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Students' Continuous Intention to Use Online Learning for Art Education in Chongqing, China

Fangrui Chen*, Satha Phongsatha

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Abstract

Purpose: The purpose of this study is to explore the factors influencing students' continuous intention to use online learning for art education in Chongqing, China. The conceptual framework incorporates self-efficacy, perceived ease of use, perceived usefulness, attitude and continuous intention. **Research design, data, and methodology:** This study used a quantitative method to collect information from students with experience in using online software for arts education in two private institutions in Chongqing. Data collection was performed by judgmental sampling, quota and convenience sampling. The data were analyzed by confirmatory factor analysis (CFA) and structural equation model (SEM). **Results:** The findings confirm the theory and relationship of attitude and continuous intention to use online art education software. Perceived ease of use had the most significant effect on attitudes but had no significant effect on perceived usefulness. In addition, the effect of self-efficacy on perceived ease of use was significant. **Conclusion:** The advantage of the perceived usefulness of online art education software is the most important factor that should be emphasized when trying to enhance students' continuous intention to use online learning software. Therefore, this study suggests that educators should create a more suitable learning platform that can optimize the learning efficiency of students.

Keywords: Online Learning, Art Education, Attitude, Self-Efficacy, Continuous Intention

JEL Classification Code: E44, F31, F37, G15

1. Introduction

Distance education, the predecessor of online education, is usually considered the second choice of traditional university education (Forsyth et al., 2011). Online learning is already being practiced in China to improve the education of young children all over the country. Since 1996, China's Ministry of Education has cooperated with private enterprises to establish many K12 online schools. Although e-schools have been in operation for more than a decade, they still face the reality that China has developed e-learning curriculum programs that have transformed the education of teenagers and children across the country. Since 1996, In cooperation with private enterprises, the government has

1 *Fangrui Chen Ph.D. Candidate, Department of Technology, Education and Management, Graduate School of Business and Advanced Technology Management, Assumption University. Email:1033379907@qq.com
2 Satha Phongsatha Program Director, M.Ed. in Teaching and Technology, Graduate School of Business and Advanced Technology Management, Assumption University. Email: sathaphn@au.edu

established many K12 online schools (Lin & Wang, 2012).

Online art education and training institutions are divided into three categories: college entrance examination art training, children's art training, and adult art training. The scope of the study is mainly for teenagers and children and art students. With The Times's development and the Internet industry's penetration, network education has developed rapidly in the past two years. Especially during the pandemic, it has shown great advantages in online education. Under the guidance of the Ministry of Education, online teaching began. Among them, network art education's rapid development has significantly impacted traditional offline art training institutions. The development of network art education is the explosive growth point of real quality education in China's art education, which provides a new opportunity for the development of art education in China.

The purpose of this study is to explore the factors that influence the behavioral intention of users of private art institutions in Chongqing, China, with more than one year of experience using online art education software. In order to form the conceptual framework of the research, the researchers have studied the previous literatures and collected the relevant theories, which are technology acceptance models or TAM theory by Davis et al. (1989), the unified theory of acceptance and use of technology or UTAUT by Venkatesh et al. (2003). The TAM describes the personal acceptance and application of technical systems, and the variables adopted by the conceptual model are self-efficacy, perceived usefulness, perceived ease of use, and attitude to using the system as the context for the research. The variables adopted from the UTAUT are also behavioral intentions to explain the technical acceptability of the user. According to the key models of factors, the researchers investigated two private art education institutions, determining key factors; self-efficacy (SE), perceived ease of use (PE), perceived usefulness (PU), attitude (AT), and continuous intention (CITU).

2. Literature Review

2.1 Self-Efficacy

Self-efficacy means a belief in the ability of the id to perform a particular task (Bandura, 1982). Self-efficacy is a person's overall confidence in their ability to perform tasks. The self-efficacy of online systems is an individual's ability to learn through mobile technology (Garavan et al., 2010; Tagoe & Abakah, 2014). Self-efficacy positively impacts the ease of use of technical systems (Meuter et al., 2005). Self-efficacy is considered an auxiliary technological innovation ability and the ability to participate in technological innovation, so we predict that users with high self-efficacy are more likely to form a positive attitude toward using technology. Some studies also postulate that self-efficacy is an essential key factor in perceived ease of use. According to Hsia et al. (2014), in high-tech enterprises, computer self-efficacy positively impacts the perceived ease of use of network learning systems. Therefore, this paper assumes the following :

H1: Self-efficacy has a significant influence on perceived ease of use of online art education.

