Determinants Influencing the Continuous Intention of Online Learning among Art Undergraduates in the Chengdu Area

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Abstract—**This research aims to determine what factors affect fine arts majors' continuance intention using online learning. The Technology Model (Information System Success Model), the theoretical foundation for this paper, assumes Service Quality by testing students' experience as predictors of their continuance intention using distance online learning: System Quality, Information Quality, and Student Engagement. The paper investigates the impact of five potential satisfaction variables on student's continued intention to use online learning. This study uses a quantitative research approach to sample all fine arts majors with online education experience, resulting in 545 valid questionnaires. The population size is undergraduates majoring in fine arts from three universities in Chengdu area. The sample size is 724, and quota sampling method is adopted. The statistical results of the questionnaire show that all the independent and mediating variables significantly affect the satisfaction of the dependent variables, especially online learning satisfaction. Therefore, it is suggested that the teaching administration institutions of art majors in universities should optimize and improve the current online teaching mode according to the results of this study so that students' satisfaction with online learning can be increased and so that an ideal teaching impact and continuance usage intention can be obtained. From the conceptual framework of the Information System Success Model, this study identifies the factors that affect the continuous intention of fine arts undergraduates in online learning and formulates corresponding strategies.**

Keywords—**online learning, continuance use intention, technology acceptance model**

I. INTRODUCTION

A. Background of the Research

Distance or online learning modes at higher education institutions have elevated in recent years due to advances in technological tools and the spread of the deadly COVID-19 pandemic [1]. Meanwhile, the quality of learning is the most crucial factor in the sustainable development of any country globally. This shows that online learning places great emphasis on the role of the Internet as a medium but also needs to pay more attention to its value in promoting the quality of student learning [2].

Therefore, the researchers began to investigate what determinants influence a user's continuance intention. For example, Bhattacherjee [3] identified antecedents for the persistence of e-commerce services.

According to the current situation of online teaching in colleges and universities, the enthusiasm of most students to participate in online education has faded, and the continuance intention usage of online learning has decreased, resulting in dropped learning quality. Therefore, in the context of the normalization of online course learning, it was crucial to explore the current situation and problems of online learning in the higher education system to improve the learning capacity of students and provide quality educational methods.

Therefore, in terms of maintaining users' utilization, this study puts forward the continuance intention of college students utilizing online learning systems and conducts an empirical test on it.

B. Research Questions

1. What factors affect students' continuance intention using online teaching?

2. What are the interaction mechanisms between the latent intent variables for continuance use intention by Fine Arts students in online learning?

3. How can teachers enhance students' learning initiative through online teaching, improving student satisfaction and learning quality?

C. Research Objectives

1. To examine the continuance intention of the utilization of online learning for art major undergraduates in three target universities in the Chengdu region.

2. To investigate the mechanisms by which the latent variables influence students' continuance intention interacting with each other.

3. To recommend further online education to improve student learning satisfaction and quality.

D. Significance of the Research

This study verifies the relationship between the factors influencing students' continuance intention using online learning, which can aid instructors in enhancing the learning experience and the quality of online instruction to raise students' academic performance. Additionally, it can

further optimize online pedagogical systems and give subsequent researchers some reference and inspiration. Studying students' continuance intention use is necessary for verifying whether students accept online teaching methods. Therefore, it is crucial to reveal the factors that affect undergraduate students in the fine arts continuance intention using online learning.

II. LITERATURE REVIEW

A. E-learning Systems

An online learning system is described as providing teaching resources or experiences online in some way [4]. The use of online learning has considerably risen recently in the sphere of education [5]. Apart from the pandemic requirements that remote learning must meet, online learning also offers teachers and students more flexibility in their use. Additionally, because it is more focused on adult education, online learning is considered a good fit for higher education usage [6]. The availability of multi-level, fully integrated remote education and interactive communication is provided by contemporary online learning platforms from reputable software companies [7].

B. Continuance Intention

The "post-acceptance model of Information Systems (IS) continuance", developed by Bhattacharjee [3], aims to explain why an IS user would want to keep using an IS. On the other hand, continuance intention describes people's decisions to continue utilizing specific technologies [8]. Continuance use intentions are explained by both perceived value and satisfaction [9]. Bhattacherjee [3] developed the IS continuance theory based on the Expectation-Confirmation Theory (ECT), which proved that user satisfaction and perceived usefulness were two fundamental and vital determinants of IS usage persistence.

