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The Influence of Technology Acceptance Factors on Intention to Study via Online Learning Behavior between Generation Y and Z Individuals in Bangkok

อิทธิพลของปัจจัยการยอมรับเทคโนโลยีที่มีต่อความตั้งใจเรียนผ่านพฤติกรรมการเรียนรู้ออนไลน์ระหว่างคนของเจเนอเรชันวายและแซดในกรุงเทพมหานคร

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Abstract

The purpose of the research study was to compare the influence of technology acceptance factors on the intention to study via online learning behavior between Generation Y and Z individuals in Bangkok during the COVID 19 pandemic. In this study, 275 samples of students in generations Z and Y were used. The research instrument, which included a total of 30 items and a Cronbach's alpha coefficient of 0.9, was used for data collection. The relationship between performance expectancy, effort expectancy, social influence, and facilitating conditions affecting intention to study via online learning behaviors of students in the Bangkok. The study was examined using a hierarchical regression analysis to investigate the moderating effect of generation. The results showed that the younger generation perceived performance expectancy and effort expectancy as being higher than those of the older generation. Educational management should ensure that messages about the performance advantages of online study and the suitability of the online system are well received by the young targets to increase their intention to study online. At the same time, social influence and facilitating conditions should be standardized and well received by both generations.

Keywords: Technology Acceptance Factors, Generation Y, Generation Z, Intention to Study Online

บทคัดย่อ

การวิจัยครั้งนี้มีวัตถุประสงค์เพื่อเปรียบเทียบอิทธิพลของปัจจัยการยอมรับเทคโนโลยีที่มีต่อความตั้งใจในพฤติกรรมการเรียนรู้ออนไลน์ระหว่างคนเจนเนอเรชันวายและแซดในกรุงเทพฯ ช่วงโควิด 19 โดยการศึกษานี้ ใช้ตัวอย่างจากนักเรียนเจนเนอเรชันวายและแซดจำนวน 275 ตัวอย่าง เครื่องมือวิจัยซึ่งมีข้อคำถามทั้งหมด 30 รายการและค่าสัมประสิทธิ์อัลฟาของครอนบาคที่ 0.9 ถูกใช้สำหรับการรวบรวมข้อมูล ความสัมพันธ์ระหว่างความคาดหวังต่อการปฏิบัติงาน ความคาดหวังด้านความพยายาม อิทธิพลทางสังคม และสภาพของสิ่งอำนวยความสะดวกที่ส่งผลต่อความตั้งใจในพฤติกรรมการเรียนรู้ออนไลน์ของนักเรียนในเขตกรุงเทพมหานคร การศึกษานี้ใช้การวิเคราะห์การถดถอยแบบลำดับชั้นเพื่อตรวจสอบผลการกำกับของเจนเนอเรชัน ผลการศึกษาพบว่า คนเจนเนอเรชันใหม่รับรู้ความคาดหวังต่อการปฏิบัติงานและความคาดหวังด้านความพยายามนั้นสูงกว่าคนเจนเนอเรชันเก่า ในการเพิ่มความตั้งใจในพฤติกรรมการเรียนรู้ออนไลน์ การจัดการศึกษาควรตรวจสอบให้แน่ใจว่าข้อความเกี่ยวกับผลการปฏิบัติงานของระบบการศึกษาออนไลน์และความเหมาะสมของระบบออนไลน์ได้รับการรับรู้เป็นอย่างดีจากกลุ่มเป้าหมายที่มีอายุน้อย ในขณะที่อิทธิพลทางสังคมและสภาพของสิ่งอำนวยความสะดวกควรมีมาตรฐานและได้รับการรับอย่างดีจากทั้งสองเจนเนอเรชัน

คำสำคัญ: ปัจจัยการยอมรับเทคโนโลยี, เจเนอเรชันวาย, เจเนอเรชันแซด ความตั้งใจเรียนออนไลน์

Introduction

Since the end of 2019, the COVID-19 pandemic has negatively impacted the livelihoods of people around the world. As can be seen from the UNESCO report, 191 governments around the world announced the closure of schools. As a result, more than 1.5 billion students from many countries were affected by the crisis. This included millions of children from 186 countries who had been affected by school closures. In Denmark, children up to 11 years old will return to school after the first semester was closed on March 12, 2020, while in South Korea, students responded to calls from teachers online. With the sudden switch from classroom or blended learning to fully online classes, many parts of the world remain concerned about whether the use of online learning will continue after the epidemic and how the change will affect the global education market. Thailand's education sector is another example that has been affected in an unprecedented way. This affected educational stakeholders. As such, the government has approved the postponement of the first semester start date for a period of time, resulting in schools and various educational institutions, both government and private, having to comply with this order by opening online teaching at all levels in response to this change (Vanichanan, 2020). This inevitably causes both educational personnel and learners to step out of their comfort zones into unfamiliar learning conditions and leads to an increased burden, more time spent on teaching preparations, and more effort to learn. Subsequently, Thailand’s educational system has changed dramatically. Li & Lalani (2020) studied how the spread of COVID-19 at different rates in different countries has created challenges for a number of issues. The number of students who do not have access to the internet and reliable technology for participating in digital learning has increased due to the domestic income gap. In addition to the issue of the digital divide, the difference in age or generation is another issue that needs to be raised. Nowadays, organizations are focusing on the

