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Measuring Satisfaction and Behavioral Intention of Students in Art Majors on the Use of Graduation Management System in China

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Abstract

Purpose: This research determines to measure factors impacting the satisfaction and behavioral intention of students in art majors who graduated in 2020 using the graduation management system in China. The conceptual framework was developed based on perceived ease of use, perceived usefulness, system quality, trust, attitude, satisfaction, and behavioral intention. **Research design, data, and methodology:** The study applied the quantitative method and collected the data (n=500) using judgmental, stratified random, and convenience sampling. The questionnaire was used as a tool to collect the data. Before the data collection, The Item-Objective Congruence (IOC) and pilot test (n=50) of Cronbach's Alpha were approved. The data were analyzed with confirmatory factor analysis and structural equation modeling. **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:** This study provides the necessary knowledge and reliable results for universities and system developers to improve and upgrade the graduation management system. Therefore, students' behavioral intention and satisfaction can be valid indicators to enhance the performance of the graduation management system.

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

JEL Classification Code: E44, F31, F37, G15

1. Introduction

The graduation project was an important practical teaching link for colleges and universities to achieve the goal of talent cultivation, and it was a review of students' four-year learning achievements. Graduation project teaching link could improve students' comprehensive practical ability and enable students to have a consciousness of scientific research and problems. It could also check the basic theory, professional knowledge, basic skills, and

innovation ability of students in the undergraduate stage (Liu & Chen, 2009). China's domestic undergraduate graduation management system was gradually developed using the Internet and cloud technology. The system did not appear before. The university graduation design management of students usually uses paper archiving management. Its main function was to save the process and achievement documents that teachers guide students to complete the graduation process, standardize the writing

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standards, and file management of undergraduate graduation design.

The development of computer information technology promoted education reform, in which the design of the graduation thesis management system was a reform focus of many universities. The management system could effectively monitor the thesis writing process, improve the thesis management level and assist in teaching (Zhao, 2016). Graduation process was an important part of comprehensive practice teaching in China's higher education to achieve the goal of personnel training, an important part of undergraduate learning achievements, and a critical assessment basis for whether students could be granted a degree. The graduation management system should provide auditors and researchers with authoritative, trusted reinvestigation services. In addition, the system should be able to meet the teachers and students to communicate and interact online.

The research scope mainly included variables related to the research object, research methods, and sampling units to address the significance of the study. The current situation of using graduation management systems in colleges and universities in China provided a more effective development theory and foundation for the developers of the graduation management system to develop further and improve the graduation system. The main goal 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

Perceived ease of use is using a new operating system or software that does not require too much thinking and judgment and could be completed through habits (Davis, 1989). It was a method to detect user performance and satisfaction (Curran & Meuter, 2005). When a new operating platform, software, or system is used, the system that is easy to operate and use will improve the user's satisfaction (Davis et al., 1989). An easy-to-use system or software could be used by more users and stay in the system or software longer (Zhang et al., 2008). Kim and Qu (2014) believed that the ease of using an online hotel system was directly proportional to whether users felt the system's usefulness. Cigdem and Öztürk (2016) showed that if students thought the learning system was easy to use, they

thought it was useful. Kim and Qu (2014) pointed out in the research that the degree of easy operation of hotel self-service kiosks significantly impacts satisfaction. Davis et al. (1989) showed that perceived usefulness was an important indicator of users' satisfaction with information technology. In conclusion, this research proposes the hypothesis 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 refers to the system functions that could improve work efficiency (Davis, 1989). Perceived usefulness was defined as an important feature of self-service technology (Curran & Meuter, 2005). When users use the interactive platform, perceived usefulness could play a positive role (Kuo et al., 2017). The survey data of perceived usefulness was one of the important factors when studying the causal relationship between different variables and user satisfaction (Arbaugh, 2000). Kim and Park (2008) proposed that perceived usefulness impacts user satisfaction. When they studied weather forecast systems, Liaw and Huang (2013) thought that perceived usefulness was an important satisfaction index. Venkatesh et al. (2003) also confirmed the positive effect of perceived usefulness on behavioral intention. By reviewing previous studies, the research made 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

System quality is defined as evaluating the responsiveness, availability, ease of use, and reliability of an e-learning system (DeLone & McLean, 2004). The broad conclusion of consumer experience was system quality (Bitner & Hubbert, 1994). System quality usually refers to the comprehensive evaluation of experience results. Good experience results will affect the satisfaction of users, promote the purchase intention of users, and achieve the goal of improving performance (Cronin & Taylor, 1992). DeLone and McLean (2004) proposed that information quality was the core element of the information system model, which affected user satisfaction and intention. Kim and Park's (2008) research showed that consumers' online shopping behavior and satisfaction were mainly affected by the quality of online information. Therefore, based on previous studies, the researchers put forward the following assumption:

H4: System quality has a significant impact on satisfaction.