2.2 Perceived Ease of Use

Davis (1989) showed that perceived ease of use affects the system's effectiveness and acceptance of the new system. Chiam et al. (2017) indicated that the perception of ease of use is disturbed by many external factors, such as hiding the user's method and cognitive abilities and the purpose of the use (Venkatesh, 1999). In previous research articles, the authors found that ease of use determines the recognition of new technologies. According to TAM, perceived usefulness and perceived ease of use are decisive factors in attitude. At the same time, perceived usefulness and perceived ease of use are also crucial factors in users' intention to continue using (Davis et al., 1989). In other words, attitude is the intermediate variable between perceived ease of use and perceived usefulness for the user's intention to continue using. Many literature studies support this view (Li et al., 2012). Based on the above research, this paper puts forward the following hypotheses:

H2: Perceived ease of use has a significant influence on perceived usefulness of online art education.

H3: Perceived ease of use has a significant influence on attitude toward online art education.

2.3 Perceived Usefulness

Through student's media experience, they will feel more able to use the Internet and show a positive attitude toward innovation (Lee, 2006). There are two dimensions of perceived usefulness to organizations and individuals. The former involves the economic benefits (product quality and teaching cost savings) that an organization can achieve by adopting new technology (Fan et al., 2021). For individuals, the benefits come from better work performance and the motivation to use technology. In the definition of perceived usefulness, not only improve or change its function but also make constructive suggestions and relevant validation (Yeh & Teng, 2012). Davis (1989) believed that attitude is an essential intermediate variable that moderates perceived ease of use and perceived usefulness on individual behavioral intention. In conclusion, perceived usefulness has a significant impact on attitude Based on the above research, the paper proposes a following assumption:

H4: Perceived usefulness has a significant influence on attitude toward online art education.

2.4 Attitude

The usage attitude is defined as a user's perception and behavior after experiencing a particular system. The user's attitude toward the system can be positive or negative (Fishbein & Ajzen, 1975). This study defines *attitude* as the user's degree of adaptation when using online art education software. The intention of continuous use refers to the behavior that users are willing to continue to use a specific system software (Lu & Hsiao, 2010). The study of TAM shows that attitudes come from emotion (Compeau et al., 1999). Emotion is a direct and external expression of personal attitude. Previous studies have also confirmed that information technology is important to individual emotions (Lin et al., 2011). Meanwhile, some researchers believe this attitude can also be explained (Ajzen, 1991). In the theory of planned behavior, one believes that the user's attitude addresses the individual's intention when using a specific technology (Cao & Jittawiriyanukoon, 2022). Therefore, this study proposes the following hypothesis:

H5: Attitude has a significant influence on continuous intention to use online art education.

2.5 Continuous Intention

The relationship between college students' attitudes towards online learning and their self-directed learning ability and willingness towards online learning research shows that they have a positive attitude after completing online learning, making them willing to continue to use online education courses. (Bhattacherjee, 2001) Research shows that the literature pays much attention to the factors identified in educational techniques but that the willingness to continue to use them is somewhat influenced in the context of four different structures. Lin et al. (2011) takes continuous use instead of behavioral intention as the main framework to develop a new research model to investigate the critical factors of users' continuous use of e-learning. Research shows that user satisfaction and perceived usefulness are essential to determining continued use intention (Ifinedo, 2006).

3. Research Methods and Materials

3.1 Research Framework

The main research direction of Chiam et al. (2017) is considering students' behavioral intention to use video lectures as a learning method. The behavioral intention was measured by students' ease of use and usefulness to the online course. In the SCT and TAM models, Lewis et al. (2003) argue that individuals are willing to follow IT use in many impact environments that come from people's interactions with IT. The simultaneous influence of individual attitudes towards perceived usefulness and perceived ease of use was studied in the condition of self-disciplined users. The purpose of Konak et al. (2019) was to compare online learning between attitude factors, interest and interest in teamwork skills learning, and teamwork self-efficacy. Hossain et al. (2021) explored the impact of cognitive needs, subjective norms, perceived usefulness, satisfaction, confirmation, attitude, and perceived ease of use on the learner's continuous use intentions. Therefore, the conceptual framework of this study is established based on the theoretical data, such as the theoretical framework and empirical questionnaires compiled in the previous literature. This point is shown in Figure 1. This study's main research direction is to study learners' intention to use online learning through online art software continuously. The conceptual framework of this paper contains all of the variables mentioned in this paper. The two main theories (TAM, UTAUT) and the main research framework of the above researchers are used as the basis for developing the conceptual framework of this study. These theories examine continued use intention, perceived usefulness, perceived ease of use, attitude, and self-efficacy.

