

**POTENTIAL FACTORS AFFECTING SATISFACTION WITH  
ONLINE LEARNING AMONG UNIVERSITY STUDENTS IN  
BANGKOK DURING COVID-19**



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Naphat Sangcharoenwanakul



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**ABSTRACT**

This study attempts to investigate factors affecting satisfaction with online learning among university students in Bangkok during the new normal. Online education has become the new normal in many universities worldwide, courtesy of COVID-19. Satisfaction with online learning is a significant aspect of promoting successful educational processes. With the outbreak, it immediately results in changes in teaching and learning for both instructors and learners. Online education is the delivery of learning materials using the interaction and for distributing educational materials, but online education is still very new, and it is also very difficult to get satisfactory responses from learners. Numerous studies have shown that satisfaction with online learning can be influenced by a variety of factors, including technical ability, perceived ease of use, cost effectiveness, and social interaction. Quantitative and qualitative studies were used to explore the relationships of each variable. The results showed that technical ability and social interaction were associated with a student's satisfaction with online learning.

**KEY WORDS:** Satisfaction with online learning/ Technical ability/ Social interaction

45 pages

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# CHAPTER I

## INTRODUCTION

### 1.1 Introduction and Problem Statement

Past research on online learning has risen in popularity in recent years, as technology has been incorporated into all levels of education and training. Consequently, scholars have been looking for methods to enhance its efficacy (Reiser & Dempsey, 2012). Online learning has been marketed as being less expensive and more convenient than conventional educational settings and offering more possibilities for students to complete their education.

In the current situation, the COVID-19 pandemic has brought massive disruption to education throughout the world, including Thailand. Many universities located in Bangkok have to stop physical classrooms and suddenly shift to an online curriculum, which some of the students and instructors still lack experience with. Therefore, it can affect instructors who lack a proper method of teaching and setting up online classes, as well as students who also lack a proper study area and equipment. Also, poor technological basics to support online learning for both students and instructors is another problem that occurs when they are suddenly shifting online classes. Moreover, technical issues for instructors during online classes make students feel like the learning is more difficult than traditional learning. The social distancing caused by the pandemic has resulted in a reduction in many elements such as interactivity, engagement, and support, which are considered significant keys in influencing students' satisfaction (Cheng, 2020). As we know, the pandemic is reshaping education, and the reality is that it is going to change education forever. As mentioned above, the disruption of traditional education will cause many universities to adjust their education systems to better accommodate changes in the upcoming future of learning. If they don't want to disappear in the new era, they need to begin shifting traditional learning to online learning. They can start by understanding students' satisfaction with online learning to be able to develop further.

Despite the spread of online courses at universities, there is limited research regarding the effects of variable factors on students' satisfaction with online learning during the COVID-19 pandemic. This study will identify variables that can increase satisfaction with online learning from the perspective of university students, and instructors in Bangkok.

## **1.2 Purpose of the Study**

The goal of purpose will reflect the statement of the problem and be a way to find out what is known, what is not, and what we can develop further. There are several purposes for this research study. The first purpose was to learn what types of problems students experience and perhaps explore good things. It will help us know and understand the real problems students experience and also explore the good things we might not have realized before. Second, the purpose of this research study was to identify and analyze the satisfaction of online learning from the perspective of university students and instructors in Bangkok. I'd like to hear from students and also from instructors, in order to identify and analyze key differences between the two groups. Lastly, it is to figure out and recommend an effective strategy for the development of satisfaction with online learning among university students in Bangkok to the public and especially educational institutions, to enhance online education in Thailand so it is more effective. In terms of the benefits from the study, after we realize the problems and state the purposes of doing this research paper, we can also classify the benefits, and here are two main benefit statements. First, foreign students could be more interested in coming to study in Thailand. When online education in Thailand has developed and improved effectively, then it will be more attractive for foreign students to come to study in Thailand from overseas. Furthermore, we can also save time and effort by designing and adapting a proper plan to improve online education management through data analysis and overcome online learning hurdles. However, we also considered a feasibility analysis of four parties that might be able to get the benefits from this study. First, private sectors such as educational institutions, investors, platform owners, as well as the education industry, etc. Second, the public sectors, which include the Ministry of Education, the Council of Education, the Statistic Department, and the Information and

Communication Technology Center. Moreover, it can benefit all researchers as well, such as educational research consultants, R & D analysts, and consumer insight analysts. Last but not least, this study can be helpful to anyone who might be interested in the topic as well.



## **CHAPTER II**

### **LITERATURE REVIEW AND RESEARCH HYPOTHESES**

#### **2.1 Satisfaction with Online Learning**

Online learning is used as a complement to face-to-face learning. Some benefits of online learning include simple access to information, appropriate content distribution, content standardization, customized teaching, self-pacing, interaction, and convenience. Although online learning is beneficial to many learners, student satisfaction is required for a successful and effective educational experience. Online learning has become the new normal and is becoming increasingly important in the period of crisis and pandemics such as COVID-19. It offers advantages in terms of accessibility and convenience, allowing students to learn in their own space and revisit content when required. According to Elshami (2021), “student satisfaction” is an attitude formed as a result of an individual’s evaluation of the educational experience, services, and facilities provided. In the context of online learning, student satisfaction relies on a wide range of factors, including communication, student participation in virtual conversations, flexibility, workload, technical support, instructional methods, and feedback (Wei & Chou, 2020). Interacting with people, engaging in activities, and receiving feedback help students gain knowledge in a social environment (Bandura, 2021). However, making the adjustment to online learning from traditional classroom learning has challenges and barriers. Some students are still dissatisfied with online learning due to some of the barriers mentioned above, resulting in significant educational losses, weakened social skills, and an increased risk of dropping out of online educational courses in Thailand during the COVID-19 pandemic (Aoyagi, 2021).

## **2.2 Technical Ability**

Technical abilities are the knowledge, or expertise required to perform specific, job-related tasks. The technological abilities of learners can be determined as the degree to which learners can handle technological devices and online platforms during the COVID-19 pandemic, which also has a direct impact on learners' satisfaction. The result reveals a positive influence towards satisfaction with online learning (Berman, 2006). These include the ability to create new documents, use a word processing program, navigate the Internet, and download software. To cope with online learning platforms, learners must possess the essential skills to operate and work with them. If the learner is new to this technology, it might be harder since online educational platforms have a lot of technical functions (Sathishkumar, 2020). Technological devices can fail, power failures can happen, etc., and in such a situation, the learner must be aware of how to resolve it or take essential steps to overcome it (Miiller, 2014). According to Talerngsri (2019), many students have anxieties about their perceived weak abilities to use technology and online learning systems. This can also be made worse by inadequate equipment and poor internet connectivity. Assareh and Bidokht (2011) highlighted four types of barriers to online learning based on the learner, teacher, curriculum, and institution. The factors involved for the learner are their access to computers and the internet, their ability to use technology and software, and their past experience in online learning.

