Determinants of Attitude, Satisfaction and Behavioral Intention of Online Learning Usage Among Students During COVID-19

Kexun Zhong[*], Deping Feng, Ming Yang, Thanatchaporn Jaruwanakul

Abstract

Purpose: The objective of this research is to examine determinants of behavioral intention to use online learning among students in a higher vocational collage in China, including perceived ease of use, perceived usefulness, attitude, trust and satisfaction. Technology Acceptance Model (TAM) and Theory of Planned Behavior (TPB) were the fundamental theories of this study. **Research design, data and methodology:** A quantitative approach was used to distribute questionnaire to 500 third-grade students in Tianfu Vocational College of Chengdu. Purposive sampling, stratified random sampling, and convenience sampling were employed. After the data collection, confirmatory factor analysis (CFA) and structural equation model (SEM) were accounted to analyze the data in measurement and structural models, measuring factor loading, reliability, validity and model fit. **Results:** Perceived ease of use had the strongest influence on perceived usefulness, followed by perceived ease of use on attitude, attitude on behavioral intention, and perceived usefulness on behavioral intention. In opposite, the non-supported relationships were perceived usefulness and attitude, trust and satisfaction, and satisfaction and behavioral intention. **Conclusions:** The findings implied that academic researchers and education's stakeholders should emphasize ease-of-use and benefits of using an online learning system that can help students' learning experience to be more conveniently and effectively.

Keywords: Online Learning, Satisfaction, Trust, Attitude, Behavioral Intention.

JEL Classification Code E44, F31, F37, G15

1. Introduction

The structure of education in China has been greatly changed in the past decade. Vocational and technical education are different from university's curriculum. The role of vocational and technical education in society is crucial. The number of students in China's vocational education in 2020 is more than 35 million. Chengdu is the capital city of Sichuan province which has reformed higher vocational enrollment up to 90 schools and 13 vocational colleges. The challenge of higher vocational education in China is to develop programs in corresponding with

international quality and standard (Textor, 2022). Chengdu city has expanded in the past five-year in vocational training program for middle and higher vocational schools, and 71 universities and 238 secondary vocational schools conducted vocational training programs in 916 specialized areas. The enrollment plan is to increase from 40,000 in 2019 to 82,700. Integration of Chengdu city department of education in cultivating higher vocational training channels improves school entrance rate after introducing the education department of Sichuan province about higher vocational cohesion through training to encourage the "big

1 * Kexun Zhong, Ph.D. Candidate, Doctor of Philosophy, Technology Education and Management, Assumption University, Thailand.
2 Deping Feng, Dean, Department of Marxism and Fundamental Education, Chongqing Vocational College of Intelligent Engineering, China.
3 Ming Yang, Department of Animation, School of Film Television and Animation, Chengdu University, China.
4 Thanatchaporn Jaruwanakul, Associate Director, Strategic Policy Development, True Corporation Public Company Limited. Email: tjaruwanakul@gmail.com|

five" economic zones" in the region For colleges and secondary vocational schools, it carries out the five-year through joint ventures, and promotes the development of secondary vocational education and higher vocational education cohesion. In 2020, 120,780 students, accounting for 57.65 percent of all employed students, were enrolled in first-level schools, increasing of 11.45 percent from 2019. 67,020 students enrolled in the entrance examination, 8,576 students enrolled in the five-year education programs, and 6,609 students enrolled in the two to three-year education programs (Newjincin, 2021).

Since the outbreak of COVID-19 in the late 2019, Ministry of Education in China has restricted in-person classes around the country. Teachers and students have been forced to use online learning system to continue teaching and learning. In this pandemic situation, there was numerous online education programs and various software development of online learning system. The six variables of this study, including perceived ease of use, perceived usefulness, attitude, trust, satisfaction, and behavioral intention to use online learning were constituted in the framework of this study. Researchers aim to find out the actual problem of course selection tendency of vocational college students in online teaching, so it selects well-known online teaching and management software and takes students of Tianfu Vocational College for an investigation. Superstar software has been widely used for online teaching and learning in Chengdu, China, in order to better serve students and facilitate the daily management of online teaching.

2. Literature Review

2.1 Technology Acceptance Model (TAM)

Davis (1989) introduced Technology Acceptance Model (TAM) which pointed the impactful constructs of technology acceptance. Two major factors impacting behavioral intention of users to use new system or technology are perceived ease of use and perceived usefulness which were also embedded into this study's framework. Students who perceive online learning software as easy to use tend to adopt this technology. Also, students who feel online learning system could provide benefits for more convenient and efficient in learning method are more likely to use it (Charness & Boot, 2009). TAM has been widely accepted by many scholars as it can serve the assumption of user's journey of a new technology usage (Clarke & Braun, 2013).