2.4 Trust

Trust is a kind of positive recognition made by one party of the other party’s possible behavior in the future and shows a positive behavior intention (Rahimnia & Hassanzadeh, 2013). Trust is defined as the degree of recognition and emotional security of something or something. Gefen (2003) addressed that the behavior of online shopping could be understood as trust in TAM. Because the object was easy to use, so trust was generated. At the same time, its efficacy will be further felt based on trust. Lin and Wang (2006) thought users were satisfied with the m-commerce system because they trusted the e-commerce system. Zhou (2013) studied the key success factors of mobile website adoption. Zhu et al. (2020) pointed out that there was a positive correlation between users’ trust in online reviews and their behavioral intention. Based on the previous studies, the researcher hypothesized as follows:

H6: Trust has a significant impact on behavioral intention.

2.5 Attitude

Davis et al. (1989) posited that attitude is embodied in the comprehensive evaluation of users’ positive or negative intentions. Bohner and Dickel (2011) defined attitude as evaluating a person, organization, or event. It usually included three aspects: emotional thinking, cognitive situation, and behavioral intention (Fishbein & Ajzen, 1975). Potential users' attitudes were the main factor in recommending a new system or information technology (Zain et al., 2005). Davis (1989) believed that the degree of the user’s willingness to use technology was the embodiment of the user's attitude, which affected the user's intention to use technology. Kim and Qu (2014) believed that the users’ attitude was directly proportional to the behavioral intention of using the hotel self-service system. Thus, in this research, the researcher made the following hypothesis:

H7: Attitude has a significant impact on behavioral intention.

2.6 Satisfaction

The degree of recognition users gets when using products and receiving services are satisfaction (Oliver, 1981). Satisfaction is the degree of the user's approval of the information system and is usually used to judge the success and failure of the system (Liaw & Huang, 2013). Some researchers believed that mutual trust between partners was a prerequisite for their relationship satisfaction (Ha & Muthaly, 2008). Satisfaction was an important criterion for judging the quality of organizational relationships. It could maintain the organizational relationship for a longer time and make it positive and healthy (Ping, 2003). Min et al.

(2022) supported that perceived satisfaction influences the behavioral intention of the students to use the learning system. Therefore, satisfaction can promote behavioral intention to use the graduation management system. Generated from the previous studies, this research made the hypothesis that:

H8: Satisfaction has a significant impact on behavioral intention.

2.7 Behavioral Intention

The users’ decision attitude to an event was similar to the function, and the execution intention obtained from perceived usefulness and execution attitude was known (Davis et al., 1989). The behavioral intention was the decisive factor determining the user’s use of new technology and the behavior that led to the users’ actual use (Fishbein & Ajzen, 1975). According to Prayag et al. (2013), the formation of user behavior intention was a dynamic process under the influence of something. Survey approval rate and word-of-mouth were important to content to obtain potential consumers with behavioral intention (Byon et al., 2013). The willingness to hold large-scale games was reflected in the majority of support behaviors (Lee & Krohn, 2013).

3. Research Methods and Materials

3.1 Research Framework

The conceptual framework was developed based on perceived ease of use, perceived usefulness, system quality, trust, attitude, satisfaction, and behavioral intention. Four previous studies were investigated to construct the research framework of this study, which are Cigdem and Öztürk (2016), Herman (2017), Alenezi et al. (2010), and Lwoga (2014). The research model is demonstrated in Figure 1.

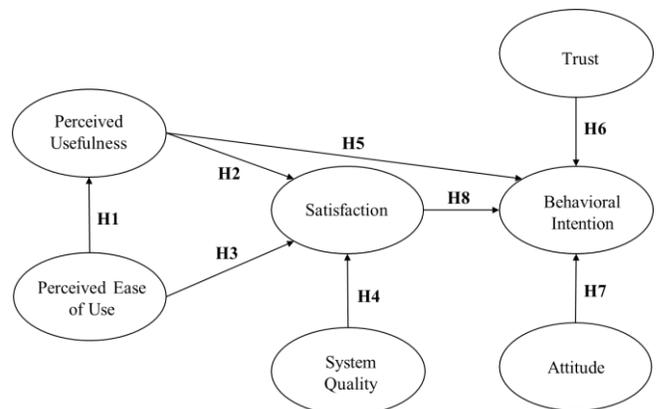


Figure 1: Conceptual Framework

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 on 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 research method in this study is a quantitative design to collect data by 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. Afterward, the data were analyzed with confirmatory factor analysis and structural equation modeling.