C. Service Quality

System performance is gauged by system quality. Service quality, product quality, price, and environmental and individual characteristics all impact the general feeling of satisfaction [10]. For example, Park and Kim [11] found that providing service information can improve consumer satisfaction and help online stores maintain a good relationship with consumers. Furthermore, Tam [12] emphasized that user pleasure and perceived value were highly impacted by service quality. Persistent intent can be explained by both perceived value and satisfaction [13]. Consequently, the following theory is put out in this study:

H1: The higher the user's perception of service quality, the higher their satisfaction.

D. System Quality

Chen [14] believed system quality was the index to measure the information processing system. According to Ref. [14], it depended on the user requirements established during the system's analysis and development process. Seddon and Kiew [15] partially tested the information systems Success Model by DeLone and McLean [16]. The findings demonstrate that system quality influences user satisfaction favorably. Following Ref. [16], system quality

had a favorable effect on perceived worth and user satisfaction. Thus, the following hypothesis is put forth:

H2: Users are more satisfied when they believe the system to be of more outstanding quality.

E. Information Quality

Srinivasan [17] chose "report content and form" as the metric to measure the effectiveness of the user perception system. The content includes the report's accuracy, relevance, adequacy, and comprehensibility, while the form contains the format quality, report timeliness, presentation mode, and information order. Lee, Kim, and Kim [18] defined the quality of information as the degree to which users believed that the information was relevant, correct, up-to-date, and complete. McKinney, Yoon, and Zahedi [19] had recently defined information quality as the user's assessment of the quality of information on a website; it was also related to the evaluation of the perceived worth that information gives users. Furthermore, Ranganathan and Ganapathy [20] felt that information quality considerably impacted satisfaction and intention to return. According to Ref. [21], a system of information offering high-quality information will be considered valuable since it assists the user in making informed decisions and enhancing work efficiency. Therefore, we argue that information quality will affect users' perception of value and satisfaction. This study proposes the following hypotheses:

H3: The greater the perceived quality of information, the greater the user's contentment.

F. Student Engagement

Bradley [22] said the learning management system platform provided teachers and students with better teaching and learning materials. It enables teachers to arrange their instructional management and formative evaluation, resulting in more diverse and efficient tools for student involvement and collaboration. Mufliharsi, Mayuni, Nuruddin, and Lustyantie [23] believed that in addition to well-organized online classes, students were also able to utilize the learning management system platform to sign up for classes, communicate with classmates and tutors, offer comments, submit coursework, confirm grades, or view lecturer notes, all of which could help students improve their learning satisfaction, knowledge, abilities, and mindset. Yilmaz [24] argued that student participation in class was vital for their relationships and happiness and that instructors could help develop the participation of students. Student involvement promotes active learning. Reeve [25] believed students' participation emphasizes learning activities and encourages active learning. As a result, we conclude that student participation will contribute to user satisfaction. The present study proposes the following hypotheses:

H4: The more engaged users are in online learning, the more satisfied they are.

G. Online Learning System Satisfaction

According to Ref. [26], the expectation confirmation theory implies that satisfaction with a product or service has a favorable impact on future intentions; satisfaction

corresponds to an individual's assessment and emotional reaction about the entirety of their experience of a product or service. According to Ref. [27], satisfaction may be referred to as a degree to which a person perceives that an experience produces pleasant emotions. Danaher and Rust [28] also discovered empirical proof that consumers were more satisfied with the products and services they received and would use their services more frequently in the future. This approach is congruent with Oliver and Winer's adaptation expectation theory, in which customers estimate future preferences based on existing preferences without regard to prospective flavor alterations. In contrast, there are parallels between repurchasing consumer products or services and continuing to use IT products/services [29]. Prior research has shown that satisfaction has an important impact on continuance intention [3]. Indeed, Baturay [30] felt that a sense of satisfaction was essential in determining the efficacy and use in the future of e-learning. At the same time, according to Ref. [31], worth is considered a direct prerequisite for satisfaction; that is, when users sense the value of the service to be higher, they will feel a higher level of satisfaction. According to Ref. [32], satisfaction is determined by a person's perception of value and has the latent to impact continuance intention to utilize IT/IS. We also want to know if satisfaction has a mediating effect on the continuance intention connection of perceived value. As a result, the following theory is advanced:

H5: User satisfaction influences the continuance intention in using online learning systems.

III. Materials and Methods

A. Conceptual Framework

According to a previous analysis of a large body of literature, the concept matrix of this study was developed from the Information System Success Model. First, according to Siti Zuraidah Md Osman's previous study, researchers determined the causal link between Student Engagement (SE) and Satisfaction (SAT) [33]. Secondly, based on the academic achievements of Chang and C, the researcher determined the Service Quality. System Quality: The causal relationship between three latent variables of Information Quality and Satisfaction (SAT), as well as the impact of Satisfaction (SAT) on continuance use intention, constitute the conceptual framework model of this study [34]. In this matrix, there were four independent variables (Service Quality (SQ), System Quality (SY), Information Quality (IQ), Student Engagement (SE)), a mediator variable (SAT), and a dependent variable (CI)). The concept matrix is shown in Fig. 1.