2.2 Theory of Planned Behavior (TPB)

The Theory of Planned Behavior (TPB), introduced by Ajzen and Fishbein (1980), is the development of the Theory of Reasoned Action (TRA). The model emphasizes a user's logical reason and decisions to act on a particular object or technology. TPB is the determination of a person to engage with a system or technology (Ajzen, 1991). This model explains behavioral intention resides cognitive perception and feeling if a system could be easy and convenient to use. TPB model is composed with attitudes, social support, self-efficacy and behavioral intention which can contribute to the self-control behavior and behavioral intention (Strating et al., 2006).

2.3 Perceived Ease of Use

Perceived ease of use (PEOU) is a primary factor impacting attitude and behavioral intention in the extension of TAM model (Davis, 1993). It is defined as an individual's perception of the level of effort in using a system or technology or how easy it is to access a technology and its function (Davis et al., 1989). Likewise, if a student feels comfortable to use an online learning system, he/she would use it regularly to attend the online classes provided by a school (Neo et al., 2015). This study proposed perceived ease of use as an influential factor impacting perceived usefulness and attitude It can be generalized that a user feel the easy-to-use system is beneficial to him/her which relates to a positive or negative attitude toward the usage (Davis, 1989). Henceforth, hypotheses are set:

H1: Perceived ease of use has a significant influence on perceived usefulness of using an online learning system.
H3: Perceived ease of use has a significant influence on attitude of using an online learning system.

2.4 Perceived Usefulness

TAM involves perceived usefulness as a key factor impacting attitude and behavioral intention to use a system technology (Chiou & Shen, 2012). Perceived usefulness of the technology can be referred to what the upsides users will receive from using the system. Moreover, many researchers confirmed perceived usefulness as the effectiveness of a specific technology can offer benefits to users (Venkatesh & Davis, 2000). In this study's context, it can be implied that students perceive the benefits of using online learning system during the pandemic because of the government's restriction and health consciousness. Therefore, they have a positive attitude toward the willingness to use a system as an alternative learning method. Based on the above statement, proposed hypotheses are follows:

H2: Perceived usefulness has a significant influence on attitude of using an online learning system.

H5: Perceived usefulness has a significant influence on behavioral intention of using an online learning system.

2.5 Trust

According to Newell et al. (2016), trust is explained as a belief of people that a person or an organization can deliver as promised. Trust means that a person has sufficient confidence in particular object and are willing to rely on it (Moorman et al., 1993). Therefore, the trust of online users is mainly based on the network, which represents the trust attribute toward a system technology (Shi & Chow, 2015). In addition, user's satisfaction is impacted by trust (Chaudhuri & Holbrook, 2001). Trust is also considered to be the establishment of a security sense which builds satisfaction in using an online learning (Delgado-Ballester & Luis Munuera-Aleman, 2001). Based on the above theoretical analysis, a hypothesis is proposed:

H4: Trust has a significant influence on satisfaction of using an online learning system.

2.6 Attitude

Attitude is a variable that explains people's intentions in using the system (Chauhan, 2015). Attitude is a psychological attribute that could affect an individual's behavior. In the study of Fishbein and Ajzen (1981), attitude refers to an individual's evaluation of the specific object. Agarwal and Prasad (1998) interpreted attitudes as people's reactions to online technologies. Chiu et al. (2017) suggested that attitude is a positive or negative emotion towards a particular thing. Triandis (1971) dictated that attitudes are people's feelings towards new things. Many researchers agreed that attitude determines behavioral intention which positive attitude directly leads to the use of online learning (Liker & Sindi, 1997; Mathieson, 1991; O'Cass & Fenech, 2003). Per the above statement, it can be assumed that:

H6: Attitude has a significant influence on behavioral intention of using an online learning system.

2.7 Satisfaction

Kotler (2000) defined satisfaction as a psychological feeling which is a summary after comprehensive evaluation of expectations before and after consumption of product or service. Zeithaml et al. (2006) cited users are satisfied when their expectation is fulfilled, which is also equivalent to product/service evaluation. In this study, satisfaction is the overall assessment of students on services provided by schools (Fornell, 1992). Most previous studies have focused on the correlation between satisfaction and behavioral intention. There is a positive correlation between student satisfaction and behavioral intention (Athiyaman, 1997; Browne et al., 1998; Clemes et al., 2008; Machleit & Mantel, 2001; Zeithaml et al., 1996). Hence, the following hypothesis is proposed:

H7: Satisfaction has a significant influence on behavioral intention of using an online learning system.

2.8 Behavioral Intention

Davis (1989), who firstly proposed the concept of behavioral intention, defined it as a kind of behavior and reaction affected by various factors. Behavioral intention, in this study, is an integration of TAM and TPB model of technology acceptance theory. Behavioral intention is a dependent variable influenced by the attitude of consumers or users (Bashir & Madhavaiah, 2015). Ajzen (1991) noted that behavioral intention refers to users' willingness to take a certain behavior. In addition, Zeithaml et al. (1996) explained that behavioral intention was a signal of whether users would continue to use online services. Researchers conceptualized behavioral intention to use online learning system is the contribution of perceived usefulness, perceived ease of use, trust, attitude and satisfaction.

