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FACTORS INFLUENCING BEHAVIOURAL INTENTION TO USE MOOCs

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ABSTRACT

This analysis aimed to investigate the factors influencing the behavioural intention to use Massive Open Online Courses (MOOCs) in Thailand and Pakistan. The study was geared towards exploring the MOOCs, a relatively new technology platform allowing the spread of education and learning in various areas and fields and surpassing traditional online courses. The study adopted the UTAUT model with additional two variables of perceived autonomy and absorptive capacity. A quantitative method was applied using primary data collected from a sample of 490 and 513 respondents from Thailand and Pakistan, respectively. The sample size was composed of students in institutions of higher learning who were aware of MOOCs or intended to use them in their studies. The analysis was conducted using the Confirmatory Factor Analysis (CFA) and multi-group structural equation modelling (SEM). The study found that four variables (social influence, absorptive capacity, facilitating conditions and perceived autonomy) significantly influence the student intention to use MOOCs in Thailand and Pakistan. However, two variables (performance expectancy and effort expectancy) did not influence the student intention to use MOOCs in Thailand and Pakistan. The results indicated that the findings between the two countries were invariant. This study extended the model by Venkatesh et al. (2003), including two additional variables, the perceived autonomy and absorptive capacity. The study indicated various aspects related to the response of students using MOOCs. This study is especially beneficial during the COVID-19 pandemic for determining factors that officials of higher institutions of learning should consider when implementing MOOCs and associated online learning programs to deliver quality education to students.

KEY WORDS

technology management, Massive Open Online Courses (MOOCs), Multi-Group SEM, UTAUT, perceived autonomy, absorptive capacity

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INTRODUCTION

Massive Open Online Courses (MOOCs) represent a disruptive educational trend, particularly in higher education and lifelong learning (McGuire, 2014). These new technology platforms allow the

spread of education and learning in various areas and fields and surpass traditional online courses. xMOOCs is used as a more conventional approach by such platforms as Coursera, Udacity, edX, or Miriádx, and some others use the connective pedagogy approach of

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cMOOCs (Kay et al., 2013). As a result, an increasing number of institutions of higher learning are adopting the MOOCs technology, and more educators are embracing the aspect of offering courses online using MOOCs. The increasing interest in MOOCs and associated enhancement through technology increases the opportunities for the exploration of more online pedagogies and business models within the education system. However, Seeman, Drake and Maysami (2013) argued that although MOOCs offer an advanced method of learning, designing and establishing it from scratch is associated with various issues, such as logistical, technological, financial, and pedagogical, which must be faced by the educators. For instance, concerning the matter of designing and running MOOCs, institutions and educators should be aware that MOOCs are quite demanding, hence require careful planning and feasibility of the course, as well as the availability of resources, such as finance and human skills. MOOCs typically require a substantive amount of time to run a single course for the first time, as well as additional hours per week to upkeep and update the trail while running it (Drake, O'Hara & Seeman, 2015). The study also indicated that the learners using MOOCs find it challenging to find a balance between their daily duties and their MOOCs courses and diverting enough time to MOOCs from their regular responsibilities or research and traditional teaching. Therefore, the overall performance of a course on MOOCs could depend on the duration and subject of the course, as well as the materials used by the instructors. According to the survey conducted by Adamopoulos (2013), MOOCs educators should keep in mind the relationship between logistical issues and design decisions to deliver successfully. Concerning the technological issues, the institutions and educators should be aware of the supporting systems used to run MOOCs. The most common aspect being applied nowadays by educators is to centralise access to learning content and materials (Ejdys, 2021).

Though MOOCs are a promising advancement in technology, several aspects may have issues. For instance, the adoption of MOOCs within the education system is the exclusion of traditional learning elements. According to MOOCs critique, the technology provides a "disruptive competition" to the status quo by eliminating some traditional learning elements, such as physical enrolment, physical class attendance, and evaluation elements (Flavin, 2017; Welsh & Dragusin, 2013). There is also a lack of expertise and training required in using MOOCs. MOOCs need tutors and teachers to be well versed with tech-

nology and computer operations to prepare lectures and tutorials, which involves video recording in some cases. Several studies have been conducted to investigate the aspects of MOOCs; however, there is no evidence of research comparing the MOOCs adoption in two different countries. This study addresses the gap by investigating the factors that influence the use of MOOCs in Thailand and Pakistan by conducting a multi-group analysis.

The study aims to investigate the factors that influence the Behavioural intention to use MOOCs in Pakistan and Thailand by conducting a multi-group analysis that compares the results of the two countries:

- What is the effect of Performance Expectancy (PE) on the Behavioural Intention to use MOOCs (BI) in Thailand and Pakistan?
- What is the effect of Effort Expectancy (EE) on the Behavioural Intention to use MOOCs (BI) in Thailand and Pakistan?
- What is the effect of Social Influence (SI) on the Behavioural Intention to use MOOCs (BI) in Thailand and Pakistan?
- What is the effect of Facilitating Conditions (FCS) on the Behavioural Intention to use MOOCs (BI) in Thailand and Pakistan?
- What is the effect of Absorptive Capacity (AC) on the Behavioural Intention to use MOOCs (BI) in Thailand and Pakistan?
- What is the effect of Perceived Autonomy (PA) on the Behavioural Intention to use MOOCs (BI) in Thailand and Pakistan?
- Is there a difference in the effects of the independent variables (PE, EE, SI, FCS, AC, & PA) on BI between the two countries?