Fig. 1. Conceptual framework model.

TABLE I. RESEARCH INSTRUMENT GRID

Variables	Indicator	Source
SQ1	I pondered the quality of the online learning system provided by educational websites was superb.	
SQ2	I pondered the quality of service provided by the online learning system meets expectations.	DeLone and McLean [16]
SQ3	I pondered that the service provided by the online learning system was very competitive.	
SY1	I contemplate that in an online learning system, the steps to complete a task follow a logical sequence.	
SY2	I contemplate that performing actions in an online learning system could predict the outcome.	
SY3	I contemplate the information on the screen of the online learning system was organized very clearly.	Yang *et al.* [44]
PSY4	I contemplate the screen changes of online learning systems were natural and predictable.	
SY5	I contemplate online learning systems could respond quickly during the busiest times of the day.	
IQ1	I ponder the online learning system provides me with relevant information for my assignments.	
IQ2	I ponder online learning systems display information in an appropriate format.	
IQ3	The information material in the online learning system was terrific, in my opinion.	DeLone and McLean [16]
IQ4	For me, I contemplate the information in the e-learning system was the current.	
IQ5	I pondered whether the e-learning system's information output was quite reliable.	
IQ6	I contemplate that the e-learning system would offer me the information I require in a timely manner.	
SE1	I did the marvelous that I could in online classes.	
SE2	I thought the online course was really entertaining, and I enjoyed learning what's novel in it.	
SE3	When I concluded the homework for the online course, I tried to recount what I had learned.	
SE4	I communicated to the teacher what I was interested in.	
SE5	I established cases to assist me in comprehending certain ideas more deeply.	Osman [33]
SE6	When I was doing my homework in this online class, I felt very intrigued.	
SE7	I made an effort to connect what I'm learning during this online course.	
SE8	In this online class, I express my inclinations and opinions.	
SE9	In this online class, I listened carefully.	
SAT1	I felt satisfied with the online learning system's performance.	
SAT2	I was cheerful to had experience with online learning systems.	Oliver [26]
SAT3	I decided it was sapient to utilize an online learning system.	
CI1	I would utilize the online learning system regularly in the future.	
CI2	I would utilize online learning systems frequently in the future.	Bhattacherjee [3]
CI3	I would highly recommend it to others.	

B. Research Method

Through an online questionnaire survey, the present study uses the method of quantitative research. This essay aims to examine the variables that influence Chengdu fine arts majors' willingness to use online learning going forward. First, a conceptual framework model was used to build the questionnaire, and a five-level Likert scale was used to assess it.

After completing the questionnaire construction, the researcher will invite three experts in the field to assess the research scale's content validity, and 30 students will be sampled to evaluate the research scale's reliability and internal consistency using the Cronbach coefficient.

Following the pilot test, questionnaires from the online survey were distributed to 545 participants from the target universities, as shown in Table I. Jamovi and AMOS were used to examine the data. In addition, the factor load was tested by Confirmatory Factor Analysis (CFA). t-value, Composite Reliability (CR), Mean Variation Extraction (MVE), and differences in validity were all reliability measures. SEM was utilized to evaluate the hypothesizing findings and investigate the direct, tieback, and total shadows of the underlying return-back linkages.

C. Sampling Technique

Depending on their majors, the students were separated into 5 units samples. The multi-stage sampling strategy was carried out in two stages. Initially, the researcher conducted a judgment sample, choosing 724 college art students who had taken the target curriculum and had enough experience in online teaching. In addition, 179 invalid data that did not belong to the target institutions were excluded, stratified random sampling was adopted, and 545 students were selected as the final sample, as shown in Table II.

TABLE II. THE SAMPLE UNITS AND SUB-SAMPLE SIZE

Target university	Sample unit	First level sample size (N = 724)	Secondary level samples size (N = 545)
Chengdu University	Undivided	46	35
	Chinese painting	251	189
Sichuan Normal University	Penmanship	208	157
Chengdu Normal University	Oil painting	128	96
	Art education	91	68

IV. RESULT AND DISCUSSION

A. Demographic Information

Table III presents an overview of the participants' demographic data. Male respondents accounted for 42.27%, and female respondents accounted for 57.73%. The distribution of students in each academic year: freshman 13.12%, sophomore 48.62%. Juniors 26.52%, seniors 11.74%. Finally, from the perspective of the concentration of majors, 34.67% of the students chose Chinese painting, 28.73% chose calligraphy, 17.68% chose oil painting, 12.57% chose art education, and 6.35%

of the students were still waiting for the selection of major direction.