3. Research Methods and Materials

This study applied a quantitative approach, using online survey to collect the data for statistical analysis. The theories are based on and Technology Acceptance Model (TAM) and Theory of Planned Behavior (TPB). The framework was developed from six variables including perceived ease of use, perceived usefulness, attitude, trust, satisfaction and behavioral intention.

3.1 Research Framework

According to previous literatures, this study proposed the research model, involving six constructs which are perceived ease of use (PEOU), perceived usefulness (PU), trust (T), attitude (A), satisfaction (S) and behavior intention (BI). The framework is developed from technology acceptance model (TAM) and the theory of planned behavior (TPB) theories with extension of variables. Three previous research of technology adoption were used in this study. Park and Park (2020) studied the information technology usage in the construction field and revealed the significant relationship between perceived easy to use, attitude and behavioral intention. Chen (2017) confirmed the relationship between brand association, trust, commitment, and satisfaction of higher education institutions. The findings of Gray and

Daymond (2010) resulted the significant impact between satisfaction and behavioral intention. The conceptual framework of this research is provided as shown in Figure 1.
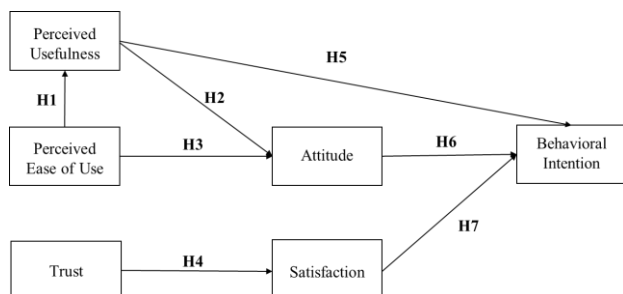

Figure 1: Conceptual Framework

The summary of hypotheses is per follows:

H1: Perceived ease of use has a significant influence on perceived usefulness of using an online learning system.

H2: Perceived usefulness has a significant influence on attitude of using an online learning system.

H3: Perceived ease of use has a significant influence on attitude of using an online learning system.

H4: Trust has a significant influence on satisfaction of using an online learning system.

H5: Perceived usefulness has a significant influence on behavioral intention of using an online learning system.

H6: Attitude has a significant influence on behavioral intention of using an online learning system.

H7: Satisfaction has a significant influence on behavioral intention of using an online learning system.

3.2 Methodology

The quantitative method was conducted with the distribution of questionnaire though administrative office of Tianfu Vocational College of Chengdu in China. The questionnaire has three parts with 31 questions. Three screening questions were used to identify students in third grade of Tianfu Vocational College student who have been using super star online learning software. Measuring items were adopted, composing 24 questions of five-point Likert scale, ranging from 1 to 5 for strongly disagree to strongly agree. Four demographics questions were gender, semester in experience of using the software, frequency of usage per week and major of study. For preliminary analysis, the expert rating of index of item objective congruence (IOC) resulted all measurements are valid. The pilot study was employed with 50 participants and has Cronbach's Alpha coefficient value accepted at above 0.7 (Nunnally & Bernstein, 1994).

3.3 Population and Sample Size

The population of this study are third-grade students from Tianfu Vocational College of Chengdu in China who have been attending the program, majoring preschool education, art pedagogy and English, and have been using superstar software during the COVID-19 pandemic. As of 2022, the total student in three programs was 3,451. A-priori Sample Size Calculator for SEM (Soper, n.d.) was applied to calculate recommended minimum sample size of 403. Nevertheless, researchers avoid the missing value of the data, so 500 participants were an appropriate amount for the data collection of this study.

3.4 Sampling Technique

Three types of sampling were accounted for the data collection. Firstly, purposive sampling was used to select the third-grade students in Tianfu Vocational College in three majors; preschool education, art pedagogy and English, who have been using superstar software during the COVID-19 pandemic. Secondly, stratified random sampling was used to calculate strata of sample size per total of students as presented in Table 1. Lastly, convenience sampling was applied to distribute online questionnaire to the target group via administrative office of the college and WeChat application.

Table 1: Number of target population

Majors	No. of Third-Grade Students (As of 2022)	Number of Respondents
Preschool Education	1025	182
Art pedagogy	1192	210
English	613	108
Total	**2830**	**500**

Source: Created by the author

3.5 Reliability Test (Pilot Test)

The pilot group of 50 participants was tested, using Cronbach's Alpha coefficient reliability test to confirm the constructs in this study. The values ranged from 0.834 to 0.957. The results ensured the internal consistency of the variables and the reliability for each item with the value of 0.70 or above (Nunnally & Bernstein, 1994). CA of each construct in this study including perceived ease of use (PEOU) = 0.912, perceived usefulness (PU) = 0.941, attitude (A) = 0.957, trust (T) = 0.845, satisfaction (S) = 0.898, and behavioral intention (BI) = 0.834 per shown in Table 2.

