Adoption of Unified Theory of Acceptance and Use of Technology (UTAUT) Model on Students' Perceptions towards Online Learning

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ABSTRACT

During the Covid-19 outbreak, Cambodian universities, including AIB, forcibly adopted distance teaching and learning. This study used the Unified Theory of Acceptance and Use of Technology (UTAUT) to understand how online learning during the COVID-19 pandemic was accepted by undergraduate students at AIB. Based on a sample of 176 respondents, the study confirmed social influence and facilitating conditions positively impact students' behavioral intention to accept online learning, whereas performance expectancy and effort expectancy do not impact students' behavioral intention. Furthermore, the study validated UTAUT model as a useful framework in predicting online learning in a Cambodian context.

Keywords: UTAUT, Online Learning

1. Introduction

1.1 Background of the study

Due to COVID-19 pandemic globally, experts in public health recommended social distancing to reduce infections and total deaths. The Ministry of Education Youth and Sport (MoEYS) announced a nationwide closure of public and private higher education institutions (HEIs) in response to the global pandemic 2020 (Chealy & Serey, 2020). According to the Asia Foundation (Chheang & Khut, 2020) the MoEYS quickly found creative ways to promote learning outside the traditional school setting. The Ministry worked with private sectors to launch a new e-learning initiative. Lessons were pre-recorded and offered online through the ministry's Facebook page, YouTube channel, and an e-learning website for grades one through twelve".

1.2 Problem statement

Digital natives and transformation dominates in every field of life for today world. Digital technologies play more promising potential to improve learning via active learning approaches (Tamim et al., 2011). Activities and habits of learning in higher education have fastly changed in the last few decades with the features of the information and digitalism, wide-scale broadband internet access, proliferation of smart devices and available online mobile applications (Tick, 2019). Distance education in many forms, such as e-learning, mobile learning, and online learning, have become a must in higher eduction in the 21st Century (Tick, 2019).

ACLEDA Institute of Business, which has been providing academic and training programs to thousands of existing students and trainees, has been experiencing online learning with various digital learning platforms -Zoom, GoToMeeting, and Microsoft Teams. The Institute experiences both challenges and opportunities of technology advancement, but there is a lack of research on students' perceptions of such online learning.

1.3 Research objective

The paper adopts the UTAUT model to determine factors influencing students' intention to accept online learning.

1.4 Research question

To reach the objective, the researchers employed research questions as follow:
What are the key factors leading students to acceptance of online learning?

1.5 Significance of the study

The study contributed the significance for learners, ACLEDA Institute of Business (AIB) and management. It provides learners more practical application on concepts and psychological theories in education combined with technology for online learning with the help of Extended TAM (UTUAT model). ACLEDA Institute of Business (AIB) recognizes what main factors

influence teaching and learning online classes and determine the gap of education in today world. Lastly, management (stakeholders) may profit from acknowledgment of online learning class as a new form of 21st century education for making decision on whether to provide online learning to students or provide only physical class.

2. Literature Review

2.1 Overview of online learning

"Distance education is teaching and planned learning where the teaching occurs in a different place from learning, requiring communication through technologies" namely distance learning, the student's activity, and distance teaching, the teacher's activity, together make up distance education (Siemens et al., 2015, p.4). Online learning is a newer version or, and improved version of distance learning (Moore et al., 2011). Online learning involves in using technology as the mediator of the learning process, and teaching is delivered through the internet (Heng & Sol, 2020, p.3). "Online learning transforms education from instructor-centered (traditional classroom) to student-centered, where students have more responsibility for their learning" (Heng & Sol, 2020,p 3). Online learning involves in synchronous or asynchronous environments that different devices with internet access. Dhawan (2020) refers synchronous learning environment as students attend live lectures. This type of mode involves in real-time interactions between educators and learners; and there is a possibility of instant feedback. However, in asynchronous learning environment, students do not have to learn at the same time and place as their instructors are teaching (University of the People, 2020).

2.2 Theoretical & conceptual framework

Hanif et al. (2018) extended Technology Acceptance Model (TAM) by providing a relationship among three major constructs, namely the perceived ease of use(PEOU) perceived usefulness(PU), and behavioral intention (BI) on e-learning system (Hanif et al., 2018). According to (Liu et al., 2010, p.601), "perceived usefulness and perceived ease of use affected by the external variables considered in the original TAM model". The UTAUT model consists of four key constructs, performance expectancy, effort expectancy, social influence, facilitating conditions (Morris et al., 2003).