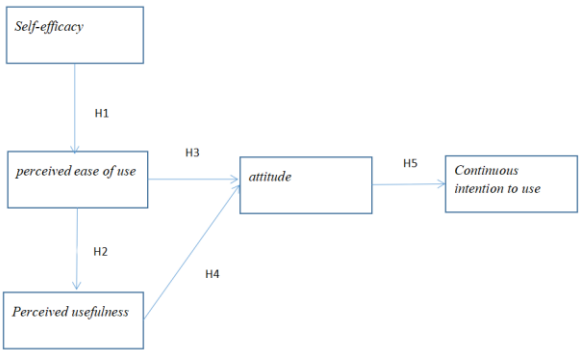

Figure 1: Conceptual Framework

3.2 Research Methodology

This study used quantitative methods in this process. The questionnaire survey was used as a data collection tool. Data were collected using the survey method, and the study model was examined. The target population of this study is art students studying in private art institutions in Chongqing, and all have more than one year of experience using online art education software. The data were analyzed by confirmatory factor analysis (CFA) and structural equation model (SEM).

3.3 Population and Sample Size

The target population of 4,300 participants, selected from two educational institutions in Chongqing, which are Chongqing Art Studio and Teana Studio. After the researcher had entered all the necessary information into the calculator, the expected result size (0.2), the desired level of statistical power (0.8), the number of latent variables (7), the number of observed variables (30), the probability scale (0.05), the calculator recommended minimum sample size was 425. Therefore, the researchers planned to collect 500 samples from two private art training institutions in Chongqing, to obtain better statistical results.

3.4 Sampling Technique

The researchers conducted non-probability sampling method. In the first step, two educational institutions in Chongqing were selected through judgmental sampling, which are Chongqing Art Studio and Teana Studio. The second step uses the quota sampling method to select 250 students in each schools with at least one year of experience using online art education software. For conveneince sampling, the online questionnaire was distributed to the target group.

4. Results and Discussion

4.1 Demographic Information

Demographic information collected from the respondents included the gender and age stage of the population. There were 278 females and 222 males, or 55.6% and 44.4%, respectively. Primary school students accounted for 39.6% of 198 people, high school students 51.2% of 256 people, and higher education at 9.2% of 46 people (As shown in Table 1).

Table 1: Demographic Profile (n=500)

Demographic (N=500)		Frequency	Percentage
Gender	Male	278	55.6%
	Female	222	44.4%
Age Stage	Primary school students	198	39.6%
	High school students	256	51.2%
	Higher Education	46	9.2%

4.2 Confirmatory Factor Analysis (CFA)

Convergent and discriminant validity are two common statistical methods of structure validity (Straub, 1989). The CFA is a multivariate analysis procedure to test multiple assumptions simultaneously, building an evaluation matrix. The measurement model was validated, and the correlation between the model's latent and observed variables was tested by confirmatory factor analysis (CFA). In Table 2, the internal consistency of perceived usefulness and continuous use intention is good, at 0.823 and 0.862, respectively. Internal consistency, perceived ease of use, and attitude, with self-efficacy, all showed good status at 0.913, 0.900, and 0.937, respectively. Factor loading measurements between construct groups (O'Rourke & Hatcher, 2013). The higher the coefficient load value, the higher the reliability of the item (Hair et al., 2010). The acceptable threshold for the factor load is 0.5 or higher (Hair et al., 1998). The factor load is greater than 0.40, and most are above 0.80. This range ranges from 0.421 to 0.933. Composite or structural reliability (CR) and average variance extraction (AVE) are other measures of the reliability and consistency of scale items (Peterson & Kim, 2013). As Fornell and Larcker (1981) recommended, the CR and AVE are 0.7 or higher, respectively, and are acceptable at 0.4 or higher. The CR results in this study were all above the threshold values. The composite reliability values range from 0.830 to 0.937. The AVE is also greater than 0.5, ranging from 0.552 to 0.787. Based on the composite reliability, the structure with the highest internal consistency is attitude.