TABLE III. DEMOGRAPHIC INFORMATION PROFILE

Demographic Information (N = 545)		Frequency	Percentage
Gender	Male	231	42.38%
	Female	314	57.61%
Academic Years	Freshman	71	13.02%
	Sophomore	266	48.80%
	Junior	144	26.42%
	Senior	64	11.74%
Major Direction	Undivided	35	6.42%
	Chinese Painting	189	34.67%
	Penmanship	157	28.80%
	Oil painting	96	17.61%
	Art education	68	12.47%

B. Confirmatory Factor Analysis (CFA)

Allen, Titsworth, and Hunt [35] identified measuring models or CFA as the procedure of recognizing varying covariation between indicators. Alkhadim, Gidado, and Painting [36] mentioned that it was crucial to perform CFA for all latent variables in studying a priori-structured model. Perry *et al.* [37] pointed out that the purpose of CFA was to judge whether a model was acceptable. As shown in Table IV, the chi-square value of freedom (CMIN/DF) in the statistical analysis results provided by AMOS was 1.188, lower than the threshold value of 3.000 [38]. The Goodness of Fit Index (GFI) exceeds the cutoff point of 0.900 [39]. The Goodness of Fit Index (AGFI) was 0.939, higher than the threshold value of 0.800 [40]. The Comparative Fitting Index (CFI) was 0.991, higher than the threshold value of 0.900 [41]. The Normalized Fit Index (NFI) was 0.944, higher than the threshold value of 0.900 [41]. Finally, the Approximate Root Mean Square Error (RMSEA) was 0.019, lower than the threshold value of 0.050 [42]. Therefore, the goodness of fit of each CFA indicator was at an acceptable level.

TABLE IV. GOODNESS OF FIT FOR CONFIRMATORY FACTOR ANALYSIS

Index	Criterion	Source	Adjusted Value
CMIN/DF	< 3.000	Hair *et al.* [38]	1.188
GFI	> 0.900	Bagozzi and Yi [39]	0.949
AGFI	> 0.800	Filippini *et al.* [40]	0.939
CFI	> 0.900	Hair *et al.* [41]	0.991
NFI	> 0.900	Hair *et al.* [41]	0.944
RMSEA	< 0.050	Browne and Cudeck [42]	0.019

Each Cronbach's Alpha score surpassed 0.900, as shown in Table IV's conclusion, which showed the findings' outstanding association with internal consistency dependability. Additionally, all factor loadings were above the permissible level of 0.500 and were beyond 0.800. The t-values were also all higher than 1.980, the *p*-values were all lower than 0.050, the CR was all greater than 0.700, and the Average Variance Extracted (AVE) was all higher than 0.500 [43]. Thus, as shown in Table V, each assessment in this section was within the appropriate range.

TABLE V. CONFIRMATORY FACTOR ANALYSIS RESULTS, COMPOSITE RELIABILITY (CR), AND AVERAGE VARIANCE EXTRACTED (AVE)

Latent Variable	Source of Questionnaire (Measurement Indicator)	Item	Factor Loading	SE	t-value	*p*-value	CR	AVE
Service Quality	DeLone and McLean [16]	SQ1	0.722	–	–	–	0.774	0.053
		SQ2	0.732	0.070	13.738	***		
		SQ3	0.735	0.078	13.770	***		
System Quality	Yang *et al.* [44]	SY1	0.708	–	–	–	0.084	0.052
		SY2	0.798	0.064	16.391	***		
		SY3	0.714	0.072	14.927	***		
		SY4	0.721	0.069	15.062	***		
		SY5	0.684	0.073	14.357	***		
Information Quality	DeLone and McLean [16]	IQ1	0.805	–	–	–	0.905	0.612
		IQ2	0.771	0.046	19.616	***		
		IQ3	0.805	0.049	20.767	***		
		IQ4	0.777	0.049	19.834	***		
		IQ5	0.774	0.049	19.739	***		
		IQ6	0.762	0.051	19.334	***		
Student Engagement	Osman [33]	SE1	0.781	–	–	–	0.919	0.557
		SE2	0.756	0.051	18.770	***		
		SE3	0.707	0.054	17.315	***		
		SE4	0.748	0.050	18.507	***		
		SE5	0.749	0.051	18.555	***		
		SE6	0.735	0.056	18.119	***		
		SE7	0.756	0.053	18.767	***		
		SE8	0.744	0.054	18.400	***		
		SE9	0.738	0.054	18.220	***		
Satisfaction	Oliver [26]	SAT1	0.728	–	–	–	0.776	0.535
		SAT2	0.729	0.073	14.516	***		
		SAT3	0.738	0.074	14.642	***		
Continuance Intention	Bhattacherjee [3]	CI1	0.700	–	–	–	0.764	0.520
		CI2	0.664	0.080	12.394	***		
		CI3	0.794	0.092	12.822	***		

