pISSN: 1906 - 6406 The Scholar: Human Sciences
eISSN: 2586 - 9388 The Scholar: Human Sciences
http://www.assumptionjournal.au.edu/index.php/Scholar

The Application of UTAUT on eLearning Usage Among Physics Students of International Schools in Bangkok, Thailand

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Received: July 26, 2022. Revised: September 12, 2022. Accepted: October 4, 2022.

Abstract

Purpose: Students have been introduced to eLearning during COVID-19, and it has been continued to have a strong impact on the future use. Therefore, this research aims to identify factors impacting the behavioral intention and use behavior of eLearning among the high school students who have been studying physics in the final two years (Grade 11 and 12) of international schools in Bangkok, Thailand, ascertained by performance expectancy, effort expectancy, social influence, facilitating conditions and habit. **Research design, data, and methods:** Researchers applied quantitative methods of questionnaire distribution to 500 participants, underlying the sampling techniques of judgmental, stratified random and convenience samplings. Constructs were prior approved by Item Objective Congruence (IOC) Index and Cronbach's Alpha reliability test. The data were analyzed with descriptive analysis, Confirmatory Factor Analysis (CFA), and Structural Equation Model (SEM). **Results:** Results indicate the strongest relationship between the behavioral intention and use behavior of eLearning. Furthermore, performance expectancy, efforts expectancy, facilitating conditions, and habit significantly affect behavioral intention. Facilitating conditions and habit have a significant impact on use behavior. **Conclusion:** This study recommends that schools should improve e-learning system in order to enhance student behavioral intention and use behavior for their future education and career.

Keywords: eLearning, Technology Adoption, Behavioral Intention, Use Behavior, Students

JEL Classification Code: E44, F31, F37, G15

1. Introduction

The role of technology in today's education system is immense. The technological support in academic learning has acclaimed significant approach amongst educational institutions, owing to continuous advancement in Internet and Web technologies. Even though teachers can never be replaced, eLearning has a potential to substitute them. Many researches have been exploring students' adoption to eLearning in many countries, while this research specifically targets the high school students in physics class of the international schools in Bangkok. A learning management system (LMS) is a part of school system for a long time, but eLearning adoption needs a futuristic perspective in enhancing students' learning efficiency. International education has been collaborated between

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Thailand and many countries for educational development and evolution. Number of International schools in Bangkok and enrollments of students have shown a progressive increase (OPEC, 2021). Curriculum followed by international schools in Bangkok can be split into following dominant categories, which are 1) American, 2) British, 3) International Baccalaureate, and 4) other national curricula of other countries such as Korea, Canada, France, Japan, Germany, Singapore, Switzerland, Australia, India, etc. The syndication has been increased between technology and education. Consequences, it leads the linkage and inclusion of school learning activities which has grown at an increasing pace, along with the development in hi-tech innovations, capabilities and accessibility.

E-Learning Market size surpassed USD 315 billion in 2021 and is projected to observe 20% CAGR from 2022 to 2028 (Global Market Insights, 2022). Advancements in societal changes, expectations and tech innovation trends are stimulating educational institutions to rethink long-established pedagogies. Additionally, physics subject is a part of Science, Technology, Engineering and Mathematics (STEM) course which is a very important fundament to develop knowledge and skills for students' future education and career (OPEC, 2021). With eLearning being a current trend, it needs in-depth research on how students, especially those, soon to graduate from schools into university accept to use eLearning and how it will impact their adoption to maximize their learning performance. Extensive implementation of digital technologies is one of a key development of Thailand's educational sector to meet global standard.

1.1 Objectives of this Research

1. To identify the significant relationship between performance expectancy, effort expectancy, and social influence and behavioral intention to use eLearning of physics students.
2. To investigate the significant relationship between facilitating conditions and behavioral intention towards use behavior of eLearning among physics students.
3. To determine the significant relationship between habits and behavioral intention towards use behavior of physics students in using eLearning.
4. To examine the significant relationship between behavioral intention and use behavior of physics students in using eLearning.

1.2 Research Questions

1. Do performance expectancy, effort expectancy, and social influence have a significant impact on behavioral intention of physics students in using eLearning?
2. Do facilitating conditions have a significant impact on behavioral intention towards use behavior of physics students in using eLearning?
3. Do habits have a significant impact on behavioral intention towards use behavior of physics students in using eLearning?
4. Does behavioral intention have a significant impact on use behavior of physics students in using eLearning?

1.3 Significance of the Study

eLearning has been practiced for a long time among international schools in Bangkok, but the students' perspective has never been explored. Capability of students to do the lab work and practical aspect of physics subject has never been studied. COVID-19 pandemic situation dramatically changed the way of learning and teaching, while it has forced schools to shift to full online learning with the aim that students could easily move to eLearning. Student's adoption of eLearning for future learning method and factors which affect their usage and continuity have been clarified in this research. Students' perspective is necessary to be investigated. This study will help identify and overcome challenges of eLearning faced by students. In this work, high school students from international schools in Bangkok have been targeted. Study discusses the definition of eLearning and various LMS in practice, which focuses on factors impacting the behavioral intention and use behavior of eLearning among the physics students in Bangkok.