Table 2: Confirmatory Factor Analysis Result, Composite Reliability (CR) and Average Variance Extracted (AVE)

Variables	Source of Questionnaire	No. of Items	Cronbach's Alpha	Factors Loading	CR	AVE
Self-Efficacy	Zhen (2018)	4	0.913	0.847-0.857	0.913	0.724
Perceived Ease of Use	Zhen (2018)	4	0.900	0.802-0.857	0.919	0.739
Perceived Usefulness	Watjatrakul (2016)	4	0.823	0.624-0.789	0.830	0.552
Attitude	Lee (2006)	4	0.937	0.865-0.901	0.937	0.787
Continuous Intention	Gbenga et al. (2015)	5	0.862	0.421-0.889	0.880	0.608

Note: CR = Composite Reliability, AVE = Average Variance Extracted, *=p-value<0.05

4.3 Structural Equation Model (SEM)

The statistical values for each index were CMIN / DF=4.397, GFI=0.824, AGFI=0.794, NFI=0.860, CFI=0.888, TLI=0.877, and RMSEA=0.083, respectively. From a numerical perspective, the GFI, AGFI, and RMSEA metrics are unacceptable. Therefore, the structural model was modified, and the fit was regulated. The structural

model was modified by correlating measurement errors between items in the structure. Based on the improved structural model, the goodness-of-fit index was recomputed from Table 3. Statistical values were CMIN / DF=2.076, GFI=0.903, AGFI=0.8885, NFI=0.935, CFI=0.965, TLI=0.961, and RMSEA=0.046. The fitness of the structural model is validated.

Table 3: Goodness of Fit for Structural Model

Index	Acceptable Criterion	Statistical Values Before Adjustment	Statistical Values After Adjustment
CMIN/df	< 5.00 (Awang, 2012)	1745.805/397 or 4.397	807.591/389 or 2.076
GFI	≥ 0.85 (Sica & Ghisi, 2007)	0.824	0.903
AGFI	≥ 0.80 (Sica & Ghisi, 2007)	0.794	0.885
NFI	≥ 0.80 (Wu & Wang, 2006)	0.860	0.935
CFI	≥ 0.80 (Bentler, 1990)	0.888	0.965
TLI	≥ 0.80 (Sharma et al., 2005)	0.877	0.961
RMSEA	< 0.08 (Pedroso et al., 2016)	0.083	0.046
Model Summary		**Not in harmony with empirical data**	**In harmony with empirical data**

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

4.4 Research Hypothesis Testing Result

In Table 4, the continuous intention was influenced by attitudes. Attitudes with continued use intention were significantly driven by self-efficacy, and perceived usefulness, respectively. The standardized path coefficient for self-efficacy and perceived ease of use is 0.550, with a t-value of 12.352, 0.067, and the t-values of 1.307, 0.637, and 15.059. The standardized path coefficient for perceived usefulness and attitude is 0.115, and the t-value is 2.927. The standardized path coefficient for attitude and continuous use intention is 0.171, and the t-value is 3.606. The standardized path coefficient variance calculated the study matrix as each variable.

Table 4: Hypothesis Results of the Structural Equation Modeling

Hypothesis	(β)	t-Value	Result
H1: SE→ PE	0.550	12.352*	Supported
H2: PE → PU	0.067	1.307	Not Supported
H3: PE→ AT	0.637	15.059*	Supported
H4: PU → AT	0.115	2.927*	Supported
H5: AT→ CITU	0.171	3.606*	Supported

Note: * p<0.05

H1: Self-efficacy affects learners' perceived ease of use in online art education. The standardized path coefficient in the second group of data is 0.550, and the t-value is 12.352, which is consistent with the studies of Compeau et al. (1999), Bandura (1982), and Hsia et al. (2014). Studies have shown that self-efficacy is a crucial factor in perceived ease of use and positively impacts the perceived ease of use of e-learning systems in online educational software.

H2: Perceived ease of use affects learners' perceived usefulness in online art education. According to the research of Chiam et al. (2017), perceived ease of use is a prominent factor of perceived usefulness, with standardized path coefficient is 0.067, and the t-value is 1.307. Perceived ease of use does not affect perceived usefulness, and the results contradict the previous researchers.

