

# INFLUENCING FACTORS OF ONLINE LEARNING SATISFACTION AND BEHAVIORAL INTENTION AMONG CHINESE COLLEGE STUDENTS

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## ABSTRACT

The purpose of this study is to investigate the key influencing factors of college students' online learning satisfaction and behavioral intention during the epidemic period. The examined variables are convenience, benefit, self-efficacy, student engagement, flexibility, perceived usefulness, satisfaction and intention. The methodology used is quantitative method (n = 550) by sending questionnaires to senior art and design students in three private universities in Sichuan Province. Multistage sampling was accounted to use nonprobability sampling with judgmental sampling to select top three private art colleges and universities. Next, probability sampling with stratified random sampling was taken to calculate the amount of each group. Last, the convenience sampling was to distribute questionnaire via offline and online channels. The Structural Equation Model (SEM) and Confirmatory Factor Analysis (CFA) including model fit, reliability and validity were deployed for data analysis. Research findings showed that convenience, benefit, self-efficacy, student engagement, flexibility, perceived usefulness have significant impact on satisfaction and intention. Satisfaction has the strongest influence on online learning intention, followed by benefit, student engagement, flexibility, perceived usefulness, convenience and self-efficacy. In summary, seven hypotheses were proven to achieve research objectives. Therefore, this study suggests academic practitioners to assess influencing factors to improve college students' online learning satisfaction and behavioral intention.

**Keywords:** Convenience, Benefit, Self-efficacy, Student engagement, Flexibility, Perceived usefulness, Satisfaction, Intention

## Introduction

In the past 20 years, the development of information and network technology has impacted online teaching in China. It has rapidly grown especially in the two pandemic periods of SARS in 2003 and COVID19 in 2020. In 2003, due to the limitation of

information and network technology, the teaching was mainly a one-way mode, teachers and students could not timely communicate. In the later stage of online education development, the Ministry of Education randomly launched high-quality audio and visual development for online learning materials to provide a strong construction of online teaching resources. At

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the beginning of 2020, the COVID-19 epidemic had swept across almost all countries in the world, causing immeasurable losses. The sudden outbreak of COVID-19 disrupted the normal order of education, leading to the closure of classes. It impacted more than 850 million students around the world and the disruption of existing teaching programs in almost every school worldwide. Many countries immediately offered online teaching services to students through various conference platforms such as Zoom, Skype and FaceTime. Online learning has restored normal teaching in most areas. Under the background of “no suspension of classes” initiated by the government, China’s education, especially higher education institutions, had unexpectedly realized the transformation and docking between online and offline through internet technology. China had begun to use Ding Ding, Tencent, Zoom and other office meeting software tools to provide online learning on a large scale. Urdan and Weggen (2000) pointed that online learning referred to e-learning, distributed learning, web-based training, learning and teaching, or virtual learning. Ministry of Education confirmed online learning during epidemic that it had organized 37 online course platforms and technology platforms, opening free online courses such as Massive Open Online Courses (MOOCs) and virtual simulation experiments, providing online learning solutions and technical support and promoting active participation of more than 110 societies and platforms to universities across the country. Teachers and students have transited from “knowing nothing” to “gradual adaptation”, from “hasty battle” to “smooth transition” and from “deep suffering” to “gradual appreciation”. Every university have been utilizing the power of internet and education technology, proving a strong education’s capability among higher level of colleges and universities in China.

Online learning as a new way of education is facing extraordinary opportunities. Facts have proved that the progress of educational technology, especially popularization of the Internet and widely use of online learning, has changed teachers’ cognition of educational technology via internet network and educational concept of students’ way of learning.

The purpose of this study is to investigate the key influencing factors of college students’ online learning satisfaction and behavioral intention during the epidemic period. The examined variables are convenience, benefit, self-efficacy, student engagement, flexibility, perceived usefulness, satisfaction and intention. The sample group is senior students of three private art colleges in Sichuan province, which ranked among the top three colleges in China. In addition, the study also assesses the causal relationship between each variable to reveal the support factors on satisfaction and behavioral intention.