collaboration of people with different age ranges. Generation Y and Z are two groups of creative people with the potential to work and be motivated to work, as well as promote the learning of new techniques in the workplace (KTC Academy, 2018). Generation Y, or "Millennials," play an important role in the business sector, accounting for 38.8% of the world's population, which is regarded as the largest group. They account for 32% of the Thai population, or approximately 68 million people worldwide, and are able to quickly follow generation X (Fernquest, 2016), while the majority of students in higher education are currently considered to be generation Z, and they will soon be entering the workforce alongside their predecessor, generation Y, with new potential and different expectations both at school and at work. This makes it extremely necessary to develop teaching and learning styles and devise new assessments to support the change (Ferrari, 2018). However, online learning has created a phenomenon of "new normal" teaching methods. We are now driven to study online, both willingly and unwillingly. Unavoidably, this allows everyone to have experience in studying and teaching online, which will never be the same again. The new normal in learning is the shift from in-class courses with a large number of students attained to small group practices in order to perform a social distancing measure. The revised teaching and learning management will involve health safety along with new learning conditions (Phakdichakriwut, 2020), thus leading to a new option that requires attention to teaching, including more online training, and has resulted in the concept of increasing efficiency and effectiveness in online learning conditions. The researcher used the Unified Theory of Acceptance and Use of Technology (UTAUT, Venkatesh et al., 2003), which has been confirmed by several contributors (Mardikyan, Besiroglu, & Uzmaya, 2021; Lin, Lu, & Liu, 2013; Tan, 2013; Khechine, Lakhal, Pascot, & Bytha, 2014; Techakritteerapong & Inthuchhanyong, 2016; Chaiyakulwat, 2017; Persada, Miraja, & Nadlifatin, 2019; Khechine & Augier, 2019; Setchinda & Mimacha, 2019). This study aims to describe the factors that affect the intention of using online learning systems for both generations. For the sake of the comparative study, the study reveals different attitudes between generation Y and Z, in the Bangkok, which will enable school administrators and educational personnel to apply information and formulate policies and strategies for the development of appropriate online teaching conditions to meet the needs of various students in different age groups.

Aims

To compare the influence of technology acceptance factors on intention to online learning behavior between Generation Y and Z individuals in the Bangkok.