This article is organised into several sections. The "Literature review" consists of a critical review of the past research conducted in the studied area. The "Research methods" section describes the techniques applied in the analysis of the study. The "Research results" section provides the findings of the analysis. The "Discussion of the results" section discusses the findings in reference to the previous studies, while the "Conclusions" summarises the article.

1. LITERATURE REVIEW

MOOCs have brought education, knowledge, and skills from the top universities across the world to the least privileged scholars in emerging countries. MOOCs can be used by the most skilled professors and experts to share their expertise and knowledge

with learners despite the lack of time and geographical hindrances and at a low or no cost. Inferring from Hew and Cheung (2014), MOOCs have brought the revolution to education, particularly higher education in developing countries, where higher education or university attendance is a privilege. An excellent example of how MOOCs had impacted the education system in developing countries is edX, which is a non-profit platform developed by Harvard University. The platform boasts having approx. 15% of the registered students from developing countries. For instance, India alone has more than 300 000 registered students on edX.

Similarly, MOOCs have been established in various developing countries, both as individual for-profit platforms and others in collaboration with the national government or education ministry. Some countries that have embraced the technology, including Thailand, China, Israel, India, and Pakistan, among others, have witnessed significant improvements in the education sector. In addition to supporting higher education in developing countries, MOOCs are an effective way of reducing the level of illiteracy in those regions.

MOOCs were first recognised after launching some free online courses to the public in 2011. These courses received massive enrolment, more than 100 000 each. Since then, more than a thousand universities around the world have adopted MOOCs. By the end of 2018, there were more than 100 million students already enrolled in different MOOCs courses around the world (Shah, 2019). Many global MOOCs platforms have been established, such as Coursera, edX, and FutureLearn, while some MOOCs platforms were launched by governments that partnered with universities. Considering the motivation from the learners' perspective, the participation of students in MOOCs is of great interest to the higher education stakeholders. The factors influencing students to use MOOCs include learning flexibility, economic benefit, personal and professional identity, challenge, and achievement, as well as learning as fun. According to a survey conducted by Duke University researchers, four significant categories motivate students to choose MOOCs (Belanger & Thornton, 2013), including exploring and experiencing online education, convenience achieved by eliminating barriers encountered in the traditional educational system, supporting lifelong learning and acquiring knowledge and understanding of the topic concept, as well as fun and entertainment through intellectual stimulation.

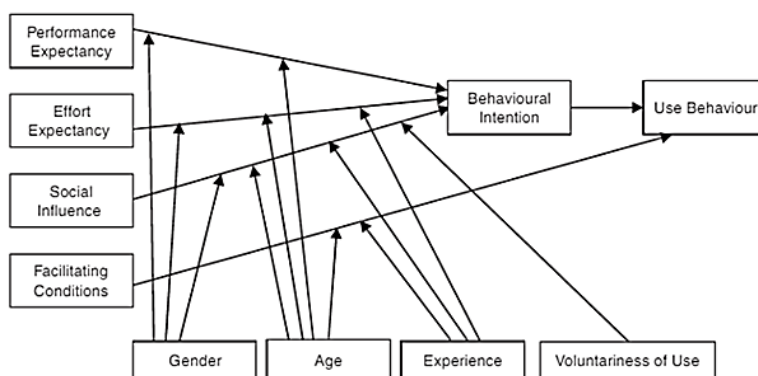
According to Blackmon and Major (2017), MOOCs are coming as a revolution to developing

countries. Developing countries usually face a lack of university entry spaces, while at the same time, there are significant barriers to entry. Therefore, MOOCs in developing nations present a comprehensive opportunity for exploration, as well as an extension of education to those who lack the opportunity to join higher education. Higher institutions of learning primarily focus on the learners' development of strong competencies, service-oriented mindset, principle and productive citizen (Stuss, Szczepańska-Woszczyna & Makiela, 2019). MOOCs have tangible career benefits to learners. Instead of experiencing some vague improvement in their career prospects, research has indicated that approximately 33% of the people who have undertaken MOOCs in developing countries have experienced more career benefits. These tangible benefits include finding a new job, starting a business, or receiving a pay rise or promotion. The learners who join MOOCs with the main objective of advancing their career have been reported to experience the most outcome.

Both Pakistan and Thailand have adopted the MOOCs technology in their education system. Considering that they are developing countries, the system is not fully integrated but have proved beneficial, especially to institutions of higher learning (Cinque, 2017). Thailand has one MOOCs, which was launched in 2017. The official platform is known as ThaiMOOC. In Pakistan, the adoption of MOOCs within the higher education system has not been fully integrated. Allama Iqbal Open University and the Virtual University of Pakistan utilise MOOCs and blended learning pedagogies. Although most universities in Pakistan offer distance learning, these programmes need to be aligned with quality-based MOOCs.