2. Literature Review

2.1 eLearning

eLearning is elucidated as an approach of teaching and learning which fully or partially applies to the instructive prototype, engaging in the use of electronic media and techs as ways to maximize the accessibility to learning and connectivity (Latip et al., 2022). eLearning engages variety of digital technologies, and is accessible via variety of devices such as computers, laptops and smart-phones. Benefits, limitations, challenges, and opportunities dwell with eLearning, like with other technologies. eLearning permits the learners to study independently anywhere, and anytime.

eLearning is the use of variety of electronic media and Information and Communication Technologies (ICT) for engaging education (Cook & Sutton, 2014). eLearning is a learning opportunity that happens without the face-to-face setting, and involves varieties of technologies and teaching approaches (Carter & Salyers, 2015). eLearning also involves latest multimedia technologies and the Internet to

improvise the learning and teaching content by aiding remote access and collaboration to resources and services (Evoh, 2011).

2.2 Unified Theory of Acceptance and Use of Technology (UTAUT)

This explorative work purposes an in-depth study of various factors impacting the behavioral intention and use behavior of eLearning among students studying physics in the final two years of school in Bangkok, Thailand. The application of those factors and features for establishing an adoption model will help in successful implementation of eLearning in educational industry. Venkatesh et al. (2012) introduced unified theory of acceptance and use of technology (UTAUT), which is a technology acceptance model that explains user intentions to use an information system and subsequent usage behavior. UTAUT is contemplated as most appropriate to assess the intention to adopt eLearning of students. The key constructs used in UTAUT are performance expectancy, effort expectancy, social influence, facilitating conditions, behavioral intention, and usage behavior.

2.3 Performance Expectancy

Performance expectancy explains students' faith and belief in the advantages of the eLearning that can help them to accomplish their learning activities (Duangekanong, 2022). Performance expectancy is the anticipation of students that the use of eLearning will enhance their productivity and performance (Marlina et al., 2021). In this study, performance expectancy is a degree to which students perceive that using eLearning tools could help them increase their academic performance. Performance expectancy is a major variable affecting students' behavioral intention to use eLearning as clarified in UTAUT theory. Therefore, a hypothesis is developed:

H1: Performance expectancy has a significant impact on behavioral intention to use eLearning of physics students.

2.4 Effort Expectancy

Effort expectancy expounds the effortless of using technology. The simple and ease of use of any system technology can enhance the behavioral intention of users. Effort expectancy is the level of easiness associated with the application of the system technology perceived by users. (Mahande & Malago, 2019). Thus, this study defines effort expectancy as the measure to which a student believes that using eLearning would be effortless. Earlier studies conjectured that effort expectancy positively influences the behavioral intention in the context of internet banking, mobile banking (Alalwan et al., 2017), social recommender systems (Oechslein et al., 2014), and computer supported collaborative classrooms (Ali et al., 2016). Consequently, H2 is indicated:

H2: Effort expectancy has a significant impact on behavioral intention to use eLearning of physics students.

2.5 Social Influence

Baki et al. (2018) pointed out that social influence is portrayed to be a students' opinion of whether other people who are important to them would motivate them to use eLearning. Social influence confines a student's behavior and response that is guided by others. Peer pressure, family influence and external marketing are few examples of social influence. The perspective of others is crucial to students in using an eLearning (Alraja, 2015). Apart from technological factors, social factors are viewed to impact behavioral intention of eLearning among students. Social influence has been researched to affect an intention to use a technology (Tan, 2013). Based on UTAUT theory, social influence has a positive impact on students' behavioral intention to adopt eLearning (Mahande & Malago, 2019; Tayebinik & Puteh, 2012). Accordingly, a hypothesis is proposed:

H3: Social influence has a significant impact on behavioral intention to use eLearning of physics students.

2.6 Facilitating Conditions

Facilitating conditions refer to the users' belief that institutional support and infrastructure are available to assist the use of particular technology (Venkatesh et al., 2012). Generally, technical assistance, support and resources are classed under facilitating conditions. Facilitating conditions affect the users' intention as well as its actual usage (Venkatesh et al., 2003). Facilitating conditions are signified as the degree to which an individual believes that an organization and technical infrastructure exists to support use of the system (Gao et al., 2022). In this study, facilitating conditions are identified as the degree to which a student believes that the school management, personal gadgets and technical infrastructure exist to support use of eLearning. In previous studies, there are variety of system technology such as mobile social network games (Baabdullah, 2018), e-Government services (Lallmahomed et al., 2017), information and communication technologies (Macedo, 2017), and employment websites (Huang & Chuang, 2017). Most studies indicated that facilitating conditions have a positive influence on behavioral intention. Based on previous studies, below hypotheses are developed:

H4: Facilitating conditions have a significant impact on behavioral intention to use eLearning of physics students.

