

ANALYSIS OF SATISFACTION AND CONTINUANCE INTENTION OF POSTGRADUATES TOWARD ONLINE DESIGN LEARNING IN CHENGDU, CHINA

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Abstract

In this study, 495 graduate students majoring in art from four public universities in Chengdu, China, were surveyed about their satisfaction and intention to continue their studies. The researchers used online traditional craft learning as a scenario and combined the TAM and ISS models. The sampling method involves judgmental, quota and convenience sampling. Confirmatory Factor Analysis and Structural Equation Model were used to establish the association between study variables through quantitative research. The model and hypothesis were validated using SPSS and AMOS tools. According to research findings, user satisfaction and perceived usefulness are directly connected with students' propensity to use online design education consistently. As a result, to support the long-term growth of traditional craft design education, teachers and teaching management departments in online design education should concentrate on helping students recognize the value of their knowledge and skills and enhance the service quality of online teaching in numerous ways.

Keywords: System Quality, Service Quality, Information Quality, Satisfaction,
Continuance Intention

Introduction

Online Learning has become a crucial component of the education sector, enabling the comprehensive and rapid development of digital learning. All academic units have accumulated some experience in online teaching. Hodges et al. (2020), pointed out that online education is bound to enter a new normal in the post-epidemic era. Although there are many differences between Online Learning conducted by universities and well-planned and developed online education due to the lack of administrative support and technical infrastructure, they all share a common feature: digital technology teaching (Rapanta et al., 2021).

According to one research, students enjoy the agility of online courses, reducing the annoyance of many students' clothing choices when traveling to class, and could tailor their education to fit their schedules and speed (Alexander et al., 2012). Unlike in a traditional university setting, students cannot participate in group projects or conversations among different groups. Both student-student and student-teacher engagement needs to be improved. Students prefer face-to-face conversation and communication when given the option, believing that online talks can supplement but not replace face-to-face communication (Dumford & Miller, 2018; Tiene, 2000). Additionally, each university has a different approach to online learning. There are disparities in students' satisfaction with the courses and willingness to continue studying between universities with relatively complete digital learning systems and those without (Bozkurt & Sharma, 2020).

Literature Review

1. Perceived Ease of Use

“Perceived Ease of Use” measures how uncomplicated it is for students to employ online learning (Mohammad et al., 2020). Furthermore, Lee et al. (2009) emphasized that perceived ease of use measures how easily students learn new things. Furthermore, studies have shown that when users learn something new, they often perceive an easy-to-use system as contributing to their willingness to continue using it (Chauhan, 2015). The level e-learning system is thought to be easy to use and productive by students (Rui-Hsin & Lin, 2018). According to Zhou and Feng (2017), perceived Ease of Use refers to how simple it is to take advantage of a novel idea. Prior studies have provided sufficient information to conclude that perceived ease of use significantly impacts perceived usefulness (Sudin et al., 2022). Hence, a hypothesis is set:

H1: Perceived ease of use has a significant impact on perceived usefulness.

2. Perceived usefulness

Davis (1989) defined perceived usefulness as a member of management's belief that adopting a specific technology will significantly strengthen his ability to perform a task and influence his desire to use it. Regarding e-education, perceived utility significantly affects users'

willingness to continue learning (Budu et al., 2018). Perceived usefulness has a strong and favorable consequence on engaging a computerized learning system (Mohammad et al., 2020). According to Islam (2011), adopting innovative technologies is not solely premised on how they view benefits. Mckechnie et al. (2006) found that perceived usefulness significantly impacted satisfaction and continuance intention. Therefore, two hypotheses are proposed:

H2: Perceived usefulness has a significant impact on satisfaction.

H6: Perceived usefulness has a significant impact on continuance intention.

3. System Quality

The measurement of the knowledge acquisition platform is what is meant by the phrase “system quality” (Chen, 2010). The effectiveness of a system is determined by its quality (Zeithaml et al., 2000). It is referred to as the industry standard for information systems that deliver material to internet users in a content creation and comprehensible format projected to be dependable, quick, and furnished with dynamic connection capabilities (Ritanjali et al., 2019). System quality comprises system reactivity, dependability, functionality, and online accessibility. Most research found that system quality significantly impacts satisfaction (Shih, 2004). Accordingly, this research concludes that:

H3: System quality has a significant impact on satisfaction.