The Unified Theory of Acceptance and Use of Technology (UTAUT) model is graphically illustrated in Fig. 1 below and has four major constructs determining the behavioural intention and the ultimate behaviour of technological system adoption and use. These constructs include performance expectancy, effort expectancy, social influence, and facilitating conditions. In turn, these constructs are moderated by other factors, such as age, gender, experience, and voluntariness of use (Venkatesh et al., 2003). The model postulates that through an examination of these constructs, it can determine the key factors that influence technology acceptance in any given context.

Various studies have been conducted using the UTAUT model. Fianu, Blewett, Ampong and Ofori (2018) investigated the factors that influence the use of MOOCs by students. The study was due to the



Source: Venkatesh *et al.* (2003)

Fig. 1. Unified Theory of Acceptance and Use of Technology (UTAUT) model

widespread criticism regarding the rates of participation and enrolment in MOOCs. The study also found that the use of MOOCs is influenced by facilitating conditions, MOOCs use intention, and instructional quality. However, the constructs of effort expectancy and social influence do not influence MOOCs use intention. The study highlighted the importance of institutions having the necessary structures and resources to support MOOCs. Mendoza, Jung and Kobayashi (2017) carried out an empirical review of the studies on MOOCs adoption using the UTAUT model.

The study indicated a significant issue that has not been addressed by the literature. According to study findings, the most significant factors that influence the use of MOOCs was the performance expectancy. Facilitating conditions were identified as the major barrier to the intention to use MOOCs. The study also advised the use of other constructs, such as learners' variables and language competencies. Alae-ddin, Altounjy, Zainudin and Kamarudin (2018) investigated consumer behaviour of switching to a mobile wallet using the TAM model incorporating an additional moderating variable of perceived risk. The study was motivated by the growing use of a mobile digital wallet, which facilitated online transactions using mobile phones.

The results of the study indicated that the perceived usefulness and the perceived ease of use had a significantly positive effect on the customer attitude to switch to mobile wallets. Also, they found a significantly positive relationship of the perceived risk as a moderating role between the attitude and the behavioural intention to switch to the mobile wallet technology. Liu, Miguel Cruz, Rios Rincon, Buttar, Ranson and Goertzen (2015) carried out a study to investigate the factors that determine the therapist's acceptance of new technology for rehabilitation using

the UTAUT model. The study found that the performance expectancy was the strongest determinant of behavioural intention to use new technology in rehabilitation, while effort expectancy and social influence did not determine the behavioural intention. The results also indicated that the current use of technologies in rehabilitation was influenced by behavioural intention and facilitating conditions.

The conceptual framework was developed from a comprehensive and critical review of the literature. The conceptual framework comprises eight variables, namely Behavioural Intention to Use MOOCs (BI), Perceived Autonomy (PI), Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), Facilitating Condition (FC), Absorptive Capacity (AC), Perceived Autonomy (PA), and Culture (CL). Among these variables, the independent variables were PE, EE, SI, FC, AC, and PA. The dependent variable was BI, and the moderating variable was CL. The conceptual framework is given in Fig. 2.

Based on the above framework, the following eight hypotheses were developed and illustrated in Fig. 2.

H1: Performance Expectancy (PE) has a significant effect on the Behavioural Intention to use MOOCs (BI) in Thailand and Pakistan.

H2: Effort Expectancy (EE) has a significant effect on the Behavioural Intention to use MOOCs (BI) in Thailand and Pakistan.

H3: Social Influence (SI) has a significant effect on the Behavioural Intention to use MOOCs (BI) in Thailand and Pakistan.

H4: Facilitating Conditions (FCS) has a significant effect on the Behavioural Intention to use MOOCs (BI) in Thailand and Pakistan.

H5: Absorptive Capacity (AC) has a significant effect on the Behavioural Intention to use MOOCs (BI) in Thailand and Pakistan.