Conceptual Framework

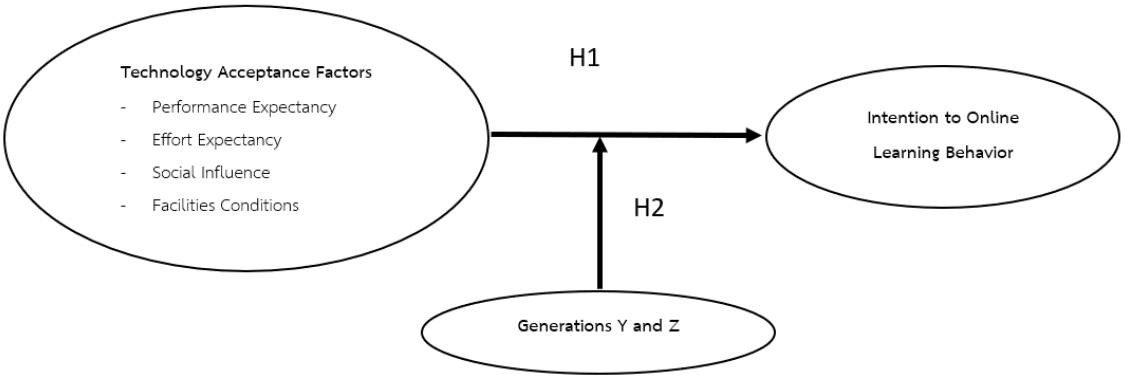

Figure 1 Conceptual model

Literature Review

Online Leaning Behavior

The idea of online learning evolved from the long-standing concept of remote learning (also known as distance learning) which makes it possible for people in distant areas to learn and subsequently evolved into a homeschooling or home-study programs which are still commonly utilized today. Due to the advanced technology, the World Wide Web (WWW) network and the Internet contributed to the creation of web-based education, also known as web-based learning and web-based training, which is the basis for today's online learning. Online learning is taking part in educational courses in an online environment which are available in numerous styles using a variety of technologies. It commonly used in organizations such as schools and other organizations, it can assist students in achieving their educational and training goals more easily and adaptably than the typical classroom setting can. Postolov, Magdinceva Sopova & Iliev (2017) concluded that the online learning is widely accepted and expected among the younger generations Y and Z, who have never lived in a world without technology. These generations have a good understanding of technology and particular expectations about how to use and apply the various opportunities it provides. It might be said that the young and innovative generations have incorporated technological advancements, tools, and applications into every aspect of their lives. They have shown a tremendous openness and acceptance for all the possible advantages that technology may bring. As a result, the online learning is becoming a standard instrument for these generations' continued education and professional growth. In light of the suggested topic, this study is therefore interested in these two generations.

Technology adoption model and intention behavior

Mardikyan, Besiroglu, & Uzmaya (2021) investigated the behavioral intentions of using 3G technology. The focus of this study was to examine the factors affecting the perception and adoption

of 3G technology in the theoretical framework of the study. The Technology Adoption Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT) which includes performance expectancy, effort expectancy, social influence, and facilitating conditions were used as a guideline for analyzing 3G user perceptions and behaviors, intentions, exogenous variables (perceived benefits, ease of use, price, 3G variety services, service quality, and social influence) and control variables (genders, age, education, level of experience, occupations, types of payment). By analyzing through survey studies, the results showed that the various 3G services, benefits, service quality, and social influence factors influenced the intended behavior of 3G usage. The differences between men and women were insignificant. The result of ANOVA presented the significant differences between people's education level and their willingness to use 3 G technology and the post-doc test showed that there were significant differences in the intentions of using 3G among the graduates. These findings are consistent with Change, Hajiyev, & Su (2017) who examined the behavioral intentions of students in using e-learning in Azerbaijan. The Extended General Technology Acceptance Model for e-learning (GETAMEL) approaches in this research was the result of an empirical developed by Abdullah and Ward (2016) to consider the factors affecting behavioral intention of undergraduate students in using the e-learning system. Moreover, Chaiyakulwat (2017) studied an application of the Unified Theory of Acceptance and Use of Technology (UTAUT) for understanding the adoption of the virtual investment community of retail investors. As quantitative research, 410 questionnaires were distributed to individual investors. The hypothesis was tested by multiple regression analysis at the significance level of 0.05 and found that effort expectancy, social influence, and perceived risks had a statistically significant effect on behavioral intentions in which the effort expectancy had the most impact on behavioral intentions. Moreover, considering the direction of the relationship, it was found that these three factors had a positive direction towards behavioral intentions while the performance expectancy factor was in the opposite direction of intention with statistically insignificance. This study provided a similar result to Techakritteerapong & Inthuchhanyong's study in 2016 which studied the factors affecting employee adoption of collaboration technology in Thai industrial organizations. This research derived the measurements from the integration of 2 basic theories including the Unified Theory of Acceptance and Use of Technology (UTAUT) and the theory of diffusion innovation (DOI). Then data were collected from a sample of 138 people who were collaborative technology users in organizations. Research findings presented that the performance expectancy, social influence, facilitating conditions significantly affected the adoption of collaboration technology. Moreover, Khechine & Augier (2019) studied the adoption of a social learning platform in higher education: an extended UTAUT model implementation. The aim of this research was to examine the factors influencing the adoption of a social learning platform called PairForm using the UTAUT model. Data were obtained from 85 French-speaking students and 14 English-speaking students at Skema Business School, an institution of higher learning. It showed good reliability coefficients and the accuracy of convergence and satisfactory

discrimination. The regression analysis presented that facilitating conditions were the primary predictor of behavioral intentions to use and implement the PairForm. Therefore, **hypothesis 1 was derived, the factors of technology acceptance influences behavior of intention to study online with statistically significance (H1).**

The Moderating role of Generations

Khechine, Lakhal, Pascot, & Bytha, (2014) studied the UTAUT model for blended learning: The role of gender and age in the intention to use webinars. Gender and age variables were also studied as moderating variables. This proposed hypothesis was based on the unified theory of acceptance and use of the technology model to better explain the usage variability greater than the previous version. The total sample of 114 students who enrolled in the integrated information systems course at Laval University in Quebec – Canada was the research subjects in this study. Interestingly, the finding showed only three factors i.e. performance expectancy, effort expectancy, and facilitating conditions had directly influenced the intention to use a webinar among the target sample with the moderating effect from the age variable. The results were also confirmed by Lin, Lu, & Liu, (2013) who investigated education behavioral intention model for e-learning systems using an extension model of UTAUT.