4. Information Quality

The accuracy of the data strongly influences the satisfaction and probability of return (Ranganathan & Ganapathy, 2002). IQ is the level of the resources or information offered in an online learning environment, and its efficacy and flexibility are anticipated to satisfy students' preferences (Ritanjali et al., 2019). Information quality indicators include users' perceptions of the caliber of the guidance provided on a website (Mckinney et al., 2002). Information quality is often called content standard (Panigyrakis & Chatzipanagiotou, 2006). An additional aspect of information quality is accuracy, it can affect the satisfaction of users (Nelson et al., 2015). Thus, this study hypothesizes that:

H4: Information quality has a significant impact on satisfaction.

5. Service Quality

Service quality is an important component expected to influence whether e-learning will be accepted. Often, whether a service conforms to customer requirements determines its level of quality (Chiu et al., 2007). Additionally, the SERVQUAL model in online learning environments can be supported by data for teaching management units and information service specialists (Mtebe & Raphael, 2018). Service quality is primarily influenced by four things: promptness, reliability, assurance, and humanity (Yakubu & Dasuki, 2018). The multidimensional idea of service performance has frequently been measured using the Service quality measuring device (Chen, 2010). Technical assistance as service quality can determine the level of user' satisfaction (Ojo, 2017). Subsequently, a hypothesis is developed:

H5: Service quality has a significant impact on satisfaction.

6. Satisfaction

Wang (2003) described user satisfaction with online course platforms as a mixed subjective reaction of different intensities after e-learning engagements. User satisfaction measures how contented users are with findings, internet sites, and technical support (Ojo, 2017). Satisfaction frequently pertains to a public's opinions about an item or service after employing it (Jamal & Naser, 2003). Kim and Malhotra (2005) precise the user's satisfaction as the foreseen degree for acquiring relevant knowledge through a specific online course. Shneiderman (2010) circumscribed satisfaction as the user's receptivity to the expertise or competence improvement by utilizing a particular e-learning infrastructure. Accordingly, satisfaction can determine continuance intention (Hsu & Chiu, 2004), as shown in a hypothesis:

H7: Satisfaction has a significant impact on continuance intention.

7. Continuance Intention

According to Chang (2013), an index of a person's desire to use online course networks in college and their desire to recommend other students to use e-learning networks subsequently. Chiu et al. (2007) established continuance intention as the perceived likelihood that the student will keep using content learning. Amoroso and Chen (2017) added that continuance intention is the extent to which an individual is truly committed to using a software or information system continuously. Venkatesh and Davis (2000) stated that continuance intention is the user's desire to continue using the online course network to acquire knowledge and skills after first adopting it. It follows that there is a clear favorable association between the goal of user activity and a sense of achievement with using E-instructional platforms (Al-Azawei et al., 2017).

Research Framework

The conceptual framework in this study is adapted from the research model of previous studies, including Sudin et al. (2022), Zhang et al. (2016), and Cheng (2014) to establish a causal link between key variables, as shown in Figure 1.

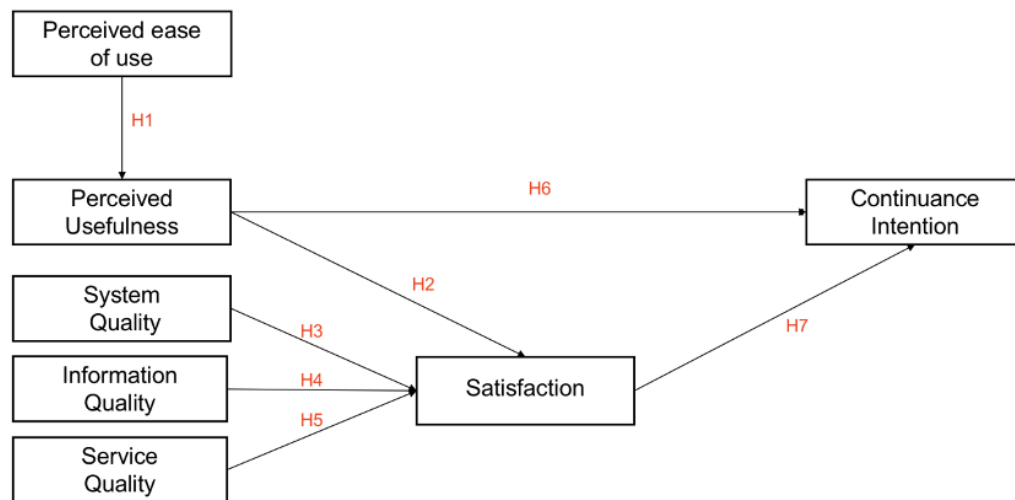


Figure 1 Conceptual Framework

Research Methodology

This study adopts the quantitative method, using a five-point Likert scale to examine the factors influencing the respondents' satisfaction and continuation intention. The main statistical analysis tools are confirmatory factor analysis (CFA) and structural equation modeling (SEM).