## **Literature Review and Hypotheses**

### **Online learning**

Online learning is described as an instruction delivery and learning experiences that are derived from electronic platforms using technological hardware and software with internet access. There are other terms used such as e-learning, m-learning and internet-based learning (Maddison, Doi, Lucky, & Kumaran, 2017).

In China, online learning has been vastly used during the epidemic era. As out of home activities have been limited, online learning is viewed as an alternative channel that provides the interaction between lecturer and learners during an outbreak. The Chinese government has upgraded the online schools’ infrastructure and has originated a number of dedicated online courses to support the distance learning programs (Wang, Zhu, Chen, & Yan, 2009).

### **Massive open online courses (MOOCs)**

Massive Open Online Courses (MOOCs) is referred to an online learning ecosystem that is widely used in an education system worldwide. It provides accessible and affordable online learning for a wide range of learners' group (Yunusa & Umar, 2018). The concept of MOOCs was developed in 2008 and has grown rapidly during pandemic. Chinese academic organizations have optimized its equipment to support the MOOCs system for more efficiency and to increase the adoption level in schools and universities. There were more than 9,000 massive open online courses in China via platforms such as XueTangX and iCourse International (McConnell, 2018).

### **Intention**

Pollack (1990) signified that intention is a representative of the actions that a system might be taken to achieve its goals. Triandis (1980) considered that "individuals give themselves instructions to behave in a particular way is called behavioral intention". Ajzen (1985) attested that people might not have enough control to formulate their intentions although it could serve as an important reference for behavior prediction, which is explained in the theory of planned behavior (TPB). Hogarth (1991) posited that "intention is determined by the subjective norms of people's attitude and behavior".

### **Convenience**

Collier, Ponder, and White (2007) referred convenience as "the flexibility and convenience of allowing students to participate in online courses". Brown (1990) explained that the task completion in the shortest time with the least manpower and material resources reflects the convenience of service which provides the advantage of time and effort saving. According to Kaura, Prasad, and Sharma (2014), service convenience is a concept and idea that could reduce the cost of

energy and time spent and also add value to product/ service.

Per the report of Berry, Seiders, and Grewal (2002), service process is reflected mainly through five dimensions of service convenience in the activities that users engage, which can dominate users' satisfaction. Keaveney (1995) believed that inconvenient service causes users to change their behavior. Kaura, Prasad, and Sharma (2015) found another similar study exploring the mediating role of satisfaction which showed convenience has a positive and direct effect on satisfaction. Many studies have examined the incidental relationship between convenience and satisfaction. Hence, researchers proposed the hypothesis that convenience significantly affects satisfaction per the following hypothesis.

H1: Convenience has a significant influence on satisfaction.

### **Benefit**

Perceived (system) benefits referred to the extent to which users benefit effectively from an information system (Wixom & Watson, 2001; Staples, Wong, & Seddon, 2002; Wu & Wang, 2006). Kinard and Capella (2006) identified that familiarity with users and friendly relationship between providers and users are manifestation of social benefits. Fisher (2010) assumed that tangible benefits directly relate to products and services and is defined as utilitarian or functional benefits.

Oliver (1997) indicted that the relational benefits intend to capture the impact of differences i.e., the effect of intention or behavior on satisfaction. According to Bhattacharya, Korschun, and Sen (2009), organization could achieve positive results from its CSR practice only if it brings benefits to its stakeholders.

Reynolds and Beatty (1999) captured those relational benefits could affect user satisfaction and loyalty to further learning and use. In the perceptual success model, perceived system

benefit could be used as an indicator of perceived usefulness. Therefore, this study proposed that benefit has a significant effect on satisfaction with the assumptions shown below.

H2: Benefit has a significant influence on satisfaction.