2.3 The Unified Theory of Acceptance and Use of Technology (UTAUT)

The UTAUT model was a comprehensive system and quantifying the degree of acceptance and/or use of any technology, and it unifies several preexistent theories (Sitar-Tăut, 2021). The researchers (Sitar-Tăut, 2021, Raman et al., 2014 Liu et al., 2010 and Attuquayefio, Samuel NiiBoi, 2014) witness the citation of the UTAUT model, include the theory of reasoned action (TRA) (Fishbein and Ajzen 1975), the theory of planned behaviour (TPB) (Ajzen 1991), the technology acceptance model(TAM)(Sharma et al., 2020).

The UTAUT model is used in different fields such as banking, marketing, business, and education. The extended UTAUT model (Bhatiasevi, 2016), employed to explain the adoption of mobile banking and the degree of influence of each one of the factors in Thailand. The article studied by (Yu, 2012), explored the factors affecting individuals to adopt mobile banking in used in business world with integration of mobile application in banking to understand the behavior of consumers in Taiwanese.

In the field of education institutions use information communication technology (ICT) in relation with e-learning, mobile learning, and online learning such as in Malaysia (Raman et al., 2014; Asghar et al., 2021; Badan & Igeria, 2018), mobile learning acceptance in social distance(Sitar-Tăut, 2021; Moore et al., 2011) online, m-learning, and e-learning. Chayomchai et al., (2020) studied the factors affecting acceptance and use of online technology with Thai people during COVID-19 quarantine.

2.4 Theoretical model constructs

The different theories and studies in several research by Ajzen and Fishbein (1980); Ajzen (1985); Davis (1986); Rogers (1983); Venkatesh and Davis (2000); Venkatesh, Morris, Davis, and Davis (2003), Davis (1989), (Dillon, 2006) use the UTAUT model as withness. The TAM theory suggested that two main factors, perceived usefulness (PU) and perceived ease of use (PEOU) as a drive for the adoption of a technology (Singh et al., 2017). TAM Davis (1986, 1989,1993) and Hanif et al., (2018) proposed the technology acceptance model (TAM) to investigate the impact of technology on user behavior.

"Perceived usefulness is that the user believes the technology will improve his/ her performance, while Perceived Ease of Use is the belief that using the technology will be free of effort" (Davis, 1989, p.447). Liu et al., (2010) adopted the work of Venkatesh and Davis (1996) and suggested perceived usefulness and perceived ease of use could be affected by external variables. Another researcher, Bhatiasevi, (2016) defined performance expectancy as ''the degree to which an individual believes that using the system will help or her to attain gains in job performance''. "Performance expectancy is driven from perceived usefulness (TAM/TAM2), relative advantage (IDT), extrinsic motivates (MM), job-fit (MPCU), and outcome expectations (SCT)" (Yu, 2012 , Badan & Igeria, 2018, Mahande et al., 2016 , Raman et al., 2014).

H1: Performance expectancy has positive relationship towards behavioral intention.

Bhatiasevi, (2016), (Yu, 2012 , Badan & Igeria, 2018, Mahande et al., 2016 , Raman et al., 2014) adopted concept of effort expectancy from (Morris et al., 2003) as ''the degree of ease associated with the use of the system', included concept of perceived ease-of-use (TAM/TAM2), complexity (MPCU), and easy-of-use in innovation diffusion theory (IDT) as the degree of ease associated with technology use".

H2: Effort expectancy has positive relationship towards behavioral intention

Social influence according to Venkatesh et al., (2003), Yu, (2012 , Badan & Igeria, (2018), Mahande et al., (2016) , Raman et al., (2014), Sharma et al., (2020), Bhatiasevi, (2016) ‘‘the degree to which an individual perceives that important others believe he or she should use the new system’’. According to Venkatesh et al. (2003, p.451) “social influence represents subjective norm in TRA, TAM2, TPB/DTPB, and C-TAM-TPB, social factors in MPCU, and image in IDT”.

H3: Social influence has positive relationship towards behavioral intention.

