

# Research on Influencing Factors of Continuous Learning Willingness in Online Art Education Based on the UTAUT Model

Youwang Wang <sup>1</sup>, Xiuqing Fang <sup>2,\*</sup>

<sup>1</sup> Arts Management, Dept. of Business, Gachon University; Ph.D Student; wyw652992072@163.com

<sup>2</sup> Arts Management, Dept. of Business, Gachon University; Visiting Professor; bangsk@gachon.ac.kr

\* Correspondence

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**Abstract:** *As the Internet rapidly evolves, online learning has emerged as the third largest scenario in the field of education. Online education, different from the two traditional learning scenarios of the school and society, is characterized with broader learning types and higher freedom. In today's post-pandemic era, art education, which relies on face-to-face teaching, is of particular significance to expand online education methods. Based on the UTAUT model, this paper posits seven hypotheses about the willingness to continue learning in online art education. After collecting valid data through a questionnaire, a detailed empirical analysis was conducted via SPSS and AMOS. The results of empirical analysis show that less than half of the respondents had experienced the online art education, mirroring that this is a market worth developing. Based on the findings, learning habit does not significantly impact art learners' willingness to continue learning online. This result and other verified hypotheses are detailed in the discussion part of this paper. This study proves that UTAUT can better explain user behavior than the traditional information system model prior to the improvement, and also has strong explanatory power in the field of art education. The conclusion also posits some operational suggestions from the perspective of practitioners in this field, thereby providing a theoretical basis for art education practitioners.*

**Keywords:** UTAUT; Online Education; Path Analysis; Art Education; SEM

## 1. Introduction

The fourth industrial revolution is undoubtedly the hottest topic of discussion in society at present. This industrial revolution mainly introduced artificial intelligence technology into social life, in which abundant labor costs were replaced with mechanization and automation under digitalization. The progress in technology has beyond doubt brought about qualitative changes in entrepreneurs' business plans and operation modes in different fields [1]. The emergence of artificial intelligence has exerted an extensive impact on manufacturing, commerce, biology, etc. However, it has received little attention in the field of education. For one thing, it is difficult to define what machines can do for courses and teaching [2]. For another, the inherent labor force such as teachers in the field of education is hard to be replaced by machines.

Over the years, a variety of new media models, with the rapid development of information technology, have emerged. Relying on the Internet environment and in combination with artificial intelligence products, such models potentially help the development for the "online" education. Based on the data research report of iimedia.cn, there were 259 million online education users domestically in 2019. Against the backdrop of the COVID-19 pandemic in early 2020, the number of online educatees has achieved breakthrough growth, which is expected to reach 446 million in 2021 [3]. According to the research report of the Music Industry Development Research Center, the music education industry saw its transaction volume amount to RMB 100 billion in 2020 [4].

Nevertheless, China's art quality education is still in its infancy, and far fewer studies on Internet application in the field of art education are carried out. Since 2018, the investment in "Internet education" has

been expanding, and similar projects have gradually drawn the attention of entrepreneurs. From the above data research report, it can also be seen that there is great potential in the market scale of this industry. As a consequence, in today's new media era, online education research from the perspective of art education institutions is particularly important.

The "Double Reduction" policy issued by the Ministry of Education of China on July 2021 highlighted the need to expand students' learning space and carry out various recreational and sports and artistic activities [5]. The move not only standardizes the off-campus discipline training institutions, but also provides a rare opportunity for social art education institutions. Therefore, in the special art learning, whether online education will become the mainstream serves as the future development direction. Art learners' views on online education and the influencing factors in the learning process are also of research significance.

After literature research, this paper, based on UTAUT model, constructs an influence relation model about the influence of online art learners' learning willingness. Through a questionnaire of 230 students who studied art online, valid data were collected, and the hypotheses suggested were verified by virtue of the path analysis method in SEM structural equation.