### **Self-efficacy**

Bandura (1995) alleged that self-efficacy referred to “the belief of one’s ability to organize and execute the action plan required to deal with the potential situation”. Shen, Cho, Tsai, and Marra (2013) considered students’ trust in their ability to successfully use online learning courses as a manifestation of self-efficacy, which presents a personal trait that plays an important role in the use of technology and information systems.

Bandura (1994) argued the determination on how people motivate themselves and their behavior per the belief about self-efficacy. Per the study of Peltier, Drago, and Schibrowsky (2003), Peltier, Schibrowsky, and Drago (2007) and Eom, Ashill, and Wen (2006) postulated that various research had surveyed in the past 10 years and had found that self-efficacy is a factor affecting student satisfaction of online learning courses.

Johnson, Hornik, and Salas (2008) discovered the perceived utility of the network learner’s system. Self-efficacy positively correlated with perceived content value, course performance and satisfaction. Satisfaction’s level has increased when people believe in their abilities. Consequently, a positive correlation between self-efficacy and satisfaction exists (Federici, 2013; Federici & Skaalvik, 2012; Skaalvik & Skaalvik, 2009). The study of Hong et al. (2016) and Yu (2012) indicated that there is a significant and positive correlation between self-efficacy, satisfaction and system use, which was concluded by many scholars. Therefore, the following hypothesis is derived.

H3: Self-efficacy has a significant influence on satisfaction.

### **Student engagement**

Bomia et al. (1997) argued that the degree to which students’ willingness and succession are required to the participation of the learning process which can be defined as student engagement. Briggs (2015) claimed that student engagement is referred to the level of students’ interest, how they interact with others, and their motivation to obtain knowledge in the course. According to Schaufeli, Salanova, Gonzalez-Roma, and Bakker (2002), engagement is characterized by diligence, dedication and focus, representing a positive and satisfied mindset. Mandernach, Donnelly-Sallee, and Dailey-Hebert (2011) regarded that several factors related to student engagement are including attitude, personality, motivation, effort and self-confidence.

Several studies strengthened that when people are highly engaged, they would achieve a balance between work, study and life, reflecting intrinsic characteristics of their engagement (Rothbard, 2001), thus become more satisfied with that balance (Wrzesniewski, 2012). Another study of Shea, Fredericksen, Pickett, and Pelz (2003) learned that students who participate in cohort studies with other students, interact with teachers and receive detailed feedback from them, tend to express satisfaction of the learning experience. Based on the above arguments, this study has proposed the hypothesis that student participation has a significant impact on satisfaction.

H4: Student engagement has a significant influence on satisfaction.

### **Flexibility**

Kickert (1985) urged that flexibility, as a meta-control, could increase variety, speed and responsiveness to cope with future uncertainties. Previous research presented that flexibility of time and place for online learning are ideal and attractive for those who

both work and study. Moreover, the flexibility of space and time allow them the freedom to study and work and life management (Arbaugh, 2000; Chiu & Wang, 2008; Githens, 2007; Marks, Sibley, & Arbaugh, 2005).

The study of Upton (1995) and Thomke (1997) indicated that flexibility could be achieved without excessive cost, time, organizational disruption, or performance loss. Scholars believed that the ability to utilize the internal capabilities of the department to meet the changing needs of users, and then quickly and effectively create and reconstruct goals and plans could be defined as the flexibility of strategic development, reflecting the positive relationship between flexibility and satisfaction (Hayes & Pisano, 1994; Pisano, 1994; McGrath, MacMillan, & Venkataraman, 1995).

Jin and Oriaku (2013) clarified those users who would benefit from flexibility are those who can solve unexpected problems according to their needs. The flexibility of strategy formulation has a direct impact on the ability of information dissemination in supply chain. In the research of mobile service conducted by Kim, Park, and Jeong (2004), factors such as quality, pricing structure, value-added services, procedural convenience and customer support were considered to promote user satisfaction. Therefore, this study proposed that flexibility potentially effects satisfaction, with the assumptions shown below.

H5: Flexibility has a significant influence on satisfaction.