Table 2: Consistency of the Scale Test

Variables	Source of Questionnaire	No. of Items	Cronbach's Alpha
Perceived ease of use	(Davis, 1989)	3	0.912
Perceived usefulness	(Davis, 1989)	3	0.941
Attitude	(Lee et al.,2015)	5	0.957
Trust	(Pappas et al., 2014)	4	0.845
Satisfaction	(Mouakket & Bettayeb, 2015)	5	0.898
Behavioral Intention	(Carlson & Cass, 2010)	4	0.834

Source: Constructed by author.

3.6 Data Analysis

After the IOC validity test and Cronbach's Alpha reliability test, the distribution of survey was made to target 500 participants. The collected data was measured through SPSS AMOS statistical software. Afterwards, Confirmatory Factor Analysis (CFA) was carried out to assure convergence and discriminant validity. The goodness of fit indices was employed to confirm the fitness of the model. Structural Equation Model (SEM) was applied to confirm significant relationships and hypotheses of this study.

4. Result and Discussion

4.1 Demographic Profile Summary

500 responds were received for the descriptive statistic. The demographic results reflected that most participants were males of 43.0% and females were 57.0%. In terms of using experience of superstar software, the ranking was that three semesters (38.8%), four semesters or over (35.8%), two semesters (14.2%) and one semester or below (11.2%). Students have majorly used superstar software 5 times per week, representing 40.0%, whereas 33.6% was 7 times or over per week and 26.4% was 3 times or below per week. For student's majors, there were 44.8% of English, 40.0% of preschool education major, and 15.2% of art pedagogy accordingly.

Table 3: Demographic Profile of Respondents

Demographic and Behavior Data (N=500)	Frequency	Percentage %
Gender		
Male	215	43.0%
Female	285	57.0%
Experience with superstar software		
One semester or below	56	11.2%
Two semesters	71	14.2%
Three semesters	194	38.8%
Four semesters or over	179	35.8%
Frequency of using superstar software		
3 times or below /week	132	26.4%
5 times/week	200	40.0%
7 times or over/week	168	33.6%
Student's Major		
Preschool Education Major	200	40.0%
Art pedagogy	76	15.2%
English	224	44.8%

Source: Constructed by author.

4.2 Confirmatory Factor Analysis (CFA)

All data met acceptable thresholds in the CFA model with no adjustment required. The results were CMIN/df = 1.502, GFI = 0.944, AGFI = 0.929, NFI = 0.945, CFI = 0.981, TLI = 0.978, and RMSEA = 0.032. Accordingly, the convergent validity and discriminant validity were confirmed by the fit model.

Table 4: Goodness of Fit of CFA

Index	Criterion	Statistical values obtained from analysis
CMIN/DF	< 3.00 (Schreiber et al., 2006)	355.987/237 = 1.502
GFI	≥ 0.90 (Hair et al., 2006)	0.944
AGFI	≥ 0.90 (Hair et al., 2006)	0.929
NFI	≥ 0.90 (Hair et al., 2006)	0.945
CFI	≥ 0.90 (Hair et al., 2006)	0.981
TLI	≥ 0.90 (Hair et al., 2006)	0.978
RMSEA	< 0.05 (Browne & Cudeck, 1993)	0.032
Model summary		**Harmony with Empirical data**

Remark: CMIN/DF = The Ratio of The Chi-Square Value to Degree of Freedom, GFI = Goodness-of-Fit Index, AGFI = Adjusted Goodness-of-Fit Index, NFI = Normed Fit Index, CFI = Comparative Fit Index, TLI = Tucker-Lewis Index, and RMSEA = Root Mean Square Error of Approximation.
Source: Constructed by author

4.3 Convergent validity

The convergent validity was tested to approve measurement model in this study. All acceptable values were resulted in the CFA which can validate the convergent validity. Hair et al. (2006) guided that significance of factor loading of each item and acceptable values in defining the goodness of fit. Factor loadings are higher than 0.50 and p-value of lower than 0.05. Besides, in case of Average Variance Extracted (AVE) is less than 0.5 but Composite Reliability (CR) is higher than 0.6, the convergent validity of the construct is still sufficient (Fornell & Larcker, 1981). Consequently, confirmatory factor analysis result, composite reliability (CR) and average variance extracted (AVE) are presented in Table 5.