H6: Facilitating conditions have a significant impact on use behavior of eLearning of physics students.

2.7 Habit

According to Limayem et al. (2007), habit is defined as "the extent to which people tend to perform behaviors or use a specific technology". In this study, habit is identified as the extent to which users or students tend to use eLearning automatically or practice it regularly. In the past researches, habit can explain the regular use of social networks sites (Herrero & San Martín, 2017), information and communication technologies (Macedo, 2017), and mobile banking (Baptista & Oliveira, 2015). The number of scholars recommended that habit has a strong influence on the behavioral intention and usage behavior. Hence, hypotheses are instituted:

H5: Habit has a significant impact on behavioral intention to use eLearning of physics students.

H7: Habit has a significant impact on use behavior of eLearning of physics students.

2.8 Behavioral Intention

Behavioral intention refers to the behavioral readiness to accept, employ or use a specific technology (Davis, 1989). Behavior intention is defined as the possibility of someone's intention to use technology. It implies intentional behavior which can lead to the actual use behavior. It is the user's intention to acquire knowledge about a particular system technology and readiness towards adopting the system. (Venkatesh et al., 2003). According to Salloum and Shaalan (2018), behavioral intention to use eLearning is the resolution that students have a willingness and are more likely to use the system in the future. As a result, a hypothesis is obtained:

H8: Behavioral intention has a significant impact on use behavior of e- Learning of physics students.

2.9 Use Behavior

Use behavior determines the actual usage of eLearning technology, and is denoted by the frequency and the objective of use. Usage behavior of eLearning is perceived as the magnitude of the users in utilizing a system to fulfill learning objectives (Venkatesh et al., 2003). The physical and mental aspects indulge in accessing the information through the eLearning system (Berry, 2017). Certain activities are conducted by using specific system, e.g., knowledge acquisition, learning activities and learning performance (Raith, 2019). This research recognizes use behavior as continuity of eLearning usage by students in their current and future occasions.

3. Conceptual Framework

In this study the extraneous variables were adopted from UTAUT framework. The variables were obtained, including performance expectancy, effort expectancy, social influence, facilitating conditions, habit, behavioral intention and use behavior in the relevance of eLearning acceptance among high school students in Physics class. Figure 1 presents the correlation among variables of eLearning acceptance. Followed hypotheses are based on literature reviews in designing a conceptual framework for this research.

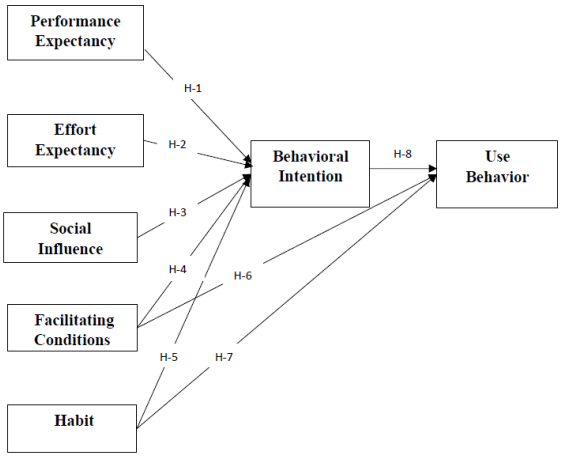

Figure 1: Conceptual Framework
Source: Created by the author.

H1: Performance expectancy has a significant impact on behavioral intention to use eLearning of physics students.

H2: Effort expectancy has a significant impact on behavioral intention to use eLearning of physics students.

H3: Social influence has a significant impact on behavioral intention to use eLearning of physics students.

H4: Facilitating conditions have a significant impact on behavioral intention to use eLearning of physics students.

H5: Habit has a significant impact on behavioral intention to use eLearning of physics students.

H6: Facilitating conditions have a significant impact on use behavior of eLearning of physics students.

H7: Habit has a significant impact on use behavior of eLearning of physics students.

H8: Behavioral intention has a significant impact on use behavior of eLearning of physics students.

4. Research Methods and Materials

4.1 Research Methodology

The methodology of this research initially highlights population and sample and sampling procedures. Before the

data collection, the application of Item Objective Congruence (IOC) Index and pilot testing of 30 participants with Cronbach's Alpha reliability test was carried out. Questionnaire is designed into three parts; screening questions, five-point Likert scale items, and demographic information. The data were analyzed with descriptive analysis, Confirmatory Factor Analysis (CFA), and Structural Equation Model (SEM).

4.2 Population and Sample Size

Population for this research are high school physics students from 21 international schools in Bangkok. Request letters were sent to each school for their permission of the survey implementation. The population are minors who are under 18 years old. Therefore, the parent's and teachers' consents are managed. Sample size was determined the minimum amount of 425 samples using the Soper (2022) statistic calculator, but 500 participants were aimed to provide sufficient and proper data analysis.