Facilitating conditions defined by Morris et al., (2003, p453) as ‘‘the degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system”. Bhatiasevi, (2016), Yu, (2012), Venkatesh et al. (2003, p.452) Yu, (2012) , Badan & Igeria, (2018), Mahande et al., (2016) , Raman et al., (2014) defined “facilitating conditions as the degree to which an individual believes that an organizational and technical infrastructure exists to support technology use”.

H4: Facilitating conditions has positive relationship towards behavioral intention.

Psychological theories believe that individual behavior predicted and influenced by individual intention, and UTAUT contended and proved behavioral intention to have significant influence on technology adoption (Yu, 2012 , Badan & Igeria, 2018, Mahande et al., 2016 , Raman et al., 2014).

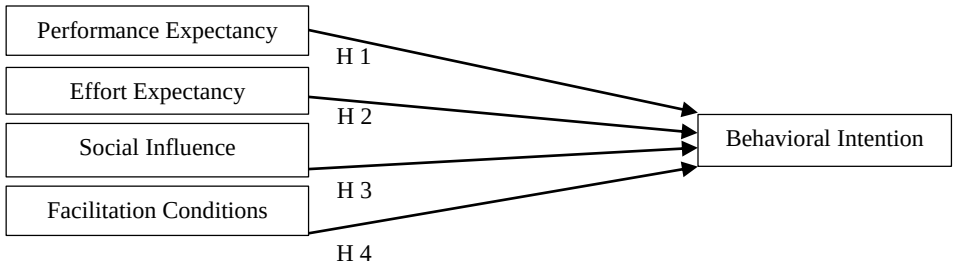

Figure 1: The Unified Theory of Acceptance and Use of Technology (UTAUT): Research Conceptual Model

3. Methods

3.1 Research design

This study used a correlational study, with descriptive and inferential statistic to investigate the relationships among the constructs of the proposed research model in which the independent variables predicting the criterion variable (dependent variables) (Kerlinger, 1986).

3.2 Research site

The research site was at ACLEDA Institute of Business located in the north of Phnom Penh Capital city. Researchers wanted to know perceptions of undergraduate students relevant to online learning during Covid-19 pandemic. The geographical site intended to conduct the study relevant to population criteria.

3.3 Population and sample

The target population in this study is the students of ACLEDA Institute of Business. Data obtained from the enrolment office, there are 1,315 students in different majors. The sample size of this study is 176. This is acceptable, according to Tabachnick & Fidell, (2017, p. 123) where "N ≥ 50 + 8m (where m is the number of IVs) for testing the multiple correlation and N ≥ 104 + m for testing individual predictors". Brooks & Barcikowski, (2012, p.2) also used practical issue in research for small sample size.

3.4 Research tools & measurements of constructs

Survey questionnaire designed with two sections, consisted of demography and research objectives using google form; some items regarding the measurement of constructs were adapted from previous studies and carefully reworded to fit online learning adoption context in Cambodia with ACLEDA Institute of Business (AIB). The items of the TRA model adapted from (Davis et al.,1989), TAM (Davis,1989), (Davis et al., 1989), the Theory of Planned Behavior (TPB) (Ajzen, 1991), the Combined-TAM-TPB (Taylor and Todd,1995), Model of PC Utilization (MPCU) (Thompson et al.,1991), Motivational Model (MM) (Davis et al., 1992), Social Cognitive Theory (SCT) (Bandura, 1986) and Innovation Diffusion Theory (IDT) (Rogers, 1995). The google form linked has sent to the respondents via google g-mail and telegram used to collect data. The data collection instrument was a self-administered questionnaire developed from the UTAUT item model (Venkatesh et al., 2003) using a seven-point Likert scale from 1 (strongly disagree) to 7 (strongly agree). Instruments consisted of model constructs-performance expectancy (PE), effort expectancy (EE), social influence (SI), facilitating conditions (FC),and behavioral intention(BI) to actual acceptance of online learning(Mahande et al., 2016).