Note: *** means *p*-value < 0.05

TABLE VI. DISCRIMINANT VALIDITY

Construct	SQ	SY	IQ	SE	SAT	CI
SQ	**0.729**					
SY	0.346	**0.725**				
IQ	0.359	0.391	**0.782**			
SE	0.395	0.332	0.369	**0.746**		
SAT	0.307	0.281	0.337	0.260	**0.731**	
CI	0.306	0.317	0.419	0.320	0.386	**0.721**

The values were all at ideal levels for discriminant validity, as shown in Table VI. The validity of convergent and discriminant methods was thereby confirmed. As a result, the matrix estimation outcomes made it easier to estimate the discriminant validity and verification of the future SEM assessment.

C. Structural Equation Model (SEM)

Following CFA, SEM was used to assess each particular system using a linear equation tailored to that system to confirm the fit of the proposed causal matrix. Factor and regression analyses are two components of traditional multivariate variation models combined in SEM [45]. In addition, SEM aims to test whether the proposed model is consistent with the data by examining the model fit [46]. The results modified by AMOS version 18.0 are displayed in Table VII.

All of the justified outcomes corresponded to the proper standards, and the criteria for CMIN/DF, GFI, AGFI, CFI,

and RMSEA were equivalent to those for CFA. Additionally, the Tucker-Lewis Index (TLI) value was 0.954, higher than the cutoff of 0.900 [41]. As a result, all of the goodness of fit indicators used in the SEM test were perfect.

TABLE VII. GOODNESS OF FIT FOR THE STRUCTURAL EQUATION MODEL

Index	Criterion	Source	Adjusted Values
CMIN/DF	< 3.000	Hair *et al.* [38]	1.834
GFI	> 0.900	Bagozzi and Yi [39]	0.916
AGFI	> 0.800	Filippini *et al.* [40]	0.901
CFI	> 0.900	Hair *et al.* [41]	0.958
TLI	> 0.900	Hair *et al.* [41]	0.954
RMSEA	< 0.050	Browne and Cudeck [42]	0.039

D. Hypothesis Testing Results

The level of significance for each of the latent variables was determined for the study matrix using the regression weights and R2 variances. SY had the most impact on satisfaction, as shown in Table VIII, with a standard path coefficient (*β*) of 0.382 and a t-value of 7.134***. Satisfaction was another factor directly affecting continuance intention to use, with β = 0.362 and t-value =

5.977***. Moreover, SQ affected SAT with β = 0.278 and t-value = 5.235***, and IQ impacted SAT with β = 0.294 and t-value = 6.024***. Finally, SE influenced SAT with β = 0.268 and t-value = 5.576***. Due to the *p*-values being below 0.001, each assumption was supported at the significance level.

The outcomes of the data assessment also allow for the following deductions. The results for H1 demonstrated that SQ impacted SAT, with a standardized path coefficient value for the structure mechanism of 0.278. DeLone and McLean [16] confirmed that SQ enhanced students' proactive evaluation of the SAT in an online learning system.

Regarding H2, the results show that SY was the most crucial factor affecting satisfaction, and its standardized path coefficient value was 0.382. It, therefore, had the most significant impact on the independent variable. According to Ref. [16], system quality favors perceived worth and user satisfaction.

Then, for H3, the results show that IQ affects satisfaction, with a standardized path coefficient value of 0.294. This was consistent with the study of Ranganathan and Ganaparty [20], whose research discovered that satisfaction and inclination to return are highly influenced by information quality.

Additionally, student participation in H4 affected satisfaction, with a normalized path coefficient of 0.268. According to Ref. [47], instructors have a significant role in developing student involvement because it is crucial to student relationships and well-being. Active learning was facilitated by student participation.

About H5, the findings showed that SAT had a significant impact on continuation intention, with a standardized path coefficient value of 0.362. In addition, according to Ref. [30], measuring customer satisfaction was crucial for assessing the value of e-learning in the future.