## 2. Literature Research

### 2.1 Unified Theory of Acceptance and Use of Technology

In the field of information technology, when testing the user acceptance of a new technology or discussing the popularization and use of information systems, the commonly used theoretical models include Technology Acceptance Model (TAM), Theory of Planned Behavior (TPB), Theory of Motivation (TM), Innovation Diffusion Theory (IDT), Social Cognition Theory (SCT), etc. These theories have excellent explanatory power in diverse scenarios. However, due to the complexity of user behavior and the limitation of research fields, a single theoretical model is not accurate [6]. Therefore, Venkatesh et al., in combination with the above theories, put forward the Unified Theory of Acceptance and Use of Technology (UTAUT) [7]. The basic variables of the theory include performance expectations, effort expectancy, social influence, and facilitating conditions. Oliveira et al., subject to UTAUT theory, studied the influencing factors of Portuguese residents' mobile payment behavior. According to the results, consumers' mobile payment behavior is influenced by security perception, innovation perception, performance expectations and compatibility perception [8]. The research reviews the IS literature on UTAUT, makes a detailed theoretical analysis of the model, and formulates proposals for future research. He thinks that the model still has the limitation of singularity [9]. Verkijika predicted the key factors in the adoption of M-commerce by users in Cameroon with 372 samples. Social influence, convenience, hedonic motivations, perceived risk and perceived trust are among the important factors affecting the use intention of M-commerce [10]. Ali, based on UTAUT theory, studied the mediator of teachers' enthusiasm and school performance on job satisfaction. While verifying the hypothesis, it is considered that the theoretical basis is also applicable in the field of education [11].

### 2.2 Online Education

Jeong put forward variables such as social emotion, learning intention, self-efficacy, expectation confirmation and task fit in his research on online education satisfaction of adults. The research shows that task fit is an important factor affecting satisfaction in adult online education, while expectation confirmation indirectly influences the satisfaction [12]. Yang et al., studied the achievements and satisfaction of online English education and traditional English education by means of control group experiment. According to the results, the experimental group with MOOC English education has achieved better learning outcome and experience [13]. Han made a comparison of test scores and learning satisfaction of students in online education and traditional education in the courses for freshmen in business school. It is concluded that scores and satisfaction of reasonable online education are higher than those of traditional education, and students show higher enthusiasm for the reasonable online education [14]. Albelbisi mentioned in the latest research that self-regulation is essential in online learning, and put forward a conceptual model among various factors affecting self-regulation [15]. Few existing studies on online education involve the field of art education, which is one of the reasons why the art field cannot better dive into the online market. Therefore, from the perspective of art education, this paper will, combined with UTAUT model, put forward a theoretical model with guiding significance.

### 3. Research Model and Hypotheses

#### 3.1 Research Hypothesis

Performance expectations is similar to perceived usefulness in the technology acceptance model. It refers to the user's expectation of whether the new technology can improve the job performance. In the business model, it is often served as an indicator to measure whether the enterprise meets the expectation of consumers through service and marketing. In the online learning environment, this variable can measure whether students have achieved the expected learning target. The following hypotheses are therefore proposed:

**H1:** Performance expectations (PE) has a positive impact on students' learning intention in online art learning.

Effort expectancy is similar to perceived ease of use in the technology acceptance model. It refers to the ease of users' acceptance of new information systems. Some studies have mentioned that in online learning, learners should not only consider the difficulty of the learning content provided, but also take into account the learning cost [16]. In other words, the online education platform under B2C mode and different charging modes will bring different consumer perceptions to customers. For example, the consumption experience of the annual membership system and that of charging as per class hours will have an impact on consumers' effort expectancy. Meanwhile, effort expectancy also potentially affects learners' intention to continue learning. The following hypotheses are therefore proposed:

**H2:** Effort expectancy (EE) has a positive impact on students' learning intention in online art learning.

Social influence refers to the impact caused by the views of communities around individuals on new technologies. This variable is called subjective norm in TPB model. In UTAUT model, the influence of group population on new technologies is highly valued. According to some studies, the information shared through SNS platform has a positive impact on promoting consumers' purchase decisions [17]. In the business model, consumers' purchasing confidence is mainly associated with corporate image and marketing reputation [18]. Reputation effect is fairly important in the online art education, since students are more willing to choose teachers with many awards and good reputation. The following hypotheses are therefore proposed:

**H3:** Social influence (SI) has a positive impact on students' learning intention in online art learning.

Facilitating conditions, the fourth variable in UTAUT model, refers to the degree to which individuals feel that organizations support the use of systems in the aspect of related technologies and equipment. However, in art learning, this variable refers to the degree to which learners feel the convenience of interaction in the learning platform. Nevertheless, such case varies with different learning platforms. Therefore, the additional platform factors, acting as a regulator, exist in the form of external variables. The following hypotheses are therefore proposed:

**H4:** Facilitating conditions (FC) has a positive impact on students' learning intention in online art learning.

**H5:** Platform factors (PF) has a positive impact on students' learning intention in online art learning.

In the model, the above variables result in the changes of learning intention, and the overall variables play a decisive role in the final learning behavior. Some studies suggest that learners of MOOC platform, through a period of study, have changed their new learning habits, which will significantly affect their later learning behavior in a persistent manner [19]. In this research, learning habit is included into the influence model of art learning, aiming at exploring the sustainable development of art learning in the online education mode. The following hypotheses are therefore proposed:

**H6:** Learning intention (LI) has a positive impact on students' continuance behavior (CB) in online art learning.

**H7:** Learning habit (LH) has a positive impact on students' continuance behavior (CB) in online art learning.

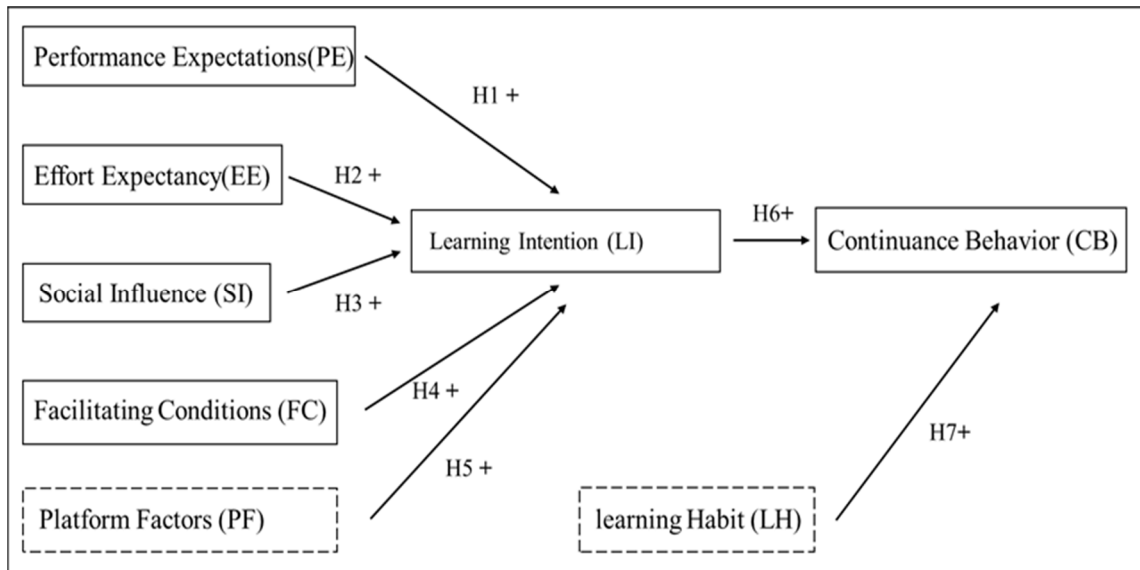
Table 1 shows the proposed hypotheses:

**Table 1.** Hypotheses

Contents	
H1	Performance expectations (PE) has a positive impact on students' learning intention in online art learning.
H2	Effort expectancy (EE) has a positive impact on students' learning intention in online art learning.
H3	Social influence (SI) has a positive impact on students' learning intention in online art learning.
H4	Facilitating conditions (FC) has a positive impact on students' learning intention in online art learning.
H5	Platform factors (PF) has a positive impact on students' learning intention in online art learning.
H6	Learning intention (LI) has a positive impact on students' continuance behavior in online art learning.
H7	Learning habit (LH) has a positive impact on students' continuance behavior in online art learning.