Table 5: Confirmatory Factor Analysis Result, Composite Reliability (CR) and Average Variance Extracted (AVE)

Variable	Factor Loading >0.5	T-value>1.98 & p-value<0.5	CA >0.7	CR (pc) >0.7	AVE (pv) >0.5
PEOU	0.817-0.906	24.090-24.681	0.889	0.887	0.725
PU	0.847-0.878	23.313-24.628	0.894	0.894	0.737
A	0.653-0.764	13.412-15.514	0.831	0.833	0.500
T	0.559-0.748	12.006-15.566	0.771	0.779	0.471
S	0.736-0.827	16.084-17.547	0.877	0.878	0.590
BI	0.669-0.710	13.362-13.972	0.782	0.783	0.475

Source: Constructed by author

4.4 Discriminant Validity

Discriminant validity was evaluated by calculating the square root of each AVE (Fornell & Larcker, 1981). The value of discriminant validity is larger than all inter-construct/factor correlations, therefore, the discriminant validity is supportive in this study. Due to convergent and discriminant validity were verified, the evidence is adequate for establishing construct validity.

Table 6: Factor Correlations

	S	PU	A	BI	PEOU	T
S	**0.768**					
PU	0.006	**0.859**				
A	0.004	0.393	**0.707**			
BI	0.064	0.618	0.627	**0.689**		
PEOU	-0.034	0.706	0.439	0.683	**0.851**	
T	0.031	0.648	0.610	0.664	0.650	**0.686**

Source: Constructed by author

4.5 Structural Equation Model (SEM)

Structural model was measured by SEM. The results were not in harmony with empirical data. Therefore, the model was adjusted to be fit. The fit results of the modified model were Chi-Square ($X2$/df) = 2.211, Goodness-of-fit statistic (GFI) = 0.932, Adjusted Goodness-of-fit statistic (AGFI) = 0.912, Normed Fit Index (NFI) = 0.921, Comparative Fit Index (CFI) = 0.955, Tucker-Lewis Index (TLI) = 0.946, and Root Mean Square Error of Approximation (RMSEA) = 0.049 as demonstrated in Table 7.

Table 7: Goodness of Fit of SEM

Index	Criterion	Statistical values obtained from analysis	
		Before adjustment	After adjustment
CMIN/DF	< 3.00 (Schreiber et al., 2006)	863.412/245 = 3.524	508.445/230 = 2.211
GFI	≥ 0.90 (Hair et al., 2006)	0.898	0.932
AGFI	≥ 0.90 (Hair et al., 2006)	0.875	0.912
NFI	≥ 0.90 (Hair et al., 2006)	0.866	0.921
CFI	≥ 0.90 (Hair et al., 2006)	0.900	0.955
TLI	≥ 0.90 (Hair et al., 2006)	0.887	0.946
RMSEA	< 0.05 (Browne & Cudeck, 1993)	0.071	0.049
Model summary		Unacceptable Model Fit	Acceptable Model Fit

Remark: CMIN/DF = The Ratio of The Chi-Square Value to Degree of Freedom, GFI = Goodness-of-Fit Index, AGFI = Adjusted Goodness-of-Fit Index, NFI = Normed Fit Index, CFI = Comparative Fit Index, TLI = Tucker-Lewis Index, and RMSEA = Root Mean Square Error of Approximation.
Source: Constructed by author

4.6 Research Hypothesis Testing Result

According to Table 8, hhypothesis testing and results were obtained from standardized path coefficient (β) and t-value of the structural pathway. The findings confirmed the supported relationship at p-value less than 0.5 which are H1, H3, H5 and H6. On the other hand, H2, H4 and H7 were not supported.

Table 8: Hypotheses Testing Result of the Structural Model

Hypothesis	standardized path coefficient (β)	t-value	Testing result
H1: PEOU → PU	0.862	20.335*	Supported
H2: PU → A	0.061	0.507	Not Supported
H3: PEOU → A	0.357	2.921*	Supported
H4: T → S	0.022	0.406	Not Supported
H5: PU → BI	0.169	3.868*	Supported
H6: A → BI	0.286	5.614*	Supported
H7: S → BI	0.071	1.340	Not Supported

Note: *=p-value<0.5
Source: Constructed by author.

The hypothesis testing results are explained per followings.

H1 resulted the support relationship between perceived ease of use and perceived usefulness at the value of standard coefficient = 0.862 (t-value = 20.335). It confirmed that perceived ease of use had the strongest influence on perceived usefulness of an online learning as aligned with many researchers (Davis, 1993; Davis et al., 1989; Neo et al., 2015).

For **H2**, the relationship between perceived usefulness and attitude was not supported with the standard coefficient

value = 0.061 (t-value = 0.507) which was contradicted with many studies of the significant relationship between these two variables (Chiou & Shen, 2012; Davis, 1989).

H3 confirmed the significant relationship between perceived ease of use and attitude of students in using an online learning system with standard coefficient value = 0.357 (t-value = 2.921). The result was aligned with the technology acceptance theory by Davis (1989).

H4 presented that trust had no significant influence on satisfaction, representing the standard coefficient value = 0.022 (t-value = 0.406). Most researchers confirmed that trust is a predictor of satisfaction (Chaudhuri & Holbrook, 2001; Moorman et al., 1993; Newell et al., 2016; Shi & Chow, 2015).