H3: Perceived ease of use affects learners' attitude toward online art education. The standardized path coefficient is 0.637, and the t value is 15.059, which is consistent with the research of Davis (1989) and Li et al. (2012). Perceived ease of use is a decisive factor affecting attitude, and attitude is an essential intermediate variable regulating the perceived ease of use and perceived usefulness of individual behavioral intentions.

H4: The result establishes perceived usefulness affects learners' attitude toward online art education. The standardized path coefficient is 0.115, and the t-value is 2.927, which is consistent with the research of Davis (1989) and Li et al. (2012). Perceived usefulness is a decisive factor affecting attitude, and attitude is an essential intermediate variable regulating the perceived ease of use and perceived usefulness of individual behavioral intentions.

H5: attitude affects learners' willingness to continue using online art education. The standardized path coefficient is 0.171, and the t value is 3.606, which is similar to previous researchers (Compeau et al., 1999; Fishbein & Ajzen, 1975; Lin et al., 2011; Lu & Hsiao, 2010). Attitude is the crucial factor for the existence of attitude and continuous behavior. Attitude will affect the user's intention to use.

5. Conclusions and Recommendation

5.1 Conclusion and Discussion

Researchers, through two private art education institutions in Chongqing, determined that self-efficacy (SE), perceived ease of use (PE), perceived usefulness (PU), and attitude (AT) affect continuous use intention (CITU) key factors using online fine arts education software. Complete the 500 group questionnaires, analyze the chance relationships between the variables, and test the proposed

hypotheses. Confirmatory factor analysis (CFA) and a structural equation model (SEM) were analyzed data. The findings identify important variables that influence behavioral intention, and the importance of influencing behavioral intention, either directly or indirectly. Based on the findings, the significance and suggestions of this study are presented. As a new way of education and learning, online learning will have positive prospects in the future. More importantly, the ongoing mutation of COVID-19 will further promote the research and development of online education worldwide. Online learning satisfaction is the embodiment of the online learning effect on learners. There are many quantitative research results on the attitude of college students with online learning, but more research results on the satisfaction of graduate students in art majors are needed. Therefore, this paper has important theoretical significance and displays significance. The results of this study will benefit the entrepreneurs or developers, administrators, and teachers of the art education institutions that develop and implement online art education software. These findings are important for entrepreneurs or developers of online art learning courses looking for online art education, learning applications, or other opportunities to learn, evaluate, report, and analyze technologies that may be key investments. This study could fully explain the predictors of attitudes and intentions for the continuous use of online fine arts education software. In conclusion, this study details the factors influencing the willingness of adolescents, art school examinees, and adult art lovers to continuously use online art education software. It provides developers of online art education software courses and top managers of higher education institutions to determine variables affecting users' willingness to continuously use online art education software, which can be applied to projects, and investments and make full use of it.

5.2 Recommendation

In this study, perceived usefulness was the strongest predictor of attitude toward and intention to continue use. Emphasis must therefore be placed on promoting the effectiveness of the system. This means that users are willing to use online art education software if they think the system is a helpful tool to improve their drawing ability. Course developers, teachers, and top managers of higher education institutions should ensure the attributes of system quality, information quality, and service quality when using online art education software.

Online art education software should have the advantages of responsiveness, flexibility, and accuracy. Its characteristics should include high-quality technical assistance, so adequate training should be carried out to improve the service level of engineers and service managers to help learners learn online art courses more effectively and improve learners' willingness to use online art education software. Once the quality characteristics, the usefulness of the system, self-efficacy operating procedures, and other factors are assured, the supported facilities should be promoted to students, such as training or media dissemination, to increase their awareness and recognition. These can stimulate or increase positive attitudes and satisfaction with the possibility of using online art education software in the exemplary art learning process.

In summary, this study elaborates on the factors that influence the willingness of adolescents, art high school candidates, and adult art lovers to use online art education software continuously. It provides developers of online art education software courses and top managers of higher education institutions with the ability to identify variables that affect the willingness of users to continuously use online art education software, which can be applied to projects, investments, and the full utilization of online art education software.

5.3 Limitation and Further Study

The limitations of this study are the scope of the target population and the specific types of online fine art learning, which are focused on the two private fine arts institutions in Chongqing. Exploring different online fine arts learning types at different institutions may yield different research findings and recommendations. In addition, research methods can also consider a combination of qualitative methods in data collection and analysis.

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