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The Investigation on Satisfaction and Behavioral Intention to Use Graduation Management System: A Case of Chinese Art Students

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Abstract

Purpose: This study assesses factors impacting the satisfaction and behavioral intention of students in art majors who graduated in 2022 and have been experiencing the use of the graduation management system in China. The conceptual framework was based on perceived ease of use, usefulness, system quality, trust, attitude, satisfaction, and behavioral intention. **Research design, data, and methodology:** The target population is 500 participants, applying the quantitative approach to distribute the questionnaire. The sampling techniques are judgmental, stratified random, and convenience sampling. Before the data collection, the Item-Objective Congruence (IOC) and pilot test (n=50) of Cronbach's Alpha were confirmed. The data analysis was implanted by confirmatory factor analysis to evaluate factor loadings, validities, and reliabilities. Furthermore, structural equation modeling was used to test a significant relationship and hypotheses. **Results:** All hypotheses are supported. Perceived ease of use has a significant impact on perceived usefulness and satisfaction. Perceived usefulness strongly impacts satisfaction, followed by behavioral intention. System quality significantly impacts satisfaction. In addition, behavioral intention is significantly impacted by trust, attitude, and satisfaction. **Conclusion:** The use of graduation management systems in colleges and universities in China provided a more effective development theory and foundation for the system developers to improve and upgrade the graduation management system.

Keywords: Attitude, Trust, System Quality, Satisfaction, Behavioral Intention

JEL Classification Code: E44, F31, F37, G15

1. Introduction

The graduation process was an important basis for measuring the quality of talent training in colleges and universities. For a long time, the graduation data of colleges and universities were usually stored in the university archives, which could have been more convenient for query, quality evaluation, and achievement promotion. As an academic achievement database, a graduation management system is open to the outside world on the premise of guaranteeing the author's intellectual property rights and provides duplicate checking, download management, and other services, which provides a strong guarantee for the standardization and quality of academic research, and

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gradually wins people's trust. People have begun to use it to manage the results (Liu & Chen, 2009).

Many Chinese college students' graduation design (Thesis) management still used the traditional person one-bag paper document management. Teachers and students must communicate face-to-face with each other. In particular, every graduation project will conflict with the practice and social practice of graduates, and even in many cases, students could not guarantee the research time in the school; The information feedback of tutors could not be transmitted to students in time; At the same time, the transfer of paper documents was easy to cause loss and damage. The researcher obtained respondents' attitudes, trust, satisfaction with the system's quality, and behavioral intention by evaluating the graduation management system's perceived usefulness and ease of use. It provided a necessary and reliable design basis for further upgrading the graduation management system.

According to Oliver (1981), the user's behavioral intention of repeated consumption of products stems from the feeling formed by comparing the expected use of products with the actual use. These feelings will affect product satisfaction, and the impact will affect whether users will continue to purchase and use the product. Accordingly, the main purpose of this study is to study the satisfaction and behavioral intention of Chinese students in art majors when using the graduation management system. Based on the previous empirical research, the researchers put forward eight hypotheses to study the relationship between perceived ease of use, perceived usefulness, system quality, trust, attitude and satisfaction, and behavioral intention.

2. Literature Review

2.1 Perceived Ease of Use

Davis et al. (1989) defined perceived ease of use as the ease users use the system. It could improve the learning ability of people using the equipment (Bagozzi & Yi, 1989). Participants will increase their acceptance and usage of the electronic system because of its ease of use (Teo, 2012). Users will find the system simple and satisfying when they thank the relatively simple operating system (Sun et al., 2008). Through the research, usability, and usability were the positive factors affecting satisfaction and use behavior (Chiua et al., 2005). Al-Azawei and Lundqvist (2015) believed that the perceived ease of use of the system has a positive impact on the perceived usefulness of online learning. Additionally, Thong et al. (2006) pointed out that people expect to be able to use mobile websites and easily and use them to evaluate their satisfaction. Accordingly, this research hypothesizes that:

H1: Perceived ease of use has a significant impact on perceived usefulness.
H3: Perceived ease of use has significant impact on satisfaction.