H5 supported the significant relationship between perceived usefulness and behavioral intention with the standard coefficient value = 0.169 (t-value = 3.868). It is referred to TAM that perceived usefulness significantly impacts behavioral intention to use a system technology (Chiou & Shen, 2012; Venkatesh & Davis, 2000).

H6 found that attitude significantly influenced behavioral intention of using an online learning system, showing standard coefficient value = 0.286 (t-value = 5.614). The result was validated by many scholars (Liker & Sindi, 1997; Mathieson, 1991; O'Cass & Fenech, 2003).

H7 was argued that satisfaction had no significant influence on behavioral intention, resulting the value of standard coefficient = 0.071 (t-value = 1.340). It was evidenced that satisfaction did not contribute to the behavioral intention to use online learning system during the outbreak of COVID-19 (Athiyaman, 1997; Browne et al., 1998; Clemes et al., 2008; Machleit & Mantel, 2001; Zeithaml et al., 1996).

5. Conclusion, Recommendations and Limitations

5.1 Conclusion

This study examines the significant influencers of behavioral intention to use online learning among students in a higher vocational collage in China. Technology Acceptance Model (TAM) and Theory of Planned Behavior (TPB) were the major theories used of this study. The conceptual model was constructed with six; perceived ease of use, perceived usefulness, attitude, trust, satisfaction and behavioral intention. The questionnaire was distributed to 500 third-year students in Tianfu Vocational College of Chengdu in China who have been attended the program majoring preschool education, art pedagogy and English, and have been using superstar software during the COVID-19 pandemic. The data were analyzed by confirmatory

factor analysis (CFA) and structural equation model (SEM).

The findings were based on the research objectives and hypotheses testing. Firstly, perceived ease of use and perceived usefulness presented the strongest influencing impact. It can be implied that students who feel online learning system is easy to use, it will be useful for them to engage learning while COVID-19 is restricted in-person class. Based on TAM theory, many researchers also supported this assumption (Davis, 1993; Davis et al., 1989; Neo et al., 2015). Secondly, perceived ease of use and attitude of students in using an online learning system were resulted significant. This evidence supported the claim that students are more likely to have positive attitude toward use of online learning system when they feel it is easy to use (Davis, 1989). Thirdly, attitude significantly influenced behavioral intention of using an online learning system (Liker & Sindi, 1997; Mathieson, 1991; O'Cass & Fenech, 2003) which can be assumed that a behavioral intention is impacted by student's attitude of using online learning. Fourthly, when students believe in benefits of using online learning, they tend to use it regularly. Thus, perceived usefulness significantly influenced behavioral intention (Chiou & Shen, 2012; Venkatesh & Davis, 2000).

Next, satisfaction had no significant influence on behavioral intention in this study which contradicted with many scholars (Athiyaman, 1997; Browne et al., 1998; Clemes et al., 2008; Machleit & Mantel, 2001; Zeithaml et al., 1996). It can be implied that the satisfaction has nothing to do with the willingness to use as the online learning system is the only way to complete their programs as required by a school. Later, the relationship between perceived usefulness and attitude was not supported in this study and it was against with the report of Davis (1989). It could be assumed that the benefits of using an online system is not the only motivation to student's attitude. Learners needs to also evaluate on other components such as instructor's skills, learning content and other interactive features. Lastly, trust had no significant influence on satisfaction which can be explicated that the confidence in using online learning has no impact on student's satisfaction, opposed by previous literatures (Chaudhuri & Holbrook, 2001; Moorman et al., 1993; Newell et al., 2016; Shi & Chow, 2015). It was because this study was conducted during COVID-19 when students have no other choice but to comply with the school to join online classes for the course completion.

5.2 Recommendations

When looking into all the significant relationships, it is essential for academic researchers, education's stakeholders and online learning software developer to keen on the system which is easy to use in order to get the fast and

efficient adoption among users. User's friendly system is also one of the benefits perceived by students. Therefore, software service providers and schools are required to collaborate in providing user's manual, training and help support to ensure students have complete solutions when they encounter problems from using the online learning system. Positive attitude could lead to behavioral adoption of online learning system; thus, service providers and schools can distribute some instant chat or survey to get the feedback on how they like or dislike the system, also what the system is needed to be improved. Due to perceived usefulness significantly influenced behavioral intention, the school management has to creatively promote the benefits of an online learning system usage, apart from the in-person classes restriction. Most of education institutes developed video on tips and special features of the online learning system besides learning such as group talks or virtual events.

Some factors were found not significant in this study which are perceived usefulness and attitude, trust and satisfaction, and satisfaction and behavioral intention. This study was conducted during the COVID-19 whereas some significant factors would be different in the normal situation. Online learning is perceived to be a new normal of learning. It was alleged as boring and not engaging when comparing with in-person classes where instructors and learners can interact and use body language. The school management team needs to raise the importance on how the system can elevate the learning effectiveness and performance of students by offering equipped guide and tools.