TABLE VIII. SEM RESULTS RELATED TO THE STUDY HYPOTHESES

Hypotheses	Path	Standardized Path Coefficient (β)	SE	t-value	Test Results
H1	SAT ← SQ	0.278	0.046	5.235***	Supported
H2	SAT ← SY	0.382	0.049	7.134***	Supported
H3	SAT ← IQ	0.294	0.033	6.024***	Supported
H4	SAT ← SE	0.268	0.036	5.576***	Supported
H5	CI ← SAT	0.362	0.068	5.977***	Supported

Note: *** means *p*-value < 0.05.

V. CONCLUSION AND RECOMMENDATION

A. Conclusion

This research aims to investigate the variables that influence fine arts majors' continuance intention to use online learning. Five hypotheses were proposed as a conceptual framework to examine how SQ, SY, IQ, SE, and satisfaction significantly affect students' continuance intention to use. A quantitative questionnaire survey was conducted among 545 fine arts undergraduates with online teaching experience. CFA was employed to verify the correlated validity and reliability of the conceptual framework. SEM examined the predominant influencers that influenced satisfaction.

The results showed that in the "online learning process, SY had the greatest impact on student satisfaction with online teaching". Therefore, the online teaching system should be continuously optimized and improved to improve the system's quality to meet the needs of students' online education.

In addition, the SAT had a significant impact on continuance intention. This was consistent with the results of Baturay's research, which believes that satisfaction was an important factor in measuring the effectiveness and future use of e-learning.

SQ and IQ significantly impacted students' satisfaction with using online education systems. These findings support the view of Chang, C, who also confirmed the relationship between these variables. The SQ and IQ of online teaching could help improve students' learning satisfaction and form a positive continuance intention using it.

In general, the purpose of this study had been realized: SQ, SY, IQ, SE, and SAT were the main factors influencing the continuance use intention of fine arts students in the Chengdu area.

B. Recommendation

This study analyses the main factors that affect the continuance intention of fine arts undergraduates to use online learning in Chengdu. The desire for continuing use was still primarily influenced by satisfaction, and this goal significantly affects the behavior of continuous participation Based on the above research results, teachers could improve the course arrangement and online teaching methods by paying attention to students' continuance intention use of online learning, increasing students' satisfaction with online learning, and thus improving the teaching quality.

Teachers should pay attention to improving students' learning satisfaction and provide help for students to use online education platforms. First, they must help students increase their proficiency with online learning platforms. At the same time, the subject's teaching courseware and multimedia materials were integrated into the online learning platform as the main content and supplementary resources of the course. Teachers should develop students' adaptability to be satisfied with the online learning experience, especially the SY and SAT of online learning, to establish a positive attitude toward students' online education learning style, thereby reinforcing continuance use intention.

In addition, teachers should design a reasonable online teaching plan according to the needs and characteristics of

the fine arts profession. At the same time, considering the comprehensive effect of SQ, SQ, SAT, and IQ, teachers should enhance students' continuance intention using online learning by improving their satisfaction with online learning to promote students' learning performance. Finally, researchers and developers of online teaching systems could further optimize the system according to the current deficiencies and problems, improve the quality of system use, optimize students' sense of experience, and thus increase the continuance intention to use.

C. Limitations and Further Research

The limitation of this study was that only college students in Chengdu were included. In addition, only fine arts majors were selected for quantitative analysis. At the same time, due to the short research time, the number of variables studied was small.

Further investigation was possible in three stages. First and foremost, the scope of the research could be expanded to include additional representative courses of fine arts and design majors, as well as schools in other parts of China. Second, the survey may consider other latent variables such as behavioral intention, social influence, self-efficacy, effort expectation, trust, perceived interaction, learning motivation, performance expectation, and facilitation conditions to extend the research framework for the conceptual structure of online learning student satisfaction. Finally, longer in-depth analyses of studies were needed to get more reliable support from large amounts of data.

CONFLICT OF INTEREST

The author declares no conflict of interest.

REFERENCES

[1] F. Martin and D. U. Bolliger, "Engagement matters: Student perceptions on the importance of engagement strategies in the online learning environment," *Online Learning*, vol. 22, no. 1, pp. 205–222, 2018.

[2] S. Dhawan, "Online learning: A panacea in the time of COVID-19 crisis," *Journal of Educational Technology Systems*, vol. 49, no. 1, pp. 5–22, 2020.

[3] A. Bhattacherjee, "An empirical analysis of the antecedents of electronic commerce service continuance," *Decision Support Systems*, vol. 32, no. 2, pp. 201–214, 2001.

[4] S. R. Sharifabadi, "How digital libraries can support e-learning," *The Electronic Library*, vol. 24, no. 3, pp. 389–401, 2006.

[5] S. Juan, "Promoting engagement of nursing students in online learning: Use of the student-generated question in a nursing leadership course," *Nurse Education Today*, vol. 97, pp. 1–5, 2021.