2.2 Perceived Usefulness

Perceived usefulness is a method to detect or measure the user's satisfaction with information technology, often regarded as the supervisor factor of users' acceptance of information technology (Venkatesh & Davis, 1996). Perceived usefulness was a key factor affecting the behavior of using information technology (Cigdem & Topcu, 2015). Perceived usefulness, in turn, affects the individual's use intention and behavior (Venkatesh & Bala, 2008). Kim et al. (2010) posited that because each user has different perceived usefulness when using mobile payment, it will affect their decision to use it. The study of most people's and individual learning habits were two key environments to study whether the e-learning environment has perceptual usefulness (Bouhnik & Marcus, 2006). Perceived usefulness positively impacts online learning satisfaction and the behavioral intention of students (Al-Azawei & Lundqvist, 2015). Based on the assumptions, the research proposes the following hypotheses:
H2: Perceived usefulness has a significant impact on satisfaction.
H5: Perceived usefulness has a significant impact behavioral intention.

2.3 System Quality

O'Neill and Palmer (2004) indicated from the perspective of higher education that system quality is defined as the ratio between students' expectations and actual acquisition. Quality of system (QoS) is usually defined as the perceived conclusion that users expect to get compared with their actual gains (Parasuraman et al., 1985). The overall support provided by information technology and communication technology service providers for users was called system quality, including the overall support provided by internal departments (DeLone & McLean, 2004). The research showed that the perception of positive system quality could improve user satisfaction, which was the premise of user satisfaction (Lee et al., 2000). Positive system quality could help users to build loyalty and maintain continuous behavioral intention (Imrie et al., 2000). O'Neill and Palmer (2004) believed that the quality of the system provided by the e-learning system would affect the positive and useful experience and improve learners' satisfaction. Therefore, the researcher puts forward the following assumption:
H4: System quality has a significant impact on satisfaction.

2.4 Trust

Trust is generally fair and friendly in behavior (Kumar et al., 1995). Trust is key to promoting cooperation between product manufacturers and product marketers (Dwyer et al., 1987). Morgan and Hunt (1994) referred that trust is an important basis for judging the reliability and integrity of a cooperative relationship, which is usually manifested as persistence, fairness, friendship, and voluntariness. According to Kulangara et al. (2016), a trust could help build a bridge between buyers and sellers. In online purchases, an increasing trust could help consumers weaken the perception of risk (Pavlou & Xue, 2007). Trust is an important bridge for buyers and sellers to build satisfaction when studying the relationship communication and the interaction between buyers and sellers. Zhu et al. (2020) pointed out that there was a positive correlation between users' trust and behavioral intention. Based on the previous studies, the researcher hypothesized as follows:
H6: Trust has a significant impact on behavioral intention.

2.5 Attitude

Attitude is defined as the users' evaluation of specific behavior, which is generally expressed as positive intention or negative intention (Richter et al., 2000). Attitude in information technology and the computer was defined as the subjective evaluation of users based on their cognition of information technology and computer, including the subjective evaluation of their constituent elements (Lam et al., 2007). For the hotel industry, the attitude was the system's function, the degree of fit, and the subjective willingness of the hotel staff to use the hotel information system. Zhu et al. (2020) believed that the player's attitude toward the new game was the key factor influencing his buying behavior. Kao and Tsai (2009) believed that teachers' attitudes toward online education technology would affect teachers' behavioral intention to use the technology. Thus, the researcher develops the following hypothesis:
H7: Attitude has a significant impact on behavioral intention.