## **2.3 Perceived Ease of Use**

Perceived ease of use is the degree to which a person believes that using a particular system will be free of effort. According to researchers, perceived ease of use has a positive effect on behavioral intention and perceived usefulness for using systems (Chin, Todd, & Doll, 1995). Cheng and Chen (2011) describe perceived ease of use as a measure of users' perceptions of how easy it is to use online learning. According to Baticulon (2021), perceived ease of use in online learning can be supported by easily adjusting style and clear communication and directions from instructors. It can also include support from the administration, such as accessibility to teachers and staff,



support and timely feedback from tutors, clear instructions and expectations, appropriate class sizes for online learning, and great online teaching skills.

## **2.4 Cost Effectiveness**

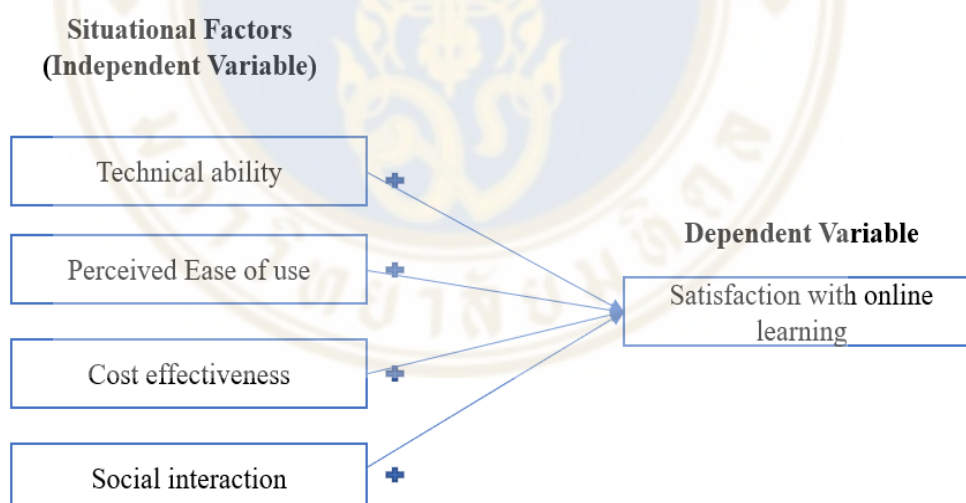
Cost effectiveness is a concept borrowed from the lexicon of economics, which is concerned with comparing different ways of achieving the same objective such that the most cost-effective choice will be the least costly of the alternatives being compared. Prior reviews of the cost analysis indicate that e-learning can result in significant cost savings compared to traditional instructor-based learning. If the providers must make online learning cost-effective in the eyes of the learners, it becomes essential to closely look at students' satisfaction. (Thomas & Martin, 1996) comment that if organizations intend to make e-learning efficient and cost-effective in the eyes of the learners, then student satisfaction needs to be focused upon. Satisfaction with learning online can be positively influenced by cost and time-saving for both learners and institutions. It can reduce the cost of classes and eliminate the cost of commuting to and from traditional educational establishments. Institutions can also save time and money by delivering classes online (Srichanyachon, 2014). Yang and Cornelius (2004) look upon online learning as a cost-effective option with all expenditures related to commutation, textbooks, etc. cut down. Free dial-up internet is offered at many universities. For learners, cost effectiveness can help eliminate geographical obstacles. The students can study at universities around the world but don't have to leave their own country. According to past research, the results showed a positive relationship between cost effectiveness and perceived satisfaction, and a behavioral intention to use. Also, there is a positive relationship between time savings and perceived satisfaction and the behavioral intention to use it.

## **2.5 Social Interaction**

Social interaction refers to the interaction that happens between students and instructors when instructors implement strategies to foster interpersonal encouragement and social inclusion. According to Muilenburg and Berge (2005), low social interaction

is perceived by students as the most severe barrier to both the enjoyment and satisfaction of online learning. Social interaction in online learning can positively influence student engagement, motivation, and can help improve student performance (Kwaske & McLennan, 2022). Lonn (2005) outlined three types of social interaction: learner-learner, learner-content, and learner-instructor. Student satisfaction is determined by these three types of social interaction. When different types of interaction are used in the learning environment, satisfaction with the learning experience increases. Moreover, student-student interaction is essential for online student satisfaction; the frequency, quality, and timeliness of student-instructor contact are the most significant predictors of student satisfaction (Penney, 2020). Social interaction is the factor that makes students decide to learn online or in a traditional class. Becker (2013) performed an exploratory factor analysis of e-learning barriers and found that a lack of social interaction was an issue.

## 2.6 Conceptual Framework



**Figure 2.1 Conceptual framework**

Figure 2.1 depicts a proposed conceptual framework for the study based on the most significant aspects uncovered in the literature review. There are five different variables in the framework. The dependent variable is the student's satisfaction with online learning, and there are four independent variables, which are technical ability,

perceived ease of use, cost effectiveness, and social interaction, that I found out can be significantly related to the dependent variable according to past research papers and dissertations.





## **CHAPTER III**

### **RESEARCH METHODOLOGY**

For both quantitative and qualitative research, the research has focused on people who are studying or teaching in the capital city, Bangkok, as it is home to many students from many places and has many more institutions compared with other provinces in Thailand. Both students and instructors were captured in this research as well. For the students, the researcher wants to explore the main factors from bachelor's degree and master's degree students that can affect their satisfaction with online learning as they are the ones who have directly experienced this circumstance. In addition, the instructors were brought in to be part of the interview because they are the ones that are very involved and can significantly directly impact student satisfaction as well as their real experiences from observing students while teaching online, which is very valuable for this study.

#### **3.1 Quantitative Study**

Quantitative study is conducted through online surveys via the Google Platform. The purpose of this quantitative study is to explore the level of impact of each variable on satisfaction with online learning. In order to collect all the data on each variable, five sets of questions were asked based on the variables in the literature review: general questions on satisfaction with online learning, technical ability, perceived ease of use, cost effectiveness, and social interaction. Moreover, the survey also collects data on demographics, which are age group, gender, income, education, and online learning platform used, simply to learn about the types of people who fill out these questionnaires. In this study, convenience sampling was used to reach out to respondents through personal relationships as well as public posts on social media platforms. The respondents are university students from age 18 and above from different demographic groups. All respondents using in the analysis must be university students from Bangkok

as well as have studied online learning in a university curriculum during the past 6 months. Following the screening questions, there are a total of 102 samples. For the analysis, 100 samples were used.