### **Perceived usefulness**

Thirumalai and Sinha (2011) argued that perceived usefulness is the primary determinant for users (people) to identify and use a system. It is a degree to which an individual decides to use a particular system and he/ she would be able to improve his/ her (job/ academic) performance and productivity. According to Aboelmaged (2010), one of the

influential determinants of various systems acceptance and technology applications in information systems research is perceived usefulness. Tandon, Kiran, and Sah (2016) mentioned that the empirical analysis to confirming user satisfaction in the network environment inserts perceived ease of use and perceived usefulness as important determinants. Roca, Chiu, and Martinez (2008) considered that perceived usefulness and ease of use are the predictors of learner satisfaction in e-learning programs. Perceived usefulness, as a key factor in technology adoption models, not only reflects the values associated with the application of information technology, but also enables users to judge their satisfaction based on these values. The study of Bhattacharjee (2001) used the adoption model to confirm the most important factor affecting user satisfaction which is perceived usefulness. In the context of mobile Internet, many researchers found that the use of mobile internet sites has a positive impact on user satisfaction (Lee, Kang, & McKnight, 2007; Zhou, 2014). Therefore, it is deduced that perceived usefulness has a significant impact on satisfaction, and the hypothesis is as follows.

H6: Perceived usefulness has a significant influence on satisfaction.

### **Satisfaction**

Oliver (1980) certified that the accumulation of interactive feelings reflects satisfaction. Wang (2015) considered user expectation, quality awareness, convenience and maintainability as the main contents of user satisfaction. With the improvement of satisfaction, users' trust in products or services would be enhanced. Previous studies had shown the only variable that directly affects the behavior model of some information systems is user's satisfaction, which plays a mediating role between perceived usefulness and the information systems

acceptance (Seddon, 1997; Seddon & Kiew, 1996).

Oliver (1980) pointed out that the first prerequisite factor for users' positive affirmation of service and expectations' level is satisfaction. Kim and Jang (2014)'s study showed that users' satisfaction has a beneficial effect on permanent intention in social networks. Jeong (2004) signified the most important indicator of users' satisfaction with the information provided by websites is their willingness to re-use certain websites. Bitner, Booms, and Tetreault (1990) posited that users' purchase and reusage, and purchase intention play a key role in the study of users' satisfaction and trust. Therefore, it is concluded that satisfaction has a significant impact on intention. Hence, the hypothesis is as follows.

H7: Satisfaction has a significant influence on intention.

## Research Methods and Materials

### Research framework

Based on previous theoretical and historical research, researchers used five main preliminary research frameworks to support and develop the conceptual framework of this study (Zhang & Kim, 2019; He, Kim, & Lee, 2019; Gray & Diloreto, 2016; Sahin & Shelley, 2008; Tandon, Kiran, & Sah, 2017), which aims to identify and analyze the impact of factors such as convenience, benefit, self-efficacy, student engagement, flexibility, perceived usefulness, satisfaction and intention. The conceptual framework of this study is shown in Figure 1.