2.6 Satisfaction

Satisfaction is important for judging whether the information system was successfully adopted (DeLone & McLean, 2004). Huntley (2006) acclaimed that satisfaction is the key factor in maintaining the relationship between the manufacturer and the seller. In online learning, satisfaction is a core indicator of the effectiveness of the teaching methods provided by an online learning system, so it may also block the system's success (Akkoyunlu & Soylu, 2008). Improving the quality and service of products is one of the important contents of customer satisfaction. High satisfaction could make customers repeat consumption and bring good word-of-mouth to promote the company's competitiveness (Cronin et al., 2000). Users' satisfaction with information technology can predict intentional behavior (DeLone & McLean, 2004). Therefore, satisfaction can promote behavioral intention to use the graduation management system. According to previous studies, this research suggests a hypothesis:
H8: Satisfaction has a significant impact on behavioral intention.

2.7 Behavioral Intention

Behavioral intention is defined as "the amount to which a person makes a deliberate plan to execute or not perform an activity" (Xie et al., 2022). Behavioral intention is a signal indicating whether the user will continue to serve the company (Zeithaml et al., 1996). An individual's subjective intention and probability of performing a specific behavior were the definitions of behavioral intention (Ajzen & Fishbein, 1980)—users' subjective intention to use (Kaplanidou et al., 2013). Behavioral intention refers to the degree to which users implement or do not implement their own subjective will in a planned way (Warshaw & Davis, 1985). Teo et al. (2019) highlighted the key factors of attitude driving users to adopt the behavior of actually using new technology. Al-Khaldi and Al-Jabri (1998) noted that emotional attitude is more important than cognitive attitude to the impact of new technology use behavior intention. Whether users use the new system or not is directly affected by their behavior intention (Fishbein & Ajzen, 1975).

3. Research Methods and Materials

3.1 Research Framework

This study assesses factors impacting the satisfaction and behavioral intention of students in art majors who graduated in 2022 and have been experiencing the use of the graduation management system in China. Based on Figure 1, the conceptual framework of this research is adapted from the previous research models of four researchers (Alenezi et al., 2010; Cigdem & Öztürk, 2016; Herman, 2017; Lwoga, 2014). The key variables are perceived ease of use, perceived usefulness, system quality, trust, attitude, satisfaction, and behavioral intention.

Figure 1: Conceptual Framework

H1: Perceived ease of use has a significant impact on perceived usefulness.
H2: Perceived usefulness has a significant impact on satisfaction.
H3: Perceived ease of use has significant impact on satisfaction.
H4: System quality has a significant impact on satisfaction.
H5: Perceived usefulness has a significant impact behavioral intention.
H6: Trust has a significant impact on behavioral intention.
H7: Attitude has a significant impact on behavioral intention.
H8: Satisfaction has a significant impact on behavioral intention.

3.2 Research Methodology

The researcher applied a quantitative approach to distributing the questionnaire. This study includes screening questions, measuring items, and respondents' demographic profiles. The questionnaire used a five-point Likert scale (1=strongly disagree, 5=strongly agree) to evaluate seven variables: perceived ease of use, usefulness, system quality, trust, attitude, satisfaction, and behavioral intention. The data analysis was implanted by confirmatory factor analysis to evaluate factor loadings, validities, and reliabilities. Furthermore, structural equation modeling was used to test a significant relationship and hypotheses.

Before the data collection, the Item-Objective Congruence (IOC) and pilot test (n=50) of Cronbach's Alpha were confirmed. Three experts involve in the Item Objective Congruence (IOC) test. IOC results were passed by three experts rating at 0.6. A pilot test of 50 respondents was conducted with Cronbach's alpha coefficient values exceeding the acceptable value of 0.7 (Hair et al., 2007). The internal consistency values showed perceived ease of use = 0.880, perceived usefulness = 0.79, satisfaction = 0.736, trust = 0.804, system quality = 0.794, attitude = 0.830, and behavioral intention = 0.856.

3.3 Population and Sample Size

The target population in this research is students in art majors who graduated in the year 2022 and have experienced the use of the graduation management system in China. Three selected universities are Chengdu University, Southwest University for Nationalities, and Sichuan Conservatory of Music. Soper (2022) provided a calculation software for structural equation modeling and the results of minimum sample size based on the total variables is 425 samples. Subsequently, the researcher decided to collect 500 participants for the data analysis.