In this study, learning and instructional styles were perceived as individual differences in how to implement an e-learning system. Due to the enrichment of the UTAUT, the cognitive individual differences were integrated into the model and considered the effect of demographic factors as moderating variables which extend its ability to explain behavioral intention toward e-learning systems. This implied that the moderating role of demographic factors was an issue in this research setting. This is consistent with the work of Setchinda & Mimacha (2019) that examined factors influencing the consequences of consequently using telephone banking services in the case of service users in Bangkok. The objectives of this research were to 1) study the factors influencing the intentions of using mobile banking services of Generation Y users. 2) To study the influence of trust in Internet banking on trust in telephone banking. service user satisfaction 3) To study the mean difference between Generation Y and Generation Z. A questionnaire was used to collect data and distribute it to a total sample of 452 participants, and inferential statistics were analyzed by multiple regression analysis. It found that internet banking trust had a positive influence on trust in banking services. Mobile banking trust was found to have a positive correlation with continued willingness to use the service and the willingness to use the service continuously has a positive effect on the satisfaction of the service users. To test the effect of generations, it was also found that the differences between the groups in terms of the level of service satisfaction and confidence in using mobile banking services. The confidence in using mobile banking services among Generation Y users was lower than Generation Z. **This implied the moderating effect of generation. Thus, the influence of technology adoption factors on people's intention to study online is significantly different between Generation Y and Z students in the Bangkok (H2).**

Materials and Methods

The population size for this study primarily focused on students who have completed various forms of study using online courses in Bangkok including people who are in the age range from 18-40 years old, which is a total of 1,792,456 people (National Statistical Office, 2019). **Sample**: The given sample group is students or college students who have undergone various forms of online learning, aged 18 years to 40 years living in Bangkok. The estimation of sample size was calculated from the G*Power 3.1.9.2 package program. The researcher determined the effect size based on the work of Yousafzai, Foxall, and Pallister, (2007) who synthesized 569 findings of this model from 95 studies using a rigorous and quantitative meta-analytic review which concluded the sample size effect of 0.3, the err prob was 0.05, the test power was 0.95, and a total of 4 predictors was put into the program to calculate the appropriate sample size for a specific statistical technique which is at least 220 samples for the multiple regression analysis. Therefore, a total of 275 samples were then corrected and used in this study. **Measurement**: The questionnaire was developed based on the Unified Theory of Acceptance and Use of Technology (UTAUT) concepts and theories developed from the work of Venkatesh, Morris, Davis, and Davis in 2003; and developed primarily from a literature review derived from secondary data. The questionnaire, therefore, consisted of closed-ended questions, including demographic factors with the choices of generation Y and Z, performance expectancy, effort expectancy, social influence, and facilitating conditions, and intention to study online behaviors. In the above questionnaire, there are five criteria for determining the weight of the assessment according to the Likert scale method. The research tool quality was tested as follows: 1) Validity testing with the IOC (Item – Objective Congruence) 0.79, 2) Reliability testing with Cronbach's Alpha Coefficient of 0.96 which passed the confidence criteria, and 3) the construct reliability (PC) testing ranged from 0.858-0.940 with the convergent validity of the measure based on the factor weights of the questionnaire and average variance extracted (AVE) ranged from 0.678-0.709, which was within the acceptable range. **1) Data analysis:** by using descriptive statistics was used to describe basic information about the sample, such as percentage, mean, standard deviation (S.D.) 2) Inferential statistics, including regression analysis, are used to analyze data. For the hypothesis testing, statistical analysis was performed using regression analysis to study the influence of technology acceptance factors on the intention to study online behaviors of generation Y and Z students in the Bangkok, and the researcher used both a Multiple Regression Analysis to test the influence of all factors of technology acceptance on behavior of intention to study online and a Hierarchical Regression Analysis to test the moderating effect of generation to determine the relationship among performance expectancy, effort expectancy, social influence, and facilitating conditions affecting the intention to study online behaviors of students in the Bangkok. Prior to the analysis, the data assumptions were tested (normal distribution, multicollinearity, linearity, and autocorrelation, table 1). In this study, all data assumptions were found to be within the acceptable criteria (Hair, Black, Babin & Anderson, 2018).

Results

Descriptive Statistics

Among the 275 research respondents, 67.3 percent were female; 73.1 percent of respondents were from generation Z; 31.3 percent had a total income between 15,001 and 20,000 baht; about half of the samples had a bachelor's degree (66.5 percent) and slightly less than half of the samples used blended learning (39.6 percent). The mean, standard deviations, reliability, correlations, and the results of multiple regression are presented in Table 1.

