Perspective of Smart Travellers. *Tourism and Hospitality Management*, *23*(2), 145–161.

Hew, K. F., Cheung, W. S., (2014). Students' and instructors' use of massive open online courses (MOOCs): Motivations and challenges. *Educational Research Review*, *12*, 45–58.

Hofstede, G., (1980). Culture and Organizations. *International Studies of Management & Organization*, *10*(4), 15–41.

Jeng, D. J. F., Tzeng, G. H., (2012). Social influence on the use of Clinical Decision Support Systems: Revisiting the Unified Theory of Acceptance and Use of Technology by the fuzzy DEMATEL technique. *Computers & Industrial Engineering*, *62*(3), 819–828.

Joo, Y. J., Park, S. and Lim, E., (2018). Factors Influencing Preservice Teachers' Intention to Use Technology: TPACK, Teacher Self-efficacy, and Technology Acceptance Model. *Educational Technology & Society*, *21*(3), 48–59. https://www.jstor.org/stable/26458506

Jung, Y., Lee, J., (2018). Learning Engagement and Persistence in Massive Open Online Courses (MOOCS). *Computers & Education*, *122*, 9–22.

Karnasuta, S., (2018). MOOCs in Thailand: An Investigation of Its Implication to Thai's Higher Education. *MOOCs in Thailand: An Investigation of Its Implication to Thai's Higher Education*. EEL 2018, Singapore.

Lakhal, S., Khechine, H. and Pascot, D., (2013). Student behavioural intentions to use desktop video conferencing in a distance course: integration of autonomy to the UTAUT model. *Journal of Computing in Higher Education*, *25*(2), 93–121.

Lathapipat, D., Sondergaard, L. M. & Jithitikulchai, T., (2015, June). *Wanted - A Quality Education for All* (No. AUS13333). World Bank. http://documents1.worldbank.org/curated/en/941121468113685895/pdf/AUS13333-WP-3Jun2015-P146230-TH-PUBLIC.pdf

Mayeh, M., Ramayah, T. and Mishra, A., (2016). The role of absorptive capacity, communication and trust in ERP adoption. *Journal of Systems and Software*, *119*, 58–69.

McGill, L., (2010, December 9). *Open educational resources (OERs)*. Https://Www.Jisc.Ac.Uk/Full-Guide/Open-Educational-Resources. https://www.jisc.ac.uk/full-guide/open-educational-resources

Morosan, C., DeFranco, A., (2016). It's about time: Revisiting UTAUT2 to examine consumers' intentions to use NFC mobile payments in hotels. *International Journal of Hospitality Management*, *53*, 17–29.

Nagy, S., Siemek, J., (2006). Virtual labs in Leonardo da Vinci "CELGAS" e-learning project. *Acta Montanistica Slovaca*, *11*(1), 125–128.

Nasongkhla, J., Thammetar, T. and Chen, S.-H., (Eds.)., (2015). Thailand OERs and MOOCs country report. In *MOOCs and Educational Challenges around Asia and Europe* (pp. 121–135). KNOU Press.

Nordin, N., Norman, H. and Embi, M. A., (2016). Technology Acceptance of Massive Open Online Courses in Malaysia. *Malaysian Journal of Distance Education*, *17*(2), 1–16.

Rabaa'i, A. A., (2017). The use of UTAUT to investigate the adoption of e-government in Jordan: a cultural perspective. *International Journal of Business Information Systems*, *24*(3), 285.

Sam, M. F. M., Baharin, S. N. F., (2018). The Factors Which Influencing Users' Behavioral Intention Towards Using Online Booking System for Car Service at Car Service Centre in Malacca. *COJ Electronics & Communications*, *1*(4), 1–7.

Schumacker, R. E., Lomax, R. G., (2010). *A Beginner's Guide to Structural Equation Modeling: Third Edition* (3rd ed.). Routledge.

Scuotto, V., Del Giudice, M. and Carayannis, E. G., (2016). The effect of social networking sites and absorptive capacity on SMEs' innovation performance. *The Journal of Technology Transfer*, *42*(2), 409–424.

Sierens, E., Vansteenkiste, M., Goossens, L., Soenens, B. and Dochy, F., (2009). The synergistic relationship of perceived autonomy support and structure in the prediction of self-regulated learning. *British Journal of Educational Psychology*, *79*(1), 57–68.

Sinaga, O., Lis, M. and Razimi, M.S.A., (2019) Education and core skills in the performance with mediating role of employee innovation. *Polish Journal of Management Studies*, 19(2), 363-373.

Stuss, M.M., Szczepańska-Woszczyna, K. and Makieła, Z.J., (2019). Competences of graduates of higher education business studies in labor market I (results of pilot cross-border research project in Poland and Slovakia). *Sustainability*, 11 (18), art. no. 4988.

Sung, H. N., Jeong, D. Y., Jeong, Y. S. and Shin, J. I., (2015). The relationship among self-efficacy, social influence, performance expectancy, effort expectancy, and behavioral intention in mobile learning service. *International Journal of u-and e-Service, Science and Technology*, 8(9), 197-206.

Venkatesh, Morris, Davis and Davis., (2003). User Acceptance of Information Technology: Toward a Unified View. *MIS Quarterly*, *27*(3), 425.