3.4 Sampling Technique

The sampling techniques are judgmental, stratified random, and convenience sampling. The judgmental sampling was conducted to select students in art majors who graduated in 2022 and have experience using a graduation management system in three selected universities; Chengdu University, Southwest University for Nationalities, and Sichuan Conservatory of Music. The stratified random sampling is demonstrated in Table 1. For convenience sampling, the researcher distributed the online questionnaire to art college students in Chengdu.

Table 1: Population and Sample Size by University

Three Universities	Total Graduates	Proportional Sample Size
Chengdu University	764	69
Southwest University for Nationalities	610	55
Sichuan Conservatory of Music	4143	375
Total	**5517**	**500**

Source: Created by the author.

4. Results and Discussion

4.1 Demographic Information

In Table 2, the data were obtained from 500 students in art majors who graduated in the year 2020 and have experienced the use of the graduation management system in China. Most respondents are males at 54.2 percent, and females are 45.8 percent. For the satisfaction level of the graduation management system, most respondents were satisfied at 73.6 percent, followed by not sure at 16.8 percent, and dissatisfied at 9.6 percent.

Table 2: Demographic Profile

Demographic and General Data (N=500)		Frequency	Percentage
Gender	Male	271	54.2%
	Female	229	45.8%
Satisfaction on Graduation Management System.	Satisfied	368	73.6%
	Not Sure	84	16.8%
	Dissatisfied	48	9.6%

4.2 Confirmatory Factor Analysis (CFA)

According to Table 3, CFA was applied to ensure convergence and discriminant validity. The CFA's results reveal that all terms in each variable are significant and have factor loading to confirm the discriminative validity. A guide recommended by Hair et al. (2007) has also been used to identify the importance of each target factor loading and to identify acceptable values for goodness-of-fit. The factor load is greater than 0.50, and the p-value is less than 0.05. In addition, according to Fornell and Larcker (1981), the composite reliability (CR) is greater than 0.7, and the average variance extraction (AVE) is higher than 0.4.

Table 3: Confirmatory Factor Analysis Result, Composite Reliability (CR) and Average Variance Extracted (AVE)

Variables	Source of Questionnaire (Measurement Indicator)	No. of Item	Cronbach's Alpha	Factors Loading	CR	AVE
Perceived ease of use (PEU)	Cigdem and Öztürk (2016)	4	0.916	0.843-0.869	0.916	0.732
Perceived usefulness (PU)	Cigdem and Öztürk (2016)	4	0.886	0.715-0.846	0.888	0.614
Attitude (AT)	Kim and Qu (2014)	4	0.911	0.799-0.868	0.911	0.720
Trust (T)	Mungra and Yadav (2020)	5	0.834	0.719-0.781	0.835	0.559
System Quality (SQ)	Lwoga (2014)	6	0.929	0.861-0.880	0.929	0.765
Satisfaction (S)	Cigdem and Öztürk (2016)	4	0.886	0.840-0.858	0.887	0.723
Behavior Intention (BI)	Afari-Kumah and Achampong (2010)	5	0.849	0.748-0.775	0.849	0.584

CFA was used to evaluate the measurement model fit, as demonstrated in Table 4. The statistical values of fit indices are confirmed to be within the acceptance criteria, including CMIN/DF=1.340, GFI=0.941, AGFI=0.927, NFI=0.951, CFI=0.987, TLI=0.985, and RMSEA=0.026.