Table 1 Descriptive Statistic and Multiple Regression Analysis

N= 275	Mean	S.D.	α	AVE	(1)	(2)	(3)
(1) PEEX	4.36	.506	.938	.700			
(2) EFEX	4.50	.536	.858	.700	.739**		
(3) SOIN	4.23	.610	.926	.678	.740**	.751**	
(4) FACO	4.25	.562	.917	.709	.068	-.044	.097

Independent Variables	b	β	t	Sig.
(Constant)	-.331		-1.506	.133
(1) PEEX	1.171	.803	7.878	.000**
(2) EFEX	-.988	-.739	-9.671	.000**
(3) SOIN	.306	.253	3.908	.000**
(4) FACO	.568	.456	9.368	.000**

$R = .834$, $R^2 = .695$, Adjust $R^2 = .691$, $F = 154.13$, Sig. $F = .000$*

Note: ** Correlation is significant at the 0.01 level

Hypotheses Testing

From a Multiple Regression Analysis (Table 1), it was found that the influence of technology acceptance factors on the intention to study online behaviors of students in Generation Y and Z in the Bangkok (H1). By analyzing multiple regression analysis using the input method (Enter) in the overall model, the technology acceptance factors including performance expectancy (PEEX), effort expectancy (EFEX), social influence (SOIN), and facilitating conditions (FACO) presented a positive correlation with the intention to study online at 0.834 (R= 0.834) and were able to predict the intention to study online by 69.5 percent ($R^2 = 0.695$). The most factor affecting the intention to study online behaviors was the effort expectancy factor (t-value = -9.671), followed by facilitating conditions factor and performance expectancy factor (t-value = 9.368 and 7.878), respectively. Considering the Unstandardized Coefficients b, it was found that when respondents prioritized the performance expectancy factor by one unit, there was a 0.803 unit increase in their intent to study online and when the respondents gave an increase in the importance of the facilitating conditions factor by 1 unit, the intention to study online behaviors was increased by 0.456 unit. Therefore, it can be concluded that the alternative hypothesis 1 was accepted at a statistically significant level of 0.05. According to the Hierarchical Regression Analysis employed to test the interaction between four independent variables, which are defined as a component of technology acceptance factors, including performance expectancy, effort

expectancy, social influence, facilitating conditions, and generation, is considered to play the moderating role between independent variables and the intention to study online (H2). The moderated multiple regression analysis for the four hypotheses includes the analysis of four steps. Step 1 looked at the impact of control variables and independent variables; Step 2 looked at the main effect of independent variables and generation; and Step 3 looked at the interaction based on calculating the standardized scores of independent variables and generation. The interaction variables are as follows: 1. Performance Expectancy x Generation, 2. Effort Expectancy x Generation, 3. Social Influence x Generation, and 4. Facilitating Condition x Generation. The p-value and unstandardized beta coefficients of the interaction among the variables were investigated to determine whether the moderation effect significantly influenced. The result found that Performance Expectancy x Generation indicates R-square for the model is 0.527, showing the model accounts for 52.7% of the observed variation in the intention to study online. The ANOVA test of significance of the overall model produced an F-statistic test of 42.554 with a p-value less than 0.05. The interaction of effort expectancy x generation also indicates the R-square for the model is 0.528, showing the model accounts for 52.8% of the observed variation in the intention to study online. The ANOVA test of significance of the overall model produced an F-statistic test of 42.641 with a p-value less than 0.05. While the interaction of Social Influence x Generation and Facilitating Condition x Generation indicates only the main effects when considered, the ANOVA test of significance of the overall model produced an F-statistic test of 46.321 and 45.651 with a p-value greater than 0.05, respectively. Accordingly, the results of moderated multiple regression analysis for models 1 and 2 support the proposed hypotheses, while models 3 and 4 are rejected (Table 2). This investigation applied the PROCESS developed by Hayes (2017) to estimate and plot the interaction among the variables to study the moderating effect of generation on the relationship between performance expectancy, effort expectancy, and intention to study online (Figure 2 and 3).

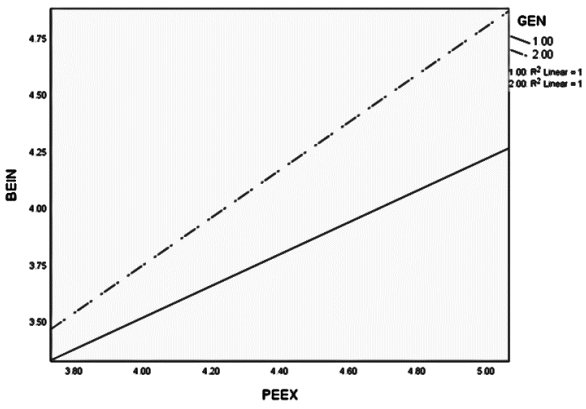

Figure 2 The moderating effect of generation the on the relationship between performance expectancy and intention to online learning behavior