4.3 Sampling Techniques

Sampling technique is crucial to conduct the research analysis. Initially, judgmental sampling was applied in targeting high school physics students in international schools in Bangkok. Next, stratified random sampling was carried out to divide the strata of subgroup, instituting 500 participants. Convenience sampling was to distribute offline via paper base and online via chat application and online community platform of students.

4.4 Content Validity and Reliability

Prior to the data collection, three experts in the field of education were identified and requested for their consents to validating each measuring items or questions, applying Item Objective Congruence (IOC) Index**.** Based on the results, the number of items were reduced from 40 to 36. Reliability of constructs was reserved using Cronbach's Alpha coefficient value test for the pilot testing. 30 students who were randomly selected to complete the survey. The reliability results were that all constructs are acceptable at equal or above 0.7. (Nunnally & Bernstein, 1994).

5. Results and Discussion

5.1 Demographic Information

The demographic profile of 500 respondents is physics students in 21 international schools in Bangkok as shown on the Table 1. The results show males of 49%, female of 46%, and others of 5%. This study examines only final two years in senior high, which presents Grade 11 of 58% and Grade 12 of 42%. Years spent in current school exhibits that 3 years or more is 90%, whereas less than 3 years is 10%. For citizenship, Thai is 30% and non-Thai is 70%. Additionally, 98% of students are pursuing STEM in their Bachelor level, while 2% are not.

Table 1: Demographic Results

Demographic (n=500)	Items	Percentage
Gender	Male Female Others	49% 46 % 5 %
Grade	Year 12 (Grade11) Year 13 (Grade 12)	58 % 42 %
Years spent in Current School	Less than 3 years 3 years or more	10 % 90 %
Citizenship	Thai Non-Thai	30 % 70 %
Pursuing STEM in Bachelor level	Yes No	98 % 2 %

Source: Created by the author.

5.2 Descriptive Analysis

The descriptive analysis is accounted by the central tendency of mean and standard deviation (SD), and is exemplified in Table 2. The average score or mean is designated with standard deviation, indicating how much of each value in set of scores vary from the mean, applying five-point Likert scale. The mean scores of seven constructs were higher than 1.0, and standard deviation values were proved by less than 1 (Tabachnick & Fidell, 2007).

Table 2: Descriptive Statistics

Constructs	No. of items	Cronbach's Alpha Coefficient (α)	Mean	Std Dev (SD)
Performance Expectancy (PE)	5	0.874	3.62	0.702
Effort Expectancy (EE)	5	0.907	3.21	0.883
Social Influence (SI)	5	0.830	3.38	0.712
Facilitating Conditions (FC)	5	0.844	3.25	0.658
Habit (HB)	3	0.866	3.45	0.904
Behavioural Intention (BI)	7	0.924	3.51	0.740
Use Behaviour (UB)	6	0.923	3.58	0.718

5.3 Confirmatory Factor Analysis (CFA)

In Table 4, confirmatory factor analysis or CFA was conducted to measure factor loadings, determining discriminant validity. Factor loadings show the greater value than 0.30 and p-value is lower than 0.05. The composite reliability (CR) is greater than the cut-off points of 0.7, and the average variance extracted (AVE) was higher than the cut-off point of 0.5 (Fornell & Larcker, 1981). Thus, all the estimates are significant. Due to the statistical values for the CFA were very much within the acceptable values, no adjustments were needed.

Additionally, CMIN/DF GFI, AGFI, NFI, CFI, TLI and RMSEA are used as indicators for model fit in CFA testing. The convergent validity and discriminant validity were also confirmed for the value of this study's results, as expressed in Table 3. Due to all fit values are acceptable, the convergent validity and discriminant validity are ensured.

Table 3: Goodness-of-Fit for Measurement Model

Index	Acceptable Values	Statistical Values
CMIN/DF	< 3.00 Hair et al. (2006)	2.649
GFI	≥ 0.85 (Sica & Ghisi, 2007)	0.859
AGFI	≥ 0.80 (Sica & Ghisi, 2007)	0.836
NFI	≥ 0.80 (Wu & Wang, 2006)	0.876
CFI	≥ 0.80 (Bentler, 1990)	0.918
TLI	≥ 0.80 (Sharma et al., 2005)	0.910
RMSEA	< 0.08 (Pedroso et al., 2016)	0.057

Note: CMIN/DF = The ratio of the chi-square value to degree of freedom, GFI = Goodness-of-fit index, AGFI = Adjusted goodness-of-fit index, NFI = Normed fit index, CFI = Comparative fit index, TLI = Tucker-Lewis index, and RMSEA = Root mean square error of approximation.