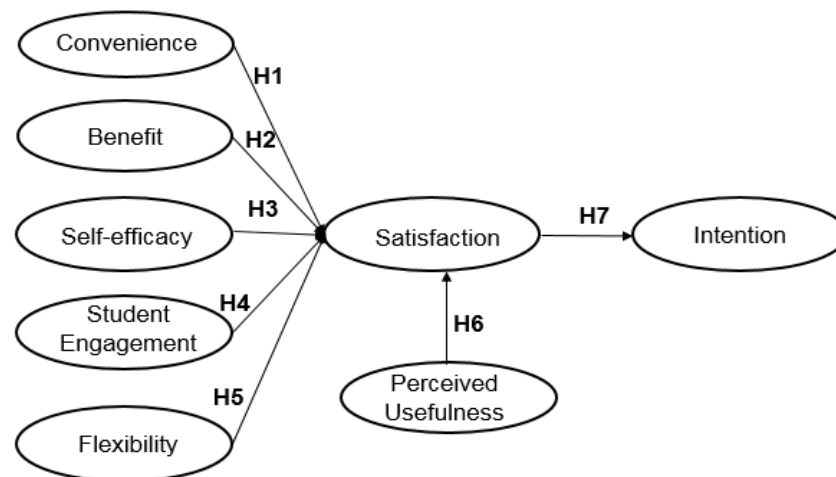


Figure 1 Conceptual framework

### Methodology

This study adopts quantitative method of nonprobability and probability sampling by sending questionnaires to target group of sophomores, juniors and seniors majoring in art and design collages of the top three private universities in Sichuan Province in China through online and paper questionnaires. Data had been collected and factors influencing

online learning satisfaction and behavioral intention during the epidemic had been analyzed. The questionnaire consists of three parts including screening questions, measured items by using the 5-point Likert scale, ranging from strongly inconsistent (1) to strongly consistent (5), and demographic profile including gender, age and university years of students.

The prior validity and reliability test were conducted by using expert rating based on Item-Objective Congruence Index (IOC) and pilot test of 30 respondents based on Cronbach's Alpha method. After the test score passed with the reservation of all items, the questionnaire was validated to distribute to 506 target respondents. The data was analyzed by SPSS AMOS 21.0. Confirmatory Factor Analysis (CFA) was used to test the convergent and discriminant validity. The fitting degree of the model was ensured and calculated by the overall test of the given data. Finally, Structural Equation Models (SEM) was applied to test the relationship among variables.

#### **Population and sample size**

The target population of this paper was Chinese students from second year (Sophomore) third year (Junior) and fourth year (Senior) of art and design colleges in the top three universities in Sichuan Province, China, who have been experiencing online learning. Israel (1992) suggested that the sample size of structural equation models

should include 200-500 respondents. In this study, the survey was completed by 550 respondents. After the data screening process, 506 responses were used for the analysis.

#### **Sampling technique**

The researchers applied multistage sampling of three stages. Firstly, nonprobability sampling using judgment sampling is used to select the top three art and design students from similar universities. Secondly, the number of target respondents in each group was calculated by using stratified random sampling in probability sampling as shown in Table 1. Last stage is to distributing questionnaires online and offline by the method of convenience sampling. The data was collected about three months between April and June 2021 and was screened to ensure the right target group. The online version was distributed through a joint research group of the three universities and respondents shared survey links with their classmates. Offline survey was conducted by the course teacher by the means of sending paper questionnaires directly to the students.

Table 1 Population and sample size in three universities

<b>University name (Art and design category)</b>	<b>Population size total</b>	<b>Proportional sample size total</b>
Art Design and Animation of Sichuan University of Media and Communications	1,587	177
Design and Fine Arts College of Sichuan Film and Television University	1,442	161
School of Art of Sichuan Technology and Business University	1,507	168
<b>Total number of questionnaires distributed</b>	<b>4,536</b>	<b>506</b>

## Results and Discussion

### Demographic information

The demographic profile summarized in Table 2 involving 506 participants. Male respondents accounted for 54.9% and female respondents for 45.1%. The largest group of age in this study was 21-22 years old of

45.1%, followed by 35.0% of 19-20 years old, 19.4% of 23-24 years old and 0.5% of 18 years old and below. In terms of the student's years, the junior students were the major group which accounted 37.9%, followed by senior students of 33.6% and sophomore students of 28.5%.

Table 2 Demographic profile

Demographic profile (N = 506)		Frequency	Percentage
Gender	Male	278	54.9%
	Female	228	45.1%
Age	18 years and below	3	0.5%
	19-20 years old	177	35.0%
	21-22 years old	228	45.1%
	23-24 years old	98	19.4%
Student's years	Second year (Sophomore)	144	28.5%
	Third year (Junior)	192	37.9%
	Fourth year (Senior)	170	33.6%