Before the data collection, the content validity and construct reliability were reserved by three experts' Item Objective Congruence (IOC) test and a pilot test of 50 respondents. IOC results were passed by three experts rating at 0.6. Moreover, Cronbach's alpha coefficient values exceeded the acceptable value at 0.7 (Hair et al., 2007). The internal consistency values reflected 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 2020 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) especially developed calculation software for structural equation modeling and analysis to determine the sample size needed for a study, which is 425 samples. Hence, the researcher decided to collect 500 participants for the data analysis.

3.4 Sampling Technique

The sampling procedure of this study involves judgmental, stratified random, and convenience sampling. The judgmental sampling was conducted to select students in art majors who graduated in 2020 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	759	69
Southwest University for Nationalities	602	55
Sichuan Conservatory of Music	4113	376
Total	5474	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 females at 53.6 percent, and males are 46.4 percent. For the satisfaction level of the graduation management system, most respondents were satisfied at 64.8 percent, followed by not sure at 19 percent, and dissatisfied at 16.2 percent.

Table 2: Demographic Profile

Demographic and General Data (N=500)		Frequency	Percentage
Gender	Male	232	46.4%
	Female	268	53.6%
Satisfaction on Graduation Management System.	Satisfied	324	64.8%
	Not Sure	95	19.0%
	Dissatisfied	81	16.2%

4.2 Confirmatory Factor Analysis (CFA)

Confirmatory factor analysis verifies convergent and discriminant validity. Previously, CFA was used to analyze a measurement model with a structural equation model (SEM). The final result of CFA shows 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	0.912	0.833-0.868	0.806	0.509
Perceived usefulness (PU)	Cigdem and Öztürk (2016)	4	0.879	0.724-0.811	0.816	0.470
Attitude (AT)	Kim and Qu (2014)	4	0.920	0.848-0.874	0.809	0.516
Trust (T)	Mungra and Yadav (2020)	5	0.790	0.621-0.726	0.865	0.622
System Quality (SQ)	Lwoga (2014)	6	0.921	0.857-0.869	0.815	0.525
Satisfaction (S)	Cigdem and Öztürk (2016)	4	0.866	0.820-0.840	0.753	0.504
Behavior Intention (BI)	Afari-Kumah and Achampong (2010)	5	0.836	0.733-0.769	0.413	0.413

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=1.201, GFI=0.947, AGFI=0.935, NFI=0.955, CFI=0.992, TLI=0.991, and RMSEA=0.020.

Table 4: Goodness of Fit for Measurement Model

Index	Acceptable Values	Statistical Values
CMIN/DF	< 5.00 (Al-Mamary & Shamsuddin, 2015; Awang, 2012)	1.201
GFI	≥ 0.85 (Sica & Ghisi, 2007)	0.947
AGFI	≥ 0.80 (Sica & Ghisi, 2007)	0.935
NFI	≥ 0.80 (Wu & Wang, 2006)	0.955
CFI	≥ 0.80 (Bentler, 1990)	0.992
TLI	≥ 0.80 (Sharma et al., 2005)	0.991
RMSEA	< 0.08 (Pedroso et al., 2016)	0.020
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

According to Fornell and Larcker (1981), the discrimination validity test was evaluated by calculating the square root of each AVE. Based on this study, discriminant validity is supportive, and the usefulness of 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	0.713						
PU	0.219	0.686					
AT	0.422	0.283	0.718				
T	0.229	0.491	0.254	0.789			
SQ	0.506	0.285	0.434	0.197	0.725		
S	0.284	0.363	0.331	0.354	0.295	0.643	
BI	0.319	0.461	0.319	0.418	0.340	0.480	0.710

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=2.670, GFI=0.888, AGFI=0.867, NFI=0.896, CFI=0.932, TLI=0.925, and RMSEA=0.058.

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)	2.688	2.670
GFI	≥ 0.85 (Sica & Ghisi, 2007)	0.887	0.888
AGFI	≥ 0.80 (Sica & Ghisi, 2007)	0.866	0.867
NFI	≥ 0.80 (Wu & Wang, 2006)	0.895	0.896
CFI	≥ 0.80 (Bentler, 1990)	0.931	0.932
TLI	≥ 0.80 (Sharma et al., 2005)	0.924	0.925
RMSEA	< 0.08 (Pedroso et al., 2016)	0.058	0.058
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	0.248	4.940***	Supported
H2: PU→S	0.165	3.520***	Supported
H3: PEU→S	0.987	4.165***	Supported
H4: SQ→S	0.117	2.479*	Supported
H5: PU→BI	0.109	2.453*	Supported
H6: T→BI	0.342	6.268***	Supported
H7: AT→BI	0.220	4.424***	Supported
H8: S→BI	0.271	5.105***	Supported

Note: *= p -value<0.05, ** 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 0.248 and t-value at 4.940.