Table 4: Goodness of Fit for Measurement Model

Index	Acceptable Values	Statistical Values
CMIN/DF	< 5.00 (Al-Mamary & Shamsuddin, 2015; Awang, 2012)	1.340
GFI	≥ 0.85 (Sica & Ghisi, 2007)	0.941
AGFI	≥ 0.80 (Sica & Ghisi, 2007)	0.927
NFI	≥ 0.80 (Wu & Wang, 2006)	0.951
CFI	≥ 0.80 (Bentler, 1990)	0.987
TLI	≥ 0.80 (Sharma et al., 2005)	0.985
RMSEA	< 0.08 (Pedroso et al., 2016)	0.026
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, NFI = Normed fit index, CFI = Comparative fit index, TLI = Tucker-Lewis index, and RMSEA = Root mean square error of approximation

Fornell and Larcker (1981) indicated that the discrimination validity test was evaluated by calculating the square root of each AVE. Based on this research, discriminant validity is supportive, and the discriminant validity is greater than the overall layout/factor correlation. The evidence is sufficient to create structural validity. Convergence validity and discriminant validity, as shown in Table 5.

Table 5: Discriminant Validity

	PEU	PU	AT	T	SQ	S	BI
PEU	**0.856**						
PU	0.167	**0.784**					
AT	0.400	0.242	**0.849**				
T	0.178	0.421	0.208	**0.748**			
SQ	0.450	0.247	0.421	0.192	**0.875**		
S	0.192	0.251	0.245	0.239	0.230	**0.715**	
BI	0.290	0.409	0.326	0.382	0.307	0.333	**0.850**

Note: The diagonally listed value is the AVE square roots of the variables
Source: Created by the author.

4.3 Structural Equation Model (SEM)

SEM can be measured through the structural model fit. Previously, the statistical values presented an unacceptable model fit. Therefore, the statistical values of fit indices after the adjustment are acceptable, including CMIN/DF=2.159, GFI=0.909, AGFI=0.891, NFI=0.919, CFI=0.955, TLI=0.950, and RMSEA=0.048.

Table 6: Goodness of Fit for Structural Model

Index	Acceptable Values	Statistical Values Before Adjustment	Statistical Values After Adjustment
CMIN/DF	< 5.00 (Al-Mamary & Shamsuddin, 2015; Awang, 2012)	2.603	2.159
GFI	≥ 0.85 (Sica & Ghisi, 2007)	0.893	0.909

Index	Acceptable Values	Statistical Values Before Adjustment	Statistical Values After Adjustment
AGFI	≥ 0.80 (Sica & Ghisi, 2007)	0.873	0.891
NFI	≥ 0.80 (Wu & Wang, 2006)	0.910	0.919
CFI	≥ 0.80 (Bentler, 1990)	0.945	0.955
TLI	≥ 0.80 (Sharma et al., 2005)	0.939	0.950
RMSEA	< 0.08 (Pedroso et al., 2016)	0.053	0.048
Model Summary		**Unacceptable Model Fit**	**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, 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

According to Table 7, the research hypothesis testing result is examined by standardized part coefficients (β) and t-value. Therefore, this study confirms that all eight hypotheses are supported.

Table 7: Hypothesis Results of the Structural Equation Modeling

Hypothesis	(β)	t-value	Result
H1: PEU→PU	0.193	3.907***	Supported
H2: PU→S	0.201	4.192***	Supported
H3: PEU→S	0.232	4.684***	Supported
H4: SQ→S	0.144	2.743**	Supported
H5: PU→BI	0.159	3.067**	Supported
H6: T→BI	0.202	4.164***	Supported
H7: AT→BI	0.249	5.028***	Supported
H8: S→BI	0.271	5.369***	Supported

Note: ** p<0.01, *** p<0.001

Based on the results, this study can refine the following discussions:

H1: Perceived ease of use significantly impacts perceived usefulness with the standardized part coefficient values (β) at 0.193 and t-value at 3.907.

H2: Perceived usefulness significantly impacts satisfaction with the standardized part coefficient values (β) at 0.201 and t-value at 4.192.

H3: Perceived ease of use significantly impacts satisfaction with the standardized part coefficient values (β) at 0.232 and t-value at 4.684.

H4: System quality significantly impacts satisfaction with the standardized part coefficient values (β) at 0.144 and t-value at 2.743.