Table 4: Confirmatory Factor Analysis Result, Composite Reliability (CR) and Average Variance Extracted (AVE)

Latent Variables	Source of Questionnaire	No. of Items	Cronbach's Alpha	Factors Loading	CR	AVE
Performance Expectancy (PE)	Venkatesh et al. (2003)	5	0.734	0.626 - 0.888	0.88	0.59
Effort Expectancy (EE)	Venkatesh et al. (2003)	5	0.815	0.711 - 0.894	0.92	0.69
Social Influence (SI)	Venkatesh et al. (2003)	5	0.862	0.642 - 0.833	0.84	0.51
Facilitating Conditions (FC)	Venkatesh et al. (2003)	5	0.891	0.614 - 0.836	0.85	0.54
Habit (HB)	Limayem et al. (2007)	3	0.963	0.801 - 0.855	0.87	0.69
Behavioral Intention (BI)	Venkatesh et al. (2012)	7	0.714	0.761 - 0.875	0.92	0.64
Use Behavior (UB)	Venkatesh et al. (2012)	6	0.903	0.764 - 0.863	0.92	0.67

Source: Created by the author.

According to Fornell and Larcker (1981), testing for discriminant-validity was evaluated by processing the square root of each AVE. Based on this study, the value of discriminant validity is larger than all inter-construct/factor correlations, thence, the discriminant validity is supportive per Table 5.

Table 5: Discriminant Validity

	PE	EE	SI	FC	HB	BI	UB
PE	**0.770**						
EE	0.033	**0.830**					
SI	0.064	0.070	**0.710**				
FC	0.054	0.092	0.095	**0.740**			
HB	0.055	0.090	0.139	0.144	**0.830**		
BI	0.375	0.322	0.237	0.288	0.415	**0.800**	
UB	0.215	0.201	0.184	0.334	0.458	0.668	**0.820**

Note: The diagonally listed value is the AVE square roots of the variables
Source: Created by the author.

5.4 Structural Equation Model (SEM)

Structural equation model (SEM) was applied to evaluate hypotheses, determining the relationship between the dependent and independent variables of the study. Structural model authenticates the casual relationship within variables in a proposed model. The goodness-of-fit indices for structural model are measured as demonstrated in Table 6, complying to the acceptable values.

Table 6: Goodness of Fit for Structural Model

Index	Acceptable Values	Statistical Values
CMIN/DF	< 3.00 Hair et al. (2006)	2.645
GFI	≥ 0.85 (Sica & Ghisi, 2007)	0.855
AGFI	≥ 0.80 (Sica & Ghisi, 2007)	0.835
NFI	≥ 0.80 (Wu & Wang, 2006)	0.873
CFI	≥ 0.80 (Bentler, 1990)	0.917
TLI	≥ 0.80 (Sharma et al., 2005)	0.911
RMSEA	< 0.08 (Pedroso et al., 2016)	0.057

Note: CMIN/DF = The ratio of the chi-square value to degree of freedom, GFI = Goodness-of-fit index, AGFI = Adjusted goodness-of-fit index, NFI = Normed fit index, CFI = Comparative fit index, TLI = Tucker-Lewis index, and RMSEA = Root mean square error of approximation.

5.5 Research Hypothesis Testing Result

The path coefficients (β), t-statistics, and p-value were measured for the significance of relationships or hypotheses in the structural model. The implication of each variable is depicted in Table 7. The results indicate that all hypotheses were supported with a significance at $p < 0.05$. Behavioral

intention has the strongest impact on usage behavior (β = 0.585), followed by habit (β = 210) and facilitating conditions (β = 153). Habit has the strongest impact on behavioral intention to use eLearning (β = 0.399). The significant drivers of behavioral intention are performance expectancy (β = 0.373), effort expectancy (β = 0.321), facilitating conditions (β = 0.204), and social influence (β = 0.148).

Table 7: Hypothesis Results of the Structural Equation Modeling

Hypothesis	Standardized Coefficients (β)	t-value	Result
H1: PE→BI	0.373	8.587*	Supported
H2: EE→BI	0.321	7.676*	Supported
H3: SI→BI	0.148	3.633*	Supported
H4: FC→BI	0.204	5.011*	Supported
H5: HB→BI	0.399	9.076*	Supported
H6: FC→UB	0.153	3.988*	Supported
H7: HB→UB	0.210	5.012*	Supported
H8: BI→UB	0.585	11.257*	Supported

Note: *=p-value <0.05

H1: Performance expectancy significantly impacts behavioral intention to use eLearning of physics student. The results were consistent with earlier researches that students' performance expectancy has a direct effect on behavioral intention to use eLearning (Chang, 2012; Ngampornchai & Adams, 2016; Taiwo & Downe, 2013; Venkatesh et al., 2012).

H2: Effort expectancy plays a significant degree of impact on behavioral intention as aligning with the results from earlier studies, which indicated effortless eLearning system can promote the behavioral intention of students to use the system (Chang, 2012; Ngampornchai & Adams, 2016; Venkatesh et al., 2012).

H3: Social influence significantly impacts behavioral intention to use e-Learning among students. The findings poste that the influence of peers, family and teachers theoretically and empirically affected behavioral intention to accept or use the eLearning among students. The results show similarity with previous studies (Chang, 2012).