5.3 Limitations and Future Research

This research has several limitations. Firstly, the study did not use some variables in TAM and TPB theories such as subjective norms, voluntariness and usage behavior. The model can be also extended to some other variables such as perceived enjoyment, perceived behavioral of control, school image and vice versa. Secondly, third-year students of high vocational college in Chengdu, China is the only focus group which can be expanded into other school year of students or in other region in China. Lastly, quantitative approach was the only methodology in this research. Considering qualitative methodology, it is recommended for better insights on why some factors were significant and some were not.

References

Agarwal, R., & Prasad, J. (1998). A conceptual and operational definition of personal innovativeness in the domain of information technology. *Information Systems Research, 9*(2), 204-224. https://doi.org/10.1287/isre.9.2.204.

Ajzen, I. (1991). The Theory of Planned behavior. *Organizational Behavior and Human Decision Processes, 50*(2), 179-211.

Ajzen, I., & Fishbein, M. (1980). *Understanding Attitudes and Predicting Social Behavior*. Prentice-Hall.

Athiyaman, A. (1997). Linking student satisfaction and service quality perceptions: the case of university education. *European Journal of Marketing, 31*(7), 528-540.

Bashir, I., & Madhavaiah, C. (2015). Consumer Attitude and Behavioral Intention Towards Internet Banking Adoption in India. *Journal of Indian Business Research, 7*(1), 67-102.

Browne, B. A., Kaldenberg, D., Browne, W. G., & Brown, D. J. (1998). Student as customer: Factors affecting satisfaction and assessments of institutional quality. *Journal of Marketing for Higher Education 8*(3), 1-14.

Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In Bollen, K. A. & Long, J. S. (Eds.). *Testing structural equation models* (pp.136-162). SAGE Publication.

Carlson, J., & O'Cass, A. (2010). Exploring the Relationships between E-Service Quality, Satisfaction, Attitudes and Behaviours in Content-Driven E-Service Web Sites. *Journal of Services Marketing, 24*, 112-127. http://dx.doi.org/10.1108/08876041011031091

Charness, N., & Boot, W. (2009). Aging and Information Technology Use: Potential and Barriers. *Current Directions in Psychological Science, 18*(5). 253-258. https://doi.org/10.1111/j.1467-8721.2009.01647.x

Chaudhuri, A., & Holbrook, M. B. (2001). The chain of effects from brand trust and brand affect to brand performance: the role of brand loyalty. *Journal of Marketing, 65*(2), 81-93.

Chauhan, S. (2015). Acceptance of mobile money by poor citizens of India: integrating trust into the technology acceptance model. *info, 17*(3), 58-68.

Chen, Y. C. (2017). The relationships between brand association, trust, commitment, and satisfaction of higher education institutions. *International Journal of Educational Management, 31*(7), 973-985. https://doi.org/10.1108/IJEM-10-2016-0212

Chiou, J. S., & Shen, C. C. (2012). The Antecedents of Online Financial Service Acceptance: The Impact of Physical Banking Services on Internet Banking Acceptance. *Behavior and Information Technology, 31*(9), 859-871.

Chiu, J. L., Bool, N. C., & Chiu, C. L. (2017). Challenges and factors influencing initial trust and behavioral intention to use mobile banking services in the Philippines. Asia Pacific *Journal of Innovation and Entrepreneurship, 11*(2), 246-278. https://doi.org/10.1108/APJIE-08-2017-029

Clarke, V., & Braun, V. (2013). Teaching thematic analysis: Overcoming challenges and developing strategies for effective learning. *The Psychologist, 26*(2), 120-123.

Clemes, M. D., Gan, C., & Kao, T. H. (2008). University Student Satisfaction: An Empirical Analysis. *Journal of Marketing for Higher Education 17*(2), 292-325.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 13*(3), 319-340. https://doi.org/10.1177/0022429411405207.

Davis, F. D. (1993). User acceptance of information technology: system characteristics, user perceptions and behavioral impacts. *International Journal of Man-Machine Studies, 38*(3),475-487.

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User Acceptance of Computer Technology: A Comparison of Two Theoretical Models. *Management Science, 35*(8), 982-1003.

Delgado-Ballester, E., & Luis Munuera-Alemán, J. (2001). Brand trust in the context of consumer loyalty. *European Journal of Marketing, 35*(11/12),1238-1258.

Fishbein, M., & Ajzen, 1. (1981). Attitudes and voting behavior: An application of the theory of reasoned action. In G. M. Stephenson & J. M. Davis (Eds.), *Progress in Applied Social Psychology* (pp. 253-313). Wiley.

Fornell, C. (1992). A national customer satisfaction barometer: the Swedish experience. *Journal of Marketing, 56*(1),6-21.