### Confirmatory factor analysis (CFA)

Confirmatory Factor Analysis was used in this study. All items in each variable were significant representing factors loading to test the validity of the discriminant. According to Henseler and Sarstedt (2013), Goodness of fit (GoF) measurements were fundamentally applied to verify the fit of the model for each item. Fornell and Larcker (1981) recommended that the relative change that Goodness of Fit could indirectly evaluate convergent effect that was represented by the extracted mean variance when the

structural model remains unchanged. Hair, Black, Babin, and Anderson (2010) believed that the comprehensive reliability (CR) value should be greater than 0.7 and above, indicating that the structure was reliable. Additionally, the average variance extraction (AVE) must be greater than 0.5, indicating the convergence effectiveness. In Table 3, all estimates are acceptable at the cutoff points with structural reliability greater than 0.7 and at the cutoff points with extracted mean variance greater than 0.5.



Table 3 Confirmatory factor analysis result, composite reliability (CR) and average variance extracted (AVE)

Variables	Source of questionnaire (measurement indicator)	No. of item	CA	Factors loading	S.E.	T-value > 1.98 & p-value < 0.5	CR	AVE
Convenience (C)	Colwell, Aung, Kanetkar, and Holden (2008)	4	.821	0.679-0.757	0.053-0.056	14.881***-16.649***	0.822	0.537
Benefit (B)	Wu and Wang (2006)	4	.838	0.714-0.797	0.051-0.054	16.071***-18.056***	0.839	0.566
Self-efficacy (SL)	Eom (2012)	4	.846	0.735-0.786	0.057-0.061	16.290***-17.460***	0.846	0.580
Student Engagement (SE)	Cain, Busser, and Baloglu (2015)	8	.923	0.702-0.877	0.037-0.043	18.770***-27.011***	0.911	0.563
Flexibility (F)	Sahin and Shelley (2008)	4	.808	0.664-0.798	0.055-0.059	14.507***-15.753***	0.855	0.598
Perceived Usefulness (PU)	Ajzen and Fishbein (1977), Davis (1989)	4	.908	0.805-0.945	0.045-0.048	21.278***-26.548***	0.911	0.720
Satisfaction (S)	Sahin and Shelley (2008)	5	.888	0.692-0.820	0.045-0.048	16.735***-20.899***	0.883	0.601
Intention (I)	Mols (1998)	4	.895	0.776-0.933	0.048-0.050	19.251***-23.943***	0.898	0.689

\*\*\* = Significant at the 0.05 significant levels ( $p < 0.05$ )

**Remark** CA = Cronbach's Alpha, CR = Composite reliability, AVE = Average variance extracted

The square root of the extracted mean variance determined that all correlations were greater than the corresponding correlation value of the variable, as shown in Table 4. In

addition, GFI, AGFI, CFI, NFI, TLI and RMSEA were used as indicators for model fitting to verify convergence validity and discriminant validity.

Table 4 Discriminant validity (Factor correlations)

Variable	C	B	SL	SE	F	PU	S	I
C	0.732							
B	0.551	0.753						
SL	0.562	0.649	0.761					
SE	0.39	0.59	0.507	0.777				
F	0.386	0.532	0.438	0.712	0.717			
PU	0.482	0.411	0.411	0.494	0.395	0.848		
S	0.592	0.708	0.623	0.689	0.645	0.565	0.775	
I	0.304	0.321	0.366	0.475	0.421	0.388	0.547	0.83

**Remark** The diagonally listed value is the AVE square roots of the variables

The fit values of this study were shown in Table 5, which were all greater than acceptable values. The convergence validity and discriminant validity were guaranteed. In

addition, these model measurements were used to verify the convergence and discriminant validity of structural model estimation.