Table 1. Summary of measurement construct

Construct	Corresponding Items	Items Sources
Performance Expectance	Online learning helps me to complete my study courses Using online learning would save my time I would use online learning anyplace It is useful tools for me It increases my study result It provides me opportunities to explore more knowledge	Luarn and Lin (2005), Venkatesh and Zhang (2010), Foon and Fah (2011) (Dillon, 2006) (Yu, 2012)
Effort Expectancy	It is easy for me to access online learning through Microsoft Team It is easy for me to use online learning devices It is easy for me to access internet It is easy for me to get relevant knowledge from digital learning sources	Luarn and Lin (2005), Venkatesh and Zhang (2010), Foon and Fah (2011), Sripalawat et al. (2011) (Yu, 2012) (Dillon, 2006)

(continued)

Table 1. Summary of measurement construct (continued)

Construct	Corresponding Items	Items Sources
Social Influence	AIB requests me to learn online Lecturers who are in-charge in course encouraging me to learn online Other students also learn online classes My family thinks that I should learn online class I learn online because of Covid-19 pandemic	Venkatesh et al. (2003), Venkatesh and Zhang (2010), Foon and Fah (2011), Sripalawat et al. (2011) (Yu, 2012) (Dillon, 2006)
Facilitating Conditions	AIB's study resources are ready for me I have necessary resources to use the online learning I am able and capable to learn online AIB has specific person(group) to assist my online learning when I face difficulties during online classes	Venkatesh et al. (2003), Venkatesh and Zhang (2010), Sripalawat et al. (2011) (Yu, 2012) (Dillon, 2006)
Behavioral Intention	I plan it as a study condition during Covid-19 pandemic Following this plan to complete the courses I prefer to use online learning I Intend to use online learning I would use it as a study option	Venkatesh and Zhang (2010), Luarn and Lin (2005), Sripalawat et al. (2011) (Yu, 2012) (Dillon, 2006)

3.5 Result of the instrument test for reliability

Table 2. The Measurement of Variables' Reliability

Variables	Items of Measurements	Pilot Cronbach's Alpha (n=30)
Performance Expectancy(PE)	6	0.834
Effort Expectancy (EE)	4	0.713
Social Influence (SI)	5	0.660
Facilitating Conditions (FC)	5	0.773
Behavior Intention (BI)	5	0.721

According to DeVellis (1991), Nunnally & Bernstein, (1994); Robinson et al., (199). Cronbach's alpha is an estimator of test reliability that is suitable for use in single applications of a test, typically in cross-sectional designs(Connelly, 2011). The reliability scores of Cronbach's alpha ranges from value of 0.660 to .0834. Nunnally & Bernstein, 1994; Vaskeh, 2008) have suggested that alphas in the .65–.80 range are acceptable (Vaske et al., 2017). Nunnally (1994) asserts that the Cronbach's Alpha which has the value more than 0.7 indicates a high reliability; and as the result of all scores for the constructs of all variables that used in this survey are above the 0.7 point. The lowest alpha is 0.660 and the highest is 0.880. The result of Cronbach Alpha for all variables (PE, EE, SI, FC &BI) are 0.880.

3.6 Data collection

A cross-sectional descriptive study conducted in 2021 on the students of ACLEDA Institute of Business. Data was collected from undergraduate students of all years and majors:

finance and banking, accounting, logistics and insurance, Fintech and business IT, marketing, International business by using google form.

3.7 Data analysis

The researchers downloaded survey questionnaire from google form to Microsoft spreadsheet then encoded and transformed to numerical data. The software used for statistical analysis were IBM SPSS version 23. The study used descriptive statistics to describe demography, means, standard deviation of each factors, and referential statistical tools used to analyze the prepared data for population inference such as regression, correlation. The statistical techniques that allow a set of relationships between one or more independent variables (IVs) both IVs and dependent variables (DVs) can be factors or measured variables (Tabachnick & Fidell, 2017). The regression analysis is used to investigate the relationship between a dependent variable(DV) and more than one independent variables(IVs) and examine how strong the relationship is between the DV and IVs (Tabachnick & Fidell, 2017).

3.8 Ethical consideration

The researchers ethically considered of the literature, authors, publishers, secondary, primary and tertiary sources, sampling and non-sampling errors used in academic research and in consented with research committee and the institute's vision, missions and values as the key factors influencing and implementing this article.