### **3.2 Qualitative Study**

Qualitative study is conducted with 6 in-depth interviews via telephone and online platforms such as Line, Google Meet, Zoom, and Microsoft Team. The objective is to gain an in-depth understanding of each behavior and attitude toward online learning satisfaction. Since quantitative students can only gain numeric data, qualitative study is able to obtain insights into specific variables. The questions are based on five variables in a quantitative study. However, they will be customized based on each sample and their backgrounds. There are two groups of samples: four students, two with a bachelor's degree and two with a master's degree, as well as two instructors, from a university located in Bangkok.

## CHAPTER IV

### RESEARCH FINDINGS

#### 4.1 Quantitative Analysis

##### 4.1.1 Frequency

**Table 4.1** Frequency Analysis

Demographic	Details	Frequency	Percent
<b>Gender</b>	Male	32	32.0
	Female	64	64.0
	Prefer not to mention	4	4.0
<b>Monthly Income</b>	Lower than 15,000 Baht	35	35.0
	15,000 - 25,000 Baht	13	13.0
	25,001 - 35,000 Baht	19	19.0
	35,001 - 50,000 Baht	25	25.0
	More than 50,000 Baht	8	8.0
<b>Education</b>	Bachelor degree	64	64.0
	Master degree	36	36.0
<b>Age</b>	18 - 22 years	38	38.0
	23 - 27 years	35	35.0
	28 - 35 years	24	24.0
	36 - 45 years	3	3.0
<b>Online learning platform used</b>	Zoom	64	64.0
	WebEx	8	8.0
	Google Meet	4	4.0
	Microsoft Teams	24	24.0

The personal questions were asked to respondents to identify the research sampling group. Table 4.1 represents the overall respondents' profiles in which their gender, monthly income, education level, ages, and online learning platform are asked. The majority of the 100 respondents (64.0%) are female, followed by males (32.0%) and those who did not want to be identified (4.00 percent).

Most of the respondents' monthly incomes of less than 15,000 Bath (35.0%) are followed by a monthly income of 35,001–50,000 Bath (25.0%). Monthly income of 25,001-30,000 Bath (19.0%) and 15,000-25,000 Bath (13.0%) and monthly income of more than 50,000 Bath (8.0%) respectively.

Most of the respondents have bachelor's degrees (64.0%), followed by master's degrees (36.0%).

The majority of respondents are aged 18–22 years (38.0%), followed by 23–27 years (35.0%), 28–35 years (24.0%), and 36–45 years (3.0%), respectively.

The majority of the respondents' online learning platforms used are Zoom (64.0%), followed by Microsoft Team (24.0%), Webex (8.0%), and Google Meet (4.0%), respectively.

#### **4.1.2 Reliability Analysis**

Reliability analysis is a tool that is used in assessing the degree to which test scores are consistent. It calculates the number that is commonly used to measure scale reliability and provides information regarding the relationships between items on the scale. Cronbach's Alpha is a measure that is used to assess the reliability or internal consistency of a set of scales or test items. A generally accepted rule of Cronbach's Alpha is 0.7, which indicates an acceptable level of reliability. However, for a good level, the Cronbach's Alpha should be 0.8 or more.

**Table 4.2 Reliability Analysis**

<b>Reliability Statistics</b>			
<b>Construct</b>	<b>Cronbach's Alpha</b>	<b>Cronbach's Alpha Based on Standardized Items</b>	<b>N of Items</b>
Satisfaction with online learning	0.742	0.743	3
Technical ability	0.760	0.761	3
Perceived ease of use	0.820	0.821	3
Cost effectiveness	0.853	0.848	3
Social interaction	0.771	0.779	3
<b>Total</b>	<b>0.906</b>	<b>0.905</b>	<b>15</b>

According to the data in Table 4.2 in this research, reliability analysis has been performed on a set of questionnaires and the result is acceptable as Cronbach's Alpha is 0.906. After consideration for each construct, the results are also acceptable as Cronbach's Alpha of five constructs is more than 0.7. It means that all 15 questions are reliable and thus, all the questions will be used for further analysis.

### 4.1.3 Descriptive Statistics

**Table 4.3 Descriptive Statistics of questionnaires**

	<b>N</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Std. Deviation</b>
The online learning activities met your expectations for what you hoped to learn	100	1	5	3.69	0.929
Satisfaction is a key factor in your choice to continue studying online rather than in a traditional class	100	1	5	3.76	0.889
The efficiency of your online learning is connected to the level of satisfaction	100	1	5	3.92	1.041
You will be satisfied with online learning if you can solve technical problems you encounter during online learning	100	1	5	4.24	1.147
Online learning will gratify you if you have a strong technological background	100	1	5	3.80	1.073
If you can run and work in all technical features of an education platform, you will be satisfied with online learning	100	1	5	3.86	1.005

**Table 4.3 Descriptive Statistics of questionnaires (cont.)**

	<b>N</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Std. Deviation</b>
Quick online learning support by an institution is frequently acknowledged as a source of happiness with online education	100	1	5	3.98	1.015
If the online learning system is user-friendly, satisfaction with online learning will increase	100	1	5	4.34	0.890
You have greater flexibility in studying to fit with your schedule and it is very satisfying for you	100	1	5	4.21	0.967
You will be quite happy if studying online allows you to pay less for tuition	100	1	5	3.01	0.980
Online learning will satisfy you because it allows you to save time	100	1	5	3.94	0.827
You will be satisfied with your online learning experience if you can save money on travel costs by not having to attend a traditional class	100	1	5	4.02	1.092



The data in Table 4.3, presents descriptive statistics including the minimum and maximum values, as well as the mean scores of each variable question, sorted from the highest mean score, which is 4.36, and the lowest mean score, which is 3.01. This table helps to understand the involvement of each question in this study.

#### 4.1.4 Factor Analysis

##### 4.1.4.1 Results of the Principal Component Analysis

The principal component analysis is carried out by the dimension reduction technique to assess any removable items and to ensure that the factors are really measuring and explaining the variables. For further details, the popular rotation technique is used, which is the varimax rotation technique. The rotation method selected is superior to other rotation methods in achieving a simplified factor structure. The sufficient factor loading value for interpretative purposes must be greater than 0.4. All items are retained as there are no issues with eigenvalue, commonality, cross factor loadings, and factor loading values. Ultimately, three constructs are recognized and named based on relevant items in each group. Details of the components are presented in Table 4.4.