H4: Facilitating conditions have significant impact on behavioral intention as evidenced by the statistical results. The use of eLearning requires tools, materials and system infrastructure to promote the students' willingness to use the system for their learning activities (Chang, 2012; Venkatesh et al., 2012).

H5: Habit significantly impacts behavioral intention to use eLearning of students in this study. The results imply that when students regular engage eLearning, they express more and more intentional behavior to use the system (Ambarwati, 2020; Chao, 2019).

H6: Facilitating conditions significantly impact use behavior of eLearning which explains that eLearning usage can actually happen when students are equipped with necessary tools in using the system such as computers, laptops, mobiles, software etc. (Chang, 2012; Venkatesh et al., 2012).

H7: The relationship between habit and use behavior is supported. The assumption can be that students' habits do significantly affect their willingness of eLearning usage as confirmed by Tadesse et al. (2018).

H8: Behavioral intention and use behavior was found to have strong significant relationship. The results of this study mirror the previous works and pointed out that behavioral intention of students to use eLearning highly promotes the use behavior. (Chang, 2012; Ngampornchai & Adams, 2016; Venkatesh et al., 2012).

6. Conclusions and Recommendation

6.1 Conclusion

This study points out the application of UTAUT on eLearning usage among physics students of 21 international schools in Bangkok, Thailand. The core variables in UTAUT used in this study are performance expectancy, effort expectancy, social influence, facilitating conditions, habit, behavioral intention and use behavior. The data were analyzed with descriptive analysis, CFA, and SEM. Results indicate the strongest relationship between the behavioral intention and use behavior of eLearning. Habit has the strongest impact on behavioral intention to use eLearning. Furthermore, performance expectancy, efforts expectancy, and facilitating conditions significantly affect behavioral intention. Facilitating conditions and habit have a significant impact on use behavior.

The results achieve its research objectives in the context of eLearning adoption. Firstly, performance expectancy is a viewed as a key variable affecting students' behavioral intention to use eLearning as certified in the UTAUT theory. Secondly, effort expectancy has been confirmed to promote behavioral intention of students in using eLearning. Therefore, ease of use system enhances the willingness to use eLearning in various ways. Thirdly, social influence has been researched to affect an intention to use eLearning of students (Tan, 2013). Based on UTAUT theory, the influence of peers, family and teachers motivate students' behavioral intention to adopt eLearning (Mahande & Malago, 2019; Tayebinik & Puteh, 2012). Fourthly, facilitating conditions are identified as the degree to which a student believes that the school management, personal gadgets and technical infrastructure exist to support use of eLearning. Fifthly, habit is identified as the extent to which users or students

tend to use eLearning automatically or practice it regularly. Lastly, intentional behavior can lead to the actual use behavior (Venkatesh et al., 2003). This research recognizes use behavior as continuity of eLearning usage by students in their current and future academic activities.

6.2 Recommendation

Performance expectancy, efforts expectancy, facilitating conditions, and habit significantly affect behavioral intention. eLearning system providers and schools' information technology departments have to work closely to improve eLearning system both during and post COVID-19 to ensure the ease of use and effective system's performance. Schools' management team needs to invest budget, manpower and resources to monitor students' habit of eLearning usage to ensure the good to excellent level of their learning performance. As the turning point of the transformation from physical classroom to online learning has been passed during the early stage of COVID-19, schools should continue to explore the technological enhancement of online learning to serve the "new normal" of educational activities. Hybrid learning is also an option for the integration of offline and online learning for the effectiveness of learning in the modern world. Pros and cons are required to be assessed on which way parents and students could ensure their quality time for their life and study balance. eLearning provides time effectiveness which students are not required to commute in the heavy traffic to schools every day. Nevertheless, physical classroom should also be mandatory as students need to make physical connection and socialization with their friends and teachers.

Students can have successful adoption of eLearning in their future academics as evidenced by the major impact of habit on behavioral intention. Though a habit, students are well adapted to the use of eLearning and would the adoption in their outside class and future education. Additionally, behavioral intention was strongly impacted by the level of students' confidence and positive attitude in the future of eLearning, so eLearning can be sustainably integrated into their future academic plan. In addition, technology is shifting from AR, VR and now to XR. There are many more technologies for the enhancement of future eLearning. The current study indicates and explicates the students' receptiveness to eLearning and inclination to pursue eLearning in future. With approach of Web 3.0, it is a positive sign that high school students are enthusiastic about eLearning. In the results, students' behavioral intention strongly promotes the use of eLearning which can accelerate their use of system in many ways.

6.3 Limitation and Further Study

This research merely examines the high school students in international schools in Bangkok. The sample group can be broadened or differed to compare results in future study. Furthermore, researchers applied UTAUT as the main model. Future scholars could extend the model or investigate other motivational theories for better implication of results. Qualitative study should be conducted to gain in-dept logical reasons of sample groups of why and what factors determining the most and the least important in the technology adoption process.