4. Results and Discussions

4.1 The analysis of respondent demographics

Among the 176 respondents, 142 were female which comprised of about 80.7% and 34 were male which comprised of about 19.3%. The responses indicate that the participants from age under 20 years old, the highest response rate of 65.3%, 21% were between age 21 to 25 and over 25 year-old respondents were 13.6%. Another distribution of the sample shows that there were 74.4% of total participants studying finance and banking, some are studying accounting for 12.5%, and other major 13.1%. More than half of students are actually, have experience of online learning, comprise of 55.1% while the rest experience less than one year. Regarding to the learning devices, 41.5% students using laptop, learning with tablet 2.3% and others 56.3%. At the same time, the students use WI-FI at 43.8%, and more frequent using of network cable 56.3%.

Table 3. Demographic Factor Analysis

Respondents' demographic	Category (n=176)	Frequency	Percentage
Gender	Male	34	19.3
	Female	142	80.7
Age	Under 20 years old	115	65.3
	between 21to25 years old	37	21.0
	Others	24	13.6

(continued)

Table 3. Demographic Factor Analysis(continued)

Respondents' demographic	Category (n=176)	Frequency	Percentage
Skills	Finance and Banking	131	74.4
	Accounting	22	12.5
	Others	23	13.1
Online Experience	One semester	60	34.1
	one year	19	10.8
	more than one year	97	55.1
Learning device	Laptop	73	41.5
	Tablet	4	2.3
	Others	99	56.3
Network Connection	WI-FI	77	43.8
	network cable	99	56.3

4.2 Result on research constructs

The research constructs range value from the lowest mean 6.1034 with standard deviation 1.08243 for Behavioral intention to the highest mean 6.1875 for Social Influence, which has standard deviation 0.75355.

Table 4. Research Construct Statistics Level of Agreement

Construct	N	Minimum	Maximum	Mean	Std.Deviation	Level of Agreement
Performance Expectancy	176	1.00	7.00	6.1193	0.94682	Agree
Effort Expectancy	176	1.00	7.00	6.1335	1.04331	Agree
Social Influence	176	2.00	7.00	6.1875	0.75355	Strongly Agree
Facilitating condition	176	1.00	7.00	6.1625	1.01608	Strongly Agree
Behavioral Intention	176	1.00	7.00	6.1034	1.08243	Agree

Table 5. Multiple Correlations Matrix

Items	1	2	3	4	5
1-Performance Expectancy	1				
2-Effort Expectancy	.375**	1			
3-Social Influence	.171*	.254**	1		
4-Facilitating condition	.470**	.364**	.067	1	
5-Behavioral Intention	.159*	.135	.171*	.366**	1

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

*. Correlation is significant at the 0.05 level (2-tailed).

Table 5 indicate the correlation among constructs. The lowest value is .067, the correlation between facilitating condition with social influence and the highest value is facilitating condition correlates with performance expectancy (.470**). Tabachnick & Fidell (2017) mention that correlation is used when the intent is simply to investigate the relationship between the DV and the IVs.

Table 6. The Analysis of Variance

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	32.324	4	8.081	8.001	.000[b]
	Residual	172.714	171	1.010		
	Total	205.038	175			

The table shows that the model is significance for the study with significant values of 0.000[b] the result indicated that at least one independent variable among the Predictors (facilitating condition, social influence, effort expectancy, performance expectancy) impacts the dependent variable (Behavioral Intention) with F (4,171) =8.001, p<.001. Furtherly, r =.397 indicates that the model can predict 39.7% in variance of behavioral intention (BI).

Table 7. Correlations Matrix

Constructs	Unstandardized Coefficients		Standardized Coefficients	Sig.
	B	S.E	Beta	
Performance Expectancy	-.043	.094	-.038	.648
Effort Expectancy	-.032	.083	-.031	.697
Social Influence	.229	.105	.160	.030[*]
Facilitating condition	.409	.087	.384	.000[**]

a. Dependent Variable: Behavioral Intention

The table of coefficients shows the performance expectancy has β= -.038 with p-value of 0.648. The effort expectancy has β=-.031 and the p-value .697. The social influence has β .160 and P-value (statistical significance) .030[*]. The facilitating condition has β=.384 and p-value .000[**].