Fornell, C., & Larcker, D. F. (1981). Structural Equation Models with Unobservable Variables and Measurement Error: Algebra and Statistics. *Journal of Marketing Research, 18*, 382-388. http://dx.doi.org/10.2307/3150980

Gray, D., & Daymond, J. (2010). *The Influence of student engagement levels on satisfaction and behavioral intentions* [Paper Presentation]. Australian & New Zealand Marketing Academy Conference, Christchurch, New Zealand.

Hair, J., Black, W., Babin, B., Anderson, R., & Tatham, R. (2006). *Multivariate Data Analysis* (6th ed.). Pearson Education.

Kotler, P. (2000). *Marketing Management: Analysis, Planning, Implementation, and Control* (10th ed.). Prentice Hall.

Lee, L. O., Aldwin, C. M., Kubzansky, L. D., Chen, E., Mroczek, D. K., Wang, J. M., & Spiro, A. (2015). Do cherished children age successfully? Longitudinal findings from the Veterans Affairs Normative Aging Study. *Psych ology and aging, 30*(4), 894.

Liker, J. K., & Sindi, A. A. (1997). User acceptance of expert systems: a test of the theory of reasoned action. *Journal of Engineering & Technology Management, 14*(2), 147-173.

Machleit, K., & Mantel, S. (2001). Emotional response and shopping satisfaction: moderating effects of shopper attributions. *Journal of Business Research, 54*(2), 97-106.

Mathieson, K. (1991). Predicting user intentions: comparing the technology acceptance model with the theory of planned behavior. *Information System Researc, 2*(3), 173-191.

Moorman, C., Deshpande, R., & Zaltman, G. (1993). Factors affecting trust in market research relationships. *Journal of Marketing. 57*(1), 81-101.

Mouakket, S., & Bettayeb, A. M. (2015). "Investigating the factors influencing continuance usage intention of Learning management systems by university instructors: The Blackboard system case". *International Journal of Web Information Systems, 11*(4), 491-509. https://doi.org/10.1108/IJWIS-03-2015-0008

Neo, M., Park, H., Lee, M., Soh, J., & Oh, J. (2015). Technology Acceptance of Healthcare E-Learning Modules: A Study of Korean and Malaysian Students' Perceptions. *The Turkish Online Journal of Educational Technology, 14(2),* 181-194.

Newell, S., Wu, B., Leingpibul, D., & Jiang, Y. (2016). The importance of corporate and salesperson expertise and trust in building loyal business-to-business relationships in China. *Journal of Personal Selling & Sales Management, 36*(2), 1-14. https://doi.org/10.1080/08853134.2016.1190656

Newjincin. (2021, October 14). *Employment rate and graduation destination of Chengdu Higher Vocational College.* www.newjincin.com

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

O'Cass, A., & Fenech, T. (2003). Web retailing adoption: exploring the nature of internet users web retailing behavior. *Journal of Retailing and Consumer Services, 10*(2), 81-94.

Pappas, I. O., Pateli, A. G., Giannakos, M. N., & Chrissikopoulos, V. (2014). Moderating Effects of Online Shopping Experience on Customer Satisfaction and Repurchase Intentions. *International Journal of Retail & Distribution Management, 42*, 187-204. http://dx.doi.org/10.1108/IJRDM-03-2012-0034

Park, E., & Park, M. (2020). Factors of the Technology Acceptance Model for Construction IT. *Applied Sciences, 10*(22), 1-15. https://doi.org/10.3390/app10228299

Schreiber, J. B., Nora, A., Stage, F. K., Barlow, E. A., & King, J. (2006). Reporting structural equation modeling and confirmatory factor analysis results: A review. *The Journal of educational research, 99*(6), 323-338.

Shi, S., & Chow, W. C. (2015). Trust development and transfer in social commerce: prior experience as moderator. *Industrial Management & Data Systems, 115*(7), 1182-1203.

Soper, D. S. (n.d.). *A-priori Sample Size Calculator for Structural Equation Models.* Software. www.danielsoper.com/statcalc/default.aspx

Strating, M. M., Suurmeijer, T. P., & van Schuur, W. H. (2006). Disability, social support, and distress in rheumatoid arthritis: results from a thirteen-year prospective study. *Arthritis and Rheumatism, 55,* 736-744.

Textor, C. (2022, January 13). *Number of students at secondary vocational schools in China 2010-220.* Statista. https://www.statista.com/statistics/227035/number-of-students-at-secondary-vocational-schools-in-china

Triandis, H. C. (1971). *Attitude and Attitude Change.* John Wiley and Sons.

Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management Science, 46*(2), 186-204. https://doi.org/10.1287/mnsc.46.2.186.11926

Zeithaml, V. A., Berry, L. L., & Parasuraman, A. (1996). The Behavioral Consequences of Service Quality. *Journal of Marketing, 60*(2), 31-46. https://doi.org/10.2307/1251929

Zeithaml, V. A., Bitner, M. J., & Gremler, D. D. (2006). *Service Marketing.* Mc Graw-Hill.