Weinhardt, J. M., Sitzmann, T., (2019). Revolutionizing training and education? Three questions regarding massive open online courses (MOOCs). *Human Resource Management Review*, *29*(2), 218–225.

Yang, Q., (2014). Students Motivation in Asynchronous Online Discussions with MOOC Mode. *American Journal of Educational Research*, *2*(5), 325–330.

Yi, M. Y., Jackson, J. D., Park, J. S. and Probst, J. C., (2006). Understanding information technology acceptance by individual professionals: Toward an integrative view. *Information & Management*, *43*(3), 350–363.

Zahra, S. A., George, G., (2002). Absorptive Capacity: A Review, Reconceptualization, and Extension. *Academy of Management Review*, *27*(2), 185–203.

Zainol, Z., Yahaya, N., Yahaya, N. A. M. and Zain, N. N. B. M., (2017). Factors Influencing Mobile Learning Among Higher Education Students in Malaysia. *International Journal of Advanced Scientific Research and Management*, *2*(8), 86–91.

Zhenghao, C., Alcorn, B., Christensen, G., Eriksson, N., Koller, D. and E.J.E., (2015, September). Who's Benefiting from MOOCs, and Why. *Harvard Business Review*.

WYKORZYSTANIE "MOOC" W SZKOLNICTWIE WYŻSZYM: PERSPEKTYWA ZARZĄDZANIA

Streszczenie: Celem tego badania jest zbadanie czynników wpływających na intencję behawioralną (BI) do korzystania z Massive Open Online Courses (MOOC) w Tajlandii. W badaniu przyjęto Model Zunifikowanej Teorii Akceptacji i Wykorzystania Technologii (UTAUT) z rozszerzeniem o dwie zmienne: Postrzeganą Autonomię (PA) i Zdolności Absorpcyjne (AC). W badaniu zbadano również moderujący wpływ kultury (CUL) na związek między zmiennymi niezależnymi i zależnymi. Badanie zostało przeprowadzone na podstawie danych pierwotnych zebranych od 490 respondentów, którzy byli studentami uczelni i zamierzali korzystać z MOOC. W badaniu wykorzystano modelowanie równań strukturalnych (SEM) do oceny związku między badanymi zmiennymi w AMOS 26. Wyniki badania wykazały, że postrzegana autonomia (PA) ma pozytywny i istotny wpływ na behawioralny zamiar stosowania MOOC (BI). ; Warunki ułatwiające (FCS) mają pozytywny i znaczący wpływ na behawioralny zamiar korzystania z MOOC (BI). Zdolność absorpcyjna (AC) ma pozytywny i znaczący wpływ na behawioralny zamiar korzystania z MOOC (BI); Wpływ społeczny (SI) ma pozytywny i znaczący wpływ na behawioralny zamiar korzystania z MOOC (BI). Jednak wyniki wskazują, że oczekiwana wydajność (PE) i oczekiwana nakład pracy (EE) mają nieistotny wpływ na BI. Ponadto postrzegana autonomia ma pozytywny i znaczący wpływ na oczekiwaną wydajność i oczekiwany wysiłek. Wyniki interakcji między Kulturą a zmiennymi niezależnymi (PE, EE, SI, FC, AC i PA) wskazują, że CUL nie moderuje żadnego związku ze zmienną zależną (BI). Badanie to jest uważane za bardzo krytyczne w okresie pandemii COVID-19, kiedy większość nauki odbywa się online. Dlatego decydenci w sektorze edukacji w Tajlandii oraz dyrektorzy i kierownictwo instytucji szkolnictwa wyższego mogą skorzystać z wyników tych badań.

Słowa kluczowe: intencja behawioralna, oczekiwana wydajność, oczekiwany wysiłek, wpływ społeczny, warunki ułatwiające

MOOC 在高等教育中的采用:管理视角

摘要:本研究的目的是调查影响泰国使用大规模开放在线课程 (MOOC) 的行为意图(BI)的因素。该研究采用了接受和使用技术的统一理论(UTAUT)模型, 并扩展到包括感知自主 (PA) 和吸收能力 (AC) 两个变量。该研究还调查了文化 (CUL)对自变量和因变量之间关系的调节作用。该研究使用从490名受访者收集的原始数据进行, 这些受访者是打算使用 MOOC 的大学生。该研究使用结构方程模型 (SEM)来评估 AMOS 26 中研究变量之间的关系。 研究结果表明, 感知自主 (PA)被发现对使用 MOOC (BI) 的行为意向具有积极且显着的影响;促进条件 (FCS) 对使用

MOOCs (BI)
的行为意图具有积极且显着的影响。吸收能力(AC)对使用MOOCs(BI)的行为意向有积极且显着的影响;社会影响力(SI)对使用MOOCs(BI)的行为意向具有积极且显着的影响。然而，结果表明绩效预期(PE)和努力预期(EE)对商业智能没有显着影响。此外，感知自主性对绩效预期和努力预期有积极而显着的影响。Culture与自变量(PE、EE、SI、FC、AC 和 PA)之间的交互结果表明，CUL 不调节与因变量 (BI) 的任何关系。在COVID-
19大流行期间，这项研究被认为非常重要，因为大多数学习都是在线进行的。因此，泰国教育部门的政策制定者以及高等教育机构的负责人和管理层可以从这项研究的结果中受益。

关键词:行为意图，绩效预期，努力预期，社会影响，促进条件 MOOC