**Table 4.4 Rotated component matrix**

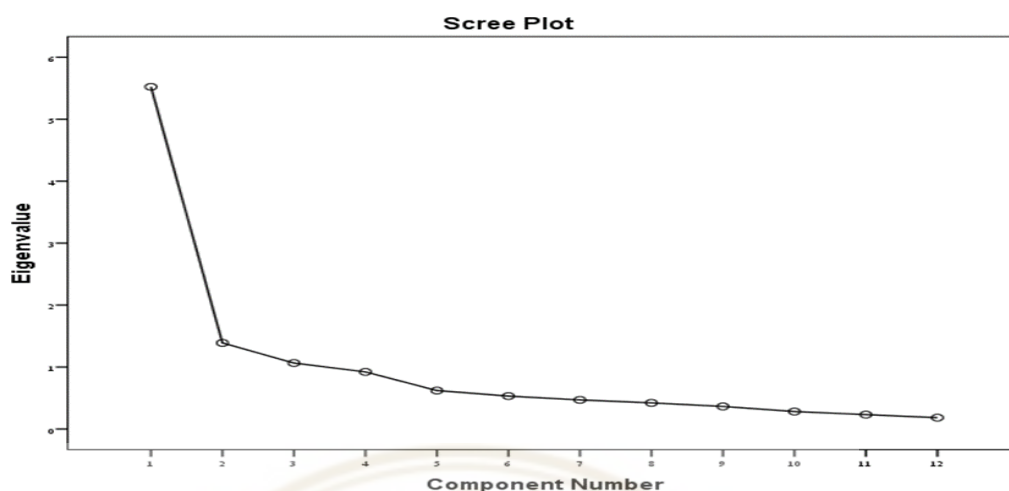
Rotated Component Matrix				
Constructs	Items	Component		
		1	2	3
Social interaction	When you can communicate with friends throughout an online class, you'll be more satisfied with your learning	0.831		
	While the instructors invite students to express their thoughts, most of them in the virtual classroom looked happier	0.844		



**Table 4.4 Rotated component matrix (cont.)**

<b>Rotated Component Matrix</b>				
<b>Constructs</b>	<b>Items</b>	<b>Component</b>		
		<b>1</b>	<b>2</b>	<b>3</b>
Social interaction	When you can communicate with friends throughout an online class, you'll be more satisfied with your learning	0.831		
	While the instructors invite students to express their thoughts, most of them in the virtual classroom looked happier	0.844		
Cost effectiveness	Online learning will satisfy you because it allows you to save time		0.696	
	You will be satisfied with your online learning experience if you can save money on travel costs by not having to attend a traditional class		0.615	
Technical ability	Online learning will gratify you if you have a strong technological background			0.418
	If you can run and work in all technical features of an education platform, you will be satisfied with online learning			0.501

In Figure 2.2, the scree plot shows the eigenvalue of each component in the first run. The point where the slope of the curve is clearly leveling off indicates the number of factors that the analysis should generate. The last big drop occurs between the three and four components, so this chart suggests using the first three components.



**Figure 2.2** The result of the Scree plot

#### 4.1.4.2 Common Method Variance—Harman's Single Factor

##### Test

This study is based on a self-administered questionnaire, so it is vulnerable to the possibility of common method bias or variance (CMV). Common method bias is a potential problem in behavioral research. The authors underlined that the presence of common method bias in a study can be assessed through Harman's single factor test (Podsakoff, MacKenzie, et al. 2012). Based on the results, it can be inferred that the data set of this study does support CMV as the variance explained by the single factor is less than 50%.

**Table 4.5** Total variance explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.966	49.437	49.437	2.966	49.437	49.437
2	0.969	16.153	65.590			
3	0.816	13.601	79.191			

*Extraction method: Principal Component Analysis*

## 4.1.4.3 Descriptive Analysis

**Table 4.6 Means and standard deviation of all variables**

	<b>N</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Std. Deviation</b>
Social interaction	100	1.50	5.00	4.325	0.863
Cost effectiveness	100	2.00	5.00	3.980	0.791
Technical ability	100	1.00	5.00	3.830	0.868

After the FEA process in the previous step of the analysis, the researcher then computes the mean score of each component. The result in Table 4.6 indicated the descriptive statistics of all variables. There are 100 valid observations. The variables have mean scores sorted descending from 4.325 to 3.830.

**4.1.5 Correlation Analysis and Normality**

Represents the correlation matrix consisting of the Pearson correlations, which indicate the inter-correlation among the variables studied. We have no missing data in this dataset. All correlations are based on all 100 cases in the dataset.

**Table 4.7 Inter-construct correlations**

		<b>SO</b>	<b>CO</b>	<b>TE</b>
SO	Pearson Correlation	1		
	Sig. (2-tailed)			
	N	100		

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

**Table 4.7 Inter-construct correlations (cont.)**

		SO	CO	TE
CO	Pearson Correlation	.468**	1	
	Sig. (2-tailed)	.000		
	N	100	100	
TE	Pearson Correlation	.479**	.572**	1
	Sig. (2-tailed)	.000	.000	
	N	100	100	100
Mean		4.325	3.980	3.830
Standard deviation		.863	.791	.868
Skewness		-1.367	-.714	-.807
Kurtosis		1.265	-.241	.762

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

According to the data in Table 4.7, As shown in Table 4.6, all variables studied are correlated across all pairs at a level of .01 statistical significance, with the pair with the highest correlation being technical ability (TE) and cost effectiveness. (CO) ( $r = 0.572$ ,  $p < 0.01$ ), and the lowest correlated pair is cost effectiveness (CO) with social interaction (SO) ( $r = 0.468$ ,  $p < 0.01$ ). Furthermore, the skewness and kurtosis values are within the acceptable range of  $-3$  to  $+3$  each, indicating that the data in the study is normally distributed.

#### 4.1.6 Regression Analysis

Multiple regression analysis is used in order to test the proposed hypotheses of the study, as it allows the examination of the influence of the predictors on the dependent variable.

**Table 4.8 Model summary of Satisfaction with online learning**

<b>Model Summary</b>			
<b>R</b>	<b>R Square</b>	<b>Adjusted R Square</b>	<b>Std. Error of the Estimate</b>
.711 <sup>a</sup>	0.506	0.491	0.532

a Predictors: (Constant), Social interaction, Technical ability

Regarding the conceptual framework, this research investigates the factors that affect social interaction and technical ability. According to Table 4.8, the researcher investigated to find out what factors affect satisfaction with online learning (H1, H3, and H4). The result in the model summary appears to be that the Adjusted R Square is 49.1%.