1. Population and Sample Size

The target population is to select graduate students from Chengdu University, Sichuan Normal University, Xihua University, and Chengdu Academy of Fine Arts majoring in Product design, Visual communication, Environmental art, and Art Design who participated in a survey questionnaire done by the researchers. According to Hair et al. (2013), the minimum sample size for demanding methodological methods in SEM is 200-500 respondents. A final sample of 500 students of which 495 were qualified.

2. Sampling Techniques

The sampling method involves judgmental, quota, and convenience sampling. Judgmental sampling determines postgraduate students who have already completed at least one semester of digital learning in traditional crafts and practical design-related courses. The quota selection was used to distribute a proportionate sample size. For convenience sampling, the online questionnaires were distributed to respondents.

Results and Discussion

1. Demographic Information

The demographic results are obtained from 495 participants, including 213 males (43.03%), and 282 females (56.97%). The respondents are from Sichuan Normal University at 27.07%, Chengdu University at 22.83%, Xihua University at 23.63% and Chengdu Fine Arts at 26.46%. For the major of the study, visual communication has 44.65%, followed by environmental design (24.44%), product design (24.44%), art design (19.6%), and others (11.31%).

2. Confirmatory Factor Analysis (CFA)

Confirmatory Factor Analysis results indicate the discriminant and convergent validity of theoretical notions (Kenny & Kashy, 1992). All orders to test the proposed models include the factor loading, unique variance, and factor variance parameters (Timothy & Michael, 2012). The Cronbach's alpha coefficients for each of the latent variables should be higher than 0.7, Additionally, the Average Variance Extracted (AVE) is 0.5 or over (Hu et al., 2014). Finally, the composite reliability for each construct is greater than 0.7 (Chin et al., 2003). Consequently, this study approves CFA's results as indicated in Table 1.

Table 1: Confirmatory Factor Analysis Result, Composite Reliability (CR) and Average Variance Extracted (AVE)

Latent Variables	Source of Questionnaire	No. of Items	Cronbach's Alpha	Factors Loading	CR	AVE
Perceived Ease of Use (PEOU)	Sudin et al., (2022)	3	0.910	0.665 - 0.791	0.761	0.517
Perceived Usefulness (PU)	Liang et al., (2011)	3	0.801	0.598 - 0.887	0.835	0.634
System Quality (SYQ)	Cheng, (2014)	4	0.851	0.715 - 0.829	0.844	0.576
Information Quality (IQ)	Cheng, (2014)	4	0.887	0.677 - 0.789	0.838	0.566
Service Quality (SEQ)	Yang et al., (2005)	3	0.797	0.747 - 0.918	0.879	0.708
Satisfaction (SAT)	Cheng, (2014)	4	0.842	0.702 - 0.915	0.901	0.697
Continuance Intention (CI)	Cheng, (2014)	4	0.905	0.711 - 0.921	0.894	0.681

Source: Created by the author.

According to Table 2, the goodness of fit measurements of the CFA test in this study is sufficient, as may be shown from prior investigations.

Table 2 Goodness of Fit for Measurement Model

Index	Acceptable Values	Statistical Values After Adjustment
CMIN/DF	<3 (Hair et al., 2010)	2.040
GFI	>0.90 (Bagozzi & Yi, 1988)	0.922
AGFI	>0.80 (Sica & Ghisi, 2007)	0.900
RMSEA	<0.05 (Hu & Bentler, 1999)	0.046
CFI	>0.90 (Hu & Bentler, 1999)	0.960
NFI	>0.90 (Hair et al., 2010)	0.925
TLI	>0.90 (Bentler & Bonett, 1980)	0.952
Model summary		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, RMSEA = Root mean square error of approximation, CFI = Comparative fit index, NFI = Normed fit index, and TLI = Tucker–Lewis index

Throughout this analysis, the method put forward by Fornell and Larcker (1981) was employed to assess the discriminant validity of the outcomes. Because the square root of each structure's AVE value is more than the comparison coefficient for every matching of structures in Table 3, the CFA results demonstrate that each structure is independent.