Table 5 Goodness of fit for confirmatory factor analysis (CFA)

Index	Acceptable values	Values
CMIN/ DF	< 3.00 (Hair et al., 2010)	1.737
GFI	$\geq 0.80$ (Greenspoon & Saklofske, 1998)	0.904
AGFI	$\geq 0.80$ (Forza & Filippini, 1998)	0.887
CFI	$\geq 0.90$ (Hair et al., 2010)	0.962
NFI	$\geq 0.90$ (Arbuckle, 2008)	0.915
TLI	$\geq 0.90$ (Vandenberg & Scarpello, 1994)	0.945
RMSEA	< 0.08 (Browne & Cudeck, 1993)	0.038

**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, CFI = comparative fit index, NFI = normalized fit index, TLI = Tucker Lewis index, and RMSEA = root mean square error of approximation

### Structural equation model (SEM)

Cadell, Regehr, and Hemsworth (2003) described that structural equation modeling (SEM) not only verify the measurement model, but also measure the Goodness of Fit index of the structural model. Jaccard and Wan (1996) posted that SEM can solve the inherent difficulty of multiple regression analysis in which measurement errors caused by multiple interactions. As shown in Table 6, the Goodness of Fit index of the structural equation model was measured. For Chi-

square/ Degree of Freedom (CMIN/ DF) ratio, the model fit measure should not exceed 3, and GFI and AGFI should be higher than 0.8 (Greenspoon & Saklofske, 1998; Forza & Filippini, 1998). In SEM, SPSS AMOS was applied to calculate and adjust the model. As a result, the fitting values as shown in Table 6 were all acceptable including CMIN/ DF = 1.768, GFI = 0.901, AGFI = 0.885, CFI = 0.960, TLI = 0.956, NFI = 0.912 and RMSEA = 0.039.

Table 6 Goodness of fit for structural equation model (SEM)

Index	Acceptable values	Values
CMIN/ DF	< 3.00 (Hair et al., 2010)	1.768
GFI	$\geq 0.80$ (Greenspoon & Saklofske, 1998)	0.901
AGFI	$\geq 0.80$ (Forza & Filippini, 1998)	0.885
CFI	$\geq 0.90$ (Hair et al., 2010)	0.960
TLI	$\geq 0.90$ (Vandenberg & Scarpello, 1994)	0.956
NFI	$\geq 0.90$ (Arbuckle, 2008)	0.912
RMSEA	< 0.08 (Browne & Cudeck, 1993)	0.039

### Testing result of research hypothesis

The significance of each variable was calculated by regression weights and  $R^2$  variance. All hypothesis results of the structural model in Table 7 were significantly supported when  $p = 0.05$ . Satisfaction has the

strongest effect on intention at  $\beta = 0.562$ , followed by benefit ( $\beta = 0.260$ ), student engagement ( $\beta = 0.220$ ), flexibility ( $\beta = 0.184$ ), perceived usefulness ( $\beta = 0.171$ ) and convenience ( $\beta = 0.142$ ). Accordingly, all estimates were supported.

Table 7 Hypothesis result of the structural model

Hypotheses	Paths	Standardized path coefficients ( $\beta$ )	S.E.	T-value	Tests result
H1	S<---C	0.142	0.054	2.958**	Supported
H2	S<---B	0.260	0.061	4.581***	Supported
H3	S<---SL	0.121	0.061	2.364*	Supported
H4	S<---SE	0.220	0.056	3.899***	Supported
H5	S<---F	0.184	0.067	3.314***	Supported
H6	S<---PU	0.171	0.035	4.267***	Supported
H7	I<---S	0.562	0.045	12.182***	Supported

Remark \*\*\* $p < 0.05$ , \*\* $p < 0.1$  and \* $p < 0.5$

The results in Table 7 are explained further in this part. H1 demonstrates convenience as one of the key factors of satisfaction, revealing the standard coefficient value of 0.142 in the structural path. Bansal, McDougall, Dikolli, and Sedatole (2004) illustrated that convenience must be fully considered to improve students' satisfaction with online learning and their willingness to take action. For H2, the analysis results support the significant effect of benefits on satisfaction with a standard coefficient value of 0.260. The empirical research of Wu and Wang (2006) showed that perceived system benefits have a positive impact on users' satisfaction to engage online learning. H3 assumes the significant influence of self-efficacy on satisfaction, and the standard coefficient value obtained was 0.121. Researchers confirmed the ability to acquire knowledge, skills, and intrinsic motivation can lead to the goal accomplishment (Bakker, Albrecht, & Leiter, 2011). H5 is a proof of the flexibility influence on satisfaction with the standard coefficient value of 0.184. Zhang and Kim (2019) verified that the flexibility in goal setting is an external factor of competitive advantage that can improve