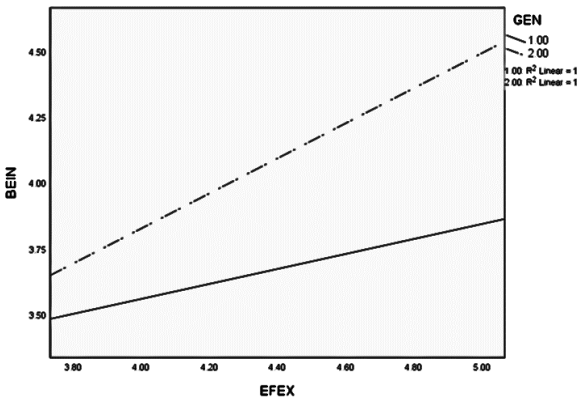

Figure 3 The moderating effect of generation on relationship between effort expectancy and intention to online learning behavior

Figure 2 indicates the interaction between performance expectancy and the generation of intention for online learning behavior. It found that the variation of intention to engage in online learning behavior was significantly dependent on the interaction effect of performance expectancy and generation. It means that the older participants (Gen Y) who had a high degree of performance expectancy can result in lower intentions in online learning behaviors, while the younger participants (Gen Z) who had a high degree of performance expectancy can have a higher impact on their intentions in online learning behaviors. Therefore, when considering only the performance expectancy and the slope effect for both generations, there was a significant positive, $t = 2.53$ ($\beta = 0.351$, $p < 0.05$). **Figure 3** indicates the interaction between effort expectancy and the generation of intention for online learning behavior. It found that the variation of intention to online learning behavior was also significantly dependent on the interaction effect of effort and generation, which means that the older participants (Gen Y) who had a high degree of effort expectancy could result in lower intentions in online learning behaviors, while the younger participants (Gen Z) who had a high degree of effort expectancy could have a higher impact on their intentions in online learning behaviors. Therefore, when considering only the effort expectancy and the slope effect for both generations, there was a significant positive, $t = 2.51$ ($\beta = 0.383$, $p < 0.05$). It suggests that perceived effectiveness of online learning, benefits of online learning activities, quality of activities, ease of online learning, clarity, and speed of online learning are factors that can have a greater impact on younger students' willingness to learn online behavior.

Discussion

In this study, the comparison of the influence of technology acceptance factors on the intention to study online behaviors between the generation Y and Z students in the Bangkok was examined during the period of the Covid Pandemic. The study also determined whether the overall technology acceptance factors affected the intention to study online behaviors of students in Generation Y and Z in the Bangkok (H1). First, the study presented the overall model of the technology acceptance factors including performance expectancy (PEEX), effort expectancy (EFEX), social influence (SOIN), and facilitating conditions (FACO) had a positive correlation with the intention to study online, which is consistent with previous studies (Chaiyakulwat, 2017; Techakritteerapong & Inthuchhanyong, 2016; Khechine & Augier, 2019; Persada, Miraja, & Nadlifatin, 2019; Tan, 2013), suggesting that the overall technology acceptance factors affected the intention to study online at a statistically significant level of 0.05. The findings may imply that the students who have high-performance expectancy, effort expectancy, social influence, and perceive the high level of facilitating conditions have increased the intention to study online. The results also showed that the interaction between performance expectancy and generation as well as the effort expectancy and

generation also indicated the statistical significance, which is partly consistent with the previous literature (Khechine, Lakhal, Pascot, & Bytha, 2014; Lin, Lu, & Liu, 2013; Setchinda & Mimacha, 2019). By testing the effect of generations, this study only agreed on two factors including performance expectancy and effort expectancy while the other two factors of the technology acceptance factors do not have a significant level when generations interacted which is consistent with the following studies (Khechine & Lakhal, 2018; Purwanto & Loisa, 2020; Joa & Magsamen-Conrad, 2021), meaning that social influence (SOIN), and facilitating conditions (FACO) were found to have an impact on the intention to study online behaviors regardless the generation differences. For the limitation, there are certain constraints on this study. The first weakness in this study is due to a certain set of subjects. In this case, participants from educational institutions in Thai were the only informants and most participants were female from gen Z and had a bachelor's degree which was not equally weighed between gen Y and Z. Although these two generations represented the major players in this research setting, the data was only collected by convenient sampling technique at the selected educational institutes and a few campuses in Bangkok and surrounding areas. These may impact the generalization of the findings. However, it would shed some more light on the field of customer behavior if other stakeholders are taken into consideration.