4.3 Hypothesis testing result

Table 8. Summary of hypothesis testing

Hypothesis	Regression weights	Beta coefficient	Sig. value	Result
H1	PE → BI	-.038	.648	Unsupported
H2	EE → BI	-.031	.697	Unsupported
H3	SI → BI	.160	.030[*]	Supported
H4	FC→ BI	.384	.000[**]	Supported

The dependent variable, behavioral intention (BI) was regressed by predicting variable, performance expectancy (PE), effort expectancy (EE), social influence (SI) and facilitating conditions (FC) to test hypothesis H1, H2, H3 and H4 respectively. The independent variables (PE, EE, SI, & FC) predicted dependent variable (BI), F (4, 171) = 8.001, p < 0.005, which indicates that social influence and facilitating conditions have significantly impact on BI, whereas performance expectancy and effort expectancy don't. Furthermore, R=.397 depicts that the model may explain 39.7% of the variance in behavioral intention (dependent variable).

4.4 Discussion

The coefficients table indicated the performance expectancy with β = -.038 and p-value .648. The result was unsupported. The effort expectancy with β =-.031 and the p-value=.697. This shown unsupported too. For social influence having β =.160 and P-value (statistical significance) = .030, this is supported result; and the facilitating condition has β =.384 and p-value= .000**, it has significantly positive result.

The finding of this study contradicted to the study of (Raman et al., 2014) which found that performance expectancy (PE) (β=0.418, p<0.01), social influence (SI) (β=0.238, p<0.01) and facilitating conditions (FC) (β=0.120, p<0.01) have positive influence towards behavioral intention (BI) to acceptance online learning in the context of the use of learning management system (LMS) with Moodle platform at Universiti Utara Malaysia. The inconsistent point is due to Raman et al (2014) studied on the curriculum designed for online with postgraduate students. The study conducted by Attuquayefio, S., & Addo, (2014) shown that effort expectancy (EE) (β =0.4, p <.05) significantly predicted behavioral intention(BI) to use ICT, while social influence (SI) and performance expectancy (PE) were statistically insignificant, as was Behavioral Intention (BI) on use behavior (UB). However, facilitating conditions (FC) (β=.26, p <.001) significantly influenced UB. The critical finding is that the acceptance of information and communication technology (ICT) with highly positive correlation due to Attuquayefio, S., & Addo, (2014) studied on the students of tertiary institutions, and social studies as well as business administration in Ghana.

5. Conclusion and Implication

5.1 Conclusion

During the year 2020 to 2021, the Covid-19 affects every factors around the globe including Cambodia. The Cambodian public and private sectors habituating the outbreak for almost two years. The education sectors both public and private use online teaching and learning, or hybrid teaching and learning. To explore on student's perception towards online acceptance, the research finds that ACLEDA Institute of Business(AIB) uses online classes during the years, the responses of participants from age under 20 years old, the highest response rate of 65.3%, 21% were between age 21 to 25 and over 25 year olds respondent were 13.6%. The distribution of the sample shows that there were 74.4% of total participants studying finance and banking, some are studying accounting for 12.5%, and other major 13.1%. Students actually have experience of online learning more than one year comprise of 55.1% while the rest experience less than one year. Regarding to the learning devices, 41.5% students using laptop, learning with tablet 2.3% and others 56.3%. At the same time, the students use WI-FI at 43.8%, and more frequent using of network cable 56.3%.

The IBM SPSS version 23 analyzed the regression of research constructs, the coefficients correlations of performance expectancy with β = -.038 and p-value= .648. The result was unsupported. This shows the negative correlation. The effort expectancy with β =-.031 and the p-value =.697 indicate the negative, unsupported result. For social influence having β .160 and P-value = .030(P<0.001), it shows supported result; and the facilitating condition has β =.384 and p-value= .000, it has significantly positive result (P<0.001).

5.2 Implications of the study

The researchers paraphrased the study of (Dhawan, 2020), that "the dependency of online learning on technological equipment and the provision of the equipment is a big challenge for institutions, faculty and learners". The authors emphasize that online learning and courses suit the best for tertiary education, higher education institutions and career training development. The trends of industrial revolution and digitalization rapidly grows, so learners should have self-transformation to digital people.

5.3 Recommendations for future research

The next researcher should employ mixed research method, quantitative and qualitative method in order to deepen on the perception of online learning, one of the form of distance education, and on procedures, and techniques to implement online learning for higher education institutions and tertiary education. The both method can properly deal with complexity according to its limited number of constructs and moderating variables which have more applicable and understandable to study the acceptance behavior to any new technology.

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