References

Alalwan, A. A., Dwivedi, Y. K., & Rana, N. P. (2017). Factors influencing adoption of mobile banking by Jordanian bank customers: extending UTAUT2 with trust. *International Journal of Information Management, 37*(3), 99-110. http://doi.org/10.1016/j.ijinfomgt.2017.01.002.

Ali, F., Nair, P., & Hussain, K. (2016). An Assessment of Students' Acceptance & Usage of Computer Supported Collaborative Classrooms in Hospitality and Tourism Schools. *The Journal of Hospitality Leisure Sport and Tourism, 18,* 51-60. http://doi.org/10.1016/j.jhlste.2016.03.002

Alraja, M. (2015). User acceptance of information technology: A field study of an e-mail system adoption from the individual students' perspective. *Mediterranean Journal of Social Sciences, 6*(6), 19-25.

Ambarwati, R. (2020). The Role of Facilitating Conditions and User Habits: A Case of Indonesian Online Learning Platform. *Journal of Asian Finance Economics and Business, 7*(10), 481-489.

Global Market Insights. (2022, April 1). *E-Learning Market*. https://www.gminsights.com/industry-analysis/elearning-market-size

Baabdullah, A. M. (2018). Consumer adoption of mobile social network games (M-SNGs) in Saudi Arabia: The role of social influence, hedonic motivation and trust. *Technology in Society, 53*, 91-102.

Baki, R., Birgoren, B., & Aktepe, A. (2018). A Meta Analysis of Factors Affecting Perceived Usefulness and Perceived Ease of Use in The Adoption of eLearning Systems. *Turkish Online Journal of Distance Education, 19*(4), 4-42. https://doi.org/10.17718/tojde.471649

Baptista, G., & Oliveira, T. (2015). Understanding mobile banking: the unified theory of acceptance and use of technology combined with cultural moderators. *Computers in Human Behavior, 50*, 418-430.

Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin, 107*(2), 238-246. https://doi.org/10.1037/0033-2909.107.2.238

Berry, A. M. (2017). *Behavioral Intention and Use Behavior of Social Networking Websites among Senior Adults* [Doctoral dissertation]. Nova Southeastern University. https://nsuworks.nova.edu/gscis_etd/1025

Carter, L., & Salyers, V. (2015). A Model for Meaningful ELearning at Canadian Universities. In J. Keengwe (Ed.), *Handbook of Research on Educational Technology Integration and Active Learning* (pp. 78-113). IGI Global. https://doi.org/10.4018/978-1-4666-8363-1.ch005

Chang, A. (2012). UTAUT and UTAUT 2: A review and agenda for future research. *The Winners, 13*(2), 106 - 114.

Chao, C. M. (2019). Factors Determining the Behavioral Intention to Use Mobile Learning: An Application and Extension of the UTAUT Model. *Frontiers in Psychology*, *10,* 1-14. https://doi.org/10.3389/fpsyg.2019.01652

Cook, R. G., & Sutton, R. (2014). Administrators' Assessments of Online Courses and Student Retention in Higher Education: Lessons Learned. In S. Mukerji, & P. Tripathi (Eds.), *Handbook of Research on Transnational Higher Education* (pp. 138-150). IGI Global. https://doi.org/10.4018/978-1-4666-4458-8.ch008

Davis, F. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS quarterly*, *13*(3), 319-339.

Duangekanong, S. (2022). Applications of Artificial Intelligence for Strategic Management of Organization. *ABAC ODI JOURNAL Vision. Action. Outcome*, *9*(2), 202-217. https://doi.org/10.14456/abacodijournal.2022.13

Evoh, C. J. (2011). ICT in Education Development in Africa: Policy and Institutional Frameworks. In E. Adomi (Eds.), *Handbook of Research on Information Communication Technology Policy: Trends, Issues and Advancements* (pp. 283-305). IGI Global. https://doi.org/10.4018/978-1-61520-847-0.ch017

Fornell, C. G., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research, 18*(1), 39-50.

Gao, L., Vongurai, R., Phothikitti, K., & Kitcharoen, S. (2022). Factors Influencing University Students' Attitude and Behavioral Intention Towards Online Learning Platform in Chengdu, China. *ABAC ODI JOURNAL Vision. Action. Outcome*, *9*(2), 21-37. https://doi.org/10.14456/abacodijournal.2022.2

Hair, J. F., Black, W. C., Babin., B. J., Anderson., R. E., & L.Tatham., R. (2006). *Multivariate Data Analysis* (6th ed.). Pearson Prentice Hall.

Herrero, Á., & San Martín, H. (2017). Explaining the adoption of social networks sites for sharing user-generated content: a revision of the UTAUT2. *Computers in Human Behavior, 71*, 209-217. http://dx.doi.org/10.1016/j.ijpe.2016.08.035. https://doi.org/10.1109/HICSS.2014.409

Huang, K. Y., & Chuang, Y. R. (2017). Aggregated model of TTF with UTAUT2 in an employment website context. *Journal of Data Science, 15*(2), 187-204.