Hypotheses Testing

Table 2 Results of Moderated Regression Analysis

Independent variables	Moderating equation 1			Independent variables	Moderating equation 2			Independent variables	Moderating equation 3			Independent variables	Moderating equation 4		
	Step 1	Step 2	Step 3		Step 1	Step 2	Step 3		Step 1	Step 2	Step 3		Step 1	Step 2	Step 3
Intercept	.135	-.345	1.8835	**Intercept**	1.977	1.231	-.333	**Intercept**	.702	.350	.295	**Intercept**	1.216	.740	.721
Control Variables			-.414	**Control Variables**				**Control Variables**				**Control Variables**			
Gender	-.043	-.026	-.023	Gender	-.042	-.021	-.027	Gender	-.049	-.036	-.031	Gender	-.007	.007	.013
Income	.027	.017	.017	Income	.017	.004	.022	Income	.041	.032	.032	Income	.002	-.007	-.012
Education	-.053	-.028	-.030	Education	-.054	-.021	-.034	Education	-.070	-.049	-.050	Education	-.097	-.070	-.069
Technology types	-.091*	-.070	-.070	Technology types	-.141*	-.112	-.077	Technology types	-.062	-.048	-.046	Technology types	-.105*	.733	-.083
Main effects				**Main effects**				**Main effects**				**Main effects**			
Performance Expectancy	.967*	.935*	.938*	Effort Expectancy	.557*	.540*	.931*	Social Influence	.851*	.821*	.819*	Facilitating Condition	.764*	.821*	.750*
Generation		.301*	.327*	Generation		.395*	.310*	Generation		.235*	.259*	Generation		.293*	.265*
Interactions				**Interactions**				**Interactions**				**Interactions**			
Performance Expectancy x Generation			**.079***	Effort Expectancy x Generation			**.079***	Social Influence x Generation			.048	Facilitating Condition Generation			-.070
R^2	.485	.516	.527	R^2	.231	.285	.528	R^2	.526	.544	.548	R^2	.424	.454	.461
Adj.R^2	.475	.505	.515	Adj.R^2	.217	.269	.515	Adj.R^2	.517	.534	.537	Adj.R^2	.414	.441	.447
ΔR^2	-	.031	.011	ΔR^2	-	.054	.243	ΔR^2	-	.018	.004	ΔR^2	-	.003	.007
F	50.616	47.586	42.554	F	16.144	17.814	42.641	F	59.670	53.391	46.321	F	39.650	37.076	32.601

Note: * denotes significance level of 0.05

The second limitation is the nature of cross-sectional research. It means that the study is carried out within only a short time frame and is only a snapshot of one setting and a certain set of variables which may provide different results with different time frames and settings. For future research, the author suggests that these given limitations need to be considered and ameliorated to derive more valid results. Hopefully, this research can provide a better understanding of the influence of technology acceptance factors on intention to study online behaviors, especially from both generations Y and Z.

Conclusion

Since online learning has become a common teaching practice, especially when education is affected by a situation such as COVID-19, researchers have paid attention to increasing efficiency and effectiveness in online learning conditions. This study aims to describe the factors that affect the intention of using online learning systems. In general, the study found the direct determinants of technology acceptance factors on the intention to study online intention behaviors of students in Generation Y and Z in the Bangkok. When considering the interaction effect, the study also found the interaction of performance expectancy and generations as well as effort expectancy and generations. The analysis shows that performance expectancy and effort expectancy for the younger generation were higher than the mean scores for the older generation, while the rest of the interaction effects were not found to be statistically significant. The findings are consistent with the results from the study by Acheampong et al (2018), which implied that as long as generation is taken into consideration, a different output could be expected regarding the age differences. As can be seen from the results, the younger generation tends to be more concerned about the performance derived from the online study than those of the older generation, and this seems to present the same direction in the case of effort expectancy. However, the study does not find support for the effect of social influence and facilitating conditions among generations, which can be explained by the existence of other explanatory variables (Khechine & Lakhal, 2018). The study also led to theoretical and practical contributions. Firstly, it presented the benefits of studying the UTAUT model in an academic institution. Persada, Miraja, and Nadlifatin, 2019; Khechine and Augier, 2019 confirmed that technology adoption influenced the intention to study online behaviors. In addition, like other study results (Khechine, Lakhal, Pascot, & Bytha, 2014; Acheampong, et al., 2018), performance expectancy was confirmed to be affected by age. Secondly, the study statistically proved the factors that could encourage the intention to study online, especially when the two groups of ages are considered, including performance expectancy and effort expectancy. Therefore, management should ensure that the messages on the benefits of online study on performance and the ease of use of the online system are received by the young targets to increase their intention to study online behaviors. The messages can be delivered through manuals, online communities or forums, training, or support staff.