users' satisfaction. H6 states the impact of perceived usefulness on satisfaction and the standard coefficient value was 0.171. Wen, Prybutok, and Xu (2011) viewed usefulness as the determinant of user satisfaction which aligns with the results. H7 displayed the significant effect of satisfaction on intention with a standard coefficient value of 0.562. Bodet (2008) argued that satisfaction is an attitude component and reflected as one of the main predictors of user willingness. In summary, these findings support the previous literatures that satisfaction has the strongest effect on intention which mean that students who are satisfied with all aspects of online learning are willing to adopt the system.

## Conclusion and Recommendation

### Conclusion

This paper mainly investigates the factors of online learning satisfaction and behavioral intention among college students in China during COVID-19. All hypotheses were proposed as conceptual framework of how convenience, benefit, self-efficacy, student engagement, flexibility, perceived usefulness significantly impact online learning satisfaction and intention. The quantitative approach

was applied with questionnaire design. The multistage sampling technique was to employ nonprobability sampling with judgmental sampling to select art and design students who have been experiencing online learning during the outbreak from the top three private colleges in Sichuan, China. Later, probability sampling with stratified random sampling was applied to calculate the sample size of each group. Last, the convenience sampling was accounted to circulate survey offline and online. Prior to data collection, the validity test of Item-Objective Congruence Index (IOC) and reliability test of Cronbach's Alpha were used. Data analysis was deployed to explore the influencers of online learning satisfaction and behavioral intention. CFA was measured and tested the validity and reliability of the conceptual model. Afterwards, SEM was adopted to assess relationship among variables. The results are that convenience, benefit, self-efficacy, student engagement, flexibility, perceived usefulness have a significant impact on satisfaction and intention. Satisfaction shows the strongest influence on online learning intention, followed by benefit, student engagement, flexibility, perceived usefulness, convenience and self-efficacy. In conclusion, all hypotheses are supported and considered to fulfil the research objectives.

### **Recommendation**

During the epidemic period, this study concluded the determinants of satisfaction and behavioral intention towards online learning including convenience, benefit, self-efficacy, student engagement, flexibility, perceived usefulness, satisfaction and intention. Consequently, researchers suggest to strengthening these aspects for online learning adoption for better learning efficiency of learners. For literatures and practical implication, academic practitioners and teachers are required to consider development plans to promote online learning for enhancing students' satisfaction and behavioral intention. In this context, students can benefit from convenience (anytime and anywhere) of learning. Students are able to personalize their learning and gain more practical knowledge through field

experiences such as internships, mentoring projects, and collaborative projects remotely. Students' learning satisfaction and behavioral intention are the prerequisites to adopt online learning in universities. In conclusion, the results of this study are useful for the academic management, functional departments of colleges and lecturers to measure and optimize the satisfaction and behavioral intention of students in online learning and realize the gradual improvement of relevant mechanism. For further clarification and examples, the school should gather results from satisfaction surveys to define the online learning adoption level for better development on some aspects such as developing system's ease of use, training on how to use online learning more effectively and building creative environment in online class i.e., vote, games and group activities to enhance student's engagement and satisfaction.

### **Limitation and further study**

The limitations of this study are explained in this last section. Firstly, the population and sample were only scoped in art and design college students of the top three art and design universities in Sichuan Province, China. The different program, region or country of higher educations may produce different outcome. Secondly, further research can consider other related variables such as online teaching resources, teaching plan and teaching strategy, fairness and efficiency, team learning etc. to explore more drivers for the online learning adoption. Lastly, the methodology can be extended with the inclusion of qualitative approach i.e., interview, focus group etc. for deepen understanding the view of participants.

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