**Table 4.9 Analysis of variance (ANOVA) of Satisfaction with online learning**

<b>ANOVA<sup>a</sup></b>					
	<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
Regression	27.857	3	9.286	32.801	.000 <sup>b</sup>
Residual	27.177	96	.283		
Total	55.034	99			

a. Dependent Variable: Satisfaction with online learning

b. Predictors: (Constant), Technical ability, Social interaction, Cost effectiveness

According to Table 4.9, the analysis of variance (ANOVA) of satisfaction with online learning results proved that the independent variables, technical ability, and social interaction have a significant effect on the dependent variables, satisfaction with online learning which has a sig. value of .000. The result is evidence that this model is acceptable and usable to explain the relationship of the variables based on the hypotheses (H1, H3, and H4).

**Table 4.10 Analysis of variance (Coefficients) of Technical ability, Social interaction toward Satisfaction with online learning**

Coefficients <sup>a</sup>					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.715	.323		2.216	.029
Technical ability	.232	.079	.270	2.954	.004
Cost effectiveness	.134	.086	.142	1.561	.122
Social interaction	.383	.073	.443	5.216	.000

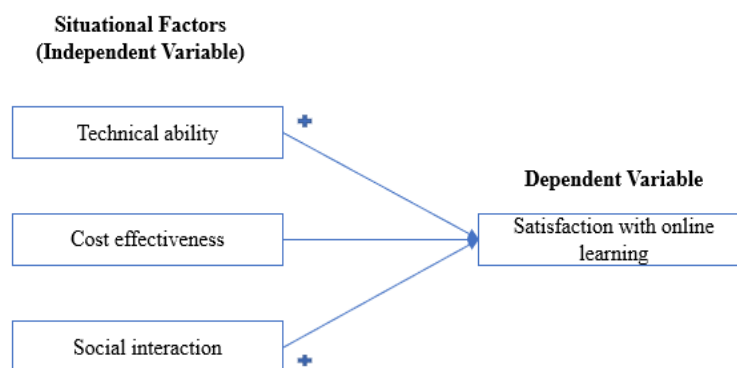
a. Dependent Variable: Satisfaction with online learning

Based on Table 4.10, the result shows that the independent variable that has a significant impact on satisfaction with online learning is technical ability (H1), which has a sig. value of 0.004 ( $p \leq 0.05$ ) and social interaction (H4), which has a sig. value of 0.000 ( $p \leq 0.05$ ). In contrast, for other independent variables, cost effectiveness (H3) is not significant as the sig. value is greater than 0.05. The final predictive model was:

$$\text{Satisfaction with online learning} = .715 + (.232 * \text{Technical ability}) \\ + (.383 * \text{Social interaction})$$

The result of assessing the data from the quantitative research has an impact on the conceptual framework of one of the variables dropped, which has been altered as illustrated in the figure below.





**Figure 2.3 New conceptual framework**

However, the new conceptual framework comes after we worked on correcting the quantitative by analyzing the new model of the framework as shown in Figure 2.3. The new model shows only three out of four variables, which are cost effectiveness, technical ability, and social interaction, and also two variables that have a positive relationship that can influence satisfaction with online learning, which are technical ability and social interaction.

## 4.2 Qualitative Analysis

The qualitative analysis is a statement of results taken from in-depth interviews that offers a deeper understanding and insight into two different groups of perspectives on satisfaction with online learning and how the four factors of technical ability, perceived ease of use, cost effectiveness, and social interaction influence satisfaction with online learning among Bangkok university students during the COVID-19 pandemics. Moreover, the interviewers are using the conference platform of Zoom and Microsoft Teams equally.

### **Satisfaction with online learning**

#### Students

Most of them said that “I am satisfied with online learning because I can exchange opinions during the class with friends and instructors, and the class also gives flexibility.” However, some students are quite unsatisfied because they lose the opportunity to do special in-class workshops, and learning offline gives a more suitable

atmosphere. The barriers that they are facing are the teacher's teaching styles and methods, followed by external factors such as the environment that can make them easily distracted and technical issues such as internet connection. For online learning experiences, they have shared that “studying online gives flexibility as it allows them to review the lesson in their free time, saving time and money and having fewer requirements.” Moreover, one student said, “I have had a good online learning experience when studying with Thai teachers because they are trying to find new and interesting methods of teaching.” Lastly, the suggestions that they think could help increase their online learning satisfaction are improvements in educational technology that can help students focus more in class, for example, the conference platform that is specially designed for online learning. They also suggested that every class should have teacher assistance to help support students when they need extra help.

#### Instructors

The first instructor said, “my students are satisfied with the online classes because I taught them slowly and always asked students if they had any questions about the studied topics.” She also has her class recorded on a cloud for students to review at their own time. She is using the LINE group to help the students in order to get the updated information (ex: class schedule, PPT Handouts, contact instructor, or other friends in the class) and using individual LINE to contact each student and when they have any problems, they can contact her directly by LINE or LINE call as well. The barriers that her students are facing are that some students prefer to see their friends and instructors on campus and some students prefer to use facilities on campus which means online learning may make them dissatisfied. Moreover, she gives some suggestions that “she can improve her students’ online learning experience, in which the instructor should let the students turn on the camera, ask them some questions while studying so that they will not feel bored or lonely, give them the group assignments and let them discuss with their groups, do, and present the assignments in the online class.”

The second instructor gave several factors regarding student satisfaction with online courses from her students. First, divided by teaching and learning category, students are more satisfied with online courses if they are lecture courses. But “if the courses are practical or lab, students would have difficulties understanding the content since there is no physical contact with the lecturers.” Sometimes it is difficult to study



online due to bad Internet connections, especially when they have to do tests or quizzes that require limited time online. Second, the tuition fee is lower when taking online courses. This factor makes students mostly satisfied with it. Lastly, regarding traveling to and from the university, students feel more satisfied since they don't have to travel far. However, regarding the place of study, students still prefer staying in class on-premise, in a university environment, rather than staying at home learning online. They elaborate that online learning distracts their attention from the classes since most classes do not require a camera to be on. They can move around when they are at home. Furthermore, staying at home makes them miss their friends, whereas learning offline is different. As for suggestions, because the nature of online and offline learning differs, students cannot pay attention for long periods of time in online learning. "Online teaching should be divided into smaller lecture sessions with activities in between for students via chat or other interactions to make sure that they pay attention to the class."