References

Abdullah, F., & Ward, R. (2016). Developing a General Extended Technology Acceptance Model for E-Learning (GETAMEL) by analysing commonly used external factors. *Computers in human behavior, 56*, 238-256.

Chaiyakulwat, N. (2017). Application of the combined theory of adoption and use of technology to understand the acceptance of the investment community as if booking for retail investors. *Independent research. Master of Business Administration, Bangkok University*.

Fernquest, J. (2016). *Generation Y Thailand: A new Me Generation?* Retrieved February 24, 2021, from Bangkok Post: https://www.bangkokpost.com/learning/advanced/1038478/generation-y-thailand-a-new-me-generation-.

Ferrari, P. (2018). *Generation Z-ers are coming of age and bringing*. Retrieved February 24, 2021, from https://www.capstan.be/generation-z-ers-are-coming-ofage-age-and-bringing-fresh-challenges-to-educators.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2018). *Multivariate data analysis: a global perspective (7th ed.).* New York: Pearson.

Joa, C. Y., & Magsamen-Conrad, K. (2021). Social influence and UTAUT in predicting digital immigrants' technology use. *Behaviour & Information Technology*, 1-19.

Khechine, H., & Augier, M. (2019). Adoption of a social learning platform in higher education: an extended UTAUT model implementation. In Proceedings of the 52nd Hawaii International Conference on System Sciences. 53-62.

Khechine, H., & Lakhal, S. (2018). Technology as a Double-edged Sword: From Behavior Prediction with UTAUT to Students' Outcomes Considering Personal Characteristics. *Journal of Information Technology Education, 17*, 63-102.

Khechine, H., Lakhal, S., Pascot, D., & Bytha, A. (2014). UTAUT model for blended learning: The role of gender and age in the intention to use webinars. *Interdisciplinary Journal of E-Learning and Learning Objects, 10*(1), 33-52.

KTC Academy. (2018). *Course on Knowing and Understanding Working Style with Gen Y and Gen Z (Understanding Gen Y and Gen Z Working Style)*. Retrieved February 24, 2021, from KCT Academy: https:// kctathailand.com/courses/courses-know-understand style/.

Li, C., & Lalani, F. (2020). *The COVID-19 pandemic has changed education forever: This is how*. Retrieved February 23, 2021, from World Economic forum: https://www.weforum.org/agenda/2020/04/coronavirus-education-global-covid19-online-digital-learning/.

Lin, P. C., Lu, H. K., & Liu, S. C. (2013). Towards an Education Behavioral Intention Model for e-learning Systems: An Extension of UTAUT. *Journal of Theoretical & Applied Information Technology, 47(3)., 47*(3).

Mardikyan, S., Besiroglu, B., & Uzmaya, G. (2021). Behavioral intention towards the use of 3G technology. *Communications of the IBIMA*, 1.

National Statistical Office. (2019). *Demographic statistics Population and housing*. Retrieved February 26, 2021, from NESDB: http://statbbi.nso.go.th/staticreport/page/sector/th/01.aspx

Persada, S. F., Miraja, B. A., & Nadlifatin, R. (2019). Understanding the generation Z behavior on D-learning: A Unified Theory of Acceptance and Use of Technology (UTAUT) approach. *International Journal of Emerging Technologies in Learning (iJET), 14*(5), 20-33.

Phakdichakriwut, Y. (2020). *Covid-19 accelerates 'education' in Thailand until it's time to change?* Retrieved February 25, 2021, from Bangkok Business:: https://www.bangkokbiznews.com/ news/detail/885550.

Postolov, K., Magdinceva Sopova, M., & Janeska Iliev, A. (2017). E-learning in the hands of generation Y and Z. Poslovna izvrsnost, 11(2), 107-119.

Purwanto, E., & Loisa, J. (2020). The intention and use behaviour of the mobile banking system in Indonesia: UTAUT Model. *Technology Reports of Kansai University, 62*(06), 2757-2767.

Setchinda, T., & Mimacha, K. (2019). Factors Influencing Consequences of Consequently Using Telephone Banking Services: Case studies of service users in Bangkok. *RMUTT Global Business and Economics Review, 14*(1), 117-138.

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

Techakritteerapong, W., & Inthuchhanyong, S. (2016). Factors for accepting the use of collaboration technology among personnel in organizations in Thailand. *Journal of Business Administration, 39*(152), 30-44.

Vanichanan, P. (2020). *Basic education in the Covid-19 era: how to open and close schools?* Retrieved February 23, 2021, from TDRI: https://tdri.or.th/2020/05/basic-education-in-covid-19-crisis-reopening-school-after-lockdown/.

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

Yousafzai, S. Y., Foxall, G. R., & Pallister, J. G. (2007). Technology acceptance: a meta‐analysis of the TAM: Part 1. *Journal of Modelling in Management.*