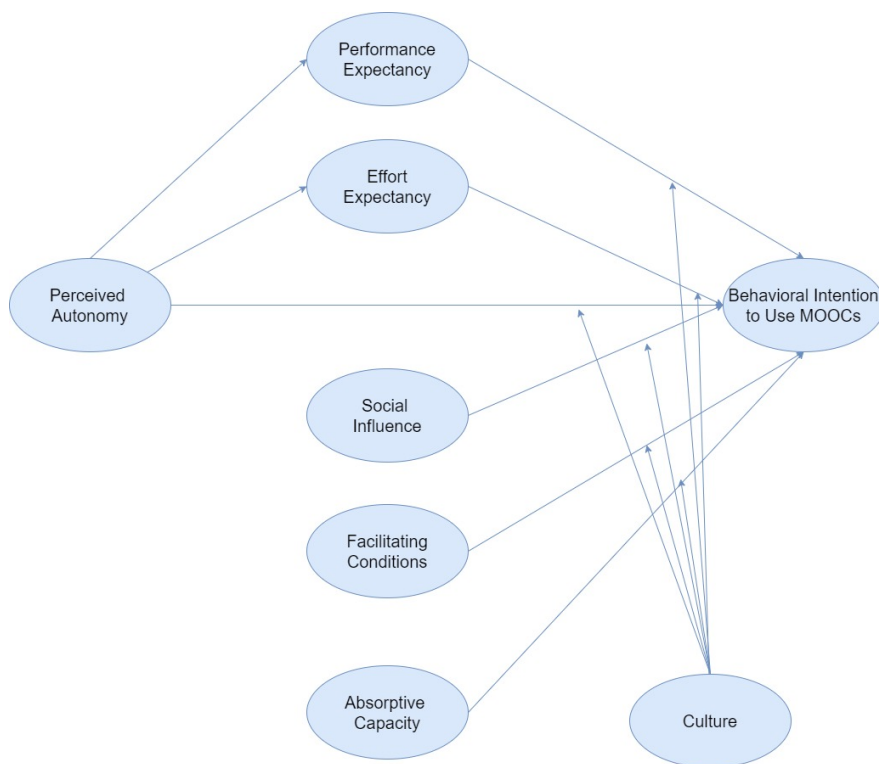


Fig. 2. Proposed conceptual framework

H6: Perceived Autonomy (PA) has a significant effect on the Behavioural Intention to use MOOCs (BI) in Thailand and Pakistan.

H7: There is a difference in the effects of the independent variables (PE, EE, SI, FCS, AC, & PA) on BI between the two countries.

2. RESEARCH METHODS

This research integrated two variables of the UTAUT model, i.e., perceived autonomy and absorptive capacity, to carry out an empirical study of the student intention to use MOOCs in Thailand and Pakistan. Specifically, the study aimed to investigate the factors affecting the student intention to use MOOCs in Thailand and Pakistan. The research population was students and professionals in Thailand and Pakistan who intended to use MOOCs for studying different courses. It also included MOOCs teachers and lecturers giving courses through MOOCs platforms. The sample comprised students and professionals familiar with the use of MOOCs in the two countries.

The mixed-method (qualitative and quantitative) was adopted for the study. With regard to quantitative research, the primary data was collected using questionnaires from a sample of 490 and 513 respondents

from Thailand and Pakistan, respectively. The sample size was set following Hair et al. (2011), stating that the most acceptable way of determination is the 20:1 ratio (20 samples for one variable). Therefore, since the study has 20 observed variables, the appropriate sample size was 400 (20*20 observed variables). The study collected the required datasets in excess of the required responses of 400 from each country using stratified random sampling. The data was collected using a structured questionnaire, which was divided into two major sections. The first section focused on demographics that captured demographic characteristics of the respondents (age, gender, marital status etc.), and the second section collected data on the study variables. It used 5-point Likert Scale, where 1=strongly disagree, 2=disagree, 3= neutral, 4=agree, 5=strongly agree. The structural equation model (SEM) was applied to analyse the data. The statistical tests conducted were CFA to evaluate the model suitability, reliability analysis, and SEM for both countries and multi-group SEM analysis.

3. RESEARCH RESULTS

The descriptive statistics showed that more males in Pakistan (71.5%) intended to use MOOCs than in

Thailand (41.0%), and vice-versa in the case of women for Pakistan (28.5%) and Thailand (59.0%). Considering the age variable for both countries, the highest age category was 21–30 years, amounting to 67.6% for Pakistan and 71.8% for Thailand. For both countries, the second biggest age category was 18–20 years, represented by 18.9% in Pakistan and 20.8% in Thailand. However, Thailand had no respondents older than 60. Most of the respondents from both countries earned less or THB 10 000, representing 66.5% in Pakistan and 56.7% in Thailand. The second-largest category was respondents earning THB10 000–20 000, amounting to 17.3% in Pakistan and 24.9% in Thailand. Most of the respondents from Pakistan had good computer knowledge (40.5%), while most of the respondents from Thailand (9.6%) indicated having moderate computer knowledge. For Internet knowledge, most of the respondents from Pakistan (46.8%) indicated having good Internet knowledge, while most of the respondents from Thailand (44.1%) indicated having moderate Internet knowledge.

The model fitness was evaluated using the Confirmatory Factor Analysis (CFA) for the seven latent variables used in the study. For the case of Thailand, the base model proved to have a fit for the data. The chi-square statistic for the model was significant ($\chi^2 [114] = 354.916$, $p < 0.01$), while the more practical alternative, the χ^2/df ratio = 3.113 was below five and was influenced by the sample size (Schumacker, Lomax & Schumacker, 2015; Hu & Bentler, 1999). The CFI was 0.971; TLI was 0.956; NFI was 0.957; which

provided an excellent fit since the values were greater than 0.9 or close to 1.0. Additionally, the RMSEA was 0.063 (below the threshold of 0.80) (Browne & Cudeck, 1992; Schumacker, Lomax, & Schumacker, 2015). For the case of Pakistan, the chi-square statistic for the model was significant ($\chi^2 [114] = 458.643$, $p < 0.01$), while the more practical alternative, the χ^2/df ratio = 4.023 was below five and was influenced by the sample size (Schumacker, Lomax & Schumacker, 2015; Hu & Bentler, 1999). The CFI was 0.96; TLI was 0.947; NFI was 0.948; which provided an excellent fit since the values were greater than 0.9 or close to 1.0. Additionally, the RMSEA was 0.077 (below the threshold of 0.80) (Browne & Cudeck, 1992; Schumacker, Lomax & Schumacker, 2015). The results of the CFA for both Thailand and Pakistan data indicated that it was feasible to move on and conduct the multi-group analysis.