3.2 Research Model

Numerous studies prove that UTAUT model is among the excellent models in discussing the problem of "factors affecting users' cognition" [20-22]. Combining traditional TAM, TPB, SCT and other classical theories, the core four dimensions of variables are concluded. According to the particularity of online art education, two auxiliary variables are added in this research, which are displayed by dotted lines. In the light of the seven hypotheses proposed, the research model in this paper is shown in Figure 1.



**Figure 1.** Research model

4. Research Method and Data Collation

4.1 Research Method

This research aims to analyze the factors that affect learners' continued use behavior when making use of online education mode for art learning. Due to the particularity of art education itself, it is difficult for ordinary art practitioners to apply theoretical models to practical entrepreneurship. Therefore, it is of significance to put forward data support in a scientific way from a rational point of view.

Questionnaires were conducted via Sojump.com, targeting groups who are studying art, including students from art colleges and social art training institutions. Firstly, the demographic characteristics of the sample were collected, mainly including age, gender and monthly income. To obtain a valid sample concerning the online art learning experience, the question of “Did you ever study art online?” was also designed. The overall sample is for sample analysis in the next section, and the valid one for verification of the hypothesis. The second part is based on seven hypotheses, with each hypothesis of three questions. Likert scale is employed to measure the standard, and AMOS for path analysis.

#### 4.2 Sample Analysis

A total of 593 questionnaires were obtained, of which, only 230 people, or 38.7%, studied art online. Many respondents who have no such experience expressed their expectation that art classes can be implemented online. It can be seen that online education has not been well expanded in the art field, and the market still needs to be developed. Art learners before the age of 30 accounted for 74.4% of the total, showing that art education is concentrated with young people, who usually have strong acceptance ability. In the implementation stage of online education platform, more SNSs commonly used by this group should be used, which will be a more effective promotion means. The income level of the sample group shows an average distribution trend, and those with an income above RMB 6,000 accounts for 66.4%. The investigation of income level can also offer assistance to the Platform Owner when setting the charging mode. The specific contents of data sample analysis are shown in Table 2.

**Table 2.** Data sample analysis

	Category	Number of people	Percentage
Online learning Exp.	Yes	230	38.7%
	No	363	61.3%
Gender	Male	286	48.2%
	Female	307	51.8%
Age	<18	189	31.8%
	18~30	253	42.6%
	31~40	106	17.8%
	≥41	45	7.8%
Monthly income (RMB)	<3000	42	7.7%
	3001~6000	154	25.9%
	6001~9000	226	38.2%
	≥9000	171	28.2%

## 5. Data Analysis Results

### 5.1 Analysis of Reliability and Validity

To ensure the validity of the verified hypothesis, only 230 data samples with online education experience were utilized. Prior to empirical analysis, analysis of reliability and validity can be a reflection of the authenticity and reliability of sample data. Usually, Cronbach's  $\alpha$  coefficient is taken for measurement. When  $\alpha$  coefficient is  $>0.8$ , the sample is of extremely high reliability, when it is  $>0.6$  and  $<0.8$ , the sample is of high reliability, and when it is  $<0.6$ , the sample is of low reliability [23].

The reliability of each variable in the scale was measured via SPSS, and seven sub-scales (performance expectations, effort expectancy, social influence, facilitating conditions, platform factors, learning intention and learning habit) were obtained. In addition, the  $\alpha$  coefficient of each specific item was measured, as shown in Table 3.

**Table 3.** Factor loading, Cronbach's alpha, CR, and AVE

Variables	Questions	Factor Loading	Cronbach's $\alpha$	CR	AVE
PE	PE1	0.729	0.893	0.811	0.591
	PE2	0.781			
	PE3	0.793			
EE	EE1	0.869	0.887	0.863	0.678
	EE2	0.788			
	EE3	0.812			
SI	SI1	0.793	0.869	0.841	0.636
	SI2	0.789			
	SI3	0.811			
FC	FC1	0.781	0.891	0.827	0.614
	FC2	0.793			
	FC3	0.778			
PF	PF1	0.765	0.879	0.817	0.598
	PF2	0.793			
	PF3	0.763			
LI	LI1	0.816	0.863	0.867	0.685
	LI2	0.839			
	LI3	0.829			
LH	LH1	0.789	0.871	0.840	0.637
	LH2	0.778			
	LH3	0.827			