[6] D. M. Billings, E. R. Faan, and J. A. Halstead, "Teaching in nursing: A guide for faculty," *Elsevier Health Sciences*, 2019.

[7] M. N. Masrek, A. Jamaludin, and S. A. Mukhtar, "Evaluating academic library portal effectiveness," *Library Review*, vol. 59, no. 3, pp. 198–212, 2009.

[8] M. Han, J. Wu, Y. Wang, and M. Hong, "A model and empirical study on the user's continuance intention in online China brand communities based on customer-perceived benefits," *Journal of Open Innovation: Technology, Market, and Complexity*, vol. 4, no. 4, pp. 46–46, 2018.

[9] J. F. Petrick and D. Backman, "An examination of the construct of perceived value for the prediction of golf travelers' intentions to revisit," *Journal of Travel Research*, vol. 41, no. 1, pp. 38–45, 2002.

[10] V. A. Zeithaml and M. J. Bitner, *Services Marketing: Integrating Customer Focus Across the Firm*, Madison, WI: McGraw-Hill, 2000.

[11] C. H. Park and Y. G. Kim, "Identifying key factors affecting consumer purchase behavior in an online shopping context," *International Journal of Retail & Distribution Management*, vol. 31, no. 1, pp. 16–29, 2003.

[12] J. L. M. Tam, "The effects of service quality, perceived value and customer satisfaction on behavioral intentions," *Journal of Hospitality and Leisure Marketing*, vol. 6, no. 4, pp. 31–43, 2000.

[13] J. F. Petrick and D. Backman, "An examination of the construct of perceived value for the prediction of golf travelers' intentions to revisit," *Journal of Travel Research*, vol. 41, no. 1, pp. 38–45, 2002.

[14] C. W. Chen, "Impact of quality antecedents on taxpayer satisfaction with online tax-filing systems: an empirical study," *Information & Management*, vol. 47, no. 5/6, pp. 308–315, 2010.

[15] P. B. Seddon and M. Y. Kiew, "A partial test and development of the DeLone and McLean model of IS success," in *Proc. the International Conference on Information Systems*, Vancouver, 1994, pp. 99–110.

[16] W. H. DeLone and E. R. McLean, "Information systems success: The quest for the dependent variable," *Information Systems Research*, vol. 3, no. 1, pp. 60–95, 1992.

[17] A. Srinivasan, "Alternative measures of system effectiveness: Associations and implications," *MIS Quarterly*, vol. 9, no. 3, pp. 243–253, 1985.

[18] H. Lee, J. Kim, and J. Kim, "Determinants of success for the application service provider: An empirical test in small businesses," *International Journal of Human-Computer Studies*, vol. 65, no. 9, pp. 796–815, 2007.

[19] V. McKinney, K. Yoon, and F. Zahedi, "The measurement of web customer satisfaction: An expectation and disconfirmation approach," *Information Systems Research*, vol. 13, no. 3, pp. 296–315, 2002.

[20] C. Ranganathan and S. Ganapathy, "Key dimensions of business-to-consumer web sites," *Information & Management*, vol. 39, no. 6, pp. 457–465, 2002.

[21] K. A. Saeed and S. Abdinnour-Helm, "Examining the effects of information system characteristics and perceived usefulness on post-adoption usage of information systems," *Information & Management*, vol. 45, no. 6, pp. 376–386, 2008.

[22] V. M. Bradley, "Learning Management System (LMS) use with online instruction," *International Journal of Technology in Education (IJTE)*, vol. 4, no. 1, pp. 68–92, 2021.

[23] R. Mufliharsi, I. Mayuni, and N. L. Nuruddin, "Task-based flipped classroom: Promoting student's reading skills of an EFL class in Indonesia," *Journal of Positive School Psychology*, vol. 6, no. 2, pp. 3823–3832, 2022.

[24] K. F. G. Yılmaz, "An investigation into the role of course satisfaction on students' engagement and motivation in a mobile-assisted learning management system flipped classroom," *Technology, Pedagogy and Education*, vol. 31, no. 1, pp. 15–34, 2022.

[25] J. Reeve, "How students create motivationally supportive learning environments for themselves: The concept of agentic engagement," *Journal of Educational Psychology*, vol 105, no. 3, pp. 579–595, 2013.

[26] R. Oliver, "A cognitive model of the antecedents and consequences of satisfaction decisions," *Journal of Marketing Research*, vol. 17, no. 4, pp. 460–469, 1980.