3.1. STRUCTURAL EQUATION MODELLING (SEM)

After establishing the fitness of the model, the structural equation model was developed for both Thailand and Pakistan. The results are presented in the following subsections.

3.2. SEM ANALYSIS FOR THAILAND

Fig. 3 below presents the SEM analysis model for Thailand and regression weights presented in the model.

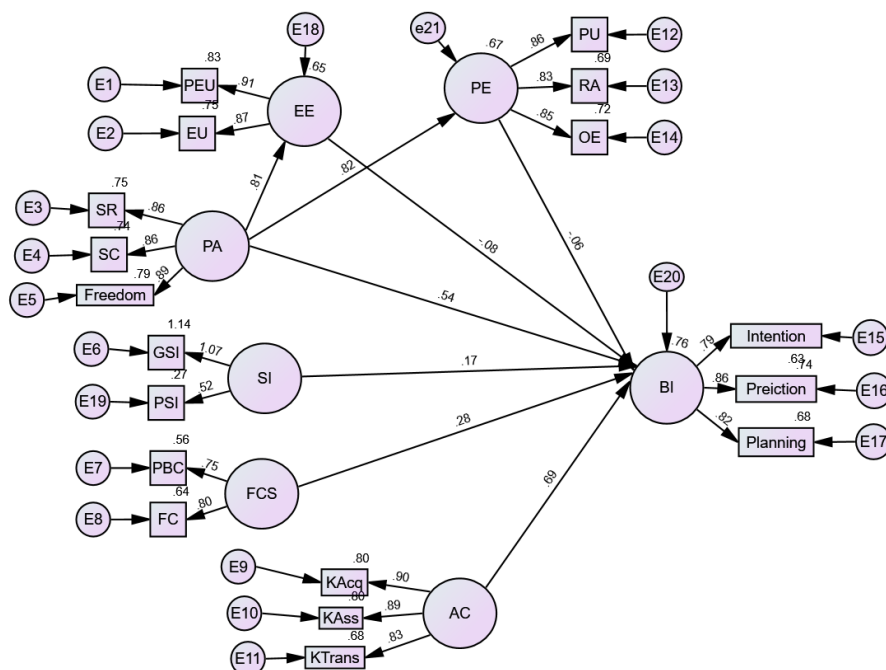


Fig. 3. SEM analysis model results for Thailand

Tab. 1. Path Analysis Regression weights for Thailand

PATHS	ESTIMATE	S.E.	C.R.	P-VALUE
PE $\leftarrow$ PA	.705	.037	19.022	***
EE $\leftarrow$ PA	.821	.045	18.396	***
BI $\leftarrow$ PA	.359	.064	5.589	***
BI $\leftarrow$ FCS	.196	.030	6.448	***
BI $\leftarrow$ EE	-.051	.043	-1.178	0.239
BI $\leftarrow$ PE	-.048	.054	-.896	0.370
BI $\leftarrow$ AC	.478	.031	15.365	***
BI $\leftarrow$ SI	.155	.029	5.277	***
BI $\leftarrow$ EE $\leftarrow$ PA	-0.042	-0.133	0.042	0.405
BI $\leftarrow$ PE $\leftarrow$ PA	-0.034	-0.131	0.055	0.511

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

Fig. 3 shows the path analysis results with standardised estimates of the loadings and the r-squared values of the indicator variables. The path relationship between the independent variables and dependent variables is shown in Table 1 below.

Based on Table 1, four variables have a significant and positive effect on the behavioural intention (BI) to use MOOCs. Considering the model fitness of SEM, the RMSEA was 0.071 (which was a threshold of 0.80) while χ^2/df ratio = 4.738 (which was below the threshold of 5). PA was found to have a positive and significant effect on BI ($\beta = 0.359$, $p < 0.01$), FCS had a positive and significant effect on BI ($\beta = 0.196$, $p < 0.01$), AC had a positive and significant effect on

BI ($\beta = 0.478$, $p < 0.01$), SI had a positive and significant effect on BI ($\beta = 0.155$, $p < 0.01$). However, the results indicated that PE and EE had a non-significant effect on BI. Additionally, PA had a positive and significant effect on PE ($\beta = 0.705$, $p < 0.01$), and EE ($\beta = 0.821$, $p < 0.01$).

3.3. SEM ANALYSIS FOR PAKISTAN

Fig. 4 below presents the SEM analysis model for Pakistan and regression weights presented in the model.