H2: Perceived usefulness significantly impacts satisfaction with the standardized part coefficient values (β) at 0.165 and t-value at 3.520.

H3: Perceived ease of use significantly impacts satisfaction with the standardized part coefficient values (β) at 0.987 and t-value at 4.165.

H4: System quality significantly impacts satisfaction with the standardized part coefficient values (β) at 0.117 and t-value at 2.479.

H5: Perceived usefulness significantly impacts behavioral intention with the standardized part coefficient values (β) at 0.109 and t-value at 2.453.

H6: Trust significantly impacts behavioral intention with the standardized part coefficient values (β) at 0.342 and t-value at 6.268.

H7: Attitude significantly impacts behavioral intention, with the standardized part coefficient values (β) at 0.220 and t-value at 4.424.

H8: Satisfaction has a significant impact on the behavioral intention with the standardized part coefficient values (β) at 0.271 and t-value at 5.105.

5. Conclusions and Recommendation

5.1 Conclusion and Discussion

The research objective of this study is to determine factors impacting the satisfaction and behavioral intention of students in art majors who graduated in the year 2020 on

the use of a graduation management system in three universities in Chengdu, China. The data were analyzed with confirmatory factor analysis and structural equation modeling. 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. Behavioral intention is significantly impacted by trust, attitude, and satisfaction.

Based on the findings, perceived ease of use significantly impacts perceived usefulness and satisfaction. Cigdem and Öztürk (2016) confirmed that if students thought the learning system was easy to use, they thought it was useful. In addition, the results reveal that the degree of easy operation of hotel self-service kiosks significantly impacts satisfaction (Kim & Qu, 2014). In this study, perceived usefulness significantly impacts satisfaction and behavioral intention. The findings can be signified that perceived usefulness was an important index of satisfaction (Liaw & Huang, 2013) and also confirmed the positive effect of perceived usefulness on behavioral intention. (Venkatesh et al., 2003). The relationship implies that the expected outcome from using a graduation management system influences the satisfaction level of students and, later on, promotes their behavioral intention.

System quality determines the evaluation of student satisfaction in the aspects of the responsiveness, availability, ease of use, and reliability of the graduation management system (DeLone & McLean, 2004). Furthermore, behavioral intention is significantly impacted by trust, attitude, and satisfaction. Zhu et al. (2020) emphasized that users' trust significantly impacts behavioral intention. It can be assumed that student trust is important to enhance their behavioral intention to use the graduation management system. Zain et al. (2005) acknowledged that the users' attitude toward potential users predicts their tendency to use new technology. Thus, students' positive attitude toward using the graduation management system can elevate their willingness to use it. Last but not least, the findings align with a previous claim that perceived satisfaction influences the behavioral intention of the students to use the graduation or any related learning system (Min et al., 2022).

5.2 Recommendation

This study provides the necessary knowledge and reliable results for universities and system developers to improve further and upgrade the graduation management system. Therefore, students' behavioral intention and satisfaction can be valid indicators to enhance the performance of the graduation management system. Based on the technology acceptance management, the new system

or technology is expected to be easy and useful. Students use new technology with the expectation that it will be simple and can provide speed and convenience. A graduation management system requires ease of use in order to promote a variety of benefits. The effect of such ease and usefulness can greatly influence behavioral intention. Therefore, system developers should consider such elements in the upgrade and improvement process.

Student satisfaction with using a graduation management system can indicate how the system is effective and well-response to the users' needs. The measurement of satisfaction can be done through the users' survey. The survey should be quantitative and qualitative for statistical analysis and explanation. In this sense, the responses could be beneficial to universities and system developers to identify what is good or bad about the system. In light of this, the evaluation could involve responsive time, features, and satisfaction level. In order to build trust and a positive attitude toward the use of the graduation management system, universities should provide guidelines and efficient communications to students on how to use and how the system would greatly provide various benefits to students to achieve their learning objectives and graduation.

5.3 Limitation and Further Study

Several limitations are accounted should be noticed in this study. Firstly, the respondents are limited to students in art majors who graduated in 2020 using the graduation management system in three universities in Chengdu, China. Hence, future studies should expand the sample units to exercise the analysis. Second, the research scope mainly focused on the quantitative method. The statistics can explain the numeric results regarding significant relationships but have yet to be articulated in practical implications. Last, the conceptual framework can be altered and adjusted due to there are many more variables that should be concerned, such as self-efficacy, information quality, service quality, and use behavior.

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