Table 3 Discriminant Validity

	SYQ	IQ	SAT	CI	PEOU	PU	SEQ
SYQ	0.759						
IQ	0.068	0.752					
SAT	0.255	0.221	0.835				
CI	0.129	0.163	0.249	0.825			
PEOU	0.080	0.121	0.090	0.154	0.719		
PU	0.147	0.192	0.413	0.344	0.129	0.796	
SEQ	0.161	0.175	0.415	0.138	0.024	0.178	0.841

Note: The diagonally listed value is the AVE square roots of the variables.

3. Structural Equation Model (SEM)

Moshagen (2012) argues that behavioral researchers typically use SEM to examine the associations underlying latent and observable variables. SEM is a framework that combines regression, factor analysis, path analysis, and latent growth curve modeling with the simultaneous solution of linear equation systems (Stein et al., 2012). So, following the conclusion of the CFA investigation, researchers verified the structural equation model. All parameters met reference values after SPSS AMOS correction, and the findings supported the structural equation model's goodness of fit.

Table 5 Goodness of Fit for Measurement and Structural Model

Index	Acceptable Values	Statistical Values Before Adjustment	Statistical Values After Adjustment
CMIN/DF	<3 (Hair et al., 2010)	2.516	2.116
GFI	≥0.90 (Hair et al., 2010)	0.898	0.914
AGFI	≥0.80 (Sica & Ghisi, 2007)	0.877	0.895
RMSEA	<0.05 (Hu & Bentler, 1999)	0.055	0.048
CFI	≥0.90 (Hu & Bentler, 1999)	0.938	0.955
NFI	≥0.90 (Hair et al., 2010)	0.902	0.918
TLI	≥0.90 (Hair et al., 2010)	0.931	0.949
Model summary		Not in harmony with empirical data	In harmony with empirical data

Remark: CMIN/DF = The ratio of the chi-square value to the degree of freedom, GFI = Goodness-of-fit index, AGFI = Adjusted goodness-of-fit index, RMSEA = Root mean square error of approximation, CFI = Comparative fit index, NFI = Normed fit index, and TLI = Tucker–Lewis index

4. Hypothesis Testing Result

Per Table 6, SAT has the strongest major consequence on CI, standardized path coefficient(β) of 0.287 (T-the value of 5.171****).The second is the PU path coefficient(β)of 0.130 (T-value of 2.580*).In addition, PU (β =0.208, T-value of 4.499****), SYQ (β =0.131, T-value of 0.062), IQ(β =0.312, T-value of 6.945****), SEQ (β =0.344, T-value of 6.931 * * *) exerts direct leverage on SAT, of which the motivate of PU is the most obvious. PEOU directly affects PU, with a path coefficient (β) of 0.114 (T-value of 2.080*).

Table 6 Hypothesis Results of the Structural Equation Model

Hypothesis	(β)	t-value	Result
H1: PEOU $\rightarrow$ PU	0.114	2.080*	Supported
H2: PU $\rightarrow$ SAT	0.208	4.499***	Supported
H3: SYQ $\rightarrow$ SAT	0.131	2.856**	Supported
H4: IQ $\rightarrow$ SAT	0.312	6.945***	Supported
H5: SEQ $\rightarrow$ SAT	0.344	6.931***	Supported
H6: PU $\rightarrow$ CI	0.130	2.580*	Supported
H7: SAT $\rightarrow$ CI	0.287	5.171***	Supported

Note: *** $p < 0.001$; ** = $p < 0.01$; * = $p < 0.05$.

PU and PEOU reflect outside motivation for use, while perceived enjoyment reflects intrinsic motivational aspects (Cheng, 2014). According to the research results of Table 7, H1 has proved that the PEOU is an important factor affecting the PU and standardized path coefficient (β) of 0.114. The intention of the trainee to use the e-learning platform is highly influenced by PEOU (Islam, 2011).

H2 confirms the achievement of SYQ on SAT and standardized path coefficient (β) of 0.208. In various ISS application instances, system quality has been demonstrated to be a substantial marker of user satisfaction (Lwoga, 2013). The researchers confirmed that the system quality of the e-learning platform engages in learners' overall perception of usefulness and satisfaction (Soujata & Zuberia, 2021).

The statistical results of H3 verified the hypothesis of IQ on SAT, and the standardized path coefficient is 0.131. Information quality substantially affects users' satisfaction and willingness to return (Ranganathan & Ganapathy, 2002). Many researchers have realized that the quality of information is an integral ingredient in assessing the effectiveness of an online course (Panigyrakis & Chatzipanagiotou, 2006).