Presented above are the path analysis results with standardised estimates of the loadings and the

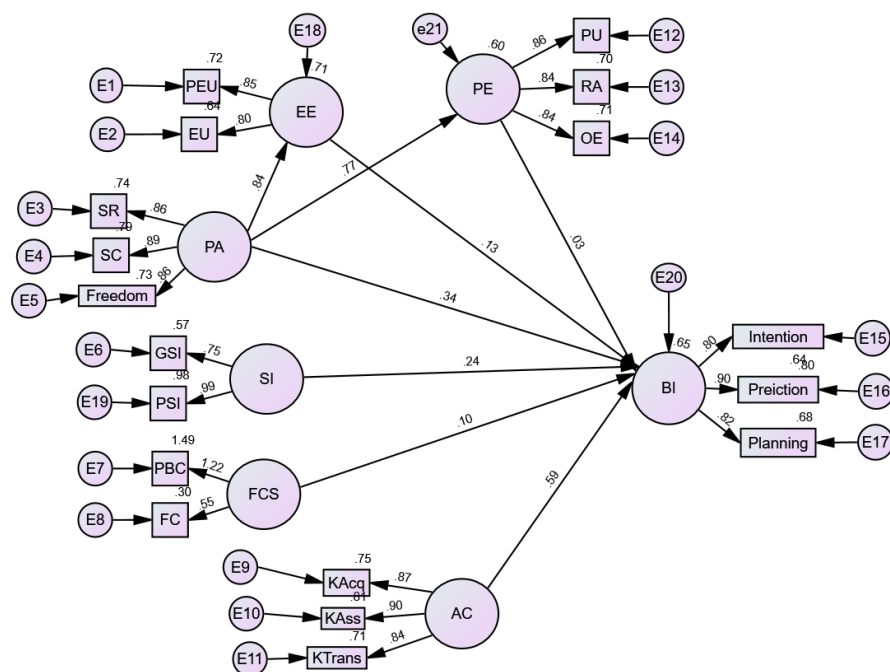


Fig. 4. SEM Analysis model results for Pakistan

Tab. 2. Path Analysis Regression weights for Pakistan

PATHS	ESTIMATE	S.E.	C.R.	P-VALUE
PE $\leftarrow$ PA	.780	.045	17.517	***
EE $\leftarrow$ PA	.791	.046	17.022	***
BI $\leftarrow$ PA	.256	.075	3.403	***
BI $\leftarrow$ FCS	.117	.031	3.831	***
BI $\leftarrow$ EE	.106	.066	1.596	.110
BI $\leftarrow$ PE	.022	.045	.496	.620
BI $\leftarrow$ AC	.412	.029	14.092	***
BI $\leftarrow$ SI	.153	.027	5.617	***
BI $\leftarrow$ EE $\leftarrow$ PA	0.084	-0.060	0.219	0.322
BI $\leftarrow$ PE $\leftarrow$ PA	0.018	-0.067	0.110	0.683

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

r-squared values of the indicator variables. The path relationship between the endogenous and exogenous variables is shown in Table 2 below.

The analysis of the above findings shows that four variables have a significant and positive effect on the behavioural intention to use MOOCs (BI), which are PA, FCS, AC and SI. Considering the model fitness of SEM, the RMSEA was 0.0621 (which was the threshold of 0.80) while χ^2/df ratio = 4.219 (which was below the threshold of 5). PA was found to have a positive and significant effect on BI ($\beta = 0.256$, $p < 0.01$), FCS had a positive and significant effect on BI ($\beta = 0.117$, $p < 0.01$), FCS had a positive and significant effect on BI ($\beta = 0.412$, $p < 0.01$), AC had a positive and significant effect on BI ($\beta = 0.153$, $p < 0.01$), SI had a positive and significant effect on BI ($\beta = 0.155$, $p < 0.01$). However, the results indicated that PE and EE have a non-significant effect on BI. Also, PA had a positive and significant effect on PE ($\beta = 0.780$, $p < 0.01$), and EE ($\beta = 0.791$, $p < 0.01$).

3.4. MULTI-GROUP SEM ANALYSIS

Although all the research hypotheses have been addressed in the previous analysis results, it proved necessary to conduct a multi-group SEM analysis to compare the difference in effects of the independent variables on dependent variables between the two countries, Thailand and Pakistan. In this case, the moderating variable “country” was a categorical variable (1 = Thailand, 2 = Pakistan).

The first analysis tested the whole model to see if the two groups were different (whether there was a difference between Thailand and Pakistan). To do this, the Chi-square differences for the unconstrained and constrained model were compared. After running the model, the results of the default model were presented in Table 3 below.