### **Technical ability**

#### Students

In students' opinions, whether a technical skill is considered a barrier for them or not, some students said that "it is not the main barrier because the program is already easy to use, and it might be a barrier at first, but once the students get familiar with it, the barrier will be gone." On the other hand, another group of students thought that technical skills are considered a barrier because they think "the programs and technologies are more complex and have some limitations." On top of that, all of the students agreed that "technical background knowledge is required for online learning because it can be time-consuming if students have to learn how to use the program, which can make them struggle and feel unsatisfied when learning online."

#### Instructors

In the instructors' opinion, whether a technical skill is considered a barrier for them or not, they definitely agree that the more applicable the technology of the lecturers and students, the more tools they can use to aim for understanding. They said that "technical skills are a requirement for the satisfaction of online learning." Since the students and instructors have the technical skills and equipment, they can use the computers, mobile telephones, or microphones easily, which can facilitate and help them get better quality pictures, files, and sound.

## **Perceived ease of use**

### Students

Most students agreed that “a quick response from instructors can ease their online learning experiences because some instructors take a long time to respond and react in a negative manner.” Also, some students are not comfortable asking questions during class. Moreover, adapting the curriculum to be more suitable for online learning is crucial.

### Instructors

“The support from instructors that can ease their students' online learning experiences is quick response and responsive communication by using a chat application (LINE).” If the students have any questions, they can contact their instructor directly. They let the students have flexibility in sending the assignments. The students are allowed to send their assignments to the teachers' LINE by taking pictures, using PDF files, or writing Word files. In addition, they have university MS Teams conducted for each class, equipped with a meeting room, exercise and quiz creation, and assignment submission, to aid online and distance learning. Furthermore, "AU Spark," an application for students from ABAC University, makes online appointments and advising easy for the lecturer as well as advisors to meet with students online.

## **Cost effectiveness**

### Students

All of the students strongly agree that “online learning can provide effectiveness in both time and cost.” They can save time by not having to travel to physical classes and instead of using that time for other activities. For a cost, they can save money on travel expenses, tuition fees, and other expenses such as stationery and printing.

The students also shared cost effectiveness experiences; the first student said that “I could save tuition and travel fees when learning online, and that could really help me and my family during an economic downturn.” The second student said that “I could save on fuel costs.” The third student said, “I can save on external expenses such as eating out with friends after class and the cost of buying new clothes.” The last student from the architecture faculty mentioned that “I can save on the cost of printing and equipment as I can submit work online.”

### Instructors

From the instructors' point of view, "I think that online learning can help my students save money and time and make them satisfied with online learning." The students don't have to come to campus, so they don't have to pay for the transportation costs and waste time in traffic jams. The students do not need to spend a lot of money on buying new dresses, shirts, or bags because they can study at home, where other students or instructors can't see them. When they have class in the morning, they don't have to wake up very early, such as at 6:00 a.m., and spend time dressing up and driving or using transportation to come to the institution. When they have a class in the evening, some of them can study in the rooms of their offices. They can study anywhere. It's quite flexible. Even when they take the trips, they can be satisfied with online learning. Furthermore, they can also save money on dormitory and food expenses.

### **Social interaction**

#### Students

The conference platform that the students used the most was Zoom. They said that "the program was already useful with features that could help them engage and interact with the class." For example, students who do not want to speak up during class can instead type in a chat box. However, they would be more satisfied if the platform could be developed to make students interact more. Another student who used Microsoft Teams said that "the program is good for studying and encourages students in the class to interact with each other and the instructor." In addition, most students interact with their classmates via LINE both during and after class because it is more personal and direct with their classmates, but "the drawback is that LINE can be slow to respond, and the more people there are in a group chat, the less attention will be paid." However, when communicating with instructors, it is usually by email that the student can get a slow and delayed response.

#### Instructors

The first instructor uses Zoom for her online class. She said that "the program is effective and encourages the class to have interaction because all the students and instructors can see each other." At the end of the class, she will let the students ask some questions that they don't understand. In this way, they can have social interaction by using online conference platforms. She believes that interacting among students in

an online class causes barriers to her students' satisfaction with online learning and may reduce their positive experiences. For example, “some students may feel lonely when they study online and they are too shy to contact other students and instructors.” They may want to see their friends face-to-face and discuss with their friends when they don't quite understand while studying instead of asking the instructor. Moreover, “some students like to go out to eat food and drink with their friends during the break or after class in order to create good relationships with their friends.”

The second instructor uses Microsoft Teams for her online class. She said, “the program is easy to use and it eases students and lecturers into group work and discussion.” When it comes to small group learning, interaction is good since they could create separate rooms to discuss. However, when there is a big class of more than ten people, computer-mediated communication makes online teaching and learning lack some human interactions. For example, “in a big class, even when all students are required to have their camera on, with the program limitation, the lecturer cannot see all faces.” Furthermore, it is difficult for a lecturer to interact fully with all students since he/she needs to pay attention to the teaching screen. Therefore, most classes allow students to turn off the camera. However, she also said that “I do not believe that interacting among students in an online class causes any barriers for her students because they are technologically savvy.” When it comes to group work, where students need a lot of interaction with their friends, students with the technical ability find online classrooms more attractive than offline ones since they have the space online to discuss group work anytime, without the barrier of distance, to work and help each other finish the assignment by creating a presentation or report on an online platform where they could all work on the project at the same time.

## **CHAPTER V**

### **CONCLUSIONS AND RECOMMENDATIONS**

#### **5.1 Recommendations**

According to a study of the potential factors affecting satisfaction with online learning among university students in Bangkok during the COVID-19 pandemic, the study provides suggestions for all benefits, such as school institute management teams from private sectors or ministers of education from public sectors, in order to use the information obtained to plan for effective management of online teaching and learning. Therefore, this study's recommendations should benefit both parties through two dimensions, which are technical ability and social interaction, which can lead to improvement and development in the future.

##### **5.1.1 Technical Ability**

Online learning can be successful. It is essential that students be technically competent with sufficient computer skills. (and access to technology); that is, they should have a basic understanding of computer hardware and software and can execute computer operations, such as the ability to use online communication tools with the software program and Internet abilities, among other things. Also, from the multiple regression analysis in this study, it was indicated that technical ability had a positive influence on satisfaction with online learning, with a standard regression coefficient of 0.270 at a significance level of 0.05, indicating that if students were able to run and work on all the technical features of an education platform, they would be satisfied with online learning. Moreover, students will be satisfied with online learning if they are able to solve technical problems they encounter during online learning. The findings are consistent with Berman's (2006) research on technical ability. Students with technical ability, the level of technological know-how, or proficiency in technological devices and online platforms, will result in learners being more satisfied with online learning during the COVID-19 pandemic. In addition, Sathish Kumar (2020) sees that learners



must possess the necessary skills by being able to deal with technology devices and online platforms, including the ability to create new documents. Use a word processor, internet browsing, and software downloads. For dealing with online learning platforms, the level of technical ability is more or less an indicator of the success of online learning management. Therefore, the relevant government agencies and administrators of educational institutions should plan online teaching and learning to support society in the 5G era for students who lack sufficient technical ability to have equal knowledge. To achieve equal knowledge and decrease disparities in information technology access. Finally, to obtain complete online learning that is consistent with the Covid-19 scenario, as well as access to the constantly changing world situation.