[27] R. T. Rust and R. L. Oliver, "Service quality: Insights and managerial implication from the frontier," in *Service Quality: New Directions in Theory and Practice*, Thousand Oaks, CA: Sage, 1994, pp. 1–19.

[28] P. J. Danaher and T. R. Rust, "Indirect financial benefits from service quality," *Quality Management Journal*, vol. 3, no. 2, pp. 63–75, 1996.

[29] R. L. Oliver and R. S. Winer, "A framework for the formation and structure of consumer expectations: Review and propositions," *Journal of Economic Psychology*, vol. 8, no. 4, pp. 469–499, 1987.

[30] M. H. Baturay. (March 2, 2010). Relationships among sense of classroom community, perceived cognitive learning and satisfaction of students at an e-learning course. *Interactive Learning Environments*. [Online]. Available: http://pdfserve.informaworld.com/287687_788837034_92229278 1.pdf/

[31] R. A. Spreng, A. L. Dixon, and R. W. Olshavsky, "The impact of perceived value on consumer satisfaction," *Journal of Consumer*

Satisfaction, Dissatisfaction and Complaining Behaviour, vol. 6, pp. 50–55, 1993.

[32] J. J. Cronin Jr, M. K. Brady, and G. T. M Hult, "Assessing the effects of quality, value and customer satisfaction on consumer behavioral intentions in service environments," *Journal of Retailing*, vol. 76, no. 2, pp. 193–218, 2000.

[33] S. Z. M. Osman, "Combining synchronous and asynchronous learning: Student satisfaction with online learning using learning management systems," *Journal of Education and e-Learning Research*, vol. 9, no. 3, pp. 147–154, 2022.

[34] C. Chang, "Exploring the determinants of e-learning systems continuance intention in academic libraries," *Library Management*, vol. 34, no. 1/2, pp. 40–55, 2013.

[35] M. Allen, S. Titsworth, and S. Hunt, *Quantitative Research Communication*, Sage Publications Inc, 2009.

[36] M. Alkhadim, K. Gidado, and N. Painting, "Perceived crowd safety in large space buildings: The confirmatory factor analysis of perceived risk variables," *Journal of Engineering, Project and Production Management*, vol. 8, no. 1, pp. 22–39, 2019.

[37] J. L. Perry, A. R. Nicholls, P. J. Clough, and L. Crust, "Assessing model fit caveats and recommendations for confirmatory factor analysis and exploratory structural equation modeling," *Measurement in Physical Education and Exercise Science*, vol. 19, no. 1, pp. 12–21, 2015. https://doi.org/10.1080/1091367X.2014.952370

[38] J. F. Hair, R. E. Anderson, R. L. Tatham, and W. C. Black, *Multivariate Data Analysis*, 6th ed., Upper Saddle River, NJ: Prentice Hall, 2010.

[39] R. P. Bagozzi and Y. Yi, "On the evaluation of structural equation models," *Journal of the Academy of Marketing Science*, vol. 16, no. 1, pp. 74–94, 1988.

[40] R. Filippini, C. Forza, and A. Vinelli, "Trade-off and compatibility between performance: Definitions and empirical evidence," *International Journal of Production Research*, vol. 36, no. 12, pp. 3379–3406, 1998.

[41] J. F. Hair, W. C. Black, B. J. Babin, *et al.*, *Multivariant Data Analysis*, international ed., Pearson, 2006.

[42] W. Browne and R. Cudeck, "Alternative ways of assessing model fit," in *Testing Structural Equation Models*, Newbury Park, CA: SAGE, 1993.

[43] R. Sarmento and V. Costa, *Comparative Approaches to Using R and Python for Statistical Data Analysis*, IGI Global Press, 2016.

[44] Z. Yang, S. Cai, Z. Zhou, and N. Zhou, "Development and validation of an instrument to measure user perceived service quality of information presenting web portals," *Information & Management*, vol. 42, no. 4, pp. 575–589, 2005.

[45] A. K. Ainur, M. D. Sayang, Z. Jannoo, and B. W. Yap, "Sample size and non-normality effects on goodness of fit measures in structural equation models," *Pertanika Journal of Science and Technology*, vol. 25, no. 2, pp. 575–586, 2017.

[46] J. Hair, W. C. Black, B. J. Babin, and R. E. Anderson, *Multivariate Data Analysis*, 7th ed., Upper Saddle River, NJ: Pearson Education International, 2010.

[47] K. F. G. Yılmaz, "An investigation into the role of course satisfaction on students' engagement and motivation in a mobile-assisted learning management system flipped classroom," *Technology, Pedagogy and Education*, vol. 31, no. 1, 1534, 2022. https://doi.org/10.1080/1475939X.2021.1940257