From Table 3, the insignificant paths for both countries were trimmed (for Thailand BI $\leftarrow$ PE; BI $\leftarrow$ EE; and for Pakistan BI $\leftarrow$ PE) to get the unconstrained model. The Chi-square values for the uncon-

Tab. 3. Multi-group SEM analysis

PATHS	THAILAND		PAKISTAN	
	ESTIMATE	P-VALUE	ESTIMATE	P-VALUE
EE $\leftarrow$ PA	0.685	***	0.672	***
PE $\leftarrow$ PA	0.658	***	0.684	***
BI $\leftarrow$ PE	0.02	0.492	0.034	0.231
BI $\leftarrow$ EE	0.032	0.247	0.093	**
BI $\leftarrow$ PA	0.249	***	0.205	***
BI $\leftarrow$ SI	0.094	***	0.153	***
BI $\leftarrow$ FCS	0.16	***	0.099	***
BI $\leftarrow$ AC	0.404	***	0.405	***

Note: *** p-value < 0.01; ** p-value < 0.05

Tab. 4. Constrained and unconstrained model

PATHS	CHI-SQUARE	DF	P-VALUE	INVARIANT?
Overall Model				
Unconstrained	705.845	16		
Fully Constrained	711.204	23		
Number of Groups		2		
Difference	5.359	7	0.616	YES
Chi-Square Threshold				
90% Confidence	708.55	17		
Difference	2.71	1	0.100	
95% Confidence	709.69	17		
Difference	3.84	1	0.050	
99% Confidence	712.48	17		
Difference	6.63	1	0.010	

strained model were recorded. To get the constraint model, the parameters were named to assume that they were equal for both groups. The difference between Chi-square and degrees of freedom for both groups (Thailand and Pakistan) were calculated and used to evaluate whether the two groups were invariant. The difference between the unconstrained and constraint model and the three thresholds (90%, 95% and 99% CL) is presented in Table 4.

3.5. CONSTRAINED AND UNCONSTRAINED MODEL

Table 4 presented the constrained and unconstrained model for both countries.

The results presented in the table above show that the Chi-square difference between the two models was 5.359, and the degree of freedom was 7. The p-value was 0.616 ($p > 0.1, 0.05, 0.01$). This indicated that the two groups (Thailand and Pakistan) were invariant. This implied that the models were not different across countries, or rather, the effects of dependent variables on independent variables were invariant (not different) between the two countries. Considering that the overall model was invariant, it did not make sense to do a path-by-path analysis for each independent variable.

4. DISCUSSION OF THE RESULTS

The discussion of the results is presented in reference to the seven hypotheses of the study. The first hypothesis investigated the effects of performance expectancy on the behavioural intention to use MOOCs. For Thailand, the performance expectancy

had an insignificant and negative effect on behavioural intention ($\beta = -0.048, p > 0.05$), while for Pakistan, the performance expectancy had a positive and insignificant effect on the behavioural intention to use MOOCs ($\beta = 0.022, p > 0.05$). It is observed that for both countries, the performance expectancy (perceived usefulness, relative advantage and outcome expectancy) did not have any significant effect on the behavioural intention of students to use MOOCs. Previous studies conducted in the same area had similar findings. The study conducted by Baj-Rogowska (2020) indicated that performance expectancy had a significantly positive relationship with the use of AutoCAD. Gupta and Dogra (2017) found that performance expectancy had a significant influence on traveller intention and habit to use technology.

The second hypothesis was on the effects of effort expectancy on the behavioural intention to use MOOCs. For Thailand, the effort expectancy had a negative and insignificant effect on the behavioural intention to use MOOCs ($\beta = -0.051, p > 0.05$). Similarly, for Pakistan, the effort expectancy had a positive and insignificant effect on the behavioural intention to use MOOCs ($\beta = 0.106, p > 0.05$). For both cases, the effort expectancy (perceived effort and the ease of use) did not have a significant effect on students to use MOOCs. Based on Alkhunaizan and Love (2012), effort expectancy had a significant influence on the behavioural intention to use mobile commerce technology. Wang and Wang (2010) also indicated that effort expectancy had a significant effect on the behavioural intention to use m-Internet.

The third hypothesis investigated the effects of social influence on the behavioural intention to use

MOOCs. For both Thailand and Pakistan, the social influence had a positive and significant effect on the behavioural intention to use MOOCs ($\beta = 0.155$, $p < 0.05$; $\beta = 0.153$, $p < 0.05$, respectively). For both cases, it implies that an increase in the level of social influence (general social influence and peer social influence) would result in an increase in the behavioural intention of students to use MOOCs. These findings are similar to those by Alraja (2016), whose study indicated that social influences had a significant effect on employees to adopt the electronic government. However, based on Jeng and Tzeng (2012), social influence does not have a significant influence on the behavioural intention to use a clinical decision support system (CDSS) for medical professionals.

The fourth hypothesis investigated the effect of facilitating condition on behavioural intention. For both countries, the results indicated that facilitating conditions had a significant and positive influence on the behavioural intention to use MOOCs ($\beta = 0.196$, $p < 0.05$; $\beta = 0.117$, $p < 0.05$). This implies that an increase in the observed aspects of facilitating condition (perceived behavioural control, facilitating condition) would result in an increase of the behavioural intention to use MOOCs by students. These findings agree with those by Sam and Baharin (2018), who indicated that facilitating condition significantly and positively affected the behavioural intention of users to employ an online booking system. Similarly, Almatari, Iahad and Balaid (2013) found that facilitating condition had a positive and significant effect on student intention to use mobile learning.