### **5.1.2 Social Interaction**

Social interactions in online learning or interactions between teachers and students or between students can lead to increased student engagement and motivation and can help improve teaching efficiency. Multiple regression analyses indicated that social interaction was a positive influencing factor on satisfaction with online learning, with a standard regression coefficient of 0.443 at a significance level of 0.05. Students can interact with their peers through online classes. Online teachers allowing students to express their opinions in online classes can create satisfaction with online learning. This is consistent with research by Muilenburg and Berge (2005) that described low social interaction as perceived by students as the most severe barrier to both the enjoyment and satisfaction of online learning. However, it is consistent with Kwaske & McLennan (2022), who described how social interaction in online learning can positively influence student engagement and motivation and can help improve student performance. It is also consistent with Lonn (2005), who outlined three types of social interaction: learner-learner, learner-content, and learner-instructor. Student satisfaction is determined by these three types of social interaction. And when different types of interaction are used in the learning environment, satisfaction with the learning experience increases. (Penney, 2020). As a result, educational administrators and ministers of education should concentrate on improving the efficiency of online teaching and learning. In order to provide the possibility for meaningful and lasting social connections in online courses, teachers must change their techniques and strategies.

## 5.2 Conclusions

During covid-19, research investigations on potential factors affecting satisfaction with online learning among university students in Bangkok were conducted with the goal of studying online learning satisfaction from the viewpoints of university students and teaching staff in Bangkok. In addition, to investigate the factors that influence online learning satisfaction. To study the factors affecting the satisfaction of online learning. This will lead to more effective adjustments to educational institutions' strategies to improve student satisfaction online in Thailand. The study used a combination of research methods. with quantitative and qualitative research methods. In a quantitative study, the population of university students aged 18 and over studying in universities in Bangkok has been studying online learning in universities for the past six months. The study used a sample size of 100 participants. Respondents were contacted through public postings on social media sites using convenient sampling. In research, statistics are employed. Analyzing the frequency, percentage, mean, and standard deviation distributions yielded a descriptive statistic. Multiple Regression Analysis, Factor Analysis, and Pearson's Correlation. Six in-depth telephone interviews were used to perform the qualitative portion of the study. A deeper knowledge of individual actions and attitudes toward online learning satisfaction was sought to support the quantitative study's findings.

Most of the students who answered the questionnaire were female (64.0%) with a monthly income of less than 15,000 Bath (35.0%), followed by a monthly income of 35,001-50,000 Bath (25.0%). The vast majority were at the bachelor's degree level. The age ranges (38.0%) were 18-22 years (38.0%), followed by 23-27 years (35.0%), and the online learning platform used was Zoom (64.0%).

For satisfaction with online learning among Bangkok university students during COVID-19, overall students had the highest mean satisfaction with social interactions at 4.33, followed by cost effectiveness at 3.98, and the lowest mean satisfaction among Bangkok university students. The technical ability was 3.83. Overall, students were satisfied with online learning because they were able to exchange ideas while studying with friends and teachers. And it's flexible as it allows you to review lessons in your spare time. It saves time and money and has fewer requirements. However, some were dissatisfied due to the wasted opportunity of doing special

workshops in class. The teaching styles and methods of teachers are not good enough, as well as having distractible surroundings and technological issues with the internet.

The study of factors affecting satisfaction with online learning was significant. In terms of technical ability, perceived ease of use, cost effectiveness, and social interaction, two factors were found to have a statistically significant level of satisfaction with online learning at the 0.05 level: technical ability and social interaction. This is because most students consider online learning to provide them with a strong technological foundation. And if it can run and run all the technical features of the educational platform effectively, it will bring a lot of benefits to online education. with average scores of 3.80 and 3.86, respectively. The ability to communicate with friends, available throughout the online learning process, as well as the teaching of students to express their opinions, both contributed. greater satisfaction with online learning, with average scores of 4.36 and 4.29, respectively.

### **5.3 Limitations**

This study has some limitations within which my findings need to be interpreted carefully. Some limitations of this study should be mentioned. First, as in most empirical studies, the study here was limited by the Covid-19 pandemic. While I am doing this study, we have a social distancing from the spreading of the virus Covid-19 in Thailand. Therefore, I am unable to approach all respondents as well as I should like face-to-face interaction. This can significantly affect the results which may cause inaccuracies in the understanding of the variables to be studied and then result in inaccurate results. Second, this study was limited by a language translation. It can normally occur when you have to use two languages to do a research study. Some words cannot be accurately translated from English to Thai exactly and also the expressions obtained by means of translation do not correspond. Third, the results of this study may not be completely generalizable because the sample size of the sample of qualitative interviews is not broad enough for every dimension of students and teachers such as Male and Female, Age, Occupation, and Education that making collecting qualitative data might not be enough to be used for data analysis. Last but not least, this study did not examine the impact of a sample bias. I have around 64% of females and we got 38 %



of people who are aged between 18-22 years old, 64 % of people who are studying for a Bachelor's degree and 35 % having lower than 15,000 Baht of monthly income as well as 64 % of those who often use the Zoom platform to study online. Thus, the research findings might be directed only at a small group of respondents. Anyway, this study was conducted by a student during the short period of study for a master's degree at Mahidol University, so there are many limitations that I have to face.

#### **5.4 Future Research**

This study focuses just on one factor that influences online learning satisfaction. Other areas of research may be investigated in the future as well. Future research should be conducted to gain a better understanding of the factors that influence student satisfaction with online learning as well as to improve and develop the management of online learning, such as by studying the problems and barriers to online learning and developing guidelines for overcoming various obstacles to improving online teaching and learning management. Moreover, future research can use a longitudinal study to handle the limitation above. Furthermore, the quantitative data was collected from one type of respondent only, namely, students. Thus, the results of the quantitative study cannot be generalized to other samples, as qualitative data was collected only from a small group of samples, which consisted of four students and two instructors based in Bangkok. Future research can also include the perspectives of instructors as well as policymakers to have a more generalized application of the quantitative results. The current research is limited only to university students and instructors in Bangkok. As a result, if data is gathered from a variety of institutions, provinces, and nations, it will be easier to compare results and have a better understanding of the student's viewpoint. This study is limited to measuring student achievement. However, similar settings could be utilized in the future to assess teacher performance. There may be some concerns or problems that students face. Some students may experience problems at home, such as disruption from family members, which can lead to poor performance. Future studies can incorporate the points described above.