It can be seen from Table 3 that the sample reliability of each item exceeds 0.8, and deletion of any indicator in the table will lead to a decrease in  $\alpha$  coefficient, indicating that the overall reliability is good and all indicators can be retained. At the same time, the CR and AVE of all variables were calculated, with CR > 0.7 and AVE > 0.5, demonstrating that the data has a high degree of aggregation and a good overall convergence validity [24]. To further verify the discriminant validity of the scale, the AVE method was introduced in this paper. Discriminant validity is to identify whether there are latent variables with high correlation [25]. It can be seen from Table 4, the correlation between all items is less than the square root of AVE (in bold). In conclusion, the overall reliability and validity of the data samples collected are at a relatively excellent level.

**Table 4.** Discriminant validity of constructs

	PE	EE	SI	FC	PF	LI	LH
PE	<b>0.768</b>						
EE	0.634	<b>0.823</b>					
SI	0.613	0.653	<b>0.797</b>				
FC	0.602	0.662	0.415	<b>0.783</b>			
PF	0.712	0.724	0.695	0.454	<b>0.773</b>		
LI	0.341	0.265	0.250	0.120	0.134	<b>0.827</b>	
LH	0.557	0.596	0.567	0.591	0.581	0.354	<b>0.798</b>

## 5.2 Structural Equation Model Analysis

In this research, Maximum Likelihood ML was introduced to validate the fitting effect of the model. Related literature researches show that parameters such as GFI, RMSEA, CFI, IFI, TLI, PGFI, and PNFI are usually used to verify the fitting degree of the model. By comparison of data in the Amos Output panel of AMOS 22.0, it is found that all the indicators of the sample satisfy the optimum condition, showing that the path model does not need to be modified and has a good fitting degree, as shown in Table 5.

**Table 5.** Model fitting test

Index	GFI	RMSEA	IFT	CFI	PNFI	PGFI
Evaluation criterion	>0.90	<0.08	>0.90	>0.90	>0.50	<0.50
Fitting value	0.984	0.058	0.912	0.967	0.722	0.763
Model fitness	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted

In SEM model, it is necessary to test the significance of path coefficient or load coefficient. AMOS provides both the path coefficient and the P value as a reference to judge the significance. The corresponding paths among coefficients in this research are shown in Table 6. The specific results are as follows:

The path coefficient between PE and LI was 0.309, with  $P < 0.001$ , indicating that PE has a significant positive impact on LI. Therefore, H1 is valid.

The path coefficient between EE and LI was 0.357, with  $P < 0.001$ , indicating that EE has a significant positive impact on LI. Therefore, H2 is valid.

The path coefficient between SI and LI was 0.251, with  $P < 0.001$ , indicating that SI has a significant positive impact on LI. Therefore, H3 is valid.

The path coefficient between FC and LI was 0.233, with  $P < 0.001$ , indicating that FC has a significant positive influence on LI. Therefore, H4 is valid.

The path coefficient between PF and LI was 0.597, with  $P < 0.001$ , indicating that PF has a significant positive impact on LI. Therefore, H5 is valid.

The path coefficient between LI and CB was 0.521, with  $P < 0.001$ , indicating that LI has a significant positive impact on CB. Therefore, H6 is valid.

The path coefficient between LH and CB is 0.027, with  $P < 0.193$ , indicating that LH has no significant impact on CB. Therefore, H7 is invalid.

**Table 6.** Path analysis

Path	Std.	S.E.	P value	Support or not
PE→LI	0.309	0.047	***	Support
EE→LI	0.357	0.049	***	Support
SI→LI	0.251	0.041	***	Support
FC→LI	0.233	0.039	**	Support
PF→LI	0.297	0.039	***	Support
LI→CB	0.521	0.040	***	Support
LH→CB	0.027	0.033	0.193	<b>Not support</b>

<sup>5</sup>\*  $p < 0.05$  \*\*  $p < 0.01$  \*\*\*  $p < 0.001$

## 6. Discussion and Conclusion

### 6.1 Discussion

Online education has witnessed a mushroom growth in the post-pandemic era, and effective online education methods have been gradually introduced in various disciplines. However, since art education relies on face-to-face teaching, most education scenarios still exist in two offline modes, namely, college and social

types. In this research, a total of 593 questionnaires were collected, but only 230 respondents had the online art learning experience, accounting for 38.7%. Less than half of the utilization rate proves that the online education market in the art field still needs to be developed. Art entrepreneurs should also expand their target market to online, with newer operation modes developed.