H4 verified the hypothesis of SEQ on SAT; the path coefficient (β) is 0.312. In order to increase competitive advantage and boost user pleasure, service quality is crucial (Santos, 2003). According to Roca et al. (2006), service quality specifies the extent to which students believe that the personal practical assistance provided by the e-learning organization is supportive, which is a useful forecaster of the acceptance of e-learning. SEQ also includes service in the teaching process, providing feedback to students, explaining problems and concepts, making the course pleasant, motivating students, and understanding their problems (Byrne, 2010).

In this survey, PU has the most obvious direct effect on SAT, and the path coefficient (β) is 0.344. PU is regarded as a powerful determinant of satisfaction in education and teaching.

Data from H5 prove the level of perceived usefulness that contributes to establishing effective relationships between user achievement and satisfaction (Ojo, 2017).

The consequences of the H6 test indicated that the effect of SAT on CI in this inquiry was relatively weak, and the path coefficient was 0.130. It is only higher than the affect value of PU on PEOU in H1. Increased user desire to employ e-learning systems will result from high levels of individual engagement with their use (Mtebe & Raphael, 2018). Furthermore, it is indisputable that users' behavioral intentions and excitement about using e-learning technologies are surely linked (Al-Azawei et al., 2017).

Finally, H7 verifies the hypothetical connection between PU and CI, standardized path coefficient (β) is 0.287. Research shows that PU positively impacts learners' CI to use e-learning systems (Roca & Gagne, 2008).

Conclusions, Recommendations, Limitations and Future Research

1. Conclusions

This paper takes TAM and ISS as the theoretical research framework. SPSS and Amos' software were used to measure the refers to the level of SAT and CI of postgraduates in online learning of traditional crafts in Chengdu, China. The researchers sent questionnaires to four design majors at the four target universities to investigate seven conceptual framework assumptions and verify the correlation and influence among PEOU, PU, SYQ, IQ, SEQ, SAT, and CI. Finally, data from 495 valid questionnaires were collated and applied to CFA and SEM to verify the model's validity and evaluate the degree of correlation between observed and potential variables. Final results show that PU plays a very positive role in both SAT and CI, of which the direct influence on satisfaction is the strongest, and the path coefficient peaks. In addition, the indirect effect of SEQ on CI is also significant. The indirect effect of PEOU on SAT and CI cannot be ignored either.

2. Recommendations

Many questions about online design education mainly lie in that online learning cannot provide real and direct teaching scenes and classroom interaction, especially for practical courses based on art design. Learners have a stronger demand for synchronous interaction with teachers. This is determined by the elements of art learning: visual observation, collaboration among classmates, and teacher-student engagement.

In light of the findings of this report's empirical analysis and the circumstances surrounding traditional craft online learning, the researchers believe that the class size should not be too large in the online design teaching to guarantee that every learner can communicate with teachers, to improve students' participation and satisfaction in the classroom. In addition, teaching management departments should provide teachers with better teaching support, actively develop tools suitable for teaching characteristics of different disciplines, or provide more convenient communication platforms to meet the needs of online

cooperation and communication.

In addition, according to research results, PU shows a strongly favorable effect on participants' CI. Therefore, teaching quality and design organization mode are still the key factors for the sustainable development of online learning of the traditional craft. In the teaching process, teachers should set clearer learning objectives, reasonably guide students' learning motivation, and emphasize the practical transformation of knowledge points and skills based on understanding traditional craft practicability, artistry, and nationality. Let "learn" and "use" close combination.

In summary, among the elements contributing to the continuance intention of online design education, it is evident that graduate students attach more importance to the practical utility brought by online learning, while another determinant to improve students' online learning satisfaction is the service quality, including the service provided by the platform and the teaching service quality of teachers during the teaching process.

3. Limitations and Future Research

First, there may be omissions in the selection of model variables. Given that users' satisfaction and continuance intention vary in different scenarios, it is difficult to include them in the model in the actual research process. Therefore, it is inevitable that the underlying factors still need to be fully considered. Moreover, the random sample can be subject to some restrictions. Most of the graduate art design students in Chengdu, China, who provided the survey data for this study came from four different routes. Moreover, they are limited to the investigation of online learning of design practice courses such as traditional crafts. Therefore, there may be some limitations in the data study and conclusion, which need to be further tested in subsequent studies.

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