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## Appendix A: Questionnaire for Quantitative Analysis

### I: Screening questions (1 question)

1. Are you a university student in Bangkok and have studied online learning in a university curriculum during the past 6 months?

- a. Yes
- b. No

### II: Factor questions

In the context of satisfaction with online learning,

How do you agree with these statements? Please rate the choice as follows:

#### Satisfaction with online learning (3 questions)

*Rank your level of agreement with each statement*

*1-Strongly Disagree   2-Disagree   3-Neutral   4-Agree   5-Strongly Agree*

Satisfaction with online learning	1	2	3	4	5
The online learning activities met your expectations for what you hoped to learn.					
Satisfaction is a key factor in your choice to continue studying online rather than in a traditional class.					
The efficiency of your online learning is connected to the level of satisfaction.					



**Technical ability (3 questions)***Rank your level of agreement with each statement**1-Strongly Disagree 2-Disagree 3-Neutral 4-Agree 5-Strongly Agree*

<b>Technical ability</b>	1	2	3	4	5
You will be satisfied with online learning if you can solve technical problems you encounter during online learning.					
Online learning will gratify you if you have a strong technological background.					
If you can run and work in all technical features of an education platform, you will be satisfied with online learning.					

**Perceived ease of use (3 questions)***Rank your level of agreement with each statement**1-Strongly Disagree 2-Disagree 3-Neutral 4-Agree 5-Strongly Agree*

<b>Perceived ease of use</b>	1	2	3	4	5
Quick online learning support by an institution is frequently acknowledged as a source of happiness with online education.					
If the online learning system is user-friendly, satisfaction with online learning will increase.					
You have greater flexibility in studying to fit with your schedule and it is very satisfying for you.					

**Cost effectiveness (3 questions)***Rank your level of agreement with each statement**1-Strongly Disagree 2-Disagree 3-Neutral 4-Agree 5-Strongly Agree*

<b>Cost effectiveness</b>	1	2	3	4	5
You will be quite happy if studying online allows you to pay less for tuition.					
Online learning will satisfy you because it allows you to save time.					
You will be satisfied with your online learning experience if you can save money on travel costs by not having to attend a traditional class.					

**Social interaction (3 questions)***Rank your level of agreement with each statement**1-Strongly Disagree 2-Disagree 3-Neutral 4-Agree 5-Strongly Agree*

<b>Social interaction</b>	1	2	3	4	5
When you can communicate with friends throughout an online class, you'll be more satisfied with your learning.					
While the instructor invites students to express their thoughts, most of them in the virtual classroom looked happier.					
The ability to connect with others via class chat boxes and discussion boards can enhance your satisfaction with online learning.					

**III: Demographic questions (4 questions)****1. What is your gender?**

- a. Male
- b. Female
- c. Prefer not to mention

**2. What is your average monthly income?**

- a. Lower than 15,000
- b. 15,000 - 25,000
- c. 25,001 - 35,000
- d. 35,001 - 50,000
- e. More than 50,000

**3. What is your education level?**

- a. Bachelor degree
- b. Master degree
- c. Doctoral degree

**4. How old are you?**

- a. 18-22
- b. 23-27
- c. 28-35
- d. 36-45
- e. More than 45

**5. What is the online learning platform that you most often use to study?**

- a. Zoom
- b. Webex
- c. Google Meet
- d. Microsoft Team
- e. Other, please specify\_\_\_\_\_.

## **Appendix B: Questionnaire for Qualitative Analysis**

### **I: Screening questions (2 questions)**

1. Are you a university student or instructor in Bangkok?
2. Have you studied or taught online learning in a university curriculum during the past 6 months?

### **II: General question (1 question)**

1. What is the online learning platform that you most often use to study or teach?

### **III: Factor questions (2 groups)**

#### **Students**

#### Satisfaction with online learning (4 questions)

- Are you satisfied with the online courses that you are taking right now? Please explain.
- What are the barriers you are facing that can make you dissatisfied with your online courses? or what are the factors that can make you dissatisfied? Please give examples.
- What are some good online learning experiences you've had in the past?
- Can you give suggestions on how to improve your experience with online learning?

#### Technical ability (2 questions)

- Do you think technical skills are a barrier factor to satisfaction with online learning? Why?
- If a person doesn't have technical background knowledge, he or she wouldn't be satisfied with online learning. Do you agree with this statement, why?

#### Perceived ease of use (1 question)

- What is the support from instructors or institutions that can ease your online learning experiences? (For example, quick response, user-friendly platform, flexibility, and responsive communication) please give examples and explain.

Cost effectiveness (2 questions)

- Do you agree with this statement ‘online learning can help you save both cost and time’? please explain.
- Can you share your cost effectiveness experience of your online classes and do you think it's better than traditional classes? why?

Social interaction (2 questions)

- Online learning classes nowadays are usually taken via online conference platforms (Zoom, Google Meet, Webex, etc.), do you think it’s effective and encourages the class to have interaction?
- How do you usually interact with your classmate and instructor during class (or after)? Do you find any barriers when doing so? Please share your experiences.

**Instructors**Satisfaction with online learning (3 questions)

- Are your students satisfied with your online courses? Please explain.
- What are the barriers your students are facing that can make them dissatisfied with your online courses? or what are the factors that can make them dissatisfied? Please give examples.
- Can you make any suggestions for how to improve your students' online learning experience in your opinion?

Technical ability (1 question)

- From your perspective, do you think technical skills are a required factor for satisfaction with online learning? Why?

Perceived ease of use (1 question)

- What is the support from you or institutions that can ease your student online learning experiences? (For example, quick response, user-friendly platform, flexibility, and responsive communication) please give examples and explain.

Cost-effectiveness (1 question)

- Do you think online learning can help your students save cost and time and make them satisfied with online learning? please explain from your point of view.

Social interaction (2 questions)

- Online learning classes nowadays are usually taken via online conference platforms (Zoom, Google Meet, Webex, etc.), do you think it's effective and encourages the class to have interaction?
- Do you believe that interacting among students in an online class causes any barriers to your student's satisfaction with online learning and may reduce their positive experiences?