Through rigorous analysis results, it is observed that UTAUT model can be well applied to the art education scenario. The variables included are all shown as significant influence relations, of which performance expectations, effort expectancy, social influence, platform factors and learning intention all significantly affect continuance behavior. This provides educators with a clear guide to action. In the implementation stage, it should aim to meet the two expectations of users mentioned in the model. While simplifying the learning methods, the learning outcomes can be clearly displayed to users, which can achieve good results. For example, in the aspect of performance expectations, the learning outcomes of the current time can be displayed at the end of each course. By conveying the knowledge gained from learning to users, users' performance expectations for online education can be spontaneously improved. It is also possible to passively improve the performance expectations of users' online education by setting a learning cycle and regularly providing tests for students with moderate difficulty. In terms of effort expectancy, there are internal and external efforts. In the field of education, internal effort refers to the time and energy that learners need to devote, and external effort refers to the money, cost, etc., that need to be paid. Some literatures show that most students are willing to pay the learning cost, which will not have a significant impact on continuance behavior. Therefore, more attention should be paid to the internal effort of users and learners. For example, before education, a questionnaire on students' daily activities should be conducted, and courses in a reasonable manner on the basis of students' free time arranged. One-to-one teaching should be further introduced to reduce learners' effort perception. At the same time, the social influence also shows a significant influence relation in the model. While establishing learner-centered social relations, creating a communication environment for teachers and students under one-to-one teaching mode is a common way to improve their learning willingness, and can also help improve their performance expectations and effort expectancy.

Path coefficient shows that learning intention has a great influence on continuance behavior, indicating that UTAUT model is reasonable and proves that learning intention is the most critical variable. Facilitating conditions and platform factors, which are both basic variables, also affect learning intention to a certain extent. Along with the continuous development of online education, art learning platforms based on different models will be gradually enriched. Whether it is more diversified practice methods or platforms with different operation modes, users' continuance behavior will be further promoted. In the research results, it is worth noting that learning habit has no significant impact on learning intention. We hold the opinion that this is related to the low popularity of online art education. The traditional mode has made learners have a mindset, and the short online art learning experience may not change their learning habits. However, learning habit is still the main influencing factors in the field of education. We also expect the gradual expansion of online art education market, which can create a novel learning environment and change traditional learning thinking.

## 6.2 Conclusion and Outlook

At present, China plays a leading role in Internet application, and boasts an excellent third-party industrial chain in both e-commerce and online learning. To cope with the difficulties in art learning in the post-pandemic era, this paper put forward hypotheses based on the basic variables of UTAUT model, and added additional variables on account of industry experience and literature learning. Hundreds of art learners were filled in the questionnaire. Eventually, empirical analysis on valid data was carried out via SPSS and AMOS. The research proves that UTAUT model also has excellent explanatory power in the field of online art learning. Basic variables have a significant impact on users' continuance behavior. This model, different from the traditional information system model, is characterized with small quantity of variables but large span. Therefore, it has a strong inclusiveness, which can not only set richer items for the scale, but also meet the independence of different paths to the greatest extent. According to industry experience and literature learning, researchers put forward two variables, i.e., platform factors and learning habit, of which, the former shows a significant influence, while the latter does not.

The deficiency of this research lies in the low popularity of art education online, which affects the collection of early samples. Only less than half of the valid samples clearly show the current market situation in this field, but reduce the credibility of the empirical analysis results. Even with students who had online art education experience, the learning habit has not been confirmed due to the short study time or the influence of



traditional education methods. In the following research, particular attention will be paid to the students who had long-term online art learning experience, more objective data will be utilized, and further rigorous research and study will be carried out by virtue of data training methods such as deep learning.

**Conflicts of Interest:** The authors declare no conflict of interest.

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