H5: Perceived usefulness significantly impacts behavioral intention with the standardized part coefficient values (β) at 0.159 and t-value at 3.067.

H6: Trust significantly impacts behavioral intention with the standardized part coefficient values (β) at 0.202 and t-value at 4.164.

H7: Attitude significantly impacts behavioral intention, with the standardized part coefficient values (β) at 0.249 and t-value at 5.028.

H8: Satisfaction significantly impacts behavioral intention, with the standardized part coefficient values (β) at 0.271 and t-value at 5.369.

5. Conclusions and Recommendation

5.1 Conclusion and Discussion

This study assesses factors impacting the satisfaction and behavioral intention of students in art majors who graduated in 2022 and have been experiencing the use of the graduation management system in China. The data analysis was implanted by confirmatory factor analysis to evaluate factor loadings, validities, and reliabilities. Furthermore, structural equation modeling was used to test a significant relationship and hypotheses. The findings show that all hypotheses are supported. Perceived ease of use has a significant impact on perceived usefulness and satisfaction. Perceived usefulness strongly impacts satisfaction, followed by behavioral intention. System quality significantly impacts satisfaction. In addition, behavioral intention is significantly impacted by trust, attitude, and satisfaction.

In discussion, perceived ease of use significantly impacts perceived usefulness and satisfaction. Several studies confirm the results that the perceived ease of use of the graduation management system has a positive impact on the perceived usefulness of students (Al-Azawei & Lundqvist, 2015; Thong et al., 2006). It explains that students expect to be satisfied with the ease of use of the graduation management system. In addition, perceived usefulness significantly impacts satisfaction and behavioral intention. Bouhnik and Marcus (2006) agreed that the learning system's usefulness significantly impacts most students' habits, satisfaction, and behavioral intention. Aligned with Al-Azawei and Lundqvist (2015), perceived usefulness positively impacts the satisfaction and behavioral intention of students to use the learning system.

System quality is a predictor of the satisfaction level of students, as confirmed by DeLone and McLean (2004). O'Neill and Palmer (2004) also emphasized that system quality determines the ratio between students' expectations and actual acquisition. In this research, behavioral intention is significantly impacted by trust, attitude, and satisfaction. Regarding Zhu et al. (2020), students' trust can contribute to the tendency to use a graduation management system. Attitude is also a key predictor of behavioral intention (Lam

et al., 2007). Finally, the implication from DeLone and McLean (2004) put forward to support that satisfaction can promote behavioral intention to use the graduation management system.

5.2 Recommendation

The use of graduation management systems in colleges and universities in China provided a more effective development theory and foundation for the system developers to improve and upgrade the graduation management system. Based on the findings, all factors are significantly related. Hence, students' behavioral intention and satisfaction are the goal for successfully adopting the graduation management system in this research. Satisfaction and behavior intention is very critical. The study recommended improving and upgrading the system's ease of use. With a large amount of data and thesis works in the system, it could slow down the responsiveness. Therefore, cloud technology and internet infrastructure must be consistently and timely upgraded.

The benefits of use can be creatively communicated to arouse students' satisfaction and behavioral intention. To encounter the problems or the issues the system might cause, helpdesk support should be formed to build positive attitudes and satisfaction among students. During the COVID-19 pandemic, students would face difficulties managing their thesis and graduation process. Therefore, system quality can be assessed by management and system developers. Students are the key users who expect the high efficiency of the graduation management system, so the universities should encourage them to provide feedback on the system use through a survey.

5.3 Limitation and Further Study

This study involves certain limitations that could be beneficial for the development of future research. First, the respondents are limited to students in art majors who graduated in 2022 using the graduation management system in three universities in Chengdu, China. Consequently, the sample size and units can be expanded to explore the results. Next, this research only applied the quantitative method. The statistics can explain the numeric results regarding significant relationships but must adequately provide details and explanations. Thus, a qualitative study should be conducted. Finally, the research model can be extended to consider more factors, such as self-efficacy, information quality, service quality, and use behavior.

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