Lallmahomed, M. Z., Lallmahomed, N., & Lallmahomed, G. M. (2017). Factors influencing the adoption of e-Government services in Mauritius. *Telematics and Informatics, 34*(4), 57-72.

Latip, M. S. A., Tamrin, M., Noh, I., Rahim, F. A., & Latip, S. N. N. A. (2022). Factors Affecting e-Learning Acceptance among Students: The Moderating Effect of Self-efficacy. International *Journal of Information and Education Technology, 12*(2), 116-122. https://doi.org/10.18178/ijiet.2022.12.2.1594

Limayem, M., Hirt, S. G., & Cheung, C. M. (2007). How habit limits the predictive power of intention: the case of information systems continuance. *MIS quarterly, 31(*4), 705-737.

Macedo, I. M. (2017). Predicting the acceptance and use of information and communication technology by older adults: an empirical examination of the revised UTAUT2. *Computers in Human Behavior, 75*, 935-948.

Mahande, R., & Malago, J. (2019). An eLearning acceptance evaluation through utaut model in a postgraduate program, ǁ. *Journal of Education Online, 16*(2), 1-14.

Marlina, E., Tjahjadi, B., & Ningsih, S. (2021). Factors affecting student performance in eLearning: a case study of higher educational institutions in Indonesia. *Journal of Asian Finance, Economics and Business, 8*(4), 993-1001.

Ngampornchai, A., & Adams, J. (2016). Students' acceptance and readiness for E-learning in Northeastern Thailand. *International Journal of Educational Technology in Higher Education, 13*(34), 1-13. https://doi.org/10.1186/s41239-016-0034-x

Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). McGraw-Hill.

Oechslein, O., Fleischmann, M., & Hess, T. (2014). *An Application of UTAUT2 on Social Recommender Systems: Incorporating Social Information for Performance Expectancy.* Proceedings of the Annual Hawaii International Conference on System Sciences (pp. 3297-3306). IEEE.

OPEC. (2021). *Office of the Private Education Commission.* https://opec.go.th/

Pedroso, C. B., Silva, A. L., & Tate, W. L. (2016). Sales and Operations Planning (S&OP): insights from a multi-case study of Brazilian organizations. *International Journal of Production Economics, 182,* 213-229.

Raith, C. P. (2019). Students' Formal and Informal Information Sources: From Course Materials to User-Generated Content. In P. Ordóñez de Pablos, M. Lytras, X. Zhang, & K. Chui (Eds.), *Opening Up Education for Inclusivity Across Digital Economies and Societies* (pp. 209-232). IGI Global. https://doi.org/10.4018/978-1-5225-7473-6.ch011

Salloum, S., & Shaalan, K. (2018). *Investigating students' acceptance of ELearning system in Higher Educational Environments in the UAE: Applying the Extended Technology Acceptance Model (TAM)* [Unpublished master dissertation]. The British University.

Sharma, S., Pradhan, K., Satya, S., & Vasudevan, P. (2005). Potentiality of earthworms for waste management and in other uses-a review. *The Journal of American Science, 1*(1), 4-16.

Sica, C., & Ghisi, M. (2007). The Italian versions of the Beck Anxiety Inventory and the Beck Depression Inventory-II: Psychometric properties and discriminant power. In M. A. Lange (Ed.), *Leading-edge psychological tests and testing research* (pp. 27-50). Nova Science Publishers.

Soper, D. S. (2022, May 24). *A-priori Sample Size Calculator for Structural Equation Models*. Danielsoper. www.danielsoper.com/statcalc/default.aspx

Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). Allyn & Bacon/Pearson Education.

Tadesse, M., Lin, H., Xu, B., & Yang, L. (2018). Personality Predictions Based on User Behavior on the Facebook Social Media Platform. *IEEE Access, 6,* 61959-61969. https://doi.org/10.1109/ACCESS.2018.2876502

Taiwo, A. A., & Downe, A. G. (2013). The theory of user acceptance and use of technology (UTAUT): A meta-analytic review of empirical findings. *Journal of Theoretical & Applied Information Technology, 49*(1), 48-58.

Tan, P. (2013). Applying the UTAUT to understand factors affecting the use of English eLearning websites in Taiwan. *Sage Open, 3*(4), 1-12.

Tayebinik, M., & Puteh, M. (2012). Blended learning or eLearning? *International Management Advances in Computer Science and Telecommunications, 3*(1), 103-110.

Venkatesh, V., Morris, M., Davis, G., & Davis, F. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly, 27*(3), 425-478.

Venkatesh, V., Thong, J. Y. L., & Xu, X. (2012). Consumer Acceptance and Use of Information Technology: Extending the Unified Theory of Acceptance and Use of Technology. *MIS quarterly, 12*(1), 157-178.

Wu, J. H., & Wang, Y. M. (2006). Measuring KMS Success: A Respecification of the DeLone and McLean's Model. *Journal of Information & Management, 43,* 728-739. http://dx.doi.org/10.1016/j.im.2006.05.002