The fifth hypothesis investigated the effect of perceived autonomy on behavioural intention. For both countries, the perceived autonomy had a significant and positive effect on the behavioural intention to use MOOCs ($\beta = 0.359$, $p < 0.05$; $\beta = 0.256$, $p < 0.05$). Overall, an increase/decrease in perceived autonomy aspects (the sense of responsibility, self-confidence, and freedom) results in an increase/decrease of behavioural intention to use MOOCs by students. These findings were supported by literature, such as studies by Lakhal, Khechine and Pascot (2013) and Sierens, Vansteenkiste, Goossens, Soenens and Dochy (2009), who found a positive relationship between perceived autonomy and behavioural intention to undertake self-regulated learning. As indicated by Ahadiat and Dacko-Pikiewicz (2020), autonomy enables individuals to generate more positive results.

The sixth hypothesis was on the effect of absorptive capacity on behavioural intention. For both

countries, the absorptive capacity has a positive and significant effect on the behavioural intention to use MOOCs ($\beta = 0.478$, $p < 0.05$; $\beta = 0.153$, $p < 0.05$). Comparing these findings, this study observed that in both cases, an increase in the level of absorptive capacity (knowledge acquisition, knowledge assimilation, and knowledge transformation) would result in an increase in the behavioural intention of students to use MOOCs. Knowledge management is an important part of strategic management (Formánek, 2015), and these findings are in line with those by Scuotto, Del Giudice and Carayannis (2017), who indicated that absorptive capacity had a significant influence on the behavioural intention to use SME innovations. Similarly, the study by Philbin and Kennedy (2020) found a strong need to deal with uncertainty and complexity in engineering projects, including effective knowledge and professional skills.

The last hypothesis aimed to compare a significant difference between Thailand and Pakistan results; thus, a multi-group structural equation modelling was used. Based on the results, the two countries were invariant as the Chi-square difference between the two models was 5.359, and the degree of freedom was 7. The p-value was 0.616 ($p > 0.1$, 0.05, 0.01). This indicated that the two groups (Thailand and Pakistan) were invariant. It implied that as far as various variables used in this study are concerned, students in Thailand and Pakistan had more or less the same responses. These findings could be confirmed by the fact that in the general SEM model, similar independent variables (perceived autonomy, facilitating conditions, absorptive capacity, and social influence) were found to significantly influence the behavioural intention to use MOOCs in Thailand and Pakistan.

CONCLUSIONS

The purpose of this study was to empirically investigate the behavioural intention of students to use MOOCs in Thailand and Pakistan, integrating the perceived autonomy and absorptive capacity in the UTAUT model applied in the analysis. The study focused on investigating the effects of various observed variables on the behavioural intention to use MOOCs in Thailand and Pakistan. The study concluded that four variables (social influence, absorptive capacity, facilitating conditions and perceived autonomy) significantly influenced the intention of students to use MOOCs in Thailand and

Pakistan. However, two variables (performance expectancy and effort expectancy) did not influence the student intention to use MOOCs in Thailand and Pakistan. The study also concluded that effort expectancy and performance expectancy did not mediate the relationship between the perceived autonomy and the behavioural intention to use MOOCs in Thailand and Pakistan. The data used in this study was collected from universities of Thailand and Pakistan, using similar questions. Therefore, it was important to investigate the variance of responses and the results of the two countries. A multi-group structural equation was used to find the variance in the effects of independent variables on dependent variables between the two countries. Applying the Chi-square technique, the results indicated that the findings between the two countries were invariant. It was, therefore, conclusive that the student intention to use MOOCs was the same for Thailand and Pakistan, as observed from the perspective of the influence from independent variables.

From the practical point of view, this study highlighted the significant factors worth evaluating, as far as adoption and implementing MOOCs by institutions of higher learning is concerned. First, the institution of higher learning could use the research findings to determine how students respond to the use of MOOCs, focusing on various aspects included in this study. For instance, how the aspects of social influence (general social influence and peer social influence), which were a significant exogenous variable, affect the intention to use MOOCs. From a scientific point of view, during the current COVID-19 pandemic, 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 programmes to students. Thirdly, this study included the variable of absorptive capacity in the model to evaluate how the variable influenced the behavioural intention to use MOOCs, which turned out to be a significant determinant of the behavioural intention of students to use MOOCs. This study is limited by some aspects. First, this study was carried out in Thailand and Pakistan universities only. This should be considered when applying the study findings. Other institutions of higher learning, such as colleges, could be considered for such a study in the future. In the development of the theoretical model of this research, the study entirely referenced the UTAUT model and extended it by including two additional variables, i.e., perceived

autonomy and absorptive capacity. Though the UTAUT model was developed by integrating eight other different models, such as Theory of Reasoned Action (TRA) and the Technology Acceptance model, this study recommended that future studies should consider including other theoretical frameworks, such as the UTAUT2 model, which incorporates such factors as hedonic motivation, price value and habit.

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